www.kamprs.or.kr

The 59th Congress of the Korean Association of Maxillofacial Plastic and Reconstructive Surgeons

제59차 대한악안면성형재건외과학회 종합학술대회 및 정기총회

온라인 학술대회 e-Conference

From The Basics to The Cutting Edge

October 29 (Thu) ~ **31** (Sat), 2020

Hosted by 대한악안면성형재건외과학회 KAMPRS Korean Association of Maxillofacial Plastic and Reconstructive Surgeons

Organized by 이화여자대학교 의과대학 치과학교실 / 이화여자대학교 임상치의학대학원

Sponsored by KOFST 한국과학기술단체총연합회

www.**kamprs**.or.kr

The 59th
Congress of the Korean Association of
Maxillofacial Plastic and Reconstructive Surgeons

제59차 대한악안면성형재건외과학회 종합학술대회 및 정기총회

온라인 학술대회 e-Conference

From The Basics to The Cutting Edge

October 29(Thu) ~ **31**(Sat), 2020

Hosted by 대한악안면성형재건외과학회 KAMPRS

Organized by 이화여자대학교 의과대학 치과학교실 / 이화여자대학교 임상치의학대학원

Sponsored by KOFST 한국과학기술단체총연합회

제59차
대한악안면성형재건외과학회
종합학술대회 및 정기총회

The 59th Congress of the Korean Association of Maxillofacial Plastic and Reconstructive Surgeons

CONTENTS

학술대회장 인사말

존경하는 대한악안면성형재건외과학회 회원 여러분 안녕하십니까?

2020년 59차 학술대회 학술대회장 김 선종입니다. 우리의 축제인 "제59차 대한악안면성형재건외과학회 종합학술대회"를 이화여자대학교 치과학교실 구강악면외과의 주관하에 개최하게 되어 큰 영광으로 생각합니다.

좋은 기회를 주신 학회 임원님과 고문님. 회원여러분께 감사의 말씀을 드립니다.

올해 초부터 발생한 코로나19 바이러스 사태로 치과계의 주요한 학술대회가 취소되면서 학술활동과 공유에 갈증을 느끼는 회원여러분의 니즈를 충족시키기 위해 본 학회의 학술프로그램과 전시회를 충실히 준비해 왔습니다.

원래는 2019년 새로 건립한 이화여자대학교 새병원인 이대서울병원 컨벤션센터에서 거행될 예정이었으나 참가자의 안전을 가장 중요하게 생각하는 본 학회는 최근 서울/경기지역 사회적거리두기 단계 격상 조치 및 COVID-19 확산 방지를 위해 고심끝에 금년도 학술대회를 전면 온라인 학술대회로 진행하기로 확정하였으며, 이에 행사장 운영과 참가자 모임이 없는 온라인 비대면 학술대회의 형태로 진행하게 되었습니다.

"From the Basics to Cutting Edge, 기본에서 최신기법까지" 라는 주제에 걸맞게 악안면 성형재건의 기본적인 내용부터 AI. Virtual surgery, Salivary Gland care. 임플란트 골이식. 미용성형 등 최신기법의 적용과 발전을 소개하는 자리도 마련하였습니다.
올해에도 2명의 해외연자의 교육강연과 국내연자의 다양한 주제의 심포지움. 특강 등 다채로운 프로그램을 준비하였습니다.
해외연자로는 Arizona 치과대학 교정과장이고 TAD 관련 교과서 저자이신 Park 교수님. "구강악안면외과 수술 Atlas" 저자인 North Memorial Cancer Center의 Prof. Kademani의 턱관절 인공관절치환재건술 주제의 강의를 준비하였습니다.

존경하는 회원여러분. 10월 29~31일 온라인으로 개최되는 종합학술대회에서 악안면성형재건외과학의 기초부터 현재. 미래와 함께 강의를 즐기시기 바랍니다. 학술대회를 준비하는 임원과 조직위원회는 회원님들의 기대에 부응하고자 보험특강과 더불어 필수윤리 교육도 추가하였으니 많은 관심을 부탁드립니다

바쁘신 중에도 훌륭한 강의를 해주시는 국내외의 초청 연자분 들과 적극적으로 참여해주신 회원분들께 깊은 감사의 인사를 드립니다. 더불어 성공적인 학술대회가 개최될 수 있도록 격려를 아끼지 않으신 고문님. 회장님. 임원여러분들께 감사드립니다. 학술대회에 축하메시지를 보내주신 유경하 이화여자대학교 의무부총장겸 의료원장님. 김철환 치의학회장님께도 심심한 감사의 말씀을 드립니다. 끝으로 준비해주신 조직위원회 위원분들.덱스코 관계자분 들. 이화여자대학교 치과학교실 구강악면외과 의국원 및 이구회 동문 여러분들께 큰 감사의 마음을 전합니다.

2020. 10. 29

제59차 대한악안면성형재건외과학회 학술대회장 **김 선 종** Sunjong Kim

My dear members of the Korean Association of Maxillofacial Plastic and Reconstructive Surgeons (KAMPRS)!

Greetings from Sun-Jong Kim, chairman of the 59th KAMPRS Congress 2020.

I am greatly honored to hold this festival "59th Congress of the Korean Association of Maxillofacial Plastic and Reconstructive Surgeons" under the supervision of the Department of Oral and Maxillofacial Surgery in the School of Dentistry at Ewha Womans University.
I would like to express my deepest thanks to the directors, advisors, and members who have made this opportunity possible.
Following the COVID-19 outbreak at the beginning of the year, major academic conferences in the dental field have been canceled. Because of this, we have prepared academic programs and exhibitions for this conference to satiate our members' thirst for academic activities and information sharing.
This year's conference was originally scheduled to be held at the convention center of Ewha Womans University's Seoul Hospital, which was newly built in 2019. However, as we prioritize the safety of participants, we have decided to conduct this year's conference as an online "untact" conference with no operation of event halls and meeting of participants following upgraded social distancing rules in Seoul and Gyeonggi Province and for the prevention of the spread of COVID-19.
Under the theme "From the Basics to Cutting Edge," we prepared a space to introduce the basic contents of maxillofacial surgery as well as the application and development of the latest technologies such as artificial intelligence (AI), virtual surgery, salivary gland care, implant bone graft, cosmetic surgery, etc.
This year, we also prepared a variety of programs such as educational lectures by two foreign lecturers, symposiums on various topics by Korean lecturers, and special lectures.
We prepared the lectures of foreign authors, such as Prof. Park, the chief of the Department of Orthodontics at Arizona Dental University and the author of temporary anchorage devices (TADs)-related textbooks, and Prof. Kademani at North Memorial Cancer Center, who is the author of "Atlas of Oral and Maxillofacial Surgery."

My dear members!
Please enjoy the lectures on the basics as well as the present and future of maxillofacial plastic surgery at this academic conference held online from October 29 to 31.
The executives and the Organizing Committee behind this conference have also prepared special insurance lectures and essential ethics training to meet our members' expectations. With all these, we look forward to your continued interest.
I would like to express my deep gratitude to the invited speakers locally and abroad who are set to give excellent lectures despite their busy schedules and to all members for their active participation.
My sincerest thanks also to the president, advisors, and executive directors who spared no effort in encouraging us to hold a successful conference.
Moreover, I would like to express my deep gratitude to Gyeong-ha Yoo, vice president of Ewha Womans University Medical Center and chairman of the Medical Center, and Cheol-Hwan Kim, the president of the Dental Association, for sending congratulatory messages to this conference.

Lastly, my deepest thanks also to the members of the Organizing Committee, Dexco officials, the Department of Oral and Maxillofacial Surgery at Ewha Womans University, and many alumni.

2020. 10. 29

Chairman of the 59th KAMPRS Congress and Regular Meeting 2020 **Sun-Jong Kim** Sunjong Kim

학회장 인사말

존경하는 대한악안면재건외과학회 회원 여러분!

제59차 대한악안면성형재건외과학회 종합학술대회가 이화여대 구강악안면외과 주관하에 열리게 된 것을 진심으로 축하드립니다. 최근에 저희 대한악안면성형재건외과 학술대회는 턱얼굴영역의 기능. 심미 및 재건수술영역을 국내외적으로 리드하는 양질의 학술 프로그램 뿐만 아니라. 국내외 회원간의 친목의 장. 그리고 다양한 기자재전시회등으로 준비된 풍성한 가을축제로 발전하였다고 자부합니다.

잘 아시는 바와 같이 2020년은 코로나바이러스감염증-19(COVID-19)이라는 전염병으로 우리나라 뿐만 아니라 전세계적으로 많은 것을 바꾸어 놓고 있습니다. 많은 전문가들은 코로나19가 사회. 경제. 과학기술. 의료계등 다양한 영역에서 많은 변화를 가져올 것이라고 이야기하고 있습니다.. 저는 이러한 세계적인 위기를 극복하는 과정은 우리에게 좋은 기회가 될 수 있다고 믿습니다.

대한악안면성형재건외과학회는 1년간의 준비기간이 필요한 대규모 학술대회입니다. 저희는 코로나19로 인한 여러 가지 환경의 변화로 인하여 많은 고민을 하였고 결국은 전 행사를 온라인 비대면 학술대회로 진행하기로 결정하였습니다. 회원여러분께서 양해해 주실 것으로 믿습니다.

이번 학술대회는 10월 29일부터 31일까지 3일동안 "From the Basics to Cutting Edge. 기본에서 최신기법까지"라는 대주제로 기획하였습니다. 주제에 걸맞게 악교정수술. 턱관절재건. 가상의료시뮬레이션. 심미수술 등 다양한 주제를 가지고 훌륭한 연자분들께서 강의를 할 예정입니다. 그리고 최근에 특별히 강조되고 있는 필수윤리교육도 포함시켰습니다. 아쉽게도 그동안 매년 만남의 장으로 회원여러분들께서 직접 대면하고 함께 친목의 시간을 위한 축제의 장으로 시행되어온 악성인의 밤이나 학회장초청 만찬. 일본이나 대만등 자매결연을 맺은 국가와의 친목모임은 생략될 것입니다. 그리고 평의원회와 정기총회 또한 온라인으로 진행하기로 하였습니다.

존경하는 회원여러분!
지금 우리에게는 코로나19라는 위기를 적극적이고 지혜롭게 극복하는 노력이 필요하다고 생각합니다. 의료 교육분야에서도 새로운 소통방식으로 등장한 온라인강연. 온라인회의 등에 빨리 적응하고 그 부작용과 시행착오를 최소화 하면서 양질의 콘텐츠와 서비스를 제공하기 위한 고민과 노력이 있어야 한다고 생각합니다. 당연히 우리도 우리 학회의 정체성을 다시한번 되새기고 우리가 해야 할 일들을 미래 지향적인 방법으로 진지하게 고민해야 할 때라고 생각합니다.
어려운 환경속에서도 기꺼이 강연을 수락해주신 국내외 초청연자분들과, 항상 적극적으로 참여해 주시는 회원여러분들게 진심으로 감사의 말씀을 드립니다. 아울러 국가적인 초유의 사태로 혼란스러운 중에도 이번 종합학술대회가 저희 대한악안면성형재건외과 회원들께 많은 도움이 될 수 있도록 최선을 다해 준비해 주신 김선종 학술대회장님과 조직위원회 그리고 이화여자대학교 치과학교실 구강악안면외과 교실원여러분께도 진심으로 감사의 말씀을 드립니다.

회원여러분! 항상 건강하시고 비록 온라인으로 치루어지지만 이번 학술대회가 회원여러분께 많은 도움이 되기를 진심으로 바라고 내년 60주년 종합학술대회에서는 건강한 모습으로 직접 뵙고 인사드릴 수 있기를 간절히 기원합니다. 감사합니다.

2020. 10. 29

제59차 대한악안면성형재건외과학회 학회장 **고 승 오**

My dear members of the Korean Association of Maxillofacial Plastic and Reconstructive Surgeons (KAMPRS)!

Please accept my sincere congratulations for the 59th KAMPRS Conference's opening under the supervision of the Department of Oral and Maxillofacial Surgery at Ewha Womans University. I am proud that the KAMPRS conference has recently evolved into an autumn festival with high-quality academic programs that lead functions, aesthetics, and reconstructive chin and facial surgery, serving as an avenue for friendship among local and international members through various equipment exhibitions.

As you know well, COVID-19, which started to spread in early 2020, has changed many things in Korea and the rest of the world. Many experts predict that COVID-19 will bring about much change in various fields such as society, the economy, science and technology, and health care. However, I do believe that the process of overcoming this global crisis can be a good opportunity for all of us as well.

The KAMPRS conference is a large-scale event that requires a one-year preparation period. With the various environmental changes caused by COVID-19, we have decided to conduct the entire event as an online "untact" conference after much deliberation. For this, we ask for your kind understanding.

This conference will be held for three days from October 29 to 31, under the central theme of "From the Basics to Cutting Edge." Commensurate with this theme, famous lecturers will discuss various topics such as orthognathic surgery, jaw joint reconstruction, virtual medical simulation, and aesthetic surgery. We also included essential ethics education, which has been highlighted recently. To our regret, festival events such as musicians' night, the invitation dinner for the president of the society, and the friendship meeting with sisterhood countries, such as Japan and Taiwan, in which the members could meet face to face, will be canceled. It was also decided that the members' meeting and regular meeting will be conducted online.

My dear members!
Let us make efforts to overcome the COVID-19 crisis actively and sensibly. Specifically, in medical education, I think we need to make our utmost efforts to provide quality content and services by quickly adapting to online lectures and online meetings that have emerged as new communication methods, while minimizing their negative impact and trials and errors. I also believe it is time for us to reflect on our society's identity once again and seriously think about our next steps in a way that cares about the future.

I would like to express my sincere thanks to the invited lecturers, local and international, who agreed to give their time despite the difficult circumstances, and to all members for their active participation. In addition, I would like to express my gratitude to Chairman Sun-Jong Kim of the KAMPRS Conference, Organizing Committee members, and the members of the Department of Oral and Maxillofacial Surgery at Ewha Womans University who did their best to help the KAMPRS members amid the national confusion caused by COVID-19, all for the success of this conference.

My dear members! I wish you healthy and well, and I sincerely hope that this conference will be of great help to you despite the online setup. More than anything, I look forward to meeting you all in person at the 60th conference next year.

Thank you!

2020. 10. 29

President of KAMPRS **Seung O Ko**

축사

안녕하십니까? 대한치의학회 회장 김 철환 교수입니다.

먼저 치의학계의 뜻 깊은 행사 중 하나인 "대한악안면성형재건외과학회 종합학술대회"에 축사를 할 수 있게 초대해 주심에 감사드립니다.

저희 대한치의학회를 소개 드리면. 대한민국 치의학계의 학문적 그리고 임상적 발전을 위해 2002년에 발족된 후. 현재 보건복지부 산하 사단법인체로써의 목적사업과 35개 전문분과학회들과 함께. 회무를 보고 있습니다.

저는 대한치의학회 회장으로서 뿐만 아니라. 대한악안면성형재건외과학회의 한사람의 회원으로서. 1962년에 창립된 후. 60여년 동안 악안면성형재건외과 분야에서 선도적인 학문연구와 이를 기반으로 한 임상 적용을 통해 국민의 건강과 보건향상에 부단히 공헌해왔음을 잘 알고 있습니다. 특별히 과학적 연구활동을 통해 굳건한 임상적 이해를 다지고 이를 바탕으로 악안면외과분야의 진단과 치료로 있어 근거기반의 국제수준의 의료를 선도하고 있음을 치과계의 한사람으로서 매우 자랑스럽게 생각하고 있습니다.

매년 가을 개최되는 정기 학술대회는 악안면분야의 성형 재건분야를 전공한 치과의사 및 스텝. 관련업체 종사자들에게 최적화된 학술 프로그램과 기자재전시회 등 풍성한 행사로 매년 가을에 열리는 축제로 자리매김하고 있습니다.
이번 "제59차 대한악안면성형재건외과학회 종합학술대회"는 이화여자대학교 의과대학 치과학교실 구강악면외과의 주관 하에 개최하게 되어 큰 영광으로 생각합니다. 이번 학술대회는 COVID-19 확산 방지를 위해 학회 측의 고심 끝에 금년도 학술대회는 전면 온라인 학술대회로 진행하기로 확정하였다고 들었습니다. 이에 행사장 운영과 참가자 행사 모임이 없는 온라인 비대면 학술대회의 형태로 진행하게 되었고. 오는 10월 29일부터 개최되는 종합학술대회에서 악안면성형재건외과학의 기초부터 현재. 미래와 함께. 온라인 상에서 그동안 많은 학자들의 연구와 의료경험을 공유할 것입니다.

바쁘신 중에도 훌륭한 강의를 해주시는 국내외의 초청 연자분들과 적극적으로 참여해주신 회원분들께 깊은 감사의 인사를 드립니다. 더불어 성공적인 학술대회가 개최될 수 있도록 준비해주신 조직위원회 위원분들. 이화여자대학교 치과학교실 구강악안면외과 교실원 및 이화여대 동문 여러분들께 화상으로나마 감사의 마음을 전합니다. 아울러 이 자리에서 대한악안면성형재건외과학회 고승오 회장님과 회무에 노력하시는 임원분들께도 그동안의 노력에 감사와 격려를 드립니다.

대한치의학회는 앞으로도 대한악안면성형재건외과학회의 활동을 적극 지원하면서 대한악안면성형재건외과학회와 함께 국민구강건강 증진을 위한 실효성 있는 정책 개발 및 개선방안 마련을 위해 최선의 노력을 다할 것임을 말씀드립니다.

감사합니다.

2020. 10. 29

대한치의학회 회장 **김 철 환**

안녕하십니까?

이화여자대학교 의무부총장 겸 의료원장 유경하입니다.

'기본에서 최신기법까지'라는 주제로 온라인으로 시행되는 제 59차 대한악안면성형재건외과학회 종합학술대회 개최를 진심으로 축하드립니다.

대한악안면성형재건외과학회는 1962년 창립하여 악안면성형재건이라는 턱얼굴 영역의 기능. 심미 및 재건수술 영역을 성공적으로 시행하기 위한 연구. 봉사를 통해 국제적으로 교류하고 리드하는 학회라고 알고 있습니다.

지난 60년 가까운 대한악안면성형재건외과학회의 역사에서는 우리 대학의 김명래 명예교수님. 김선종 교수님. 김진우 교수님. 박정현 교수님 등 이화의료원 치과학교실의 역할이 매우 큰 것으로 알고 있습니다.

그런 연유에 이대 서울병원의 컨벤션센터와 이화의대 계림홀에서 성대하게 모실 예정이었는데. 참가자들의 안전을 가장 고려해서 온라인 비대면 학술대회 형태로 진행하게 된 점 송구하게 생각합니다.

바쁘신 중에도 학술대회 연자로 참여해 주신 미국 Arizona School of Dentistry & Oral 교정과장이자 교수이신 Prof. Park, "구강악안면외과수술 Atlas" 저자인 North Memorial Cancer Center의 Prof. Kademani. 그리고 국내 초청 연자이신 이종호 서울치대 구강악안면외과학 교수님. 장현호 턱이아름다운치과 원장님. 이유미 연세의대 내분비내과 교수님을 비롯한 심포지움 연자님께 감사드리고. 특히. 축사로 참여해주신 김철환 대한치의학회 회장님께도 감사의 말씀을 드립니다.

이번 학술대회를 통해 향후 학회 발전을 위해 이화의료원 치과학교실이 큰 역할을 하는 장이 되기를 기원합니다.
더불어. 성공적인 학술대회가 개최될 수 있도록 준비해주신 이화의대 치과학교실 구강악안면외과의국원 및 이구회 동문 여러분께 감사의 마음을 전합니다.

고맙습니다.

2020. 10. 29

이화여자대학교 의무부총장 & 의료원장 **유 경 하**

Educational Lecture I	Anterior Open bite Correction : Surgery vs. TADs	**Jae Hyun Park** (Arizona School of Dentistry & Oral Health, USA)
Invited Lecture I		
Educational Lecture II	State of the Art in Alloplastic Reconstruction of the TMJ	**Deepak Kademani** (North Memorial Medical Center)
Invited Lecture II		
Invited Lecture III - Orthognathics -	Patient's dissatisfactions and complications in orthognathic surgery – Lefort I level maxilla surgery	**장현호** (턱이 아름다운 치과)
Special Seminar	Recombinant PTH in ONJ	**이유미** (연세 세브란스 병원)
Invited Lecture IV - Oral Cancer -	Reconstruction of mandibular condyle and TMJ	**이종호** (서울대학교)
Symposium I - Virtual Surgery -	Development of Total Shoulder Arthropathy AR surgery training simulator and AI evaluation system	**최요철** (홀로웍스)
	Augmented Reality Guide and Optimal Dental Occlusion Simulation for Corrective Jaw Surgery	**홍재성** (DGIST)
	VR/AR based orthognathic surgery	**문성용** (조선대학교)
Symposium II - Salivary Gland -	Cure and care of xerostomia using sialendoscopy	**전상호** (고려대학교)
	Understanding salivary glands and saliva from the perspective of the oral and maxillofacial surgeon	**황경균** (한양대학교)
	Salivary gland imaging	**김조은** (서울대학교)
Symposium III - Oral Cancer Reconstruction -	Rare situations for maxillofacial reconstruction with free vascularized flap	**김진욱** (경북대학교)
	Advantages and Results of sharp adventitial dissection for microvascular anastomoses	**남 웅** (연세대학교)
	Functional reconstruction of mandible and its limitation	**정승곤** (전남대학교)
Symposium IV - Orthognathic Surgery -	How accurate the surgical outcomes in orthognathic surgery is? In the era of virtual planning	**서병무** (서울대학교)
	Customization, 3D Printing Guides and Computer-aided Surgical Simulation for Patient-fitted Orthognathic Surgery	**양병은** (한림대학교)
	The Evaluation of Treatment Difficulty in Orthognathic Surgery	**한세진** (단국대학교)
Symposium V - Implant -	Alveolar bone augmentation using mandibular block bone(MBB) for dental implant	**이재열** (부산대학교)
	Various surgical approaches for ridge augmentation in severely atrophied alveolar ridge	**창동욱** (원치과의원)
	Management of bone graft failure and complications	**최은주** (원광대학교)
Symposium VI - Esthetic Surgery -	실 리프팅의 첫걸음	**조진환** (조진환 성형외과)
	Clinical anatomy for the filler injections for chin and nasolabial fold	**김희진** (연세대학교)
Medical Insurance	구강악안면외과 보험청구의 모든 것	**권경환** (원광대학교)
필수과목 **Ethics Education**	의료분쟁 조정중재원과 최근경향	**이강운** (강치과)
	모르고 범하는 의료법 위반과 코로나 위기 극복 의료분쟁 대처법	**김 진** (가톨릭대학교)

*보수교육 인정에 윤리교육은 필수 이수 사항입니다.

일반 연제 구연 및 포스터 발표 안내

구연 발표 (Oral Presentation)

① 일반 구연 발표는 약 8분입니다.

② 우수 발표자에게는 심사 후 학술상 시상 예정입니다.

* 수상자 발표

일시 2020년 10월 31일 (토) 오후 12시

장소 악성학회 홈페이지 (kamprs.or.kr)

* 구연 발표 심사위원 명단

이름	소속
이정우	경희대학교 치과병원 구강악안면외과
송인석	고려대안암병원치과 구강악안면외과

이름	소속
송승일	아주대병원 구강악안면외과
강영훈	경상대학교병원 치과 구강악안면외과

"심사를 맡아 주신 심사위원님들께 감사드립니다."

e-포스터 발표 (e-Poster Presentation)

① e-포스터 게시 시간 2020년 10월 29일 (목) 00시 ~ 31일 (토) 24시

② e-포스터 운영 장소 kamprs.e-symposium.org/index.php

③ 포스터 심사는 두 차례 진행될 예정이며, 1차 심사 후 우수 선정자에 한해 Q&A 심사가 진행될 예정입니다.

④ 우수 발표자에게는 학술상 시상 예정입니다.

* 수상자 발표

일시 2020년 10월 31일 (토) 오후 12시

장소 악성학회 홈페이지 (kamprs.or.kr)

* 포스터 발표 심사위원 명단

이름	소속
김문영	단국대학교 치과대학 구강외과
김재영	강남세브란스병원
김좌영	한림대학교 성심병원 구강악안면외과
남정우	원광대 산본병원 치과/구강외과
변수환	한림대학교 동탄성심병원 치과/구강외과

이름	소속
석현	전북대학교 치과대학 구강악안면외과
양훈주	서울치대병원 구강악안면외과
이의룡	중앙대병원 구강악안면외과
이호	서울대학교 보라매 병원 구강악안면외과

"심사를 맡아 주신 심사위원님들께 감사드립니다."

Educational/Invited Lecture I

Speaker Prof. Jae Hyun Park

Affiliation Orthodontics Department, Arizona School of Dentistry & Oral Health, USA

Topic Anterior Open Bite Correction: Surgery vs. TADs

Educational/Invited Lecture II

Speaker Dr. Deepak Kademai

Affiliation North Memorial Health Cancer Center, USA

Topic State of the Art in Alloplastic TMJ Reconstruction

Anterior Open Bite Correction: Surgery vs. TADs

Jae Hyun Park, DMD, MSD, MS, PhD
JPark@atsu.edu
Professor and Chair, Postgraduate Orthodontic Program,
Arizona School of Dentistry & Oral Health, A.T. Still University

Lecture description

Anterior open bite (AOB) can be corrected by orthognathic surgery or orthodontic treatment. Severe skeletal, facial, and functional problems should be corrected by orthognathic surgery, but combining cone-beam computed tomography (CBCT) and temporary anchorage devices (TADs) provides an efficient and accurate way to correct AOB. Nowadays, by using TADs, we can expand orthodontic boundaries. In this lecture, various clinical applications of TADs and orthognathic surgery will be discussed in challenging AOB cases along with the new American Board of Orthodontics (ABO) Scenario-based Clinical Examination domains. After the lecture, clinicians will be able to treat and finish anterior open bite cases more efficiently and successfully while minimizing the chance of relapse.

Three learning objectives

- Understand clinical applications and biomechanical considerations of orthognathic surgery vs. TADs in challenging AOB cases
- Identify clinical situations in which CBCT imaging and TADs would be beneficial in AOB correction;
- Discuss how to prepare for the new ABO Scenario-based Clinical Examination in diagnosis and treatment planning, treatment implementation and management, and critical analysis and outcomes assessment in AOB cases;

Curriculum Vitae

Jae Hyun Park, DMD, MSD, MS, PhD

Dr. Jae Hyun Park is Professor and Chair of the Postgraduate Orthodontic Program at the Arizona School of Dentistry & Oral Health. He is a Diplomate of and Examiner for the American Board of Orthodontics (ABO). Dr. Park has received several awards for scientific and clinical excellence including the Charley Schultz Award (1st Place Winner in the Scientific Category at the Orthodontic Resident Scholars Program) and the Joseph E. Johnson Award (1st Place Winner at the AAO Table Clinic Competition) from the AAO. He also serves as an editorial board member of several peer-reviewed orthodontic and dental journals including The Angle Orthodontist, Seminar in Orthodontics, and Journal of Clinical Orthodontics (JCO) as well as associate editor of the American Journal of Orthodontics and Dentofacial Orthopedics (AJO-DO), Orthodontics & Craniofacial Research, Journal of World Federation of Orthodontists, and Journal of Clinical Pediatric Dentistry. He was recently invited to be a guest editor of Seminars in Orthodontics. While working as a full-time faculty member since 2008, he has published more than 230 scientific and clinical articles in peer-reviewed orthodontic and dental journals including five cover pages in the AJO-DO, three cover pages in the JCO, three books, and 22 book chapters. He lectures nationally and internationally and represented the AAO at the 2018 ADA Annual Session where he presented a 3-hour lecture. Dr. Park is currently Editor-in-Chief of the Journal of the Pacific Coast Society of Orthodontists (PCSO) Bulletin, Past President of the Arizona State Orthodontic Association, and Thesis Committee Co-Chair of Northern California Edward H. Angle Society of Orthodontists. He also works for the NBDE Part II Ortho-Pediatric Dentistry/ADAT Test Construction Committee and CODA Site Visitor. Recently, he was also appointed as the 2021 Scientific Program Chair at the College of Diplomates of the American Board of Orthodontics (CDABO) annual meeting. In addition, he was recently appointed to replace Dr. Steven Dugoni as the ABO Director representing the PCSO. He will be the ABO President in 2024.

State of the Art in Alloplastic TMJ Reconstruction

Deepak Kademani DMD MD FACS
North Memorial Health Cancer Center, USA

This lecture will cover contemporary concepts in alloplastic TMJ reconstruction. It will focus on providing surgeons with an outline on surgical techniques to optimize outcomes. Diagnostic preoperative and therapeutic postoperative measures to improve outcomes will also be discussed.

Curriculum Vitae

Current Role

Chief of Staff
North Memorial Medical Center
3300 Oakdale Ave. N
Minneapolis, MN 55422

Minnesota Oral and Facial Surgery/Head and Neck Surgery
Medical Director, Oral and Maxillofacial Surgery
Fellowship Director, Oral/Head and Neck Oncologic and Reconstructive Surgery

Education

College or University	**Bachelor of Dental Surgery**, University of Liverpool, United Kingdom Dec 13, 1993 – July 1, 1989
Dental School	**Doctor of Dental Medicine**, University of Pennsylvania, U.S.A May 19, 1997 – July 1, 1995
Medical School	**Doctor of Medicine**, University of Pennsylvania, U.S.A May 22, 2000 – July 1, 1997
Fellowship	**Head and Neck Tumor and Reconstructive Surgery Fellowship** Legacy Emanuel Hospital, Portland OR June 30, 2004 – July 1, 2003
Residency	**Oral and Maxillofacial Surgery Residency** University of Pennsylvania Medical Center, Philadelphia PA June 30, 2003 – July 1, 1997
Internship	**General Surgery Internship**, University of Pennsylvania Medical Center, Philadelphia PA June 30, 2002 – June 20, 2000

Professional Background

Present - 2020	Chief of Staff
2018 - 2020	Vice Chief of Staff
2016 - 2018	Chief of Surgery
Present - 2014	Medical Director and Fellowship Director Oral/Head and Neck Oncologic and Reconstructive Surgery North Memorial Medical Center and Hubert Humphrey Cancer Center Minneapolis, MN
2014 –2008	Oral and Maxillofacial Surgeon / Associate Professor / Fellowship Director Oral/Head and Neck Oncologic and Reconstructive Surgery Division of Oral and Maxillofacial Surgery Department of Developmental and Surgical Sciences School of Dentistry, University of Minnesota, Minneapolis, MN
Present-2011	Medical Director / Minnesota Oral and Facial Surgery / Minneapolis, MN
2008 – 2003	Consultant, Division of Oral and Maxillofacial Surgery Department of Surgery, Mayo Clinic, Rochester MN
2003 – 1997	Instructor, Oral and Maxillofacial Surgery University of Pennsylvania School of Dental Medicine, Philadelphia, PA
1995 – 1994	Senior House Surgeon in Oral and Maxillofacial Surgery / Chester Royal Infirmary, Chester, UK
1994 – 1993	House Surgeon in Dental Surgery / Royal Liverpool University Hospital, Liverpool, UK

Invited Lecture

The 59th Congress of the Korean Association of Maxillofacial Plastic and Reconstructive Surgeons

Invited Lecture III

Speaker Hyun Ho Chang

Affiliation Beautiful Jaw Dental Clinic

Topic Patient's dissatisfactions and complications in orthognathic surgery – Lefort I level maxilla surgery

Invited Lecture IV

Speaker Jong-Ho Lee

Affiliation Department of Oral and Maxillofacial Surgery, Oral Cancer Center, College of Dentistry, Seoul National University, Seoul, Korea

Topic Reconstruction of mandibular condyle and TMJ

Patient's dissatisfactions and complications in orthognathic surgery – Lefort I level maxilla surgery

Hyun Ho Chang
Beautiful Jaw Dental Clinic

It was reported that Le fort I osteotomy was first attempted to enhance esthetics and occlusion in 1920s. Since then, many OMF surgeons have improved surgical techniques and invented novel instruments accordingly. In doing so, we could have got safer and more predictable results in orthognathic surgery now than any time before.

While movement of maxilla had been mainly directed forward years ago, more complex movement of maxilla – superior, posterior, etc. – is needed these days. While reported complications of maxilla surgery had been hemorrhage or numbness in the past, more complex complications like hearing problem, dry eyes, loss of visual acuity have been reported recently. Furthermore, patients occasionally do not satisfy aesthetic aspects of postoperative results, although respective elements were improved objectively. Recently, patients have become more fastidious in addressing their aesthetic demands, while challenging strict prevention of complications associated with the surgery.

I hope to discuss the complications in orthognathic surgery (mainly in maxillary surgery), causes of complications, surgical considerations and patients' aesthetic dissatisfactions.

Curriculum Vitae

DDS. MSD. PhD. College of Dentistry. Yonsei University
Intern. Resident. Dental Hospital of Yonsei University
Clinical Fellow & Visiting Faculty Dept. of OMFS College of Dentistry Dalhousie University
Associate Professor ASAN Medical Center & Chairman Dept. Dentistry Medical College of Ulsan University.
President. Beautiful Jaw Dental Clinic.

Reconstruction of mandibular condyle and TMJ

Jong-Ho Lee
Department of Oral and Maxillofacial Surgery,
Oral Cancer Center, College of Dentistry,
Seoul National University, Seoul, Korea

Mandibular condyle is very important part of occlusal function. Not infrequently, we meet situations for resection of condyle or TMJ defects. It is usually reconstructed with alloplastic materials like metal prosthesis or non-vascularized bone source. However, the complex defect related with facial soft tissue and condylar-ramal bone, conventional non-vascularized costochondral graft or alloplastic material is not sufficient to restore the function and contour.

For this indication, we use vascularized bone or costochondral graft. The objective of this presentation is to introduce various techniques of TMJ reconstruction and evaluate the efficacy and long-term results of reconstruction of mandibular ramal-condylar defect using vascularized costochondral graft with serratus anterior muscle. Since 1999, total 16 cases of mandibular ramal-condylar defect were reconstructed using vascularized costochondral graft with serratus anterior muscle. The average mouth opening was distinctly improved at inter-incisal distance after the follow-up of 6 months period postoperatively, nevertheless, lateral jaw movement was limited at the affected side and deviated to that side in the jaw opening. Only 4 cases became false ankylosed after operation. Good cosmetics and viability were found. Ramal height decrease was found to be not appeared altogether with absence of donor sit morbidity.

On the basis of my small experiences, free vascularized costochondral grafts with serratus anterior muscle may be the more attractive method for the reconstruction of mandibular ramal and condylar defect. Flap viability, TMJ function, graft resorption rate, restoration of soft tissue contour, donor site morbidity will be discussed more as the clinical outcomes and efficacy of this flap.

Curriculum Vitae

Jong-Ho Lee
Professor, DDS, MSD, PhD

Dr Lee completed his dental education at the School of Dentistry, Seoul National University in 1982 and trained at the Department of Oral and Maxillofacial Surgery, Soul National University Hospital and military field hospital in Korea till 1988.
He has written a PhD thesis in Dentistry 1992 about "Assessment of capillary blood flow and histologic study of neovascularized bone flaps using interpositional vein graft as pedicles" and was subsequently appointed as an Associate Professor at the Chonnam University Hospital(1998-1996) and Professor at Seoul National University(1996-present).

Presently Dr Lee practices as a specialist of oncology-reconstruction and director at the Oral Cancer Center, Clinical Trial Center and Department of Oral and Maxillofacial Surgery, Seoul National University, Korea. Dr Lee has served a visiting Professor for a year in the Department of Maxillofacial and Plastic Surgery, Eberhardt Karls Universitaet Tuebingen, Germany. He also served as a research Fellow at the Laboratory for the Study of Skeletal Disorders and Rehabilitation, Children's Hospital, Harvard Medical School, USA. Dr Lee is also a Director of AOCMF Fellowship Center, Honorable President of Korean Association of Oral and Maxillofacial Surgeons(KAOMS), President of Korean Academy of Dental Science(2017-2020), and Member of The National Academy of Science, Republic of Korea(2017-life time)

Dr Lee has lectured internationally, has over 450 Publications. His clinical and research interests include peripheral nerve regeneration, bioresorbable metals, micro-reconstruction of maxillofacial region.

Special Seminar

The 59th Congress of the Korean Association of Maxillofacial Plastic and Reconstructive Surgeons

Special Seminar

Speaker Yumie Rhee

Affiliation Department of Internal Medicine
Yonsei University College of Medicine

Topic Recombinant PTH in ONJ

Recombinant PTH in ONJ

Yumie Rhee, MD, PhD
Department of Internal Medicine
Yonsei University College of Medicine

Medication-related osteonecrosis of the jaw (MRONJ) is a rare disease which can be challenging to treat. This presentation covers the perspectives of the international task force on MRONJ. Then, the role and efficacy of teriparatide (TPTD) as a treatment for MRONJ will be reviewed in a clinical and translational evidences. Despite lack of RCTs of TPTD, it may play a role in the treatment of intractable MRONJ in osteoporotic patients. Health professionals who deal with MRONJ should think in a balanced way against both on MRONJ and the osteoporosis for the patient's sake.

Curriculum Vitae

Personal Information

Name	Yumie Rhee, MD, PhD
Current Address	Department of Internal Medicine, Yonsei University College of Medicine, Severance Hospital, Yonsei University Health System, 50-1, Yonsei-ro, Seodaemun-gu, Seoul, 03722, Korea
Tel (Office)	+82-2-2228-1973
E-mail	yumie@yuhs.ac

Licenses

Korean Medical License (No. 58055, 1996)
Korean Board of Internal Medicine (No. 7416, 2001)
Korean Subspecialty Board; Endocrinology & Metabolism (No. 4-03-277, 2003)

Education

1990.3.2 - 1996.2.26	Yonsei University College of Medicine (95-3033)
1998.9.1 - 2000.8.25	Master Degree of Medical Science, Graduate School, Yonsei University, majored in Internal Medicine
2001 - 2003	Ph.D. Degree of Medical Science, Graduate School, Yonsei University, majored in Bone Metabolism
2011.1.25	Investigator GCP workshop
2012.1.27	Clinical Trial Training & Education Continuing Program for Investigators by KNECT
2014.7.1	2014 8th GCP Workshop for Investigators at Severance Hospital
2015.3.10	CITI English International Modules completed
2016.9.8	Online training for Bioethics Law
2016.10.25	Investigator GCP workshop (4h)
2017.1.1	Collaborative Institutional Training Program completed
2017.7.6	Investigator GCP workshop (4h)
2018.2.21	Investigator GCP workshop (4h)
2019.6.19	Investigator GCP workshop (4h)

Professional Training & Employment

1996.3 - 1997.2	Internship at Yonsei University Medical Center (YUMC), Seoul, Korea
1996.3 - 2001.2	Residency at the Department of Internal Medicine, Yonsei University Medical Center (YUMC), Seoul, Korea
2001.3 - 2004.2	Fellow of the Internal Medicine, Yonsei University College of Medicine, Seoul, Korea
2004.3 - 2007.2	Faculty Instructor of the Internal Medicine, Yonsei University College of Medicine, Seoul, Korea
2007.3 - 2012.2	Assistant Professor of the Internal Medicine, Yonsei University College of Medicine, Seoul, Korea
2008.7 - 2010.6	Visiting Scholar of the Department of Anatomy & Cell Biology, Indiana University School of Medicine, Indianapolis, USA
2012.3 – 2017.2	Associate Professor of the Internal Medicine, Yonsei University College of Medicine, Seoul, Korea
2017.3 – present	Professor of the Internal Medicine, Yonsei University College of Medicine, Seoul, Korea

Medical Insurance

The 59th Congress of the Korean Association of Maxillofacial Plastic and Reconstructive Surgeons

Medical Insurance

Speaker Kyung-Hwan Kwon

Affiliation Wonkwang University

Topic 구강악안면외과 보험청구의 모든 것

구강악안면외과 보험청구의 모든 것

Kyung-Hwan Kwon
Wonkwang University, College of Dentistry

악안면성형재건외과학회와 구강악안면외과학회에서 보험정책에 대한 연구를 위해 구강악안면외과보험연구회를 구성하여 2년 가까이 2019년까지 진행하였지만 최근에서는 코로나-19 감염으로 인하여 언택트 시대에 많은 부분이 온라인 SNS화 되면서 온택트를 시도하고 있습니다. 구강악안면외과 국가 전문의가 1400여명의 배출이 되고 있고 치과의원이나 치과병원에서 구강악안면외과 과목으로 개원하시는 분들이 증가하고 있습니다. 되돌아 보면. 구강악안면외과 분야의 고시 및 법규. 심사지침. 심사례 등에 대한 지식과 정보가 부족하여 반복되는 청구에 대한 삭감으로 고생하고 있었지만 구강악안면외과학회와 악안면성형재건외과학회 보험위원 및 심평원 위원으로 참여했던 저희들로서는 보험 정책 변화 대응과 의견제출에 힘들고 보험에 대한 저변을 확대하고 교육하는 시스템을 구축하기 힘든 시기가 있었습니다. 이제는 구강악안면외과 보험연구회를 통한 교육시스템을 구축해 나가고 있고 삭감에 대한 대책과 심사지침. 고시에 대한 대응을 적극적으로 해나가면서 구강악안면외과 영역을 좀 더 넓혀가고 있습니다.

본 교육프로그램은

보험급여에 대한 개념과 구강악안면외과 보험청구과정 ▶ 권경환 (원광대학교 치과병원)
1. 신의료기술 신청과 평가 과정 ▶ 양병은 (한림대 (평촌)성심병원)
2. 불합리한 보험청구 ▶ 정승원 (분당차병원)
3. 잊기 쉬운 외래보험청구 ▶ 최근락 (첫사랑니치과의원)
4. 알기 쉬운 입원보험청구 ▶ 김재영 (연세대학교 강남세브란스병원)

각각의 각론별로 교육프로그램으로 발표를 할 예정입니다. 구강악안면외과 보험진료 지침서의 발간이 1년이 되어가고 있습니다. 구강악안면외과 보험영역의 꾸준한 연구와 교육이 이루어져야 우리의 영역을 좀 더 넓혀 갈 수 있고 자신의 행위에 대한 보답아닌 보답을 받을 수 있을 것으로 생각됩니다. 구강악안면외과 전문의 시대에서 새로운 전환기에 항상 보험급여의 변화는 필수적입니다. 저희들이 좀 더 깨어 있어야 신의료기술. 불합리한 보험청구를 해결해 나갈 수 있으리라 사료됩니다.

Curriculum Vitae

Graduated from Wonkwang University School of Dentistry
Wonkwang University Dental Hospital, Department of Oral and Maxillofacial Surgery Training
Ph.D. in Oral and Maxillofacial Surgery, College of Dentistry, Chonnam National University
Visiting Professor, Department of Oral and Maxillofacial Surgery, Baylor Dental College, Texas A&M University
Insurance director, Korean Society for Maxillofacial Plastic and Reconstruction Surgery

Ethics Education

The 59th Congress of the Korean Association of Maxillofacial Plastic and Reconstructive Surgeons

Ethics Education I

Speaker Kang Woon Lee

Affiliation Kang-Dental Clinic

Topic Medical Dispute Mediation Arbitration Board and Recent Trends

Ethics Education II

Speaker Jin Kim

Affiliation Daejeon St. Mary's Hospital, Medical colledge, The Catholic univ. Korea

Topic Unknowingly violating the medical law and coping with medical disputes over the Corona-19 crisis

Medical Dispute Mediation Arbitration Board and Recent Trends

Kang Woon Lee
Kang-Dental Clinic

The Mediation Agency for Medical Dispute Mediation is a government organization responsible for medical disputes. It is an organization under the Ministry of Health and Welfare, and since it was first established in 2012, the frequency of use has been increasing continuously.
The arbitrator has a motto of swift and impartiality.
It also puts forward the fact that lawsuits cost little money.
The arbitrator has a supervisory government and a mediation department, and if the dispute is filed and the other side agrees, the procedure will be initiated.
Based on the data submitted by the two sides, the government will draw up an appraisal report, and when the appraisal document is transferred to the mediation department, a meeting of the mediation department will proceed based on it and make appropriate adjustments.
In the early days of the launch of the Arbitration Board, it proceeded fairly and won the trust of the medical personnel.
However, as time goes by, it is gradually leaning towards the patient side.
In this lecture, I would like to take a look at the recent trends of mediators.

Curriculum Vitae

Name 이강운 (李康云)
Affiliation & Position 강치과. 원장
E-mail perioace@hanmail.net

Graduated from Seoul National University Dental College (1992)
Master's and Ph.D.s at Seoul National University Graduate School of Dental
Seoul National University Dental Hospital Dental Clinic Intern, Resident Completed
Seoul National University Adjunct Professor (former)
Outpatient Professor (former) of Sungkyunkwan University
Legal Director (former) of the Korean Dental Association
Vice-Chairman of the Medical Advertising Review Committee of the Korean Dental Association (former)
Vice-Chairman of the Medical Dispute Mediation Committee of the Korean Dental Association (former)
The chairman of the Korea Dental Association's Medical Area Committee (former)
Mediation Committee member of Medical Dispute Mediation Arbitration Board (2012-Currently)
a chief of the kang dental clinic

Unknowingly violating the medical law and coping with medical disputes over the Corona-19 crisis

Jin Kim (DDS, MSD, Ph.D)
Daejeon St. Mary's Hospital, Medical colledge, The Catholic univ. Korea

Medical accidents mean personal accidents that occur in the course of receiving medical treatment at medical institutions. A medical accident is a concept that targets only results that occur regardless of the cause of imputation. In addition to medical errors caused by attributable reasons of the medical staff, medical accidents may occur inevitably regardless of medical errors. In carrying out medical activities, such as medical treatment by medical personnel, there is a duty of care to take the best necessary measures to prevent risks according to specific symptoms or circumstances in light of the nature of the work of managing a person's life, body and health, which is a legal concept that means the possibility of blaming a doctor if the medical malpractice results in the event of failing to fulfill these precautions. The legal basis for patients to hold the medical staff accountable in medical litigation is damages resulting from default in medical contracts (Article 390 of the Civil Act) and illegal activities (Article 750 of the Civil Act). The requirements for the establishment of damages in medical care are important whether the cause and effect of medical staff is recognized, and there should be a "violation of the duty of principle" to acknowledge the negligence of medical practice. In addition, the violation of the duty of cautions shall be specified, including violation of the duty of all personnel, guidance, and explanation.

Curriculum Vitae

Jin Kim, D.D.S, M.S.D, Ph.D

Education

Department of Dentistry, College of Dentistry, Dankook University, Korea,
Degree: Doctor of Dental Surgery

Department of oral and maxillofacial surgery, Graduate School, Dankook University, Korea,
Degree: The Master of Science in Dentistry (oral and maxillofacial surgery)

Department of oral and maxillofacial surgery, Graduate School, Dankook University, Korea,
Degree: Certificate of Ph.D. (oral and maxillofacial surgery)

Advanced Education

Internship, Dankook Dental University Hospital.
Residency, Oral & Maxillofacial Surgery, Dankook Dental University Hospital
Volunteer Fellow, Oral & Maxillofacial Surgery, Medical College of Georgia(MCG), USA
Diplomatic course of Tissue Bank, Singapore National university Hospital (Sponsor by IAEA)
The specialist of oral and maxillofacial surgery, Korea

Professional Career

March. 1994 - April. 1997	Chairman of Oral & Maxillofacial Surgery, Korean Army Hospital
May. 1997 - Feb. 1999	Chairman of Oral & Maxillofacial Surgery, Department of Dentistry, Masan Sungkwunkwan University Hospital, Korea

Present

Clinical Professor, College of Medicine, The Catholic University of Korea
Chairman of Oral & Maxillofacial surgery, Daejeon St. Mary's Hospital,
College of Medicine, The Catholic University of Korea
Medical Advisor of Korean Supreme Court, medical part of professional review committee
Medical director of Tissue Bank of Hans Daedeok R&D Center
Medical Advisor of Committee Small and Medium Business Technology Development Support Project
President of Daejon, The Korean Academy of Oral and Maxillofacial implantology
President of Korean Academy of Dental Administration

Symposium I

The 59th Congress of the Korean Association of Maxillofacial Plastic and Reconstructive Surgeons

- Virtual Surgery -

Symposium I - I

Speaker Yoo Chul Choi

Affiliation HOLOWORKS

Topic Development of Total Shoulder Arthropathy AR surgery training simulator and AI evaluation system

Symposium I - II

Speaker Jaesung Hong

Affiliation DGIST, Department of Robotics Engineering

Topic Augmented Reality Guide and Optimal Dental Occlusion Simulation for Corrective Jaw Surgery

Symposium I - III

Speaker Seong-Yong Moon

Affiliation Times New Roman, 11pt, Mixed case, Justified

Topic VR/AR based orthognathic surgery

Development of Total Shoulder Arthropathy AR surgery training simulator and AI evaluation system

Yoo Chul Choi
HOLOWORKS

1. Development of a simulator applying Z-Depth Buffer Map technology to AR Camera ; Provides distinctive AR images in which the final composite image is reconstructed similarly to the actual operating room by applying a technology that divides into several layers according to the Z-Depth and inserts 3D images into the desired layer position.

2. By utilizing Saw-Bone with built-in tracker in silicon body, maximizes educational efficiency by tracking the body and bone in a given state of flexibility similar to the actual situation.

3. By attaching a flexible pressure sensor to the surgical location, the pressure information applied from the surgical instrument is digitally converted and stored and used as an evaluation resource.

4. Verify the signal correction/separation algorithm and calibration of the pressure sensor system, and improve the functionality of the pressure/repulsion measurement sensor using a load cell (collaboration with Ulsan UNIST).

5. By exchanging information in real time through the network environment, one-on-one personalized practice between the trainer and the trainee is conducted even in a remote location: Realistic education is possible by overlapping images such as the appropriate entry position, angle, and path of the surgical tool that the trainer moves with the location of the trainee's surgical tool in real time.

Curriculum Vitae

1985~2000	Samsung Electronics Co., Ltd. S/W Business Director
2000~2014	Enium Co., Ltd CEO
2014~ Present	Holoworks Co., Ltd CEO
2014~ Present	Next Generation Convergence Contents Industry Chairman

Augmented Reality Guide and Optimal Dental Occlusion Simulation for Corrective Jaw Surgery

Jaesung Hong
DGIST, Department of Robotics Engineering

Anatomical landmarks of teeth including cusp, fossa, embrasure, are important to define upper and lower dental occlusion. Most extraction methods for the landmarks are based on 2D medical images, but their accuracy is limited due to metallic prosthesis, contrast resolution, and patient motion. There are several 3D model based methods. However, they handle only teeth after removing the braces and gums.
In this study, we propose a method to simulate 3D-based optimal dental occlusion with premature contact for orthognathic surgery without editing of braces and gums.
The augmented reality-based surgical navigation is also introduced.

Curriculum Vitae

Jaesung Hong received the B.S. and M.S. degrees in electronic engineering from Kyungpook National University, Korea, and the Ph.D. degree in frontier science from The University of Tokyo, Japan in 2004. He worked as a Foreign Researcher of the Japan Society for the Promotion of Science with the Graduate School of Information Science and Technology, University of Tokyo. From 2005 to 2010, he worked as a research professor with Kyushu University, Fukuoka, Japan.

Dr. Hong is currently a professor of Department of Robotics Engineering, DGIST, South Korea. His research interests include surgical navigation, surgical robotics, and Augmented/Virtual Reality. At the University of Tokyo, he has developed the first US-guided needle insertion robot for a movable and deformable organ. While he worked at Kyushu University Hospital, he developed customized surgical navigation systems, and clinically applied them to various surgeries.

After moving to DGIST, he studied medical augmented and virtual reality in collaboration with major hospitals of Korea. He has also performed various government research projects including an endoscopic bone drilling robot and augmented reality for arthroscopy.

He worked as a key board member of Korean Society of Medical Robotics and Asian Society of Computer-aided Surgery. He is also co-chair of the IEEE/RAS technical committee on surgical robotics.

VR/AR based orthognathic surgery

Seong-Yong Moon

msygood@chosun.ac.kr

Department of Oral and Maxillfoacial Surgery, College of Dentistry, Chosun University

Oral and maxillofacial surgery has undergone a technological revolution over the past several decades, from computer guided surgery to image-guided navigation. Advancements in virtual reality (VR) and augmented reality (AR) represent some of the newest modalities being integrated into clinical practice and education. In this presentation, i would like to present the development of VR and AR technologies, analyze its current uses, and discuss its emerging applications in the field of orthognathic surgery. Augmented reality appears to be a powerful tool possibly capable of revolutionising the field of surgery. In the future, AR will likely serve as an advanced human-computer interface, working in symbiosis with surgeons, allowing them to achieve even better results

Curriculum Vitae

Current Position

Director, Oral Cancer Center, Chosun University Dental Hospital, Gwangju, Korea
Professor, Department of Oral and Maxillofacial Surgery, School of Dentistry, Chosun University, Gwangju, Korea
Director, Virtual reality education center, School of Dentistry, Chosun University, Gwangju, Korea
Director, Clinical support center, Chosun University, Gwangju, Korea

Education

2002	D.D.S . College of dentistry, Chosun University, Gwangju, Korea
2006	MSD in Oral and Maxillofacial Surgery, College of Dentistry, Chosun University, Gwangju. Korea
2013	Ph.D in Oral and Maxillofacial Surgery, School of Dentistry, Chonnam National University, Gwangju. Korea

Training and Career

Mar. 2002- Feb.2006	Postgraduate Program. Department of Oral and Maxillofacial Surgery, Chosun University Dental Hospital, Gwangju, Korea
Mar. 2006- August 2007	Fellowship. Department of Oral and Maxillofacial Surgery, Chosun University Dental Hospital, Gwangju, Korea
July 2007	Chang-Gung Memorial Hospital, Taipei, Taiwan: Short Term Visiting
Feb. 2010	MD Anderson Cancer Center, Houston, TX, USA : Short Term Visiting
Sep. 2011	Department of Dentistry, National Taiwan University Hospital, Taipei, Taiwan.
Sep. 2007- Aug 2013	Assistant Professor, Dept. of Oral and Maxillofacial Surgery, Chosun University Dental School, Gwangju, Korea
Feb. 2013 – Aug 2013	Director, Dept. of Oral and Maxillofacial Surgery
Aug. 2013 – Feb 2014	Visiting Professor, Peking University Stomatology, Beijing, China
Sep. 2013 – Mar. 2017	Associate Professor, Dept. of Oral and Maxillofacial Surgery, Chosun University Dental School, Gwangju, Korea
Oct. 2016 – Oct. 2018	Director of Education and Research Center, Chosun University Dental Hospital, Gwangju, Korea
Feb. 2014- Present	Director, Oral Cancer Center, Chosun University Dental Hospital, Gwangju, Korea
Apr. 2017 – Present	Professor, Dept. of Oral and Maxillofacial Surgery, Chosun University Dental School, Gwangju, Korea
Dec. 2018 – Present	Director, Virtual reality education center, School of Dentistry, Chosun University, Gwangju, Korea
Oct. 2019 – Present	Director, Clinical Support Center Chosun University, Gwangju, Korea

Symposium II

The 59th Congress of the Korean Association of Maxillofacial Plastic and Reconstructive Surgeons

- Salivary Grand Care -

Symposium II - I

Speaker Sang Ho Jun

Affiliation Korea University anam hospital

Topic Cure and care of xerostomia using sialendoscopy

Symposium II - II

Speaker Kyung-Gyun Hwang

Affiliation Hanyang University

Topic Understanding salivary glands and saliva from the perspective of the oral and maxillofacial surgeon

Symposium II - III

Speaker Jo-Eun Kim

Affiliation Seoul National University

Topic Salivary gland imaging

Cure and care of xerostomia using sialendoscopy

Sang Ho Jun

Korea University anam hospital

Dry mouth is a patient's subjective discomfort about pain in the mouth, a change in taste, and abnormalities in the tongue, which are caused by a decrease in the amount of salivation. When the normal saliva secretion of the general population is 1000~1500ml per day, dry mouth begins when the amount decreases considerably. In the literature, it is said that dry mouth occurs when there is a decrease of more than 50%, that is, when the non-stimulating salivation amount is less than 0.1 mL/min and the stimulating salivation amount is less than 0.5 mL/min.

The causes of dry mouth include not only aging, but also medication, medical treatment (head and neck radiation therapy, chemotherapy, salivary gland surgery, etc.), infections (HIV-1infection, Hepatitis C), and autoimmune diseases such as Schegren's syndrome and rheumatoid arthritis.

Due to dry mouth, various diseases such as multiple caries, periodontitis and burning sensation in the oral cavity may occur, but it is known that the treatment is not clear, and many patients are neglected and feel pain due to different treatments for each cause by symptom.

In this lecture, I will give a lecture on how to increase salivary secretion through salivary duct endoscopy and how to manage the patient's symptoms to reduce and relieve symptoms.

Curriculum Vitae

Sang Ho Jun DDS, MS, Ph.D

Clinical assistant professor, associate professor, professor/ Korea university anam hospital, Seoul, South Korea

DDS / Dankook University School of Dentistry, Cheonan, South Korea

M.S./ Korea University Graduate School of Clinical Dentistry, Seoul, South Korea

Ph.D/ Korea University Graduate School of Medicine, Seoul, South Korea

Residency & OMFS Specialist/ Dept. of oral & maxillofacial surgery, Korea university medicine, Seoul, south Korea

Visiting researcher/ Keio university school of medicine, Tokyo, Japan

Research fellow/ Harvard medical school & Children's Hospital Boston, Boston, USA

Visiting professor/ Harvard school of dental medicine, Boston, USA

Understanding salivary glands and saliva from the perspective of the oral and maxillofacial surgeon

Kyung-Gyun Hwang

Hanyang University

The changes of oral environment due to salivary gland disease and hyposalivation may be one of the important topics for dentist and oral & maxillofacial surgeon to improve oral health. Saliva is secreted from the parotid gland, the maxillary gland, the sublingual gland, and the salivary gland, and saliva functions to prevent the oral environment and diseases such as digestion, immunity, lubrication, buffering, washing, taste, and healing. Reduction or loss of these functions due to salivary gland disease or dysfunction will cause many changes in the oral environment, and can lead to the occurrence of secondary oral diseases, so dentists or oral maxillofacial surgeons participating in improving oral health, and interesting in understanding and managing and researching salivary gland disease. In this presentation, I am going to share the experience of the diagnosis, treatment, management, and research of patients with salivary disfuction symptom.

Curriculum Vitae

1. DDS, College of Dentistry, Seoul National University
2. MSD, PhD, Graduate School, Seoul National University
3. Intern, Resident, Fellow-ship in Department of Oral and Maxillofacial Surgery, Seoul National University Hospital
4. Professor Division of Oral and Maxillofacial Surgery, Department of Dentistry Hanyang University Hospital

Salivary gland imaging

Jo-Eun Kim
Seoul National University

Salivary glands tend to overlook the importance of vital organs that maintain oral health through proper secretion of saliva, until pain or loss of function is caused by diseases such as tumors and inflammation. Despite a large number of patients visiting the dental clinic due to salivary gland disease, dentists are not familiar with what images should be used and how to diagnose salivary gland disease. In this presentation, I would like to introduce the diagnostic images which could evaluate the salivary gland diseases.

Curriculum Vitae

Name	Jo-Eun Kim
President position	Clinical Assistant Professor
Professional address	Dept. of Oral and Maxillofacial Radiology, Seoul National University Dental Hospital, Daehakro 101, Jongno-gu, Seoul 03080, Korea
Tel (Office)	+82-2072-4468
E-mail	noel1st@snu.ac.kr

Academic Carrier

Feb. 2006	B.S., Yonsei University, Seoul, Korea
Feb. 2010	M.D., Seoul National University School of Dentistry, Seoul, Korea
Feb. 2014	Ph. D., Seoul National University Postgraduate School, Seoul, Korea

Professional Carrier

Mar. 2011 ~ Feb. 2014	Resident, Dept. of Oral and Maxillofacial Radiology, Seoul National University Dental Hospital, Seoul, Korea
Mar. 2014 ~ Feb. 2016	Fellow, Dept. of Oral and Maxillofacial Radiology, Seoul National University Dental Hospital, Seoul, Korea
May 2016 ~	Clinical Assistant Professor, Dept. of Oral and Maxillofacial Radiology, Seoul National University Dental Hospital, Seoul, Korea

Symposium III

The 59th Congress of the Korean Association of Maxillofacial Plastic and Reconstructive Surgeons

- Oral cancer reconstruction -

Symposium III - I

Speaker Jin-Wook Kim

Affiliation Kyungpook National University

Topic Rare situations for maxillofacial reconstruction with free vascularized flap

Symposium III - II

Speaker Woong Nam

Affiliation Yonsei University, College of Dentistry

Topic Advantages and Results of sharp adventitial dissection for microvascular anastomoses

Symposium III - III

Speaker Seunggon Jung

Affiliation Chonnam National University

Topic Functional reconstruction of mandible and its limitation

Rare situations for maxillofacial reconstruction with free vascularized flap

Jin-Wook Kim
Kyungpook National University

Maxillofacial reconstruction in needed when OMS surgeons resect large tumors including malignant neoplasms, necrotic hard tissues and etc. Nowadays immediate reconstruction is popular and shows good result. Especially free vascularized flap like free radial forearm flap or free fibular flap is first choice for maxillofacial reconstruction method following oral cancer surgery.
Free vascularized flap has high success rate and good result for head and neck reconstruction for a long time. However, flap harvesting, vascular anastomosis and post-operative care can be still difficult for beginners even for experts. Besides although detailed examinations and plans were made before surgery, facing unexpected situations or complications will throw you into confusion. In this lecture, I introduce and share variable difficult experiences of mine and reported cases during or after free flap surgery.

Curriculum Vitae

Jin-Wook Kim, DDS, PhD

Address

Department of Oral and Maxillofacial Surgery, School of Dentistry, Kyungpook National University, Dalgubeol Daero 2177, Daegu Metropolitan City, Korea (R.O.K), Zip 41940.

Tel +82-53-600-7551 **Fax** +82-53-426-5365
Mobile +82-010-2534-4071 **E-mail** vocaleo@knu.ac.kr

Academic Records

2006 ~ 2009	Ph.D, Kyungpook National University, Korea
2004 ~ 2006	MSD, Kyungpook National University, Korea
1996 ~ 2002	DDS, School of Dentistry, Kyungpook National University, Korea

Professional Records

2016. 10 ~ present	Associate Professor, Department of Oral & Maxillofacial Surgery, School of Dentistry, Kyungpook National University, Korea
2010. 09 ~ 2016. 09	Assistant Professor, Department of Oral & Maxillofacial Surgery, School of Dentistry, Kyungpook National University, Korea
2009. 03 ~ 2010. 08	Clinical Professor, Department of Dentistry, College of Medicine, Yeungnam University, Daegu, Korea
2007. 03 ~ 2009. 02	Clinical Professor, Department of Oral & Maxillofacial Surgery School of Dentistry, Kyungpook National University, Korea
2006. 03 ~ 2007. 02	Clinical Fellow, Department of Oral & Maxillofacial Surgery School of Dentistry, Kyungpook National University, Korea
2002. 03 ~ 2006. 02	Intern & Resident, Department of Oral & Maxillofacial Surgery School of Dentistry, Kyungpook National University, Korea

Advantages and Results of sharp adventitial dissection for microvascular anastomoses

Woong Nam
Yonsei University, College of Dentistry

Before performing microanastomosis, we almost always work on removing the adventitia from the artery. Why do we do this? Because when you remove the outer wall, the cutting edge is clearly visible under the microscope, so accurate suture is possible. But what if this doesn't work? Frequently faced with failures, we become frustrated and prefer local or regional flap to free flap, and eventually lose interest in oral cancer and reconstructive surgery itself. What on earth is the problem? The answer is in the following paper; Advantages of Sharp Advential Dissection for Microvascular Anastomoses, published in 1998 by Robert Lohman, Maria Siemensow, and Graham Lister in Annals of Plastic Surgery. In this paper, they compared adventitial dissection methods, which are different for each surgeon, in two major ways: blunt dissection and sharp dissection, and demonstrated through experimental and histological analysis that sharp dissection has many advantages. Do it right if you want to.

In this presentation, I would like to review their thesis and introduce the results of applying this method directly to surgery, as well as the various reconstruction techniques and methods that have recently been carried out in our department.

Curriculum Vitae

Woong Nam, DDS, PhD

2017 – present	Professor, Dept of Oral and Maxillofacial Surgery, Yonsei University College of Dentistry, Seoul, Korea
2016.8 – 9	Visiting Professor, Peking University School and Hospital of Stomatology, Beijing, China & Dept. of Plastic Surgery, Chang Gung Memorial Hospital, Linkou, Taiwan
2011.4 - 2012. 6	Visiting Professor, Dept. of Oral and Maxillofacial Surgery, University of Michigan, USA
2006 – 2011	Associate / Assistant Professor, Dept of Oral and Maxillofacial Surgery, Yonsei University College of Dentistry, Seoul, Korea
2004 – 2006	Clinical & Research Fellow, Dept of Oral and Maxillofacial Surgery, Yonsei University College of Dentistry, Seoul, Korea
2009	PhD, Yonsei University
2001	MSD, Yonsei University
1998 – 2001	Residency, Dept of Oral and Maxillofacial Surgery, Yonsei University College of Dentistry, Seoul, Korea

Functional reconstruction of mandible and its limitation

Seunggon Jung
Chonnam National University

Surgical ablation of oral tumor often leaves defect of mandible and/or missing of continuity, which results in impairment of function and esthetics.

Mandible plays a important role not only in support of lower teeth, but in support of the tongue and mouth floor which permits swallowing and articulation.

Although, short span mandibular defect can be restored with non-vascularized bone graft, longer span mandibular defect needs to be reconstructed with vascularized bone flap of fibula or ilium.

However, mandibular reconstruction often encounters some obstacles of wide extent for reconstruction, previous operation, radiotherapy, or weak general condition of patient. In addition, the age of patients is increasing as entering an aged society, which is another difficulty in treating oral cancer patients. Despite the efforts of the surgeon, however, the result of the surgery disappoint the patients and their family.

Nevertheless, less cases are thought to be inoperable due to factors limiting resection and reconstructino surgery with the progress in the field of reconstructive surgery.

In this presentation, various cases of mandibular reconstruction will be reviewed with review of literatures.

Curriculum Vitae

Seunggon Jung, DDS, PhD, FIBCSOMS

Associate professor, Department of Oral & Maxillofacial Surgery, School of Dentistry, Chonnam National University

Academic Records

2004	DDS, College of Dentistry, Chonnam National University.
2010	MS, Graduate School, Chonnam National University.
2016	PhD, Graduate School, Chonnam National University.

Professional Records

2007 - 2011	Internship and residency, Department of Oral & Maxillofacial Surgery, Chonnam National University Dental Hospital.
2011 - 2014	Clinical Fellow, Department of Oral & Maxillofacial Surgery, Chonnam National University Hospital.
2014 - 2015	Clinical assistant professor, Department of Dentistry, Chonnam National University Hwasun Hospital.
2015 - present	Assistant professor, Associate professor, Department of Oral & Maxillofacial Surgery, School of Dentistry, Chonnam National University.

Symposium IV

The 59th Congress of the Korean Association of Maxillofacial Plastic and Reconstructive Surgeons

- Orthognathic Surgery -

Symposium IV - I

Speaker Byoung Moo Seo

Affiliation Seoul National University

Topic How accurate the surgical outcomes in orthognathic surgery is? In the era of virtual planning.

Symposium IV - II

Speaker Byoung-Eun Yang

Affiliation Div. of Oral and Maxillofacial Surgery, College of Medicine, Hallym University Graduate School of Clinical Dentistry Hallym University

Topic Customization, 3D Printing Guides and Computer-aided Surgical Simulation for Patient-fitted Orthognathic Surgery

Symposium IV - III

Speaker Sejin Han

Affiliation Dept. of Oral and Maxillofacial Surgery, Dental School of Dankook University, Korea

Topic The Evaluation of Treatment Difficulty in Orthognathic Surgery

How accurate the surgical outcomes in orthognathic surgery is? In the era of virtual planning

Byoung Moo Seo
Seoul National University

In the digital era we live in, the whole paradigm of dentistry is moving towards it. The field of orthognathic surgery is not the exemption. Digital technology enables us to utilize virtual planning of orthognathic surgery, which allows the improvement in terms of precision and reliability. Although, a conventional 2 D planning procedure has its own usage at this early stage of digital era, it will be eventually replaced with 3D planning procedure.

In this presentation, current trends of the orthognathic surgery in terms of planning, preparation, surgical procedure, and its outcomes will be provided.

In conclusion, the digital technology applied in orthognathic surgery could enhance the precision, reliability, and stable surgical outcomes far more favorable than conventional procedure.

Curriculum Vitae

Byoung Moo Seo

Professor, Department of Oral and Maxillofacial Surgery, School of Dentistry, Seoul National University, 101 Daehak-ro, Jongno-Gu, 110-768, Seoul, Korea

Tel +82-2-2072-3369 **Fax** +82-2-766-4948 **e-mail** seobm@snu.ac.kr

Educational Background

Feb. 1988	Seoul National University, Seoul, Korea (D.D.S.)
Feb. 1991	Seoul National University, Seoul, Korea (M.S.D.)
Feb. 1999	Seoul National University, Seoul, Korea (Ph.D.)

Training

Mar. 1988 - Feb. 1989	Internship in Seoul National University Hospital
Mar. 1989 - Feb. 1992	Resident course in Department of Oral and Maxillofacial Surgery, Seoul National University Hospital

Work Experiences

May 1992 - Apr. 1995	Captain in Dental Surgery in Military Service
May 1995 - Feb. 1998	Staff Surgeon of Oral and Maxillofacial Surgery, Nowon Eulji General Hospital
Mar.1998 - Aug. 1999	Clinical Fellow Department of Oral and Maxillofacial Surgery Seoul National University Hospital, Seoul, Korea
Sep.1999 - Sep.2001	Instructor Department of Oral and Maxillofacial Surgery Seoul National University School of Dentistry, Seoul, Korea
Oct. 2001 - Sep. 2006	Assistant Professor Department of Oral and Maxillofacial Surgery Seoul National University School of Dentistry, Seoul, Korea
Jun. 2003 - May 2005	Special Volunteer and Research Fellow in NIH, (CSDB) USA
Oct. 2006 - Aug. 2011	Associate Professor Department of Oral and Maxillofacial Surgery Seoul National University School of Dentistry, Seoul, Korea
Aug. 2013 – Feb. 2017	Chairman Department of Oral and Maxillofacial Surgery Seoul National University School of Dentistry, Seoul National University Dental Hospital, Seoul, Korea
Sep. 2011 - present	Professor Department of Oral and Maxillofacial Surgery Seoul National University School of Dentistry, Seoul, Korea
Jul. 2019 - present	Superintendent Seoul Dental Hospital for the Disabled

Customization, 3D Printing Guides and Computer-aided Surgical Simulation for Patient-fitted Orthognathic Surgery

Byoung-Eun Yang DDS, PhD

Div. of Oral and Maxillofacial Surgery, College of Medicine, Hallym University
Graduate School of Clinical Dentistry Hallym University

Oral and Maxillofacial surgical operations are complex due to complicated anatomical structures of the face. Therefore, Surgeons use CBCT images and specialized software to make a virtual three-dimensional image for the surgery. This allows our team to thoroughly simulate each step of the surgery and determine the optimal technique as well as exact measurements needed to achieve a good outcome for that patient. This customized virtual operation plan is then precisely translated to the patient's bone and soft tissue in the operating room. There are several elements in the success of orthognathic surgery. The exact treatment plan is most important. In order to be stable occlusion when the bone segments are moved, preoperative orthodontic treatment must be made sufficiently. Next, the movement of segments and osteotomy should be performed in the operating room as pre-surgical planning. In the conventional method, Dental casts were mounted to the articulator. Intermediate wafer and final wafer were fabricated after the enforcement of the model surgery based on the paper surgery. However, the patient's conditions are different, and there will be errors resulting from the process of mounting the dental casts. Especially, the range of the error increases when the facial asymmetry is initiated from the skull. Recently, planning and simulation surgery through 3D analysis have been introduced to the clinic. We create a computer-aided surgical simulation module, and orthognathic surgeries were performed in a variety of cases according to virtual planning. We prepared the osteotomy guide and screw insertion guide using the 3D printing technology based on virtual planning. Also, predictive hole placement concept was tried for the first time in Korea through the production of patient-customized plates using CAD-CAM technology, and a long-term follow-up was conducted after being used for various facial bone surgery cases. We have gained some knowledge and report some cases.

Curriculum Vitae

Byoung-Eun Yang DDS, PhD

Professor, Div. of Oral and Maxillofacial Surgery, Hallym Univ. Sacred Heart Hospital

Director of Graduate School of Clinical Dentistry, Hallym University

Head Professor, Dept. of Dentistry, Hallym Univ. College of Medicine

Committee Chairperson of Medical New Technology, Korean Association of Maxillofacial Plastic and Reconstructive Surgeons

Planning Affair, Korean Association of Oral and Maxillofacial Surgeons

Visiting Scholar, Div of Plastic and Reconstructive Surgery, Oral Medicine & Maxillofacial Surgery Service, Stanford School of Medicine (2010-2011)

D.D.S - Chonnam National University

M.S.D and Ph.D - Seoul National University (Major in Oral and Maxillofacial Surgery)

Member, Clinical Research Insurance Evaluation Committee, Ministry of Health and Welfare, Korea

Member, New Medical Technology Evaluation Committee, NECA, Korea

Member, Medical Device Committee, Ministry of Food and Drug Safety, Korea

The Evaluation of Treatment Difficulty in Orthognathic Surgery

Professor **Sejin Han**
Dept. of Oral and Maxillofacial Surgery,
Dental School of Dankook University, Korea

Orthodontists and Oral and maxillofacial surgeons are expected to produce evidence of the quality of care they are delivering. Combined orthodontic-orthognathic surgical treatment is unusual because treatment is usually undertaken at the request of the patient to improve aesthetics or function, rather than for the prevention or treatment of disease. Since orthognathic cases form a significant part of the hospital orthodontist's caseload, it is particularly important that they are able to demonstrate that this type of treatment is both effective and beneficial to patients. So, clinicians need to be able to explain to patient and orthodontist difficulty of orthognathic surgery, case by case.

For evaluating the treatment difficulty in orthognathic surgery, we consider three factors- stability of occlusion, combined soft tissue problem and patient's psychosocial factor. We know that the treatment of patient with unstable occlusion or first-surgery case is more difficult. Facial asymmetry originated from soft tissue or hard tissue would make the more delicate treatment plan for orthognathic surgery. Patients with unrealistic expectations they are more likely to be dissatisfied with the outcome of surgery.

I will present some difficult treatments of my orthognathic surgery cases and discuss them.

Curriculum Vitae

SEJIN HAN, D.D.S., M.S.D., Ph.D.

Department of Oral & Maxillofacial Surgery, School of Dentistry, Dankook University Shinbudong, Cheonan, Choongnam, Korea

Tel +82-41-550-0271 **Fax** +82-41-551-8988 **e-mail** hanimplant@dankook.ac.kr

Professional Career

March 2014 - 2020	**Chief**, Department of Oral and Maxillofacial Surgery, Dental Hospital, Dankook University, Cheonan, Korea
March 2014 - Present	**Professor**, Department of Oral and Maxillofacial Surgery, School of Dentistry, Dankook University, Cheonan, Korea
March 2009 - February 2014	Assistant Professor, Department of Oral and Maxillofacial Surgery, School of Dentistry, Dankook University, Cheonan, Korea
March 2006 - February 2009	Instructor, Department of Oral and Maxillofacial Surgery, School of Dentistry, Dankook University, Cheonan, Korea
March 2005 - February 2006	Army Surgeon Staff, Department of Oral and Maxillofacial Surgery, The Armed Forces Medical Center, Seoul, Korea
March 2004 - February 2005	Army Surgeon Staff, Department of Oral and Maxillofacial Surgery, Zytun Field Hospital, Arvil, IRAQ
March 1999 - February 2003	Clinical Resident, Department of Oral and Maxillofacial Surgery, School of Dentistry, Dankook University, Cheonan, Korea

Doctoral Degree

August 2008	**Ph. D**. received from Dankook University, Korea

Symposium V

The 59th Congress of the Korean Association of Maxillofacial Plastic and Reconstructive Surgeons

- Implant -

Symposium V - I

Speaker Jae-Yeol Lee

Affiliation Pusan National University

Topic Alveolar bone augmentation using mandibular block bone(MBB) for dental implant

Symposium V - II

Speaker Dong Wook Chang

Affiliation Win Dental Clinic

Topic Various surgical approaches for ridge augmentation in severely atrophied alveolar ridge

Symposium V - III

Speaker Eun Joo Choi

Affiliation Wonkwang University

Topic Management of bone graft failure and complications

Alveolar bone augmentation using mandibular block bone(MBB) for dental implant

Jae-Yeol Lee
Pusan National University

Alveolar ridge resorption resulting from tooth loss often compromises ideal implant placement. In order to provide sufficient bone volume and ridge height, Alveolar bone augmentation is imperative for successful implant placement. Various graft source such as autogenous, allogenic, xenogenic and alloplastic materials have been developed to enable the augmentation. Among these materials, autogenous bone is believed to be the most effective bone graft material and is still regarded as the “gold standard” for augmentation procedures because of its osteogenic potential. The common donor sites for autogenous graft material is from the mandibular symphysis, the ramus, the mandibular body, and others. Among these donor sites, the mandibular body yields several advantages; Intraoral approach for surgical access which enables the clinician to operate in the same field as that of the recipient site, a low resorption rate and short healing period (because of its cortical characteristics), obviation of horizontal osteotomy near the root apex; and reduced risk of nerve injury. In this symposium, I will present efficacy and considerations of mandibular body block bone for atrophic maxilla and mandible and review some of the related literatures.

Curriculum Vitae

Present Position

Associate professor
Dept. of Oral & Maxillofacial Surgery, School of Dentistry, Pusan National University
ITI(International Team for Implantology) fellow

Education

2003	DDS, Collage of Dentistry, Pusan National University
2013	PhD Dept. of Oral & Maxillofacial Surgery, Pusan National University

Post- graduate Courses

2003 - 2007	Intern/residentship, Dept. of Oral & Maxillofacial Surgery, Pusan National University Hospital
2007 - 2010	Naval surgeon, ROK Navy
2010 - 2014	Clinical Fellow/Professor, Dept. of Oral & Maxillofacial Surgery, Pusan National University Hospital
2014 - present	Assistant/Associate professor, Dept. of Oral & Maxillofacial Surgery, School of Dentistry, Pusan National University
2017 - 2018	Visiting scholar, Dept. of Oral & Maxillofacial Surgery, UCLA, USA

Various surgical approaches for ridge augmentation in severely atrophied alveolar ridge

Dong Wook Chang
Win Dental Clinic

When tooth is extracted due to various causes (severe periodontitis, trauma, deep caries, etc.), prosthetic restoration through implant placement has become the most common method to restore the function of the missing tooth. However, in most cases, it is not easy to insert fixture in an ideal position for prosthetic restoration due to the physiological resorption of alveolar ridge that inevitably occurs after tooth extraction.

Regarding the pattern of alveolar ridge healed after tooth extraction, Seibert (1983) suggested classifying ridge defects based on the amount of volume loss, divided into three classes:

Class I : buccolingual loss of the ridge contour
Class II : apicocoronal loss of the ridge contour
Class III : combined loss of the ridge contour

In this lecture, based on the Seibert classification, we will look at various surgical techniques applied to solve the ridge defect for implant placement.

First I will confirm the clinical usefulness of each procedures through clinical cases of Block Bone Graft, Guided Bone Regeneration, and Ridge Splitting that are commonly applied in Class II, vertically resorbed ridges.

In addition, I will introduce the DUK technique and Goljeolmi technique, which are designed to be easily applied in Class I, horizontally resorbed ridges that occur most commonly after tooth extraction

Curriculum Vitae

Dong Wook Chang

Director of Win Dental Clinic
DMD, MSD, Ph.D., Periodontist
Clinical Associate Professor of Kyunghee Univ. school of dentistry Dental Hospital
Director of the The Korean Academy of Oral & Maxillofacial Implantology
Director of The Korean Academy of Periodontology
Director of The Korean Academy of Geriatric Dentistry

Management of bone graft failure and complications

Eun Joo Choi
Wonkwang University

Bone grafts are very often performed before or at the same time as implant placement in the case of dental implant placement. The purpose of bone graft is to better support the implant, but it increases the cost and trauma, and the surgeon must consider risks of infection or failure. Typical complications after bone transplantation include lack of soft tissue, infection, deterioration of the wound, and lack of stability of the graft.

Implants are particularly difficult in areas with congenital tooth defects, and are more difficult in areas where the patient has systemic disease, extensive trauma, or previously failed implants, so the surgeon selects the most stable results among various bone graft materials. Should be. In the case of autogenous bone, it can be selected from a variety of areas, but it can be collected from calvaria, iliac crest, tibia, or other parts of the oral cavity. Various materials such as allograft, xenograft, alloplastic material, and BMP-2 are on the market. PRP, PRF, and live cell products can also be used. The surgeon must understand and apply the characteristics of various bone graft materials.

In this symposium, the speaker would like to discuss how to select a graft material for each case and coping with complications based on personal experiences and literature review.

Curriculum Vitae

Name	Eun Joo Choi
President position	Associate professor in Department of Oral Maxllofacial Surgery, School of Dentistry, Wonkwang University
Professional address	Department of Oral and Maxillofacial Surgery, School of Dentistry, Wonkwang University, 460 Iksandae-ro, Iksan-si, Jeollabuk-do, Korea
Tel (Clinic)	063-859-2921
Tel (Office)	063-850-6931
E-mail	cejoms@wku.ac.kr

Education

2011 - 2013	PhD, Graduate School, Yonsei University
2004 – 2009	MSD, Graduate School, Yonsei University
1997 - 2003	Bachelor of Dentistry, Yonsei University

Work Experience

2016 – present	Associate professor, Dept of Oral Maxillofacial Surgery, School of Dentistry, Wonkwang University
2013 - 2016	Assistant professor, Dept of Oral Maxillofacial Surgery, School of Dentistry, Wonkwang University
2011 - 2012	Clinical assistant professor, Dept of Oral Maxillofacial Surgery, Yonsei University Dental Hospital
2010	Clinical fellow, Dept of Oral Maxillofacial Surgery, Yonsei University Dental Hospital
2003 - 2007	Intern and Residentship, Dept of Oral Maxillofacial Surgery, Yonsei University Dental Hospital

Symposium VI

The 59th Congress of the Korean Association of Maxillofacial Plastic and Reconstructive Surgeons

- Esthetic Surgery -

Symposium VI - I

Speaker Jin Hwan Cho

Affiliation Cho Plastic Surgery Hospital

Topic 실 리프팅의 첫걸음

Symposium VI - II

Speaker Hee-Jin KIM

Affiliation Yonsei University

Topic Clinical anatomy for the filler injections for chin and nasolabial fold

실 리프팅의 첫걸음

Dr. **Jin Hwan Cho**
Cho Plastic Surgery Hospital

1990년대 중반에 시작된 cog가 달린 실을 이용한 안면부 거상술. 즉 실리프팅은 사전적으로는 처진 피부를 팽팽하게 하기 위하여 피부에 가느다란 실을 넣어 당겨 주는 성형술이라고 간단히 정의 되어있다. 이러한 실리프팅은 실제에 있어서는 술기와 실이 개발되면서 다양한 시술법이 소개 되고 있다.

발표자는 현재 가장 많이 사용되고 있는 다양한 길이와 굵기의 PDO와 PLLA 실의 기초적인 적응증과 적용 범위와 적용 개수에 대한 총론과 아울러 기존의 피하 삽입법과는 삽입위치와 방법. 그리고 깊이가 전혀 다른 발표자만의 방법인 Cho's Method의 세부적인 디자인 방법. 시술법을 대면 강의와 시술 동영상을 통해 소개 하고자 한다.

Curriculum Vitae

Dr. Jin Hwan Cho

Gratuated Doctoral Degree for Plastic Surgery from the School of Medicine, Korea University.

1995 - 1996	Chief of Plastic Surgery in Korea Hospital.
1988 - 2001	Chief & Professor of Plastic Surgery in School of Medicine, Inha University.
2001 - 2012	Director of Hana Plastic Surgery Hospital. Member of Koread Hand Surgery Society, Korea Plastic Surgery Society, Korea Beauty Plastic Surgery Society, International Plastic Surgery Society.
2012 - Present	Owner of "Cho Plastic Surgery Hospital" Korea.

Clinical anatomy for the filler injections for chin and nasolabial fold

Hee-Jin KIM / DDS, PhD, Professor
Division in Anatomy & Developmental Biology, Department of Oral Biology, Human Identification Research Center, BK21 PLUS Project, Yonsei University College of Dentistry, 50-1 Yonsei-ro, Seodaemun-gu, Seoul, 03722, Korea

Clinical dentistry is the art and science pursuing the facial aesthetic outcomes as well as the functional improvement. For the dentist, the anatomy and physiology on the perioral structures is well educated and the clinically-oriented aging process of the maxillofacial structures should be fully aware for purposes of the aesthetic and functional rejuvenation.

Anatomically, the face is the most complicated structure of the human body. Furthermore, maxillofacial anatomy varies individually and shows the racial differences. Recently, the importance on the facial anatomy has been reconsidered as the increasing demand on the facial aesthetics. To avoid the unexpected complications after the injectables treatment, a detailed understanding of the maxillofacial anatomy is essential.

Through my talk, I would like to show the clinical anatomic features of the maxillofacial region including individual and racial variations. Especially, clinical anatomic knowledge related to the filler injection for the safe and efficient outcomes in clinical dentistry will be demonstrated.

To avoid the serious complications after the injection, the detailed vascular anatomy of the face is essential. In this presentation, I would like to show (1) the whole running courses of the facial artery (FA) and superficial temporal artery (STA), (2) the origin and nature of the angular artery, and (3) the courses and distribution patterns of the perioral artery. Vascular compromise is one of the most severe side effects of filler injection, and a sound understanding of facial vascular anatomy can significantly reduce the risk of side effects.

Curriculum Vitae

Hee-Jin KIM / DDS, PhD, Professor

Affiliation

Professor
Division in Anatomy & Developmental Biology / Department of Oral Biology, Yonsei University College of Dentistry, Seoul, Korea

Director	Brain Korea 21 Plus Project for Interdisciplinary Oral Science Graduate Program, Applied Life Science
Address	50-1 YONSEI-RO, SEODAEMUN-GU, SEOUL, 120-752, KOREA
E-mail	hjk776@yuhs.ac

A brief education and professional history

1984 - 1991	Yonsei University College of Dentistry
1991 - 1997	Yonsei University Graduate School
2003 - 2005	Faculty Exchange at Lille II Universite, France
2008 - 2012	Vice dean for the Students Affairs
2014 - 2016	Vice Director of the Medical Research Affairs
	Adjunct Professor of Tokyo Dental College, Japan

제59차
대한악안면성형재건외과학회
종합학술대회 및 정기총회

The 59th Congress of the Korean Association of Maxillofacial Plastic and Reconstructive Surgeons

Oral Presentation

Trauma

O1-01

하악 과두부 골절에서 비관혈적 정복술의 적응증 및 예후
김민식
연세대학교 강남세브란스병원 구강악안면외과

Prognosis and indications of closed reduction on mandibular condylar fracture
Minsik KIM
Department of Oral and Maxillofacial Surgery, Gangnam Severance Hospital, Yonsei University College of Dentistry, Seoul, Korea

O1-02

지주막하 출혈로 개두술을 시행받은 환자에서 환자맞춤형 임플란트를 이용한 안와첨부 재건 : 증례보고
심유송
전남대병원 구강외과

Orbital apex reconstruction using Patient Specific Implant in patient who had craniotomy as traumatic subarachnoid hemorrhage: Case report
You-Song Sim
Department of Oral and Maxillofacial Surgery, School of Dentistry, Dental Science Research Institute, Chonnam National University

Orthognathic Surgery

O2-01

안면 비대칭 환자에서 Le Fort I 절골술 후 비중격만곡의 평가
강노을
아주대학교 치과병원 구강악안면외과

Assessment of nasal septal deviation after Le Fort I osteotomy in facial asymmetry patients
No-Eul KANG
Department of Dentistry, Oral and Maxillofacial surgery, Ajou university school of Medicine

O2-02

성장 중인 3급 부정교합 환자에게 맞춤형 가이드와 플레이트를 이용한 치료 증례 보고
조승원
한림대학교 성심병원 구강악안면외과

Temporary Anchorage Device for Growing Class III Patient using Customized Guides and Plates: A Case Report
Seoung-Won Cho
Div. of Oral and Maxillofacial Surgery, Hallym University College of Medicine

Tumor & Reconstruction

O3-01

경안면부 괴사성 근막염 환자에서의 유리 광배근 피판을 이용한 안면 재건술
이경민
강릉원주대학교 치과병원 구강악안면외과

The facial reconstruction in cervicofacial necrotizing fasciitis using Latissimus Dorsi (LD) myocutaneous free flap
Kyung-Min Lee
Department of Oral and Maxillofacial Surgery, College of dentistry, Gangneung-Wonju National University

O3-02

전방외측 대퇴피판을 이용한 복합적 구인두 결손부의 재건
김현민
연세대학교 치과대학병원 구강악안면외과

Anterolateral Thigh free flap for reconstruction of Composite Oropharyngeal defects.
Hyounmin Kim
Department of Oral and Maxillofacial Surgery, Dental Hospital, Yonsei University, Seoul, Korea

O3-03

모반기저세포암종증후군 환자에서 미맹출치아와 치성각화낭에 대한 증례보고
김희열
전북대학교 치과대학 구강악안면외과학교실

A case report of unerupted tooth and odontogenic keratocyst in a patient with nevoid basal cell carcinoma
Hee-Youl Kim
Department of Oral and Maxillofacial Surgery, School of Dentistry, Jeonbuk National University

O3-04

두경부 재건수술에서 측완유리피판의 활용: 서울대학교 치과병원에서 1998년부터 2020년까지 수행된 79 증례를 중심으로
이승민
서울대학교 치과병원 구강악안면외과

Review of the Lateral Arm Free Flap Reconstruction Cases at SNUDH from 1998 to 2020
Seung-Min Lee
Department of Oral and Maxillofacial Surgery, Seoul National University

Implant

O4-01

TS III CA 임플란트의 장기적 예후 관찰 : 후향적 임상연구
김민중
분당서울대병원 치과-구강악안면외과

Long-term evaluation of the prognosis of TS III CA (Calcium-modified surface) Implant : Retrospective clinical study
Min-Joong Kim
Department of Dentistry, Seoul National University Bundang Hospital, Seongnam, Korea

O4-02

두 종류의 다른 rhBMP-2 전달 시스템을 사용한 치조골 보존술 후 시행한 임플란트의 치료 결과 비교
백형진
분당서울대학교병원

Alveolar ridge preservation using two different rhbmp-2 delivery systems: Comparison of radiographic and clinical outcome of subsequent implant treatment
Hyeong-Jin Baek
Dept. of Oral and Maxillofacial Surgery, Seoul National University Bundang Hospital

O4-03

상악 구치부에서 두가지 서로 다른 표면처리 방식을 갖는 임플란트에 대한 전향적 비교 연구
김형기
Seoul national university bundang hospital

Prospective comparative study of two-types of implant surface treatment in the maxillary posterior area
Hyeong Ki Kim
Dept. of Oral and Maxillofacial Surgery, Seoul National University Bundang Hospital

O4-04

임플란트수술에서 치근단변위판막술 이후 나타나는 각화치은의 변화
김창수
보라매병원

The change of the keratinized gingiva after apically positioned flap in the dental implant surgery
Chang Su Kim
Department of Oral and Maxillofacial Surgery, SMG-SNU Boramae Medical Center

O4-05

상악동 거상술에서 임플란트 위치를 기반으로 한 측방 골창의 디자인
천경준
한림대학교 성심병원 구강악안면외과

Design of Lateral window for maxillary sinus graft based on the implant position
Kyeong-Jun Cheon
Department of Oral & Maxillofacial Surgery, Dentistry, Sacred Heart Hospital, Hallym University College of Medicine, 14068, Anyang, Korea

O4-06

임플란트에 의해 발생한 설하혈종 : 증례보고
이대훈
Department of Oral & Maxillofacial surgery, Ajou University Medical Center

Sublingual hematoma by dental implant : A Case Report
Dae-Hoon LEE
Department of Oral & Maxillofacial surgery, Ajou University Medical Center

O4-07

가토 두개골 결손부에서 자가골, 탈회동결건조골 및 콜라겐 스폰지의 골치유능 비교
이준영
전남대학교병원

Comparison of bone healing capacity of autogenous bone, demineralized freeze dried bone allograft(DFDBA), and collagen sponge in the rabbit cranium defect
JunYeong Lee
Department of Oral and Maxillofacial Surgery, School of Dentistry, Dental Science Research Institute, Chonnam National University

O4-08

SLA 티타늄 표면에서 시간 조건에 대한 자외선 조사의 광기능화
서동준
조선대학교 치과병원 구강악안면외과

Time-related modification of ultraviolet photofunctionalization on SLA-treated titanium surfaces
Dong-Jun Seo
Department of oral and maxillofacial surgery, Chosun university dental hospital

TMJ

O5-01

과두흡수로 인한 전치부 개방교합 환자의 보존적 TMD 치료 및 비외과적 교정치료: 증례 보고

최혜리
분당서울대학교병원

Conservative treatment of TMD followed by orthodontic correction in a patient with mandibular condyle resorption and anterior open bite: A case report

He-Li Choi
Dept. of Oral and Maxillofacial Surgery,
Seoul National University Bundang Hospital

O5-02

하악골융기와 유형별 측두하악장애의 연관성에 대한 연구

이희민
Seoul National University Bundang Hospital

Study on the association between torus mandibularis and temporomandibular disorders by type

Hee-Min Lee
Dept. of Oral and Maxillofacial Surgery,
Seoul National University Bundang Hospital

Basic Research

O6-01

한국인의 성별, 연령에 따른 측모 선호도에 관한 연구

이소연
Department of Oral and Maxillofacial Surgery,
Gangnam Severance Hospital,
Yonsei University College of Dentistry, Seoul, Korea

Influence of Korean's Gender and Age on the Perception of an Esthetic Facial Profile

Soyeon LEE
Department of Oral and Maxillofacial Surgery,
Gangnam Severance Hospital,
Yonsei University College of Dentistry, Seoul, Korea

O6-02

랫드 두개골에서 골막하 뼈이식시 recombiant human bone morphogenic protein-2의 골 조직형성 연구

박정호
전북대학교 치과병원 구강악안면외과

Evaluation of the Bone Regeneration Effect of Recombinant Human Bone Morphogenic Protein-2 on Subperiosteal Bone Graft in the Rat Calvarial Model

Jung Ho Park
Dept. of Oral and Maxillofacial Surgery, School of Dentistry,
Jeonbuk National University

O6-03

임플란트 주위염으로 발생한 구강내 염증성 가성종양: 임파구 매개 면역반응의 역할

최용석
국립암센터 구강종양클리닉

Uncontrolled host lymphocytes responses in periimplantitis induced aggressive inflammatory pseudotumors in oral cavity

Yong-Seok Choi
Division of Oral Oncology, National Cancer Center

O6-04

치과용 임플란트 식립에 사용되는 핸드피스의 윤활제가 생체내 미치는 영향

김헌영
이화여자대학교 의료원 구강악안면외과

Influence of rotary instrument mineral oil lubricant on the handpiece for dental implant : In vitro and in vivo study

Heon-Young Kim
Department of Oral and maxillofacial surgery,
Ewha Womans University Medical center, Seoul, Korea

Dentoalveolar Surgery

O7-01

혈소판 풍부 피브린과 농축성장인자의 신생골 형성 효능 비교 평가

박상엽
조선대학교 치의학전문대학원

Comparative analysis of platelet-derived substance platelet-rich-fibrin and concentrated growth factor-induced osteogenic effect on bone regeneration

Sang-Yeap Park
Department of Oral and Maxillofacial surgery, School of Dentistry,
Chosun University

O7-02

파노라마 영상과 임상데이터를 이용한 하악 제3대구치 발치의 난이도 예측 딥러닝 모델의 개발

윤민근
Samsung Medical Center

Development of deep learning model for predicting the difficulty of the mandibular third molar extraction using panoramic radiographs and clinical data

Min-Geun YOON
Dept. of Oral and maxillofacial surgery, Samsung Medical Center,
Sungkyunkwan University School of Medicine.

Infection

O9-01

약물 유도성 악골 괴사의 합병증으로 야기된 치명적인 세균성 급성 뇌염

김혜원
단국대학교 치과대학 구강악안면외과

Fatal Infectious Encephalitis as a Complication of Medication-Related Osteonecrosis of the Jaw

Hye -Won Kim
Department of Oral & Maxillofacial Surgery, College of Dentistry,
Dankook University, Korea

O9-02

중증 치성 기원의 악안면 감염에서 프로칼시토닌 수치의 임상적 유용성

강은성
단국대학교치과대학병원 구강악안면외과

Clinical Utility of Procalcitonin in Severe Odontogenic Maxillofacial Infection

Eun-Sung Kang
Dankook University Dental Hospital,
Dept. of Oral and Maxillofacial Surgery

O9-03

세대별 비스포스포네이트에 따른 파노라마 및 임상 분석: 임상 진단을 위한 예비 연구

조성지
서울대학교 치과병원 구강악안면외과

Panoramic and clinical analysis according to the generation of bisphosphonate: preliminary study for the clinical diagnosis

Seongji Cho
Department of Oral and Maxillofacial Surgery,
Seoul National University Dental Hospital

O9-04

타석증의 임상적 연구와 문헌 검토

김훈민
울산대병원 구강악안면외과

Clinical study of salivary gland stone with literature review

Hoon-Min Kim
Department of Oral and Maxillofacial Surgery,
Ulsan University Hospital, University of Ulsan College of Medicine,
Ulsan, Korea

O9-05

구강 점막 괴사병변에 광유도 형광법의 적용

김일형
[1]의무사령부 국군수도치과병원 구강악안면외과
[2]분당서울대학교병원 구강악안면외과

Application of light-induced fluorescence technique to oral mucosal necrosis

Il-hyung Kim
Dept. of Oral and Maxillofacial Surgery,
Armed Forces Capital Dental Hospital,
Armed Forces Medical Command

O9-06

간단하게 고안된 도구를 이용한 부인두간극 농양의 수술적 배농: 증례 보고

김형기
Seoul national university bundang hospital

Surgical drainage of the parapharyngeal space abscess using simply devised tool: A case report

Hyeong Ki Kim
Dept. of Oral and Maxillofacial Surgery,
Seoul National University Bundang Hospital

O9-07

진균성 상악동염의 임상방사선병리학적 고찰

정성영
서울대학교 치과병원 구강악안면외과학교실

A Clinicopathologic Review of Maxillary Sinusitis Originated from Fungus

Sung-Young Jung
Department of Oral Pathology,
Seoul National University Dental Hospital

O9-08

61개의 케이스 비교를 통한 두경부 농양 분석

김경미
조선대학교 치의학전문대학원 구강악안면외과학교실

Analysis of head and neck fascial space infection; review of 61 cases

Gyeong-mi Kim
Department of Oral and Maxillofacial Surgery, School of Dentistry,
Chosun University

O9-09

장기 비스포스포네이트 투여 및 방사선골괴사로 인한 악골괴사 환자에서 하악골 골절 치료에 보조적으로 적용한 테리파라타이드: 증례보고

장동규
이대목동병원 구강악안면외과

Adjunctive teriparatide application of fractured mandible treatment in osteonecrosis of the jaw due to prolonged bisphosphonates administration and osteoradionecrosis patients: case review

Dongkyu Jang
Department of Oral and Maxillofacial Surgery,
Ewha Womans University Mokdong Hospital

Trauma

O1-01

Prognosis and indications of closed reduction on mandibular condylar fracture

Minsik KIM*, Joon-Ho Jung, Dae-Hoon KIM, Jae-Young KIM, Jong-Ki HUH

[1]Department of Oral and Maxillofacial Surgery, Gangnam Severance Hospital, Yonsei University College of Dentistry, Seoul, Korea

The mandibular condylar fracture is frequent form of mandibular fracture which occurs at 10~40% incidency of whole mandibular fracture. Mandibular condylar fractures require correct reduction to restore occlusion, mastication and aesthetics.
Treatments of mandibular condylar fracture are divided by open reduction and closed reduction and this has been controversial. Treatment is decided in consideration of the degree of displacement of the fracture segment, the patient's occlusion, or the change of mandibular ramal height. If the degree of displacement of the fracture segment is not large and the change of mandibular ramal height is not severe with favorable occlusion, closed reduction method could be performed rather than open reduction method.
Therefore, the purpose of this study is to follow up retrospectively on patients diagnosed on mandibular condylar fracture and underwent closed reduction, and to discuss on the prognosis for each fracture site and indications for closed reduction of mandibular condyle.

O1-02

Orbital apex reconstruction using Patient Specific Implant in patient who had craniotomy as traumatic subarachnoid hemorrhage: Case report

You-Song Sim*, Junyeong Lee, Jeong Joon Han, Seunggon Jung, Min-Suk Kook, Hee-Kyun Oh, Hong-Ju Park

Department of Oral and Maxillofacial Surgery, School of Dentistry, Dental Science Research Institute, Chonnam National University

Introduction
Fractures of the orbital apex rarely occur in isolation, and are usually an extension of facial, skull base and orbital fractures. It may be also caused by neoplasia, inflammation, infection, or vascular disorder. There are optic canal, superior orbital fissure and neurovascular structure. Complications from trauma of orbital apex include diplopia, limitation of ocular movement, infraorbital numbness, enophthalmos, reduced vision and orbital apex syndrome. Surgical intervention to restore the anatomic structure of the orbit is therefore essential for improving visual function and orbital appearance. Depending upon size of defects, titanium mesh, hydroxyapatite block, ceramic inlay, lyophilized dura, silastics, polyethylene sheets, autogenous bone graft using calvaria, Medpor®, and MatrixORBITAL® have been used. However, there are many problems about formation of artifact during radiography, the need for pre-contouring and poor anatomical fit.
Patient Specific Implant as orbital reconstruction materials has improved anatomical fit, reduces operation time for handling. Depending on the size of the defect, it is possible to use multiple sheets according to the anatomical structure of the patient.

Method
On October 2018, the patient who had V-P shunt using craniotomy as traumatic subarachnoid hemorrhage visited department of Oral and Maxillofacial surgery, Chonnam University Hospital. We performed both coronary incisions in cooperation

with our neurosurgeon via previous craniotomy area. Bone of orbital apex was absent, and Patient Specific Implant was applied to planned location while checking the accurate anatomical position using navigation.

Conclusion
The CT scan taken immediately after the operation revealed that the defect of orbital apex was reconstructed and eye glove was repositioned symmetrically by the Patient Specific Implant. After 2months, facial appearance and enophthalmos were improved significantly compared to preoperative condition.

Orthognathic Surgery

O2-01

Assessment of nasal septal deviation after Le Fort I osteotomy in facial asymmetry patients

No-Eul KANG*, Song-Hee MIN, Dae-Hoon LEE, Seung-Il SONG, Jeong-Keun LEE

Department of Dentistry, Oral and Maxillofacial surgery, Ajou university school of Medicine

Patients with skeletal facial asymmetry show unilateral deviation of hard and soft tissues, and there is a high correlation between facial asymmetry and nasal septal deviation. In patients with skeletal facial asymmetry, orthognathic surgery improves the function of the mandibular system and the facial esthetics.
With Le Fort I osteotomy of the maxilla, orthognathic surgery with maxillary movement can resolve asymmetry and may affect nasal septal deviation by the surgical method. Radiographs including CT and Cephalometry can be used to assess the degree of skeletal asymmetry and septal deviation.
The purpose of this study was to evaluate the presence and extent of septal deviation in facial asymmetry patients and to analyze the change of septal deviation after Le Fort I osteotomy surgery.
Between July 2017 and June 2020, it was performed on patients who underwent orthognathic surgery after being diagnosed with skeletal malocclusion or facial asymmetry at the Department of Oral and Maxillofacial Surgery at Ajou University Dental Hospital. Patients were subjected to Cephalo PA and cone beam computed tomography before (T0) and 2 months after surgery (T1), and the nasal septal deviation was evaluated through radiographic analysis.

O2-02

Temporary Anchorage Device for Growing Class III Patient using Customized Guides and Plates: A Case Report

Seoung-Won Cho, Sang-min Lee, Soo-Hwan Byun, Byoung-Eun Yang*

Div. of Oral and Maxillofacial Surgery, Hallym University College of Medicine
Graduate School of Clinical Dentistry Hallym University

Facemasks using tooth-borne anchorages have been used primarily for the treatment of Class III malocclusion with maxillary undergrowth. However, when using a tooth as an anchorage, the anchoring function may fail as the tooth tilts if the stability of the tooth used as an anchor is weak. Meanwhile, the use of skeletal anchorages such as implants, mini-implants, and mini-plates has been claimed to minimize the side effects of using dental anchorage. This case report describes the treatment of a six-year-old male patient with Class III malocclusion, presenting maxillary undergrowth and mandibular prognathism. Due to the increased mobility of the anchoring primary teeth, a device using dental anchorage was replaced with that using skeletal anchorage for the treatment. Customized guides and miniplates for the surgery were fabricated in advance through a computer-assisted system, in order to avoid possible damage to the adjacent tooth buds. The customized plates were accurately and passively placed on the intended part, showing a desired outcome.

Tumor & Reconstruction

O3-01

The facial reconstruction in cervicofacial necrotizing fasciitis using Latissimus Dorsi (LD) myocutaneous free flap

Kyung-Min Lee*[1], Ji-Hyun Oh[1], Kang-Min Ahn[2], Min-Keun Kim[1], Seong-Gon Kim[1], Kwang-Jun Kwon[1], Young-Wook Park[1]

[1]Department of Oral and Maxillofacial Surgery, College of dentistry, Gangneung-Wonju National University
[2]Department of oral and maxillofacial surgery, college of medicine, university of Ulsan, Seoul Asan medical center

Background
Latissimus Dorsi (LD) muscle which originates from a paravertebral aponeurosis of dorsum and inserts to axillary region has triangular shape. LD myocutaneous flap can be used for large defect requiring massive tissues. Its main nutrition supplying vessels are thoracodorsal artery and vein, it can be used as both free flap and pedicled flap. Donor site can be sutured primarily, and post operative functional loss of muscle has minimal effect on patient. In cervicofacial necrotizing fasciitis patient, extensive incision on involved skin lesion should be performed, and all necrotized tissues should be removed completely. Thus, it is inevitable to make extensive defect. Therefore, facial reconstruction with LD myocutaneous free flap can be effective strategy for the diseases forming extensive defect.

Case presentation
A 75 yeared old man had swelling with necrotized lesion on right lower face. Under midazolam sedation, intraoral and extraoral incision and drainage with extraction of causative tooth were performed. Bone denudation area was observed on right mandible. According to the result of biopsy, it was diagnosed as cervicofacial necrotizing fasciitis and osteomyelitis. Under general anesthesia, after sequestrectomy and debridement were performed, reconstruction with local flap of neck skin was

performed. During observation postoperatively, the recipient flap on right neck area was necrotized, re-operation was performed under general anesthesia. After all necrotized tissue were removed, trimming of defect margin was performed. On lateral decubitus position, left latissimus dorsi muscle was dissected, and myocutaneous free flap was harvested. Donor site was sutured primarily. After grafting the free flap to neck defect area, thoracodorsal artery and vein was anastomosed to left sound facial artery and vein using microscope. After 2 weeks postoperatively, there was no sign of any specific complication or recurrence.

Conclusion
In this case, LD myocutaneous free flap enabled stable reconstruction of extensive composite defect, and showed that it can be an effective reconstruction strategy for cervicofacial necrotizing fasciitis patients. Applying this technique, we anticipate that LD myocutaneous free flap would be used effectively in many patients who have extensive cervicofacial defect.

O3-02

Anterolateral Thigh free flap for reconstruction of Composite Oropharyngeal defects

Hyounmin Kim*[1], Hyunwoo Yang[1], Dong Wook Kim[1]

[1]Department of Oral and Maxillofacial Surgery, Dental Hospital, Yonsei University, Seoul, Korea

Introduction
Because the anterolateral thigh flap can be harvested in large quantities, and the thickness and muscle mass are appropriate for Asians, it can be used for various intraoral defects. In order to reconstruct oropharyngeal defects, according to the tissue and space width of the pharynx remaining after tumor resection, the primary closure or enlargement using a free flap can be possible.

Method and materials
The patient had diagnosed as hypopharyngeal cancer, and she has underwent total laryngectomy, partial pharyngectomy at 2019, at the department of Otolaryngology. Later, in September 2019, this patients visited our clinic for reconstruction after partial pharyngectomy and total glossectomy for recurred hypopharyngeal cancer. Our clinic reconstructed the defect with the anterolateral thigh free flap using "Cathedral Triptyque design".

Result
In the second week after the operation, pharyngocutaneous fistula occurred, but the flap survived without critical complications. The radial forearm free flap was used to repair pharyngocutaneous fistula at 4 weeks after the operation.

Conclusion
Pectoralis Major myocutenous flap, Radial forearm free flap, Jejunal free flap, Gastro-omental flap and Anterolateral thigh flap were introduced to expand the inner diameter of the neopharynx when there was no enough space. In particular, in the case of composite defect of oropharyngeal region, the anterolateral thigh flap may be used as a stable reconstruction option in the same way as in this report.

O3-03

A case report of unerupted tooth and odontogenic keratocyst in a patient with nevoid basal cell carcinoma

Hee-Youl Kim*, Jin-A Baek,
Dae-Ho Leem, Hyun Seok, Seung-O KO

Department of Oral and Maxillofacial Surgery, School of Dentistry, Jeonbuk National University

Nevoid basal cell carcinoma syndrome(NBCCS) is a rare autosomal genetic disease caused by a PTCH mutation. The disease is characterized by multiple basal cell carcinomas of the skin, multiple odontogenic keratocysts(OKCs) in the jaw, palmar and/or plantar pits, bifid ribs, ectopic calcification of the falx cerebri, and skeletal abnormalities.
A 10-year-old male patient and a 10-year- old female patient visited the OMFS with a cyst in the jaw. In the case of male patient, at the first visit, odontogenic keratocyst related to the unerupted #37 were present, and marsupialization and cyst enucleation were performed. About 1 year later, odontogenic keratocysts related to the unerupted #27 and 5 years later, odontogenic keratocysts related to unerupted #18 were occured. A total of 3 cyst enucleations were performed.
A female patient first visited the hospital with an odontogenic keratocyst of the left mandibular anterior teeth. 2 years later, multiple odontogenic keratocysts related to unerupted #17,35,37,47 and 3 years later, odontogenic keratocyst related to unerupted #18,28 were occured. A total of 3 cyst enucleations were performed.
In these patients, odontogenic keratocysts were occured, particularly associated with the unerupted second and third molars. It should be noted that young patients with nevus basal cell carcinoma syndrome are more likely to occure odontogenic keratocysts associated with unerupted teeth in the jaw.

O3-04

Review of the Lateral Arm Free Flap Reconstruction Cases at SNUDH from 1998 to 2020

Seung-Min Lee*[1], Do-Hyeon Kwon[1], Ikjae Kwon[1], Soung-Min Kim[1], Jong-Ho Lee[1]

[1]Department of Oral and Maxillofacial Surgery, Seoul National University

Introduction
Lateral arm free flap has not been used frequently due to the lack of experienced surgeons, difficulty in harvesting flaps, and the small vessel size, short pedicle. However, the flap has several advantages, and since it was first introduced by Song et al. in 1982, cases used for head and neck reconstruction have been steadily reported. In 2008, Marques Faria et al. reported 210 cases in which LAFF was used to the head and neck area, which showed that the flap can be applied in various areas of the head and neck, which is the most numerous cases reported so far. LAFF has the following advantages; Color coordination with surrounding tissues, less hair, and well compartmentalized fat to maintain volume, donor nerves allow for nerve grafts in case of sacrificing the facial or lingual nerves, primary closure of the donor site and fewer complications. In this study, we reported LAFF reconstruction status and confirmed the advantages of the flap by analyzing cases performed in our hospital.

Method and materials
A case of lateral arm free flap reconstruction performed by a single surgeon in the Department of Oral and Maxillofacial Surgery at Seoul National University Dental Hospital from 1998 to October 2020 was reviewed. Sex, age, diagnosis, site, recipient artery, rate of skin graft, flap survival rate, etc. were analyzed.

Results
During this period, there were 79 cases of flap reconstruction(78 patients) performed in SNUDH. The number of cases in the last 4 years has been increasing, especially in 2020, with 24 cases, which accounted for 30.8% of the total cumulative number of LAFF cases. The most common diagnosis was squamous cell carcinoma with 66 cases (83.5%), followed by buccal mucosa 25 cases (32.1%), mandible 24 cases (30.8%), tongue 19 cases (24.4%). There was also one case of extraoral reconstruction and two cases of intraoral approach reconstruction. Skin grafts were performed in 31.6% of the total, and lingual nerve repair with PCNA was performed in 10 cases. The flap survival rate was 96.1% and there were 3 cases of failure.

Conclusion
This report is meaningful because it is the second-

largest cases as a single operator after 210 cases of Marques in 2008. The flap survival rate was 96.1%, which is higher than Marques(95.7%), and is close to the flap survival rate(96.3%) for 429 cases analyzed by KANG (2018). In recent years, the number of LAFF cases has been increasing because the radial forearm flap cases, which were previously commonly used, have gradually shifted to the LAFF cases. In SNUDH, LAFF is now mainly used in areas such as the tongue and buccal cheek, because it has excellent volume retention and fewer complications at the donor site. Moreover, LAFF is differentiated because it is capable of nerve graft, and since there are few donor complications, it contributes to improving the patient's quality of life after surgery.

Implant

O4-01

Long-term evaluation of the prognosis of TS III CA (Calcium-modified surface) Implant : Retrospective clinical study

Min-Joong Kim*[1], Il-Hyung Kim[1], Young Kyun Kim[1, 2]

[1]Department of Dentistry, Seoul National University Bundang Hospital, Seongnam, Korea
[2]Department of Dentistry & Dental Research Institute, School of Dentistry, Seoul National University, Seoul, Korea

Purpose
The aim of this study was to evaluate the long-term clinical stability of Implants with Calcium-modified surface (Osstem Implant, Busan, Korea) using retrospective analysis of the survival rate, success rate, primary and secondary stability, complication and loss of marginal bone of Implant.

Material and method
From January 2013 to December 2017, patients who had Osstem's CA surface implant installed at the dentistry at Seoul National University Bundang Hospital were the subjects of the study. Using the patient's medical records and radiographs (panorama, periapical view), gender, age, placement location, width and length of implant, presence or absence of bone-graft, type of bone-graft and membrane used during bone-graft, primary stability and Secondary stability, early complications and delayed complications, marginal bone loss, implant success rate and survival rate were analyzed retrospectively. In order to find out more accurate long-term results, the analysis was divided into two groups : consisting of patients installed from January 2013 to December 2017 (group A) and patients installed from January 2013 to December 2015 (group B).

Result
In group A installed between 2013 and 2017, 495 implants were implanted in a total of 203 patients, and the average observation period was 44 months. The number of implants that failed to survive was 7 with a survival rate of 98.6%, and the number of implants that did not reach the success criterion was 23 with a success rate of 95.4%. Complications occurred in a total of 23 cases, of which initial complications occurred in 2 cases (0.4%) and delayed complications in 21 cases (4.2%). Of the 7 implants that failed to survive, 2 were included when an initial complication occurred, and the remaining 5 were included when a delayed complication occurred. In group B installed between 2013 and 2015, 258 implants were implanted in a total of 120 patients, and the average observation period was 62 months. The number of implants that failed to survive was 7 with a survival rate of 97.3%, and the number of implants that did not reach the success criterion was 15 with a success rate of 94.2%. Complications occurred in a total of 15 cases, of which initial complications occurred in 2 cases (0.8%) and delayed complications in 13 cases (5.0%). Of the 7 implants that failed to survive, 2 were included when an initial complication occurred, and the remaining 5 were included when a delayed complication occurred.

Conclusion
The TS III CA implant has a survival rate of 98.6% and a success rate of 95.4% when the average observation period is 44 months, and a survival rate of 97.3% and a success rate of 94.2% when the average observation period is 62 months. TS III CA implants are unaffected by most factors and show excellent survival and success rates. In particular, it can be seen that the stability of the implant is so excellent that there are no failed implants in the case of delayed installation in which the implant is placed after performing a bone-graft and having a healing period for a certain period of time.

O4-02

Alveolar ridge preservation using two different rhbmp-2 delivery systems: Comparison of radiographic and clinical outcome of subsequent implant treatment

Hyeong-Jin Baek*[1],
Il-hyung Kim[1, 2], Young-Kyun Kim[1, 3]

[1]Dept. of Oral and Maxillofacial Surgery, Seoul National University Bundang Hospital
[2]Office of Human Resources Development, Armed Forces Capital Hospital
[3]School of Dentistry, Seoul National University

Purpose
The purpose of article is to compare long term therapeutic value of alveolar preservation with two different materials by comparing outcome of implant placement that have done, following alveolar preservation.

Materials and Methods
Patients that have received alveolar preservation with O –BMP(Osstem Implant Co., Busan, Korea) or Cowell BMP(Cowellmedi, Busan, Korea),and done implant placement at preserved site, subsequently prosthesis treatment from October 29th, 2015 to October 6th 2016 are enrolled. Information about implant therapy as ISQ value at a moment of primary operation and impression is collected and analyzed by retrospectively, and marginal bone loss is measured with periapical radiograph. We judge the success or failure of each implant with the standard published by Zarb in 1998.

Results
The mean age of participants is 59.1 years with a rage of 30 to 79 years. 14 participants(8 male, 6 female) in test group(O-BMP), 14 participants(6 male, 8 female) are included in the final analysis. The primary stability is 73.17±12.86 in test group, 72.00±5.61 in control group(p=0.408), and the secondary stability is 82.13±6.45 in test group, 80.29±6.32 in control

group(p=0.415). There is no statistical significance in primary and secondary stability. Marginal bone loss is 0.38±1.35 in test group, 0.21±1.49 in control group. There is no statistical significance in marginal bone loss as well. The mean time of implants to survive after mastication in test group is 434.6days, and 13 among 14 implants exist except for 1 implant that has removed at 10.2month after mastication. The mean time of implants to survive after mastication in control group is 408.2days, and all the implants exist. However, it is not statistically significant(p=0.617). Additionally, each 11 implants of both group fulfill the standard of success.

Conclusions
We conclude that two different rhBMP-2 carrier system have similar treatment effect for dental implant therapy, succeeded alveolar preservation.

O4-03

Prospective comparative study of two-types of implant surface treatment in the maxillary posterior area

Hyeong Ki Kim[1,2], Il-hyung Kim[1,2],
Young-Kyun Kim[1,3]

[1]Dept. of Oral and Maxillofacial Surgery, Seoul National University Bundang Hospital
[2]Office of Human Resources Development, Armed Forces Capital Hospital
[3]School of Dentistry, Seoul National University

Purpose
The purpose of this study is to evaluate the clinical applicability of different surface treatment implants in the maxilla posterior tooth area. We would like to compare and verify the therapeutic performance of the newly developed ETIII NH surface (Hiossen Inc., Philadelphia, PA, USA) by applying the double surface treatment method compared to the existing TSII SA surface (Osstem Implant Co., Busan, Korea).

Materials and Methods
Subjects were recruited based on criteria for groups of patients with one or more consecutive edentulous areas in the initial stage of the maxilla posterior tooth area, and were randomly classified as experimental and control groups. Finally, a total of 27 people were analyzed for treatment results. There were 14 experimental groups (17 ETIII NH implants) and 13 control groups (14 TSIII SA implants). In some patients, a sinus lift or guided bone regenerative surgery was performed together with implantation. All patients performed impression acquisition 2.5 months after primary surgery and began to function within 2 weeks of impression acquisition. ISQ values measured using Osstell Mentor device (Ostell, Gothenburg, Sween) are collected for basic information on implants, implantation, and impression acquisition, and marginal bone loss is measured through analysis of periapical view

Results
The average primary stability of the experimental group was 71.23 ± 10.72, and the average secondary stability of the group was 77.65 ± 7.54, with an increase of 6.41 ± 7.35 on average from the point of acquisition of the impression after the installation. The mean primary stability of the control group was 74.21±7.05, with an average increase of 5.00±4.49 during the healing period, showing a secondary stability of 79.21±5.20 on average. The increase in stability during the first and second stability and the healing period of the two implants was not statistically different. Implants in the experimental group all survived for an average of 299.4 days of observation after implantation, with an average loss of 0.015±00.034mm of marginal bone. The implants of the control group also survived on average within an observation period of 293.3 days after implantation, and an average of 0.021±0.038mm of marginal bone loss was confirmed, and there was no significant difference between the two groups.

Conclusions
ETIII NH surface shows early osseointegration similar to TSIII SA, and there seems to be no clinical difference between the two surface treatment methods

O4-04

The change of the keratinized gingiva after apically positioned flap in the dental implant surgery

Chang Su Kim[1], Dong Wook Park[1],
Ho Lee[1,2], Yoon-Sic Han[1,2]

[1]Department of Oral and Maxillofacial Surgery, SMG-SNU Boramae Medical Center
[2]Department of Oral and Maxillofacial Surgery, School of Dentistry, Seoul National University

Purpose
Clinically, more than 2mm amount of keratinized gingiva (KG) around implant is considered as periodontallly healthy. Of various soft tissue augmentation methods, apically positioned flap (APF) are mostly used to increase KG around implants. The Studies on the change of KG after dental implantation with APF are insufficient. Therefore, this study aims to study the changes of the amount of keratinized gingiva over time after implant surgery with APF.

Method
One-stage (n=59) and two-stage implant surgery (n=144) were carried out with APF during implant surgery. The amount of keratinized attached gingiva is clinically measured up to 6 months after implant surgery (pre-OP, 1week, 3week, 3mont, 6month post-OP).

Conclusion
In both one and the two-stage implant surgery group with APF, the amount of keratinized attached gingiva around the implant decreased from 1 week after the implant surgery. In one-stage group, the average KG length decreased from 5.7 to 6.3 - 4.7 - 4.0 - 3.0mm by period. In the same way, in two-stage group, it was 4.1 - 4.7 - 3.1 - 2.6 - 2.3mm. Each group showed the remaining KG of 61.5 % (one-stage) vs 55.9 % (two-stage) 6 months after surgery (p >0.05). Moreover, implantation with APF show the increase of 1.92 ± 1.66 mm (one-stage), 1.48 ± 1.35 mm (two-stage) KG compared with punch-out method 6 months after implantation (p >0.05).

O4-05

Design of Lateral window for maxillary sinus graft based on the implant position

Kyeong-Jun Cheon, DDS*[1,2],
Byoung-Eun Yang, DDS*[1,2,3],
Seung-Won Cho, DDS[1,2,3],
Sung-Min Chung, DDS[4],
Soo-Hwan Byun, DDS[1,2,3†]

[1]Department of Oral & Maxillofacial Surgery, Dentistry, Sacred Heart Hospital, Hallym University College of Medicine, 14068, Anyang, Korea
[2]Research Center of Clinical Dentistry, Hallym University Clinical Dentistry Graduate School, 24252, Chuncheon, Korea
[3]Graduate School of Clinical Dentistry, Hallym University, 24252, Chuncheon, Republic of Korea
[4]R&D center, Genoss, 16229, Suwon, Korea

* These authors are equally contributed in this study.
† Correspondence : **e-mail.** purheit@daum.net
Tel. +82-10-8787-2640

The purpose of this study was to develop a classification and lateral window design method based on implants and evaluate whether classifications and methods are applicable to clinical practice. Patients who underwent maxillary sinus augmentation by lateral approach were classified into four clinical situations: (A) two or more sites for implants are required for maxillary sinus augmentation, (B) single implant is required without presence of adjacent teeth, (C) one adjacent tooth is present at mesial or distal area, and (D) both mesial and distal adjacent teeth are present. The lateral window was designed in a rectangle form by drawing four lines at mesial, distal, superior, and inferior side. Out of 76 patients, 47 patients (62%) were included in Group A, 9 (12%) in Group B, 8 (11%) in Group C, and 12 (22%) in Group D. There were no cases that were unclassified. Lateral window designing in the lateral approach technique of sinus augmentation can be classified into four clinical situations. This classification and window positioning method can be clinically applicable in most cases.

O4-06

Sublingual hematoma by dental implant : A Case Report

Dae-Hoon LEE*, No-Eul KANG, Song-Hee MIN, Seung-Il SONG, Jeong-Keun LEE*

Department of Oral & Maxillofacial surgery, Ajou University Medical Center

With the recent advancement of digital dentistry, flapless implant surgery is often opted at local dental clinics. We can expect advantages of fair patient compliance, minimal blood loss, etc. However, we can also expect more probability of damaging adjacent anatomical structures such as nerves and vessels in that it does not require flap elevation.

Case

Male patient who had hypertension and diabetes mellitus received dental implant surgery(flapless technique) on site #34,33,43,44. After the surgery, the patient complained symptom of dyspnea. The patient was sent to Korea University Ansan Medical Center, where orotracheal intubation was done, followed by transfer to Ajou University Medical Center. At the first visit of the patient, mouth floor elevation and general swelling of submandibular area were observed. Radiographic findings revealed perforation of lingual cortex of mandible by #33i,34i and the involvement of the equivalent area of opposite side by #43i,44i. Hematoma formation was also observed. Constant decrease of hemoglobin and depression of spontaneous respiration were observed and the patient was decided to be put under emergency surgery.

Flapless implant surgery requires precise implant positioning through accurate diagnosis and examination, which leads to fabrication of precise surgical guide stent.

O4-07

Comparison of bone healing capacity of autogenous bone, demineralized freeze dried bone allograft(DFDBA), and collagen sponge in the rabbit cranium defect

JunYeong Lee, Song-Jay Choi, Jaeyoung Ryu, Min-Suk Kook

Department of Oral and Maxillofacial Surgery, School of Dentistry, Dental Science Research Institute, Chonnam National University

Purpose

For oral and maxillofacial regions, extraction socket, cleft palates, cysts, and tumors may lead to bone loss. There have been numerous studies to induce bone regeneration for treatment of bone defects, and many kinds of bone graft materials and substitutes for bone defects have been widely used. The aim of this study was to evaluate the regeneration potential of collagen graft materials compare to other graft materials in the calvarial defects of rabbits.

Material and method

For in vivo test, calvarial defects, 10 mm in diameter, were created in ten rabbits (average weight approximately 3 kg). Those were divided into 4 groups, which were control group (nothing was grafted), autogenous bone graft group, SureOss™ graft group, and Teruplug® graft group. The bone regeneration ability were evaluated by histologic and radiographic methods.

Results

The distinct healing profile was not observed by visual observation and no statistical difference was observed between the groups. There was no signs of inflammation. After 4 weeks, histologic analysis showed no bone regeneration in control group, however, after 8 weeks, the new bone formation was observed around the margin of defected sites. In autogenous bone graft group, new bone formation was found at 4 weeks postoperative, and mature bone was detected around the grafted bone after 8 weeks. In SureOss™ graft group, after 4 weeks, acute inflammatory cells and multinuclear cells were shown around the grafted materials, and after 8 week, the decrease of graft materials and new bone formation were found around the defected sites. In Teruplug® graft group, the new bone formation was detected around the margin of the bone without signs of inflammation. In CT number of bone density evaluated by radiographic analysis, there were statistically significant differences between the graft groups and control group ($P < 0.05$), especially autogenous bone graft group ($P < 0.001$).

Conclusion

These results suggest that autogenous bone, SureOss™, and Teruplug® have potential to induce bone regeneration compared to control group, and osteogenic potential of Teruplug® is less than autogenous bone, but similar to SureOss™.

O4-08

Time-related modification of ultraviolet photofunctionalization on SLA-treated titanium surfaces

Dong-Jun Seo*, Seong-Yong Moon, Ji-Su Oh, Jae-Seek You, Hae-In Choi

Department of oral and maxillofacial surgery, Chosun university dental hospital

Introduction

Titanium has advantages including high biocompatibility, excellent strength, low toxicity to fibroblasts and macrophages, and low inflammatory response to peri-implant tissues. Various surface modifications including mechanical, chemical, and physical methods have been studied to achieve the desired biological response for early osseointegration and improvement of Bone-to-implant contact (BIC). Photofunctionalization of a titanium surface using ultraviolet (UV) irradiation has been introduced as an efficient method to improve the biological capabilities of titanium implants.

Objective

The objective of this study was to compare the time-related modifications associated with physicochemical and biological characteristics through short-term re-hydrophobization and UV re-irradiation of titanium surfaces.

Meterial and Methods

All surfaces of discs were hydroxyapatite-sandblasted and acid-etched with hydrochloric/sulfuric acid. After manufacturing titanium discs, all discs were stored in sterilized sealed containers for 8 weeks to allow enough biological aging. The duration of the UV irradiation was as follows: 1) Control group: No UV irradiation; 2) Group 1: UV irradiated for 24 hours; 3) Group 2: UV irradiated for 24 hours and then stored in an ambient sterilized medium; and 4) Group 3: UV irradiated for 24 hours followed by storing for 24 hours in an ambient sterilized medium and then UV re-irradiated for 24 hours. Field emission scanning electron microscopy (FE-SEM) was performed to assess the effect of photofunctionalization on titanium surface morphology. To assess the wettability of the disc surfaces, contact angles were measured using a goniometer with the sessile drop method. The chemical compositions of the titanium disc surfaces were analyzed using X-ray photoelectron spectroscopy (XPS). An alkaline phosphatase (ALP) assay using MC3T3-E1 cell 7 and 14 days. Alizarin red S staining was performed 7 and 14 days later to evaluate the mineralization capability of cells.

Results and Conclusion

Photofunctionalization by UV irradiation did not alter the morphology of SLA titanium surfaces. Photofunctionalization by UV irradiation effectively removed the hydrocarbons that had accumulated on the aged titanium surfaces and improved surface hydrophilicity. The improved bioactivity after UV irradiation was maintained during short-term re-hydrophobization and repeated re-irradiation.

TMJ

O5-01

Conservative treatment of TMD followed by orthodontic correction in a patient with mandibular condyle resorption and anterior open bite: A case report

He-Li Choi[1], Il-hyung Kim[1, 2], Young-Kyun Kim[1, 3], Nam-Ki Lee[4]

[1]Dept. of Oral and Maxillofacial Surgery, Seoul National University Bundang Hospital
[2]Office of Human Resources Development, Armed Forces Capital Hospital
[3]School of Dentistry, Seoul National University
[4]Dept. of Orthodontics, Seoul National University Bundang Hospital

Idiopathic condyle is one of temporomandibular disease characterized by progressive resorption of condylar head and manifests functional and esthetic changes with poorly known cause. This case describes our treatment experience of a 21-year-old woman who presented with anterior open bite caused by idiopathic condyle resorption (ICR). To reduce and relieve TMJ-related symptoms, conservative TMD treatments such as medication, physical therapy, splint therapy and injection therapy were conducted for 6 months. Following the conservative TMD treatment, we have conducted orthodontic correction of anterior open bite without orthognathic surgery for 2 years by distalization of maxillary dentition and molar intrusion using palatal anchorage system. During orthodontic treatment, periodic observation at oral and maxillofacial surgery department was done for evaluation of TMJ symptoms, and no related sypmtoms such as mouth opening limitation and joint pain were observed. After the orthodontic treatment was completed, we confirmed that the anterior openbite was effectively resolved by comparison of cephalometric radiograph before and after the treatment. Through this case, we would like to emphasize the importance of proper and meticulous evaluation of TMD in the whole process of orthodontic treatment. And before the start of orthodontic treatment, stabilization of the TMJ symptoms should be proceded. In addition, if appropriate case selection is made, we would like to show the possibility of solving anterior open bite without orthognathic surgery by using skeletal anchorage system could be an effective orthodontic treatment.

O5-02

Study on the association between torus mandibularis and temporomandibular disorders by type

Hee-Min Lee[1], Il-hyung Kim[1, 2], Pill Young Yun[1], Young-Kyun Kim[1, 3]

[1]Dept. of Oral and Maxillofacial Surgery, Seoul National University Bundang Hospital
[2]Office of Human Resources Development, Armed Forces Capital Hospital
[3]Scholl of Dentistry & Dental Research Institute, Seoul National University

Purpose

The purpose of this study was to investigate the association of occurrence of the torus mandibularis(TM) according to the Temporomandibular disorders(TMD) types. We would also suggest using a simple and useful diagnostic device called Temporary Splint for Checking Bruxism(TSCB) to diagnose parafunctional activity and planning treatment for TMD.

Materials and Methods

77 subjects diagnosed with TMD were studied who first visited Seoul National University Bundang Hospital temporomandibular clinic between March 2019 and July 2020. Using the RDC/TMD chart, clinical and radiological examinations and oral examinations were conducted and TMD were classified according to the JSTMJ(2013) classification of TMD. Statistical analysis was performed on sex, age, duration of symptoms, type of TMD and the presence of TM(SPSS 26.0). Presence of oral Parafunction were included in which the subjects was aware of clenching or bruxism, and cases revealed through TSCB test.

Results

Among the 77 subjects, 27 were men and 50 were women, with an average of 41.7 years (13-84 years). Of these, 28 subjects (36.8%) had TM, and 58 (75.3%) had parafunctional habits. The presence of TM was significantly associated with having Parafunctional habit in TMD($P<0.05$), and the odds ratio was 3.103. An analysis of the presence of TM by type of TMD showed that the TM had significant association with TMD type1 (Myalgia of the masticatory muscle) ($P<0.05$). Of the 27 subjects who prescribed TSCB, 23 (85.1%) were found to have parafunctional habit, and statistical significance result was found between the TSCB test result and the TM($P<0.05$).

Conclusions

We investigated the association of TM in TMD1 type (Myalgia of the masticatory muscle). Clinicians are advised to keep in mind the close association between TM and oral parafunctional habits when treating patients with TMD. TSCB can be usefully used to identify oral habits that subjects are not aware of, and can be considered to have diagnostic value.

Basic Research

O6-01

Influence of Korean's Gender and Age on the Perception of an Esthetic Facial Profile

Soyeon LEE*, Ji-Hoon KO, Micheal D. HAN, Jong-Ki HUH, Jae-Young KIM

[1]Department of Oral and Maxillofacial Surgery, Gangnam Severance Hospital, Yonsei University College of Dentistry, Seoul, Korea
[2]Department of Oral and Maxillofacial Surgery, University of Illinois at Chicago College of Dentistry, Chicago, Illinois, USA

Aesthetic face is an important factor for social activity, psychological stability, and happiness. Khosravanifard et al. have announced that excessive mandibular retrognathism is the most important factor that both men and women perceive as the least attractive face. On the other hand, Soh et al. reported that men and women with protrusion of mandible were evaluated as the least attractive faces.

Age and gender are important criteria for evaluating faces. In 2014, Tole et al. reported that the evaluation of facial profile attractiveness may differ depending on age, gender, and social background. In 2015, Pithon et al. reported that the standard of aesthetic perception of the lateral appearance may differ depending on the age and gender of the evaluator.

The purpose of this study is to investigate how the preferred lateral appearance differ according to gender and age. The study targeted 288 patients who visited the Oral Surgery Clinic of Gangnam Severance Hospital, and a questionnaire survey of preferences from the 1st to the 5th was statistically analyzed by forming the profile silhouettes of different men and women with Photoshop.

O6-02

Evaluation of the Bone Regeneration Effect of Recombinant Human Bone Morphogenic Protein-2 on Subperiosteal Bone Graft in the Rat Calvarial Model

Jung Ho Park*, Eunhye Jang, Ja-Youn Lee, Eun-young Lee, Hyun Seok

Dept. of Oral and Maxillofacial Surgery, School of Dentistry, Jeonbuk National University

The aim of this study was to evaluate the bone regeneration effect of recombinant human bone morphogenetic protein-2 (rhBMP-2) on a subperiosteal bone graft in a rat model. A subperiosteal space was made on the rat calvarium, and anorganic bovine bone (ABB), ABB/low bone morphogenetic protein (BMP) (5 μg), and ABB/high BMP (50 μg) were grafted as subperiosteal bone grafts. The new bone formation parameters of bone volume (BV), bone mineral density (BMD), trabecular thickness (TbTh), and trabecular spacing (TbSp) were evaluated by microcomputed tomography (μ-CT), and a histomorphometric analysis was performed to evaluate the new bone formation area. The expression of osteogenic markers, such as bone sialoprotein (BSP) and osteocalcin, were evaluated by immunohistochemistry (IHC). The ABB/high BMP group showed significantly higher BV than the ABB/low BMP ($p = 0.004$) and control groups ($p = 0.000$) and higher TbTh than the control group ($p = 0.000$). The ABB/low BMP group showed significantly higher BV, BMD, and TbTh than the control group ($p = 0.002$, 0.042, and 0.000, respectively). The histomorphometry showed significantly higher bone formation in the ABB/low and high BMP groups than in the control group ($p = 0.000$). IHC showed a high expression of BSP and osteocalcin in the ABB/low and high BMP groups. Subperiosteal bone grafts with ABB and rhBMP-2 have not been studied. In our study, we confirmed that rhBMP-2 contributes to new bone formation in a subperiosteal bone graft with ABB.

O6-03

Uncontrolled host lymphocytes responses in periimplantitis induced aggressive inflammatory pseudotumors in oral cavity

Yong-Seok Choi*[1] and Joo-Young Park[2]

[1]Division of Oral Oncology, National Cancer Center
[2]Department of Oral and Maxillofacial Surgery, Seoul National University Dental Hospital

Introduction
Inflammatory pseudotumor (IPT) is a rare benign nonneoplastic lesion, often mistaken as malignancy because of its aggressive behavior. Because IPT presents clinically and radiographically invasive malignant tumor, a precise and early pathological diagnosis is essential for proper management of the disease. Interestingly, the exact etiology and pathogenesis of IPT still remain unknown, especially for IPTs in head and neck. Recently, host immune cell reactions against infection, foreign bodies or tissue injuries were suggested possible etiologies for IPT, however, what types of immune cells and how they affect IPT formation are not clearly identified. In this study, T and B lymphocytes and their subsets are identified in IPT lesion to investigate the main host immune cell responses in IPT formation.

Method and materials
Two malignant tumor suspicious lesions were excised for biopsy and confirmed as IPT. To identify T and B lymphocytes and their subsets in the IPT lesion, tissues were processed for histological sections for immunohistochemical staining. Anti-human antibodies for surface proteins of immune cells were used; CD3, CD4, CD8, CD19, CD5, CD25, CD56 and surface IgM, as well as intracellular transcription factor Foxp3. Normal human gingival tissues were used for control staining.

Results
Histopathologic findings revealed that the lesion contained intense lymphocytic infiltration as well as predominant appearance of interlacing fascicles of fibroblasts. However, there were no atypical pleomorphic features in the specimen, which confirmed the lesions as IPT. Among the infiltrated lymphocytes, $CD3^+$, $CD4^+$ helper T cells were abundant, and those cells did not express Foxp3. Interestingly, $CD19^+$ surface IgM^+, $CD11b^+$, B-1 cells were also abundant and located nearby $CD4^+$ T cells, which suggest that contact allergic reactions were developed inside the IPT lesion.

Conclusion
As the IPT lesions were developed in periimplantitis area, the original inflammation around implant fixture or prothesis might initiate host immune reaction. Therefore, abundance of $CD4^+$ helper T cells and lack of $Foxp3^+$ regulatory T cells might result in uncontrolled inflammatory B-1 cells responses, and we speculated that patient's immunity relates pathophysiology of aggressive IPTs. Based on the results of this study, the authors confirmed that immune homeostasis is essential for healthy status of oral cavity and failure of maintenance results in pathological status.

O6-04

Influence of rotary instrument mineral oil lubricant on the handpiece for dental implant : In vitro and in vivo study

Heon-Young Kim, Jin-Woo Kim, Sun-Jong Kim

Department of Oral and maxillofacial surgery, Ewha Womans University Medical center, Seoul, Korea

Purpose
The purpose of this study was to evaluate the effect of oil lubricant for dental handpiece and to investigate the relationship to the prognosis of dental implants.

Materials and Methods
An experiment was conducted on the residual amount of lubricant in the handpiece and the amount of lubricant that will remain in the fixture after drilling. Based on the data, biocompatibility was assessed through the assessment of cytotoxicity with L929 cells and 33 SD rats. This experiment was conducted through an 8 mm-long, 3.5 mm-diameter fixture(Osstem implant Co., Ltd., Korea) and lubricant(KaVo Dental GmbH., Germany) for handpiece.

Results
The amount of lubricants in the handpiece decreased with the removal phase, but some of them could be confirmed to remain. In the cytotoxicity assessment, the survival rate was lower over 100 ppm. In experiments with SD rat, there was no significant difference among groups.

Conclusion
The surface of the dental implants could be contaminated from some leftover lubricants in the handpiece. Although the lubricant is the biocompatible in cytotoxicity test and SD rat test, it does not mean it has no effect on osseointegration

Dentoalveolar Surgery

O7-01

Comparative analysis of platelet-derived substance platelet-rich-fibrin and concentrated growth factor-induced osteogenic effect on bone regeneration

Sang-Yeap Park*, Jae-Seek You,
Seong-Young Moon, Ji-Su Oh, Hae-In Choi,
Hye-Jung Lee, Gyeo-Woon Jung

Department of Oral and Maxillofacial surgery, School of Dentistry, Chosun University

Purpose
The aim of present study is to investigate the comparative osteogenic effect of platelet-derived autologous substance platelet-rich fibrin (PRF) and concentrated growth factor (CGF) on the proliferation and differentiation of osteoblast. Furthermore, it is to compare the effect of PRF and CGF applied to bone graft materials on new bone formation

Material and Methods
In vitro analysis was compared through cell viability analysis, alkaline phosphatase staining, and alizarine red S staining. In addition, quantitative polymerase chain reaction (qPCR) was performed to confirm the mRNA of biomarkers related to bone formation.
To investigate the in vivo comparative osteogenic effects of 20% PRF and 20% CGF, each synthetic bone grafting materials containing saline, PRF, and CGF were transplanted into the 4 of bone defecting region with 8 mm diameter generated on the cranium of experimental rabbit model, respectively. Thereafter, animals were sacrificed to perform the radiographic" and histological analysis for measuring the new bone formation at 2 and 4 weeks.

Result
Cytotoxicity and cell survival assay showed that both PRF and CGF increased the cell proliferation without cell cytotoxicity in MG-63 cells. Furthermore, both MG-63 cells containing 20% PRF and 20% CGF were not only increased the activity of alkaline phosphatase, but also accelerated the mineralization compared with untreated control. Moreover, the induction of mRNAs associated with osteogenic biomarker genes such as type I collagen, BMP-2 and osteocalcin was increased mostly in the MG-63 cells cultured in the serum-free media containing 20% CGF. In addition, histological analysis showed that the new bone formation was significantly increased in the defecting region transplanted with synthetic bone grafting materials containing 20% CGF on the cranium of experimental rabbit at 4 weeks, after transplantation, more than any others.

Conclusion
Taken together, these data consistently demonstrated that PRF and CGF have a positive osteogenic effects on bone regeneration. In vivo study, the osteogenic efficacy of CGF is highest statistically through the increase of osteogenic effects after 4 weeks. Therefore, these data including *in vitro* and *in vivo* studies suggest that CGF, a platelet-derived autologous substance, may successfully act the bone regeneration on the bone defecting region.

O7-02

Development of deep learning model for predicting the difficulty of the mandibular third molar extraction using panoramic radiographs and clinical data

Min-Geun YOON*, Jaemyung AHN,
Chang-Soo KIM, Jun-Young PAENG

Dept. of Oral and maxillofacial surgery, Samsung Medical Center, Sungkyunkwan University School of Medicine.

Introduction
Pell & Gregory, Winter's classification and Pederson index are commonly used to evaluate the extraction difficulty of the mandibular third molar. However, these indicators do not necessarily match the difficulty of actual surgery. Clinical factors such as experience of the operator, maximum mouth opening and bone quality are also known to affect the extraction surgery time. In this study, we developed the model to predict the extraction difficulty of the mandibular third molar using deep learning model and evaluated its usefulness.

Patients and method
All patients underwent extraction of the third molar in the oral and maxillofacial surgery at Samsung Medical Center between March 2020 and September 2020. The 373 extraction surgeries of impacted mandibular third molars were performed by three Professors and a second year resident using similar surgical technique with the same instruments.(high speed and low speed drills) Pre-and post- clinically operative variables were recorded. Panoramic radiographs and clinically collected data (sex, age, MMO, BMI, etc.) were used to predict extraction time using concatenated deep learning using neural network and convolutional neural network.

Results
No significant correlation was found between time of operation and variables for difficulty assessment. (P-value > 0.05) The smaller the MMO, the longer the extraction time was taken and It was affected by who the operator was. (P-value < 0.05) The predicted extraction time and actual extraction time through deep learning showed a statistically significant correlation. (r = 0.63, P-value = 6.451137e-07 < 0.05)

Conclusion
The deep learning model for predicting the extraction difficulty (time required for extraction) using panoramic radiographs and clinical data (sex, age, MMO, BMI, etc.) of patients showed statistically significant results.

Infection

O9-01

Fatal Infectious Encephalitis as a Complication of Medication-Related Osteonecrosis of the Jaw

Hye -Won Kim*, Joo-Young Lee,
Sung-Min Park, Moon-Young Kim, Se-Jin Han,
Chul-Hwan Kim, Jae-Hoon Lee

Department of Oral & Maxillofacial Surgery,
College of Dentistry, Dankook University, Korea

We present a unique case of bacterial encephalitis in a 79-year-old female due to progression of medication-related osteonecrosis of the jaw. The occurrence of this life-threatening neurologic condition following the expansion of medication-related osteonecrosis of the jaw is an extremely rare finding, and we know of no other previously reported cases. The case history, differential diagnosis, proposed mechanism, and management of this fatal complication is discussed.

O9-02

Clinical Utility of Procalcitonin in Severe Odontogenic Maxillofacial Infection

Eun-Sung Kang, Ji-Kwan Kim,
Sung-Min Park, Moon-Young Kim, Se-Jin Han,
Chul-Hwan Kim, Jae-Hoon Lee

Dankook University Dental Hospital,
Dept. of Oral and Maxillofacial Surgery

Background
Most of maxillofacial infections are bacterial inflammation, and there are possibility that systemic inflammation occur by maxillofacial infection. However, routine laboratory tests for inflammatory condition such as white blood cell count (WBC),

C-reactive protein have low accuracy with diagnosing systemic inflammation. On the other hand, PCT has the highest sensitivity and specificity for predicting systemic bacterial inflammation. The aim of this study is to investigate the diagnostic value of PCT in patients with odontogenic bacterial infections of the maxillofacial region.

Materials and Methods

We enrolled 60 patients, who were admitted to the Department of Oral and Maxillofacial Surgery in Dankook University Hospital with odontogenic maxillofacial infection from September 2018 to March 2020. White blood cell counts, C-reactive protein and PCT concentrations were evaluated. In addition, the site of infection were confirmed and the severity score of infection was recorded. 60 patients were divided into two groups, sepsis and non-sepsis group, based on systemic inflammatory response syndrome. Student t-test was performed to statistically analyze difference in inflammatory markers between sepsis and non-sepsis group.
A receiver operating characteristic curve was used to measure the accuracy of PCT in the diagnosis of septic syndrome in patients with maxillofacial infection. Area under curve (AUC) was measured for sensitivity, specificity, and cut-off value of PCT.

Results

The mean PCT values on admission were 7.24 ng/mL (range, 0.09–37.15 ng/mL) and 0.40 ng/mL (range, 0.02–4.94 ng/mL) in the sepsis group and non-sepsis group, respectively. The PCT values between the two groups showed a significant difference($P<0.05$). On the other hand, there was no significant difference in the severity score between the two groups($P=0.75$). The AUC of PCT was 0.927($P<0.001$), cut-off value of PCT that maximizes the AUC area was calculated to be 0.87ng/mL. At this point, the sensitivity was 77.78% and the specificity was 95.24%.

O9-03

Panoramic and clinical analysis according to the generation of bisphosphonate: preliminary study for the clinical diagnosis

Seongji Cho*, Mi Hyun Seo, Soung Min Kim

Department of Oral and Maxillofacial Surgery,
Seoul National University Dental Hospital

Introduction

osteomyelitis in jaw is a disease that accounts for a significant proportion of patients who visit the Oral and Maxillofacial Surgery. Particularly, since 2006, bisphosphonate or drug-related jaw bone necrosis (BRONJ, MRONJ) has been a number of discussions on the etiology, prognosis, and diagnosis of the disease. In particular, the generation of bisphosphonate, which is the main cause of BRONJ, is classified according to its chemical structure, but its potency varies according to generation. In the previous paper, the relationship between the potency according to the generation of bisphosphonate drugs and the occurrence of BRONJ has been discussed, but clinical and radiographic analyzes have not been performed.
In this study, the incidence and pattern of BRONJ according to bisphosphonate drugs are reviewed, and the pattern of radiation density that can be observed in panoramic radiation according to the generation of bisphosphonate drugs is analyzed to suggest future use of bisphosphonate drugs.

Method and materials

In this study, among patients admitted to the Department of Oral and Maxillofacial Surgery at Seoul National University Dental Hospital from 2015 to 2020, the medical history, radiographs, and blood test results such as whole blood cells and erythrocyte sedimentation rates of 34 patients diagnosed with BRONJ were reviewed and analyzed. Statistical analysis was performed on the correlation with the bisphosphonate drug. In particular, in the panoramic radiograph, the center of the lesion was set as the region of interest (ROI) using the "measure area rectangular" function of PACS (INFINITT Healthcare, Seoul, South Korea). All the images were classified into group 1 with many resorption lesion, group 2 with lots of bony sclerosis, and group 3 with most of the sequestrum and involucrum.

Result

Of the 34 surveyed, 12 patients who took the second generation bisphosphonate drug and 22 were the third generation. The correlation between the stage of BRONJ and the generation of bisphosphonate drugs had a statistically significant value. In the statistics on radiologic density, the pattern of radiologic density of group 1 was correlated according to the generation of bisphosphonate drugs, but was not statistically significant.

Conclusion

Bisphosphonates with high potency have a significant correlation with the stage of BRONJ, and it seems that the using pattern and duration of the drug should be considered together when establishing the stage and treatment plan of BRONJ. Depending on the limitations of the panoramic image, it is believed that further image analysis through CT will be needed.

O9-04

Clinical study of salivary gland stone with literature review

Hoon-Min Kim*, Se-Jeong Lim, Yeong-Cheol Cho, Iel-Yong Sung, Jang-Ho Son

Department of Oral and Maxillofacial Surgery,
Ulsan University Hospital, University of Ulsan College of Medicine, Ulsan, Korea

Introduction

Sialolithiasis is presence of calculus, known as sialolith, in the ductal system of a salivary gland. This may happen at any age but is more common in young people and middle-aged adults, affecting approximately 1.2% of the population. It is related to the submandibular gland in 83%.to the parotid gland in 10% and sublingual gland 7% of cases. The main symptoms of the patient with salivary gland calculi are decrease of saliva secretion, pain and dysphagia. The signs are increased volume of the glands involved, with or without presence of local inflammatory and/ or infectious process. In this example, we will discuss cases of general anesthesia or local anesthesia resulting in sialolithiasis

Case report

Cases of patients who underwent surgery for sialolithiasis were analyzed for 10 years from 2010 to 2020. During the period, there are 27 cases of patients who have been operated on as sialolithiasis at Ulsan National University Oral Surgery Clinic, 25 cases of submandibular gland, 1 case of parotid gland, and 1 case of sublingual gland. Sialolith causes a low flow of saliva and causes secondary infection. As a result, the saliva duct expands and the achini shrinks, causing chronic obstructive sialoadenitis. Patients are often found to have no symptoms, complaining of discomfort when eating food. Diagnosis is performed along the saliva gland and is diagnosed with radiography, sialography, CT, etc. Treatment provides preservation treatment such as antibiotic therapy and analgesic anti-inflammatory therapy during an acute period and surgical removal of sialolith when acute symptoms are reduced. In the event of repeated inflammation due to chronic obstructive sialoadenitis, it is recommended that the saliva is completely extracted from the bottom of the curved part of the saliva tube or in the substance of the salivary gland.

Conclusion

submandibular gland and parotid gland caused by anatomical vulnerabilities can cause repeated infections and lead to chronic obstructive sialoadenitis. During the acute period, it is essential to control inflammation through preservation therapy. And crucially, surgical removal of the at-bats is essential.

O9-05

Application of light-induced fluorescence technique to oral mucosal necrosis

Il-hyung Kim[1,2], Yesel Kim[2,3], Jinhyuk Choi[4], Jeong-Kui Ku*[1]

[1] Dept. of Oral and Maxillofacial Surgery, Armed Forces Capital Dental Hospital, Armed Forces Medical Command
[2] Dept. of Oral and Maxillofacial Surgery, Section of Dentistry, Seoul National University Bundang Hospital
[3] Dept. of Preventive Dentistry and Public Oral Health, Yonsei University
[4] Dept. of Forensic Medicine, Scientific Investigations Laboratory, Criminal Investigation Command, Ministry of National Defense

In the case of oral soft tissue necrosis, a diagnostic method capable of determining the depth of the lesion or observing the progression is not yet known. Quantiatative Light induced Fluorescence(QLF) is a technology that can measure and quantify the red fluorescence generated by porphyrin, a metabolite of bacteria. Currently, the technology is being widely used in the field of dentistry to diagnose dental caries, tooth cracks, and to evaluate the remineralization of dental caries at an early stage and oral hygiene status by analyzing dental plaque and calculus. In this case, we would like to analyze the clinical and histological findings of a case of oral mucosal necrotic lesions that occurred after surgical extraction of the third molar, diagnosed and observed using QLF. With this, we suggest the possibility of using QLF in necrotic and infectious lesions in the field of oral and maxillofacial surgery.

O9-06

Surgical drainage of the parapharyngeal space abscess using simply devised tool: A case report

Hyeong Ki Kim[1,2], Il-hyung Kim[1,2], Young-Kyun Kim[1,3]

[1] Dept. of Oral and Maxillofacial Surgery, Seoul National University Bundang Hospital
[2] Office of Human Resources Development, Armed Forces Capital Hospital
[3] School of Dentistry, Seoul National University

Parapharyngeal space abscess is a type of deep neck infection that can occur after dental treatment, and is a progressive form of infection, which can progress rapidly and often threaten life, requiring immediate surgical drainage. However, the presence of various cranial nerve, internal carotid and their branches in this space acts as a major obstacle to surgery and, if damaged, can cause great discomfort or fatal consequences, absolute non-traumatic drainage is essential. We are announcing this after obtaining good treatment results by using simple production-able surgical tools during the drainage of parapharyngeal space abscess.
Three days before visiting the hospital, a 51-year-old man visited the emergency room at the address of pain, fever, and difficulty breathing in the left mandible, which occurred after root canal treatment of the #37. The patient had primary adrenal failure. Hematological tests showed that leukocyte (WBC) was 10.89x103/ul, absolute neutrophil count (ANC) was 9,420/ul, and C-Reactive Protein (CRP) was 29.83 mg/dL. In the contrast enhancement computed tomography (CT), the formation and airway displacement accompanied by bubbles were observed in the left parapharyngeal space
Approximately 25mm of openings were secured after general anesthesia, and intraloral access was planned. After applying a stab incision to the left pharyngeal mucosa, a 24Fr rubber catheter was inserted into a 6.3-inch haemostat about 7cm from the end and inserted into the window. Based on the CT images, several times of obtuse was performed in the target direction and a large amount of pus was drained. No bleeding occurred during surgery and the drainage pipe was inserted.
In order to control the underlying disease of patients, 20 mg of hydrocortisone was taken twice a day for two days from surgery and 1.2g of amoxicillin clavulante was injected three times a day before discharge. The clinical symptoms of post-operation improved rapidly, and the CRP levels conducted on the fourth day after surgery improved to 1.7 mg/dL and all other haematological tests also showed signs of converging into normal ranges. After three days of operation, the drainage pipe was removed after the CT confirmed that the left parapharyngeal abscess was removed and airway space was secured. The patient was discharged on the 6th day after operation and all clinical results were good afterwards.
The tools used in this example are thought to be easy to manufacture in the operating room and to allow drainage without damaging the anatomical structure in a manner similar to the digital blunt dissection.

O9-07

A Clinicopathologic Review of Maxillary Sinusitis Originated from Fungus

Sung-Young Jung, Truc Thi Hoang Nguyen, Jeong Joon Han, Mi Hyun Seo, Hye-Jung Yoon[1], Soung Min Kim*

Department of Oral and Maxillofacial Surgery, Seoul National University Dental Hospital
[1] Department of Oral Pathology, Seoul National University Dental Hospital

Introduction
Fungal sinusitis is largely divided into invasive and non-invasive types. Symptoms are similar to those of chronic maxillary sinusitis, but invasive type requires rapid diagnosis and treatment because of its high mortality. The purpose of this study is to investigate the radiological and pathological characteristics of fungal sinusitis and its association with underlying diseases, surgical treatment, and prognosis.

Methods
Among 347 cases of modified endoscopic sinus surgery performed by the Department of Oral and Maxillofacial Surgery at Seoul National University Dental Hospital from April 2011 to August 2020, 28 patients who were confirmed as fungal sinusitis through computed tomography and histopathologic examination The clinical symptoms, radiological examination, comorbid diseases, and histopathological examination results were analyzed retrospectively.

Results
As a result of preoperative computed tomography, calcified radiopaque lesions were observed in 18 patients (64%). OMU block was observed in 19 patients (68%). Concomitant diseases include high blood pressure in 7 (26%), immunosuppressive medication, hypothyroidism in 4 (15%), diabetes, postoperative radiation therapy in 3 (11%), HBV, HCV, rhinitis, and MRONJ in 2 (7 %). In histopathologic examination, 24 patients (86%) had Aspergillosis and 1 patient (4%) had mucormycosis. Recurrence was observed in 2 patients and reoperation was performed.

Conclusions and Discussion
It is difficult to distinguish fungal sinusitis from chronic maxillary sinusitis based on symptoms alone. Computerized tomography or nasal endoscopy is useful for diagnosis. In particular, high attenuation on computed tomography is thought to be a strong indication of fungal sinusitis, but there are cases where high attenuation lesions are not observed, so it should be considered for diagnosis. The two relapsed patients are patients with uncontrolled diabetes and multiple myeloma who have received chemotherapy, respectively. Particular attention should be paid to patients with immunosuppressant such as organ transplantation, and diabetes.
In addition, surgical management requires simultaneous treatment of the fungal mass, the odontogenic origin of the disease, and the accompanying chronic sinusitis.
And a modified endoscopic sinus surgery was

performed to obtain satisfactory results.

O9-08

Analysis of head and neck fascial space infection; review of 61 cases

Gyeong-mi Kim*, Seong-Yong Moon, Ji-Su Oh, Jae-Seek You, Hae –In Choi

Department of Oral and Maxillofacial Surgery, School of Dentistry, Chosun University

Introduction
The purpose of this study is to analyze cases of head and neck facial infections from the origin of teeth.

Method and materials
From 2011 to 2013, we performed a chart analysis of patients who were diagnosed with head and neck facial abscess under general anesthesia at the Oral and Maxillofacial Surgery of Chosun University Dental Hospital and were treated for I & D. Treatment with only I&D progression and antibiotic treatment under local anesthesia was excluded. Statistics, etiology, systemic disease, length of stay, laboratory findings and antibiotic therapy of 61 patients were analyzed. The related space is submandibular, submental, sublingual, pterygomandibular, infratemporal, superficial or deep temporal, parapharyngeal, and buccal space.

Results
Of the 61 patients, 34 were female and 27 were male, with ages ranging from 2 to 88 years. Enhanced Neck CT was taken to determine the extent of infection, and infections of superficial, deep temporal space, intratemporal space, submasseteric space, pterygomandibular space, submandibular space, sbmental space, sublingual space, buccal space, and parapharyngeal space were observed. It was confirmed that the origin of the tooth was the most common cause of infection. We collected blood samples during hospitalization and summarized the WBC, ESR, and CRP values, after proceeding with I&D, we were able to observe the aspect where the values decreased. At the time of surgery, pus culture was performed from 55 patients, and as a result of bacterial culture, it was confirmed that streptococcus anginosus and streptococcus constellatus were the most. The hospitalization period was observed from a minimum of 4 days to a maximum of 62 days.

Conclusion
When infected head and neck area pay more attention to prevent serious complications, and to prevent life-threatening infections, especially high-risk groups, do regular oral examinations. It is important to implement it to prevent head and neck infections at an early stage.

O9-09

Adjunctive teriparatide application of fractured mandible treatment in osteonecrosis of the jaw due to prolonged bisphosphonates administration and osteoradionecrosis patients: case review

Dongkyu Jang*, Young-Long Park, Sung-Min Lee, JinWoo Kim

Department of Oral and Maxillofacial Surgery, Ewha Womans University Mokdong Hospital

Introduction
Recombinant human parathyroid hormone (Teriparatide, rhPTH) is uprising medication in treatment of osteonecrosis of the jaw. Teriparatide have both anabolic and catabolic effect on bone and it shows therapeutic effect to osteonecrosis of the jaw patients from many studies. The aim of this study is to evaluate of teriparatide application on fractured mandible treatment with poor bone healing.

Case 1
84 years old woman who had bisphosphonate injection history and was diagnosed mandibular body fracture due to fall down. Poor bone healing was expected after mandible fracture surgery. Delayed bone healing, bone exposure and pus discharge regarded as medication related osteonecrosis of the jaw were observed. Forsteo injection was administrated 20mcg daily for 4 months. After 8 months she showed well healing of mandible.

Case 2
71 years old man was diagnosed mandible fracture who had osteoradionecrosis and deformity of mandible after surgical treatment of squamous cell carcinoma on right mouth floor and 5600rad radiotherapy 26 years ago. He undergone several osteonecrosis surgery and reconstructive procedures including iliac bone graft, soft tissue graft and dental implants. He had open reduction and internal fixation of fractured mandible but it seems hard to obtain proper bone healing and trying more reconstructive procedure. Teribone injection 56.5mcg once a week for 7 weeks and Forsteo injection 20 mcg daily for 4 months were administrated. Favorable bone healing of fractured part of mandible is observed after 1 year.

Discussion
Demonstrating systemic administration of rhPTH(1-34) may enhance fractured bone healing was reported from many animal and clinical studies. Two cases showed promotive healing of fractured mandible clinically and radiographically. More studies and clinical investigation are needed to know profit and limitation.

Conclusion
Adjunctive teriparatide application is considerable in fracture treatment in osteonecrosis patients.

제59차
대한악안면성형재건외과학회
종합학술대회 및 정기총회

The 59th Congress of the Korean Association of Maxillofacial Plastic and Reconstructive Surgeons

Poster Presentation

Trauma

P1-01

스포츠 관련 구강악안면부 외상과 두부 외상의 상관관계: 5년간의 후향적연구

박한결

부산대학교 치과병원

Correlation between sports-related oral and maxillofacial injuries and head injuries: a 5-year retrospective study, Pusan National University Dental Hospital

Han-Kyul Park

Pusan National University Dental Hospital

P1-02

간이 수면다원검사 기기를 이용한 악간 고정 전 후 수면의 질 평가

고경수

고려대학교 구로병원

Evaluation for quality of sleep using portable polysomnography device before and after intermaxillary fixation

Kyeong-Soo Ko

Dept. of Oral and Maxillofacial Surgery,
Korea University Guro Hospital

P1-03

재골절을 통한 관혈적 정복술과 내고정술을 통한 외상 후 부정교합의 치료

정희용

Chonnam national university

Treatment of post-traumatic malocclusion through open reduction and internal fixation with refracture

Hee-yeoung Jung

Department of Oral and Maxillofacial Surgery, School of Dentistry,
Dental Science Research Institute, Chonnam National University

P1-04

하악골 관절돌기 골절에서 Sliding plate를 이용한 기능적 반견고 고정

소병규

고려대학교 구로병원

Functional Semi-rigid Fixation for Condylar Process Fracture of Mandible using Sliding Plate

Byung-Kyu So

Dept. of Oral and Maxillofacial Surgery,
Korea University Guro Hospital

P1-05

하악 정중부 골절 수술 후 설측 골편 간격에 따른 과두 위치 변화에 대한 후향적 연구

김진우

가천대 길병원 구강악안면외과

Retrospective Study about Condyle Position Change according to Lingual Gap after Operation for Mandibular Symphysis/Parasymphysis Fracture

Jin-woo Kim

Department of Oral & Maxillofacial Surgery,
Gachon University Gil Medical Center

P1-06

부산대학교치과병원 응급실 내원환자의 역학적 조사 및 평가

류지혜

부산대학교치과병원

Evaluation of patients visiting Emergency center at Pusan National University Dental Hospital

Jihye Ryu

Dept. of Oral and Maxillofacial surgery, School of Dentistry,
Pusan National University

P1-07

하악 과두의 외상방 전위의 정복술을 위한 관상돌기 절제술

조현준

전북대 구강외과

Coronoidectomy for Reduction of Superolateral dislocation of Mandible Condyle

Hyun-Jun Jo

Department of Oral and Maxillofacial Surgery, School of Dentistry,
Jeonbuk National University, Jeonju 54896, Republic of Korea

Orthognathic Surgery

P2-01

Deep learning-based discrimination of soft tissue profiles requiring orthognathic surgery by facial photographs

김봉철

원광대학교 대전치과병원

Deep learning-based discrimination of soft tissue profiles requiring orthognathic surgery by facial photographs

Bong Chul Kim

Department of Oral and Maxillofacial Surgery,
Daejeon Dental Hospital,
Wonkwang University College of Dentistry, Daejeon, Korea

P2-02

Three-dimensional stability evaluation after the orthognathic surgery using the invivo absorbent osteosynthesis system

Tadashi Kogou

Oral&Maxillofacial Surgery, Tokyo Dental College

P2-03

A skeletal Class II open bite case whose functional disharmony was improved after surgical-orthodontic treatment

Chiho KADOTA-WATANABE

Department of Maxillofacial Orthognathics,
Tokyo Medical and Dental University

P2-04

양악수술 환자에서 수술 전후 하악과두 위치변화에 대한 삼차원적 분석

김병수

원광대학교 대전치과병원 구강악안면외과

3-dimensional evaluation of condylar position changes following two jaw surgery

Byung Su Kim

Department of Oral and Maxillofacial Surgery,
Daejeon Dental Hospital, College of Dentistry,
Wonkwang University

P2-05

Evaluation of ultrasonic orthognathic surgery with a serrated aggressive knife tip of an ultrasonic bone cutting device

Yusuke Kato

Division of Reconstructive Surgery for Oral and Maxillofacial Region,
Faculty of Dentistry & Graduate School of Medical and Dental Sciences, Niigata University

P2-06

Changes in bone metabolism markers following orthognathic surgery

Daisuke Saito

Division of Reconstructive Surgery for Oral and Maxillofacial Region,
Faculty of Dentistry & Graduate School of Medical and Dental Sciences, Niigata University

P2-07

악교정수술에서 익상판의 처치에 따라 발생하는 합병증의 비교 분석: 과다 출혈, 부정 유합, 청각 이상, 상악골의 재발

문치호

부산대학교치과병원

Comparative Analysis of Complications According to Handling of Pterygoid Plate After Orthognathic Surgery: Severe bleeding, Non-union, Auditory Problem, Skeletal relapse of maxilla

Chi-Ho Moon

Dept. of Oral and Maxillofacial surgery, School of Dentistry,
Pusan National University

P2-08

최소 술전 교정을 동반한 양측성 하악골 시상분할 골절단술: 증례보고

임세정

울산대학교병원

The Mandible Setback surgery with minimal presurgical orthodontics: Case reports

LIM SE JEONG

Department of Oral and Maxillofacial Surgery,
Ulsan University Hospital, University of Ulsan College of Medicine

P2-09

급성 동량 혈액희석법을 이용한 악교정수술

김의현

고려대학교 안암병원 구강악안면외과

Orthognathic surgery with Acute Normovolemic Hemodilution(ANH)

Euy-hyun Kim

Department of Oral and Maxillofacial Surgery,
Korea University Medicine, Seoul, Korea

P2-10

구순구개열 환자에서 편악수술과 양악수술의 안정성 비교

장훈

부산대학교 치과병원 구강악안면외과

Comparing Stability of 1-Jaw Versus 2-Jaw Surgery in Patients with Cleft Lip and Palate

Hun-jang

Department of Oral and Maxillofacial Surgery, School of Dentistry,
Pusan National University

P2-12

양악수술을 위한 디지털 수술 교합

안재명

삼성서울병원 구강악안면외과

Digital Surgical Occlusion for Orthognathic Surgery

Jaemyung Ahn

[1]Dept. of Robotics Engineering, Daegu Gyeongbuk Institute of Science & Technology

[2]Dept. of Oral and maxillofacial surgery, Samsung Medical Center, Sungkyunkwan University School of Medicine

P2-13

구순구개열 환자에 대한 악교정 수술 시에 안정성에 영향을 주는 요소

이원범

부산대학교치과병원

Contributing factors affecting stability After Orthognathic Surgery for Cleft Palate & Lip Patient

Won-Bum LEE

Dept. of Oral and maxillofacial surgery, School of Dentistry, Pusan National University

P2-14

상. 하악 복합체의 시계방향 회전 후 안모의 지연변화: 수술 후 6개월에서 2년

권진주

부산대학교치과병원

Delayed change of facial profile after clockwise rotation of maxillomandibular complex: from postoperative 6months to 2 years

Jin-Ju Kwon

Dept. of Oral and Maxillofacial surgery, School of Dentistry, Pusan National University

P2-15

Surgical-orthodontic treatment case of severe skeletal openbite due to a persistent thumb-sucking habit through growth period

Hiroyuki Kamimoto

Department of Maxillofacial Orthognathics, Graduate School of Medical and Dental Sciences, Tokyo Medical and Dental University

P2-16

상악골 후방 이동 수술 후 비순부 연조직의 변화에 대한 연구

선수윤

경희대학교 치의학전문대학원 구강악안면외과학교실

Study of soft tissue change in upper lip and nose after backward movement of maxilla in orthognathic surgery

Suyun Seon

Department of Oral and Maxillofacial Surgery, School of Dentistry, Kyung Hee University

P2-17

Accuracy of Le Fort I osteotomy with combined computer-aided design/computer-aided manufacturing technology and mixed reality

Masahide KOYACHI

Department of Oral Pathobiological Science and Surgery, Tokyo Dental College, Tokyo, Japan

P2-18

하악전돌증 환자에서 투명교정장치를 이용한 선수술 악교정 치료

김명주

전남대학교 치의학전문대학원. 구강악안면외과학교실. 전남대학교 치의학연구소

Surgery-first Orthognathic Surgery using Clear Orthodontic Appliance in Mandibular Prognathism Patients

Myoung-Ju Kim

Department of Oral and Maxillofacial Surgery, School of Dentistry, Dental Science Research Institute, Chonnam National University

P2-19

CAD/CAM을 이용한 악교정 수술의 정확도 평가: 상악에서의 CT분석

맹지연

서울대학교 치과병원 구강악안면외과

Accuracy of CAD / CAM assisted orthognathic surgery: CT evaluation in Maxilla

Ji Youn Maeng

Seoul National University, Oral and Maxillofacial Surgery

P2-20

측모두부규격 방사선사진 자동 계측 프로그램의 정확도 평가

박동욱

서울대학교 보라매병원

Evaluation of accuracy of automatic tracing program for lateral cephalometric radiograph

Dong-Uk Park

Department of Oral and Maxillofacial Surgery, SMG-SNU Boramae Medical Center

P2-21

악교정수술 후 턱관절 잡음과 통증 변화에 대한 연구 : 선교정접근과 선수술접근에 대한 비교

심유송

전남대병원 구강외과

A comparative study of the changes in the temporomandibular joint clicking and pain after orthognathic surgery between orthodontics-first approach and surgery-first approach

You-Song Sim

Department of Oral and Maxillofacial Surgery, School of Dentistry, Dental Science Research Institute, Chonnam National University

P2-22

3D facial CT를 이용한 전진이부성형술 후의 골격 안정성에 대한 고찰

이동우

경북대학교 치과대학구강악안면외과학 교실

Evaluation of skeletal stability after advancement genioplasty using 3D facial CT

Dong-woo Lee

Dept. of Oral and Maxillofacial surgery, School of Dentistry, Kyungpook National University, Daegu, Republic of Korea

P2-23

전진 이부성형술을 동반한 하악 후퇴술 후 연조직 외형의 변화

김균태

경북대학교 치과대학구강악안면외과학 교실

Soft-tissue responses after advancement genioplasty

Kyoun-Tae Kim

Dept. of Oral and Maxillofacial surgery, School of Dentistry, Kyungpook National University, Daegu, Republic of Korea

P2-24

측모 두부규격방사선사진의 인공지능 기반 골격 분류 진단의 자동화

김진우

이화여자대학교

Deep learning based Automated Skeletal Classification with Lateral Cephalometry without identifying landmarks

Jin-Woo Kim

Department of Oral and Maxillofacial surgery, School of Medicine, Ewha Womans University

P2-25

안면비대칭 교정을 위한, 3D 디자인과 CAD-CAM 기술로 제작한 환자맞춤형 티타늄 고정판을 사용하여, 하악 근심골편의 frontal-ramal inclination(FRI)의 의도적 변화

우민호

서울대학교 치과병원 구강악안면외과

Intentional change of frontal-ramal inclination (FRI) of mandibular proximal segment using patient specific titanium plate with 3D design and CAD-CAM technology for the correction of facial asymmetry

Min-Ho Woo

Department of Oral and Maxillofacial Surgery, Seoul National University Dental hospital, Seoul, Korea

P2-26

상악구치부 분절골절단술(Segmental Osteomy): 증례보고

문미리

청주한국병원

Maxillary posterior segmental osteomy; Case report

Mi Ri Moon

Department of Oral and maxillofacial surgery, Cheongju Hankook hospital

P2-27

하악 윤곽 수술 후 제3대구치와 Clenching 분류에 따른 하악골의 기계적 안정성 평가

김재은

경희대학교 일반대학원 치의학과

Effect of the position of 3rd molar on the mechanical stability of the mandible after mandibular contouring surgery during clenching task

Kim Jae-eun

Department of Oral & Maxillofacial Surgery, Department of Dentistry, Graduate School, Kyung Hee University, Seoul, Korea

P2-28

악교정수술에서 AR nevigation을 이용한 술적접근법: 증례보고

조예준

조선대학교 구강악안면외과학교실

A Surgical approach using Augmented Reality(AR) navigation in orthognathic Surgery: Case report

Yejoon Jo

Department of Oral and Maxillofacial Surgery, School of Dentistry, Chosun University

Tumor & Reconstruction

P3-01

턱의 사구맥관종 : 증례보고

이민우

단국대학교 치과대학 부속치과병원

Glomangioma of the chin a case report

Min-Woo Lee

Department of Oral & Maxillofacial Surgery, College of Dentistry, Dankook University

P3-02

증례보고 : 우측 하악골체에 발생한 골종

이가형

원광대학교 대전치과병원 구강악안면외과

Case report : Large Osteotoma on Right Mandible

Ga Hyung Lee

Dept. of Oral and maxillofacial surgery, Daejeon Dental Hospital, College of Dentistry, Wonkwang University

P3-03

가토모델에서 3D 환자 맞춤형 티타늄 임플란트 및 외과용 골 절제 유도기를 이용한 하악골 절제 및 재건수술의 정확도에 대한 연구

김민근

강릉원주대학교

A Study on the Accuracy of the Mandibulectomy and Reconstructive Surgery Using 3D Customized Implants and Surgical Guides in a Rabbit Model

Min-Keun Kim

Department of Oral and Maxillofacial Surgery, College of dentistry, Gangneung-Wonju National University

P3-04

재발된 비구개관낭에서 발견된 석회화물질

양지호

원광대학교치과대학대전치과병원

Recurred Nasopalatine Duct Cyst with Intraluminal Calcification

Ji Ho Yang

Dept. of Oral and maxillofacial surgery, Daejeon Dental Hospital, College of Dentistry, Wonkwang University

P3-05

스스로 크기가 감소한 좌측 협점막의 백반증

유정훈

원광대학교 대전 치과병원

Spontaneously decreased leukoplakia on left buccal mucosa

Jeong Hun Yoo

Dept. of Oral and maxillofacial surgery, Daejeon Dental Hospital, College of Dentistry, Wonkwang University

P3-06

하악 후방부위 결손의 재건을 위한 유경 협부 지방 피판의 사용: 증례보고

이현우

강동경희대학교병원

The Use of a Pedicled Buccal Fat Pad for Reconstruction of Posterior Mandibular Defects: Case Report

Hyenwoo Lee

Kyung-Hee University Dental Hospital at Gangdong

P3-07

모반양 기저세포암종 증후군과 연관된 다발성 각화낭성 치성종양의 치료: 11년간의 추적관찰

김훈민

울산대학교병원 구강악안면외과

Management of multiple keratocystic odontogenic tumors associated with nevoid basal cell carcinoma syndrome: A case report of 11-year follow-up

Hoon-Min Kim

Department of Oral and Maxillofacial Surgery, Ulsan University Hospital, University of Ulsan College of Medicine, Ulsan, Korea

P3-08

증례보고: 구강에서 발생한 다발성 원발성 암종

윤주형

강릉원주대학교 치과대학 구강악안면외과

Case Report: Multiple Primary Carcinomas in Oral Cavity

Joo-Hyung Yoon

Department of Oral and Maxillofacial Surgery, College of dentistry, Gangneung-Wonju National University

P3-09

하악골에서 발생한 거대세포 수복성 육아종 의 수술적 치료: 증례보고 및 문헌고찰

정준영

전남대치과병원 구강악안면외과

Surgical treatment of giant cell reparative granuloma of mandible: a case report and literature review

Jun-Young Jeong

Department of Oral and Maxillofacial Surgery, School of Dentistry, Dental Science Research Institute, Chonnam National University

P3-10

구강안안면영역의 낭종 제거 후 합병증 및 골 치유에 대한 고찰

정용욱

서울대학교 치과병원

A study on complications and bone healing after cyst enucleation in oral and maxillofacial area

Yongwook Jung

Department of Oral and maxillofacial surgery, Seoul National University Dental Hospital

P3-11

중심성 황색종: 증례 보고

박준상

서울대학교 치과병원

Central xanthoma: Report of two cases

Jun-Sang Park

Department of Oral and maxillofacial surgery, Seoul National University Dental Hospital

P3-12

하악골에서 시상분할골절단술을 이용한 함치성 낭종의 외과적 적출술: 증례보고

정지혜

한국병원구강악안면외과

Surgical Treatment of LargeDentigerous Cyst by Sagittal Split Ramus Osteotomy: A Case Report

JIHYE JEONG

Department of Oral and maxillofacial surgery, Cheongju Hankook hospital

P3-13

비골피판을 이용한 상악골의 재건수술 : 증례 보고

조혜현

한국병원구강악안면외과

Maxillary bone reconstruction using a free fibular flap : a case report

Hyehyeon Jo

Department of Oral and maxillofacial surgery, Cheongju Hankook hospital

P3-14

구강내 악성병소의 제거 후 일차봉합으로 수복한 환자에 대한 후향적 연구

최준석

조선대학교치의학전문대학원구강악안면외과학교실

Retrospective study of patients repaired to primary closure after removal of malignancy lesion on oral area

Jun-Seok Choi

Department of Oral and Maxillofacial Surgery, School of Dentistry, Chosun University

P3-15

구강 내 점막 피판과 유리 전완요 피판을 이용한 거대한 구강 상악동 누공의 폐쇄

이경민

강릉원주대학교 치과병원 구강악안면외과

Huge oroantral fistula closure using intraoral mucosal flap and radial forearm free flap

Kyung-Min Lee

Department of Oral and Maxillofacial Surgery, College of dentistry, Gangneung-Wonju National University

P3-16

관골부의 골침윤을 동반한 결절성 근막염의 증례보고
심우철
가천대 길병원 구강악안면외과

Nodular Fasciitis with Bony Erosion of the Zygomatic Area : A case Report
Woo-chul Shim
Department of Oral & Maxillofacial Surgery,
Gachon University Gil Medical Center

P3-17

다발성 표재성 점액류: 증례보고
윤성빈
서울대학교 치과병원 구강악안면외과

Multiple superficial mucoceles: a case report
Sungbin Youn
Department of Oral and Maxillofacial Surgery,
Seoul National University Dental Hospital

P3-18

Navigation-assisted surgical resection of central giant cell granuloma in temporal bone and skull base: A case report
Tsung-Hsun HO
Department of Oral & Maxillofacial Surgery,
National Taiwan University Hospital

P3-19

유리전완피판술을 적용한 구강암수술 환자들의 후향적 임상연구
마윤희
부산대학교 치의학전문대학원 구강악안면외과학교실

A retrospective study on oral cancer patients with radial free tissue microvascular transfer
Yoon Hee Ma
Dept. of Oral and maxillofacial surgery, School of Dentistry,
Pusan National University

P3-20

측두 하악 관절에 발생한 거대 연골모세포종 : 증례 보고
배희연
강동경희대학교 치과대학병원

Huge Chondroblastoma on Temporomandibular joint : a case report
Heeyeon Bae
Dept. of Oral and Maxillofacial surgery,
Kyung-Hee University Dental Hospital at Gangdong

P3-21

상완 내측부위의 전층 피부이식을 이용한 전완 유리 피판의 재건의 치험례
오혜민
삼성서울병원 구강악안면외과

Management of Radial Forearm Free Flap Donor Site Using Upper Inner Arm Full-thickness Skin Graft
Hyemin OH
Dept. of Oral and maxillofacial surgery, Samsung Medical Center,
Sungkyunkwan University School of Medicine.

P3-22

비골 유리피판 재건술이 동반된 중증 하악골 병발 OSCC 암 종환자들의 수술 증례에 대한 예후 분석
전민아
부산대학교치과병원 구강악안면외과

A retrospective analysis of surgical cases of patients with advanced stage OSCC patients with Fibula Free Flap Reconstruction
Min-A Jeon
Dept. of Oral and maxillofacial surgery, School of Dentistry,
Pusan National University

P3-23

유리비골피판을 이용한 구강암 환자의 재건례에서 관찰된 혈관경 골화: 증례보고
김민경
국립암센터

Pedicle ossification of an oral cancer patient with fibular osteocutaneous free flap: A case report
Kim Min-Gyeong
National cancer center

P3-24

악골에 발생한 소아 근섬유종: 증례 보고
김수민
서울대학교치과병원 구강악안면외과

Myofibroma in mandible of child: case report
Sumin Kim
Department of Oral and Maxillofacial Surgery,
Seoul National University Dental Hospital

P3-25

턱관절 양성 병소의 절제후 기성 인공관절을 이용한 턱관절 전치환술: 증례보고 및 고찰
이성재
고려대학교 안암병원 구강악안면외과

Total Replacement of Temporo-mandibular Joint Using Stock Alloplastic Joint Prosthesis after Resection of Benign Lesion: A Case Report
Sung-Jae LEE
Dept. of Oral and Maxillofacial Surgery, Anam Hospital,
Korea University

P3-26

측두하악관절에 발생한 거대세포종양 : 증례보고
고지훈
연세대학교 치과대학 구강악안면외과학교실 (강남세브란스병원)

Giant Cell Tumor of Temporomandibular Joint : A report of two cases
Ji-Hoon KO
Department of Oral and Maxillofacial Surgery,
Gangnam Severance Hospital,
Yonsei University College of Dentistry, Seoul, Korea

P3-27

이하선의 점액표피양암종 : 증례보고
이규현
서울성모병원 구강악안면외과

Mucoepidermoid carcinoma of the parotid gland : Case report
KyuHyeon Lee
Department of Oral and Maxillofacial surgery

P3-30

구강악안면영역에서의 장골이식술의 활용 : 증례보고
허성휘
청주한국병원

Application of iliac bone graft in the oral and maxillofacial area ; Case report
Sunghwi Hur
Department of Oral and maxillofacial surgery,
Cheongju Hankook General Hospital

Implant

P4-01

임플란트 식립을 위한 치조골 재생에 사용되는 3차원 맞춤형 티타늄 차폐막: 증례보고
김창
한양대학교 의과대학 구강악안면외과

Three-dimensional Customized Titanium Mesh in Alveolar Bone Regeneration for Implant Therapy: A Case Report
Chang Kim
Division of Oral and Maxillofacial Surgery, Department of Dentistry,
College of Medicine, Hanyang University, Seoul, Republic of Korea

P4-02

치근단 질환으로 심한 치조골소실을 보였던 하악구치부위의 골유도재생술식 및 임플란트 수복의 장기 추적 증례보고
홍인석
전북대학교 치과병원 구강악안면외과

A case report of long-term follow-up of guided bone regeneration technique and implant restoration at the mandibular molar area with severe alveolar bone loss from a periapical lesion.
Inseok Hong
Department of Oral and Maxillofacial Surgery, School of Dentistry,
Chonbuk National University

P4-03

발치 후 즉시 식립 임플란트를 이용한 전악 재건술: 증례보고
오민석
선치과병원 구강악안면외과

Extraction with Immediate Full mouth implant Surgery at Mx.edentulous patient, No surgical Stent
Min-Seok Oh
Department of Oral and Maxillofacial Surgery, Sun Dental Hospital,
Daejeon, Korea

P4-04

전신질환과 임플란트 수술의 상관관계에 대한 문헌조사
서동준
조선대학교 치과병원 구강악안면외과

Implant surgery in patients with systemic disease literature review
Dong-jun Seo
Department of oral and maxillofacial surgery,
Chosun university dental hospital

P4-05

발치후 즉시식립된 임플란트의 장기 관찰 연구
유한창
분당서울대학교병원

Long term observation of immediately-installed implants after extraction: Retrospective clinical study
Hanchang YU
Seoul National University Bundang Hospital

P4-06

하치조신경전위술을 이용한 임플란트 식립: 증례보고
박상래
청주 한국병원 구강외과

Implant placement using inferior alveolar nerve transposition: a case report
Sangrae Park
Department of Oral and maxillofacial surgery,
Cheongju Hankook hospital

P4-07

Deproteinized porcine-derived bone graft를 이용한 3차원적인 치조골이식: 케이스 레포트
김영현
대구카톨릭병원 구강악안면외과

Simplified three-dimensional ridge augmentation using a deproteinized porcine-derived bone graft: A case series
Young-Hyun Kim
Resident, Department of Dentistry and Oral and Maxillofacial Surgery, Catholic University Medical Center of Daegu. Republic of Korea.

P4-08

임플란트 수술 후 출혈로 나타난 파종성 혈관내 응고: 증례보고 및 문헌 고찰
양재영
부산대학교 치과병원 구강외과

Disseminated intravascular coagulation presenting as Hemorrhage after dental Implant surgery: A case report and literature review
Jae-Young Yang
Dept. of Oral and Maxillofacial surgery, School of Dentistry,
Pusan National University

P4-09

종물 절제 수술 후 광범위한 하악골 결손을 가진 환자에서 interpositional bone graft 부위에 식립한 implant의 증례 보고
최송제
전남대치과병원 구강악안면외과

Implant Treatment on the Area of Interpositional Bone Graft for the Management of Extensive Mandibular Defect After Tumor Resection Surgery: Report of Two Cases
Song Jay Choi
Department of Oral and Maxillofacial Surgery, School of Dentistry,
Dental Science Research Institute, Chonnam National University

P4-10

하악 골체부 이식술을 이용하여 증대된 치조골에 식립한 임플란트의 예후
김솔아
부산대학교치과병원

Prognosis of dental implants placed in augmented alveolar bone using mandibular block bone grafts
Sola Kim
Dept. of Oral and Maxillofacial surgery, School of Dentistry,
Pusan National University

P4-11

Biphasic Calcium phosphate와 탈단백 이종골 이식재를 이용한 상악동 거상술: 전향적 무작위 비교임상 실험
김경미
조선대학교 치과병원 구강악안면외과

A Comparative Study with Biphasic Calcium Phosphate to Deproteinized Bovine Bone in Maxillary Sinus Augmentation : A Prospective Randomized Controlled Clinical Trial
Gyeong-Mi Kim
Department of Oral and Maxillofacial Surgery, School of Dentistry,
Chosun University, Gwangju, Republic of Korea

P4-12

짧은 길이 임플란트의 임상적 평가: 이전 발표된 증례들의 장기간 평가
이중곤
분당서울대학교 병원

Clinical evaluation of short length implants; long -term follow-up study of previous published article
Junggon Lee
Department of Dentistry,
Seoul National University Bundang Hospital

P4-13

수직골 소실이 심한 치조골 부위에서SMARTbuilder™ 의 유용성
정겨운
조선대학교 치의학전문대학원 구강악안면외과학교실

Usefulness of SMARTbuilder™ for bone regeneration in severe vertical alveolar bone defects
Gyeo-woon Jung
Department of Oral and Maxillofacial Surgery School of Dentistry,
Chosun University

P4-14

티타늄메쉬를 이용한 치조골증대술 후 발생한 창상열개의 보존적 치료 기법
구정귀
국군수도병원

Conservative treatment technique for wound dehiscence after ridge augmentation using titanium mesh
Jeong-Kui Ku
Department of Oral and Maxillofacial Surgery,
Armed Forces Capital Dental Hospital,
Armed Forces Medical Command, Seongnam, Korea

P4-15

Tenting abutment를 활용한 임플란트 식립 및 3차원적인 치조골 증대의 증례
우라현
대구가톨릭의료원 구강악안면외과

Simplified 3-Dimensional Ridge AugmentationUsing A Tenting Abutment
Ra-Hyeon Woo
Department of Dentistry and Oral and Maxillofacial Surgery,
Catholic University Medical Center of Daegu, Korea

P4-16

Locking taper implant와 screw type implant의 식립 5년 후 변연골 흡수에 대한 후향적 연구
최순규
청주한국병원

A retrospective study on marginal bone resorption 5 years after placement of locking taper implant and screw type implant
SUN GYU CHOI
Department of Oral and maxillofacial surgery,
CheongjuHankook hospital

P4-17

골치밀화 드릴링을 이용한 성공적인 임플란트 식립 : 증례보고
이성민
이대목동병원 구강악안면외과

Successful implant installation using bone densification drilling ; Case report
Sung-Min Lee
Department of Oral and Maxillofacial Surgery,
Ewha Womans University Mok-Dong Hospital, Seoul, Korea

TMJ

P5-01

인공 턱관절 치환술을 통한 측두하악관절 장애의 치료
강동욱
삼성서울병원

Treatment of temporomandibular joint disorders with artificial joint replacement
Dong-Ohk KANG
Dept. of Oral and maxillofacial surgery, Samsung Medical Center,
Sungkyunkwan University School of Medicine.

P5-02

측두하악관절에서 발생한 칼슘피로인산염 침착증의 증례보고 및 문헌 고찰
정준호
연세대학교 치과대학 구강악안면외과학교실 (강남세브란스병원)

Calcium Pyrophosphate Dihydrate Deposition in Temporomandibular Joint : a case report and literature review
Joon-Ho Jung
Department of Oral and Maxillofacial Surgery,
Gangnam Severance Hospital,
Yonsei University College of Dentistry, Seoul, Korea

P5-03

An ultrasonographic evaluation of masseter muscle thickness in patients with parafunctional habit
어드후 미치드게렐
이대서울병원

An ultrasonographic evaluation of masseter muscle thickness in patients with parafunctional habit
Michidgerel ODKHUU
Department of Oral and Maxillofacial Surgery,
Ewha Womans University Seoul Hospital

Basic Research

P6-01

정상교합자와 3급 부정교합 환자에서 하악의 형태와 저작근의 두께 간 연관성 비교 연구
김원용
단국대학교 치과대학 구강악안면외과

Correlation between mandibular morphology and masticatory muscle thickness in young korean adults between normal occlusion and class III malocclusion
Won Yong KIM
Dept. of Oral and maxillofacial surgery, College of Dentistry, Dankook University

P6-02

치아 조직에서 유래된 줄기세포의 상아모세포/골모세포로의 분화 가능성 및 효율성에 대한 17β-estradiol의 효과 평가
강영훈
창원경상대학교병원

Evaluation of odonto/osteogenic differentiation potential from different regions derived dental tissue stem cells and effect of 17β-estradiol on efficiency
Young-Hoon Kang
Department of Oral and Maxillofacial Surgery, Changwon Gyeongsang National University

P6-03

실크 세리신과는 다른 4-헥실레조시놀의 혈관내피세포 분화 유도 경로
강예진
강릉원주대학교 치과대학 구강악안면외과

Silk sericin and 4-Hexylresorcinol differentiate endothelial cells via different mechanism in diabetic model
Yei-Jin Kang
Oral and Maxillofacial Surgery, College of dentistry Gangneung-Wonju National University

P6-04

쥐 모델에서 손상된 궁둥 신경의 재생에 미치는 저온플라즈마 효과
박진영
부산대학교 치과병원

Effect of Non-thermal Plasma on the Regeneration of Injured Sciatic Nerve in Rat Model
Jinyoung Park
Dept. of Oral and maxillofacial surgery, School of Dentistry, Pusan National University

P6-05

AI를 이용한 CBCT의 airway auto-segmentation
박진영
부산대학교 치과병원

Application of intelligent automatic segmentation of airway from cone-beam computed tomography
Jinyoung Park
Dept. of Oral and maxillofacial surgery, School of Dentistry, Pusan National University

P6-06

Increased risk of Osteonecrosis of the jaw following dentoalveolar surgery in patients who administrated antiresorptives
Li Jingwen
Department of Oral and Maxillofacial Surgery, Ewha Womans University Medical Center

P6-08

Fatty liver index와 periodontitis의 연관성
김지연
가톨릭대학교 성빈센트병원 치과 - 구강악안면외과

Association between fatty liver index and periodontitis
Ji-Youn Kim
Division of Oral & Maxillofacial Surgery, Department of Dentistry, St. Vincent's Hospital, College of Medicine, The Catholic University of Korea

Dentoalveolar Surgery

P7-01

단순골낭의 외과적 치료 후 치유에 관한 연구
신영진
강동경희대학교치과병원 구강악안면외과학교실

The Study on Healing after Surgical Treatment of Simple Bone cyst
Youngjin Shin
Dept. of Oral and Maxillofacial surgery, Kyung-Hee University Dental Hospital at Gangdong

P7-02

중등도 골흡수 환자에서 하악골 블록형 골이식술에 이은 3차원 수술용 가이드를 이용한 무절개 임플란트 수술의 효용성
이정민
부산대학교병원 구강악안면외과

Efficacy of flapless implant surgery with 3D surgical guide following mandibular body block bone graft in moderate alveolar bone deficiency
Jung-Min Lee
Dept. of Oral and Maxillofacial Surgery, School of dentistry, Pusan National University

P7-03

증례 보고: 수직적 골량이 부족한, 치유가 완료된 치조골에서 상악동 거상술, 자가골 이식술을 동반한 자가 치아 이식술의 7년 경과 관찰
윤주형
강릉원주대학교 치과대학 구강악안면외과

Case Report: 7-Year Follow-up of Autogenous Tooth Transplantation with Sinus Elevation, and Autogenous Bone Graft on Vertically Deficient Healed Ridge
Joo-Hyung Yoon
Department of Oral and Maxillofacial Surgery, College of dentistry, Gangneung-Wonju National University

Deformity

P8-01

Correction of facial deficiency using three-dimensionally planned and designed custom-made titanium implant – A case report
Santhiya Iswarya Vinothini UDAYAKUMAR
Department of Oral and Maxillofacial Surgery, Sungkyungkwan University, School of Medicine, Samsung Medical Centre, Seoul, Republic of Korea.

P8-02

이부 편위된 환자의 3D CBCT영상을 이용한 악안면 비대칭 분류
장재호
서울대학교 치과병원 구강악안면외과

Classification of facial asymmetry using 3D Cone beam computerized tomograhy images in paitents with menton deviation
Jaeho Jang
Seoul national university dental hospital

P8-03

가상현실을 이용한 구순열 수술 교육
김희진
조선대학교 치의학전문대학원 구강악안면외과학교실

Cleft lip surgery education with VR
Hee-Jin Kim
Department of Oral and Maxillofacial Surgery, School of Dentistry, Chosun University

P8-04

편측측방얼굴파열을 가진 반안면왜소증 환자의 구륜근 재배치술과 Z-성형술을 이용한 구각성형술 및 누공절제술 치험례
이준영
조선대학교 치의학전문대학원 구강악안면외과학교실

Deformity Management in Hemifacial Microsomia with Unilateral Transverse Facial Cleft: A Case Report
JunYeong Lee
Chonnam national university

P8-05

환자 맞춤형 티타늄 및 PEKK 임플란트 보형물을 활용한 악안면 결손의 수복

김시영

서울대학교 치과병원 구강악안면외과

Maxillofacial defect restoration using patient-specific impants made of titanium or PEKK

Ci young Kim

Department of Oral and Maxillofacial Surgery,
Seoul National University Dental Hospital

P8-06

LED surface scanner를 사용한 구순열 환자에서의 술전 악정형치료 결과에 대한 3차원적 분석

김진규

연세대학교 치과대학 구강악안면외과학 교실

Three-dimensional analysis of outcome for presurgical infant orthopedics in cleft lip patients using an LED surface scanner

Jin-Kyu Kim

Department of Oral and Maxillofacial surgery, College of Dentistry,
Yonsei University, Seoul, Korea

P8-07

유전적 돌연변이가 의심되는 소아환자에서의 미맹출 치아와 관련된 다발성 낭성병소에서의 조대술 영구치

박종훈

전북대학교 치과대학 구강악안면외과학교실

Marsupializaion in multiple cystic lesion associated with multiple cystic lesion in Pediatric patients suspected of genetic mutation

Jong-hoon Park

Department of Oral and Maxillofacial surgery, School of Dentistry,
Jeonbuk National University

P8-08

비인강폐쇄부전에 의한 발음 장애를 가진 성인의 치료

강동철

전북대학교 치과병원 구강악안면외과

Effective treatment of Articulation disorder: Application of Sppech-aids

D. C. Kang

Department of Oral and Maxillofacial Surgery, School of dentistry,
Jeon Buk National University

Infection

P9-01

백악질-골성 이형성증의 이차성 감염 : 증례보고

김휘강

원광대학교 대전 치과병원 구강악안면외과

Cemento-osseous dysplasia with secondary infection : A Case Report

Hwikang Kim

Department of Oral and Maxillofacial Surgery,
Daejeon Dental Hospital,
College of Dentistry, Wonkwang University

P9-02

최근 8년간 노인 구강악안면 감염환자에 대한 임상통계학적 연구

김성욱

인제대학교 상계백병원 구강악안면외과

A Clinicostastical study of Oral and Maxillofacial infected elderly patients for the last 8 years

Sung-Ouk Kim

Dept. of Oral and Maxillofacial surgery,
Inje University Sanggye Paik Hospital

P9-03

Denosumab(Prolia)에 의한 악골 괴사에 관한 후향적 연구

홍유진

경북대학교치과병원

Retrospective study of Denosumab(Prolia)-induced Osteonecrosis of Jaws

Yoo Jin Hong

Kyungpook National Dental Hospital

P9-04

약물관련골괴사(MRONJ)로 인해 발생한 병리적 골절을 유발하는 요인에 대한 고찰

서주연

경북대학교 치과대학 구강악안면외과학교실

A study of factors influencing Pathologic Fractures in Medication related osteonecrosis of the jaw (MRONJ)

Ju-Yeon Seo

Dept. of Oral & Maxillofacial Surgery, School of Dentistry,
Kyungpook National University, Daegu, Korea

P9-05

치통의 전구 증상 후, 뇌수막염을 동반한 대상포진 감염의 증례

조주연

계명대학교 의과대학 동산병원 치과

Herpes zoster infection with meningitis presenting prodromal toothache

Juyeon Cho

Department of Dentistry,
Keimyung University Dongsan Hospital, Daegu, South Korea

P9-06

Daratumumab 복용으로 인한 다발성 악골괴사증의 특이 사례 보고

박영롱

이대목동병원 구강악안면외과

A rare case of multiple osteonecrosis of the jaw caused by daratumumab

Young-Long Park

Department of Oral and Maxillofacial Surgery,
Ewha Womans University Mok-Dong Hospital, Seoul, Korea

P9-07

악안면 영역 감염에서의 항생제 초기 선택

홍창현

원광대학교 치과병원

The study for first choice antibiotics in maxillofacial infection

ChangHyun HONG

Department of Oral and maxillofacial surgery, college of dentistry,
Wonkwang University, Korea

P9-08

백악-골이형성 환자에서 증상 발현에 영향을 주는 요소

남인혜

부산대학교치과병원 구강악안면외과

Factors influencing symptom on Cemeto-osseous dysplasia patient

In-hye NAM

Dept. of Oral and maxillofacial surgery, School of Dentistry,
Pusan National University

P9-09

부갑상선 호르몬제를 이용한 비스포스포네이트 관련 골괴사증 환자의 치료경과 증례보고

신원택

이대서울병원

Case reports : The Trratment of MRONJ with rhPTH

WonTack Shin

Dept. of Oral and maxillofacial surgery,
Ewha Womans University Seoul Medical center

Trauma

P1-01

Correlation between sports-related oral and maxillofacial injuries and head injuries: a 5-year retrospective study, Pusan National University Dental Hospital

Han-Kyul Park*, Jin-Young Park, Jae-Min Song, Jae-Yeol Lee, Yong-Deok Kim, Sang-Hun Shin, Uk-Kyu Kim, Dae-Seok Hwang

Dept. of Oral and Maxillofacial Surgery, School of Dentistry, Pusan National University Authors

Recently, as the number of people who play in various sports activities increases, the proportion of patients with trauma to the head and neck area is increasing. Trauma to the head and neck area may appear as a single region injury in the oral and maxillofacial area, but in some cases, injuries to both area may appear together depending on the type of impact. In addition, although the oral and maxillofacial area was shocked, delayed complications may occur in the head.

This study was conducted on patients who visited the emergency department of Pusan National University Dental Hospital for 5 years from January 2014 to December 2018. Of the 517 patients who had injured to the oral and maxillofacial area during sports activities, patients with head injuries or neurological symptoms were included. Clinical and radiographic examination were performed for identify of oral and maxillofacial injuries. The information of physical examination results and neurological manifestations at the time of arrival to the emergency department were collected through medical records. Through this, we tried to identify whether there was a injury to the head and to find out the correlation with the injuries of the oral and maxillofacial area.

P1-02

Evaluation for quality of sleep using portable polysomnography device before and after intermaxillary fixation

Kyeong-Soo Ko*, Yeh-Jin Kwon, Byung-Kyu So, Moo-Kyeong Kim, Hyun-Je Kim, Dong-hyuck Kim, Ho-Kyung Lim, Eui-Seok Lee

Dept. of Oral and Maxillofacial Surgery, Korea University Guro Hospital

Introduction

Although, there were some reports of sleep apnea in patients with limited nasal-breathing and permitted oral-breathing by anatomical barriers such as nasal obstruction and chronic maxillary sinusitis, but there was a lack of research on the relationship between mouth or nasal breathing and sleep apnea because it is difficult to forcibly induce only a single breathing method in human studies. Therefore, study was conducted to analyze the effect of artificial restrictions of mouth breathing on the sleep index using a portable polysomnography device in cases such as maxillofacial trauma patients that forced inter-maxillary fixation are required for therapeutic purposes.

Methods and Materials

This study was conducted on 13 patients with mandibular simple fractures. Each patient performed a polysomnography test using a portable polysomnography device after performing an inter-maxillary fixation under local anesthesia using an arch bar or a skeletal anchorage system screw for fracture treatment. After that, open or close reduction are completed, the same test was performed with removal of the inter-maxillary fixation. The apnea and hypopnea index, respiratory index, snoring times per hour, average oxygen saturation, and oxygen desaturation index were compared and analyzed. The effects of gender, body mass index, and angle's classification on the results were also analyzed. The statistical method used wilcoxon signed ranks test and the significance level was 0.05.

Results

The sleep index values were generally lower when the mouth opening was possible. Gender and angle's classification had no effect on the results. When the body mass index was 25 or higher, the difference between the apnea and hypopnea index before and after intermaxillary fixation was observed ($p < 0.05$), and no significance was observed for other indices.

Conclusion

In cases that the body mass index is high, when oral breathing is restricted, sleep apnea may tends to be greater.

P1-03

Treatment of post-traumatic malocclusion through open reduction and internal fixation with refracture

Hee-Yeoung Jung*, You-Song Sim, Song-Jay Choi, Myoung-Ju Kim, Jaeyoung Ryu, Jeong- Joon Han, Min-Suk Kook, Hong-Ju Park, Hee-Kyun Oh, Seung-gon Jung

Department of Oral and Maxillofacial Surgery, School of Dentistry, Dental Science Research Institute, Chonnam National University

Introduction

If proper treatment is not performed after facial trauma, malocclusion is one of the complications that can appear with high probability.
In this case, the malocclusion can be treated through open reduction and internal fixation (ORIF) with refracture.

Purpose

In patients complaining post-traumatic malocclusion with delayed surgical treatment or improper operation, ORIF with refracture were performed.
And the postoperative outcome and prognosis of open reduction and internal fixation with refracture were evaluated. In this study, we would like to investigate the effectiveness of ORIF with refracture.

Methods

Medical records and radiographic images of 12 patients with post-traumatic malocclusion who underwent ORIF with refracture, between 2013 and 2020, were investigated.

Result

There were 3 out of 12 cases where malocclusion was not resolved after ORIF with refracture. The remained malocclusion was resolved with orthognathic surgery with orthodontic treatment.
Postoperative complications other than malocclusion were mouth opening limitation, hypoesthesia, and facial asymmetry.
Four of the 12 patients underwent one more operation to resolve these complications.

Conclusion

It is assumed that ORIF with refracture can be and effective method for resolving post-traumatic malocclusion due to delayed or inadequate surgery.

P1-04

Functional Semi-rigid Fixation for Condylar Process Fracture of Mandible using Sliding Plate

Byung-Kyu So*, Yeh-Jin Kwon, Kyeong-Soo Ko, Moo-Kyeong Kim, Hyun-Je Kim, Hyon-Seok Jang, Dong-Hyuck Kim, Ho-Kyung Lim, Eui-Seok Lee

Dept. of Oral and Maxillofacial Surgery, Korea University Guro Hospital

Introduction

Standard open reduction techniques in condylar process fracture was rigid fixation with extraoral or intraoral approach with endoscope. However, occlusal displacement was often occurs after surgery because it was difficult to reduce fractured

fragment precisely. To overcome this limitation, this study was operated using functional semi-rigid fixation with sliding plate that could prevent lateral movement of fractured segment and induce more correct reduction by masticatory neuromuscular function. In our study, functional semi-rigid fixation was compared with the rigid fixation.

Method and materials
Among 34 patients who had one-sided condylar process fracture, 17 patients was treated rigid fixation, and the others was treated functional fixation with sliding plate. All patients were taken panoramic radiographic images before, right after, and 6 months after surgery. In panoramic view, ramus height as the distance between the point of mandibular angle (Gonion, Go) and the uppermost point of condylar process (Condylion, Co), and the condylar process inclination as the angle between the line that connect the both Gonion points and the extended center line of condylar process were measured. In addition, differences between fractured side and normal side were calculated. Differences of surgical outcomes between 2 groups and change of post-operative deviations within each group were analyzed with calculated ramus height and condylar process inclination. Also, operation time between the 2 groups was analyzed. Mann-Whitney U test, Wilcoxon signed-rank test and independent T-test were used as statistical analysis methods individually. Significant level was set as 0.05.

Results
Compared ramus height and condylar process inclination between the two groups, there was no statistical significance at post-operative immediately and 6 months post-operatively. Compared ramus height and condylar process inclination within each group, regardless of follow-up timing, no statistical significances were observed. Functional semi-rigid fixation group recorded significantly shorter operation time than rigid fixation group (p = 0.022).

Conclusion
Functional semi-rigid fixation and pre-existing rigid fixation shows no differences in effectiveness and stability of surgery. In terms of operation time, functional semi-rigid fixation was superior to rigid fixation.

P1-05

Retrospective Study about Condyle Position Change according to Lingual Gap after Operation for Mandibular Symphysis/ Parasymphysis Fracture

Jin-woo Kim*, Jin-yong Cho, Sung-beom Kim

Department of Oral & Maxillofacial Surgery,
Gachon University Gil Medical Center

Purpose
The aim of study is to evaluate the position change of mandibular condyle according to lingual gap of patients who underwent open reduction and internal fixation (ORIF) for mandibular symphysis and parasymphysis fractures.

Materials and methods
The medical records of 15 patients who underwent operation of mandibular symphysis and parasymphysis fractures from January 1, 2013 to June 30, 2020 were analyzed retrospectively.
Largest lingual gaps between fragments in the anterior mandible were measured using axial view of computed tomography (CT) and cone-beam computed tomography (CBCT) before and after operation.
The positions of condyle after operation were evaluated subjectively using postoperative image.
According to the patterns of fracture, vertical fractures in buccolingual direction were classified as "Vertical group" and oblique fractures were classified as "Oblique group"
To evaluate change of intercondylar distance according to lingual gap, the CBCT of 6 patients without mandible fracture was reconstructed three-dimensionally and mandible was separated into left and right bone fragment based on symphysis.
The change in the intercondylar distance according to lingual gap was measured.

Results
In 133 patients who underwent mandibular symphysis fracture caused by trauma, the patients combined with mandibular body or condyle fracture, with comminuted fracture, fixated using reconstruction plate, without postoperative CT were excluded. Of the 15 patients, 12 were male, and 3 were female and mean age was 38.4(±17.7).
The lingual gaps before operation were measured from 0.84 mm to 13.46 mm and the mean gap was 3.69(±3.29) mm. The mean lingual gaps after operation were 1.05(±0.81) mm.
The mean of the lingual gap of "Vertical group" and "Oblique group" before operation were 2.27(±1.28) mm and 6.52(±4.39) mm, respectively. The difference between two patterns was statistically significant ($p<0.05$).
The mean of the postoperative lingual gap of "Vertical group" and "Oblique group" were 0.82(±0.18) mm and 1.51(±1.36) mm, respectively ($p>=0.05$).
In the assessment of postoperative condyle position, 14 patients were evaluated as normal and 1 was evaluated as abnormal.
In patients without mandible fracture, the average of intercondylar distance was 125.9(±7.43) mm. If lingual gap was 1 mm, intercondylar distance increased by 4.83(±0.24) mm on average.

Conclusion
In patients with mandibular symphysis fracture, when patients underwent reduction and internal fixation on buccal side by transoral approach, if lingual gap was widened 1 mm, postoperative intercondylar distance can increase over 4 mm. In addition, if mandible is fractured obliquely in buccolingual direction, lingual gap can be more widened than fractured vertically. Therefore, surgeons should be cautious about reduction and fixation.

P1-06

Evaluation of patients visiting Emergency center at Pusan National University Dental Hospital

Jihye Ryu*, Han-Kyul Park, Jae-Min Song, Jae-Yeol Lee, Dae-Seok Hwang, Yong-Deok Kim, Uk-Kyu Kim, Sang-Hun Shin

Dept. of Oral and Maxillofacial surgery, School of Dentistry, Pusan National University

With recent increase in time spent on leisure and increasing demands on various sports activity, the frequency of maxillofacial trauma has also coincide with these trend. Not only the frequency but the severity and the pattern of injuries vary depend on environmental and socioregional factors. Accidental falls, motor vehicle accidents, alcohol and assaults have been reported to be the cause of injuries.
Other leading cause of emergency visit at the department is due to odontogenic infections. Increasing frequency and severity of odontogenic infection requiring hospital admission has caught the attention. Therefore, we investigate the factors associated with this trend and suggest preventive measures to improve patients' dental health and further, their systemic health.
From January 2017 to August of 2020, we investigated the patients visited Emergency department at Pusan National Univeristy Dental hospital to analyze the epidemiology of maxillofacial fractures and odontogenic infections.
Recent outbreak of Covid-19 must have limited patients' access to routine hospital visits with less severe symptoms. However patients still seeking emergency care would have the symptoms that can help suggest what we as an oral and maxillofacial surgeon to pay attention to when treating emergency patients.

P1-07

Coronoidectomy for Reduction of Superolateral dislocation of Mandible Condyle

Hyun-Jun Jo, Hyun Seok*, Seung-O Ko,
Jin-A Baek, Dae-Ho Leem

Department of Oral and Maxillofacial Surgery, School of Dentistry, Jeonbuk National University, Jeonju 54896, Republic of Korea

The superolateral dislocation of the condyle is a rare mandibular fracture. The treatment goal is to return the dislocated condyle to its original position to recover normal function. This study reports superolateral dislocation of the condyle with mandibular body fracture. The mandibular body was completely separated and the medial pole of the condyle head was fractured. The condyle segment was unstable and easily dislocated after the reduction. The temporalis muscle on the condyle segment may have affected the condyle dislocation. A coronoidectomy was performed to remove the function of the temporalis muscle on the condyle segment so the dislocated condyle was successfully reduced. Coronoidectomy is a simple procedure with minimal complications. We successfully used coronoidectomy to reduce the superolateral displaced condyle to its original position to achieve normal function. Coronoidectomy can be effectively used for reduction of superolaterally displaced condyles combined with severe maxilla-mandibular fractures.

Orthognathic Surgery

P2-01

Deep learning-based discrimination of soft tissue profiles requiring orthognathic surgery by facial photographs

Seung Hyun Jeong[1], Jong Pil Yun[1], Han-Gyeol Yeom[2], Hun Jun Lim[3], Jun Lee[3] & **Bong Chul Kim**[3]

[1] Safety System Research group, Korea Institute of Industrial Technology (KITECH), Gyeongsan, Korea
[2] Department of Oral and Maxillofacial Radiology, Daejeon Dental Hospital, Wonkwang University College of Dentistry, Daejeon, Korea
[3] Department of Oral and Maxillofacial Surgery, Daejeon Dental Hospital, Wonkwang University College of Dentistry, Daejeon, Korea

Facial photographs of the subjects are often used in the diagnosis process of orthognathic surgery. The aim of this study was to determine whether convolutional neural networks (CNNs) can judge soft tissue profiles requiring orthognathic surgery using facial photographs alone. 822 subjects with dentofacial dysmorphosis and / or malocclusion were included. Facial photographs of front and right side were taken from all patients. Subjects who did not need orthognathic surgery were classified as Group I (411 subjects). Group II (411 subjects) was set up for cases requiring surgery. CNNs of VGG19 was used for machine learning. 366 of the total 410 data were correctly classified, yielding 89.3% accuracy. The values of accuracy, precision, recall, and F1 scores were 0.893, 0.912, 0.867, and 0.889, respectively. As a result of this study, it was found that CNNs can judge soft tissue profiles requiring orthognathic surgery relatively accurately with the photographs alone.

Please cite this article as

Deep learning-based discrimination of soft tissue profiles requiring orthognathic surgery by facial photographs. Jeong SH, Yun JP, Yeom HG, Lim HJ, Lee J, Kim BC. Sci Rep. in press.

P2-02

Three-dimensional stability evaluation after the orthognathic surgery using the invivo absorbent osteosynthesis system

Tadashi Kogou

Oral&Maxillofacial Surgery, Tokyo Dental College

The absorbent bone connecting material (super fixsorb^{R} MX, Takiron Corporation) has been applied to a maxillary joining in the jaw corrective surgery widely, but the stability evaluation in the postoperative three-dimensional analysis is not decided. On the occasion of maxillary fixation of the jaw corrective surgery, we examined postoperative maxillary stability this time.

P2-03

A skeletal Class II open bite case whose functional disharmony was improved after surgical-orthodontic treatment

Chiho KADOTA-WATANABE*[1],
Norihisa HIGASHIHORI[1], Junka KANG[1],
Takuya OGAWA[1], Tetsuya YODA[2], Keiji MORIYAMA[1]

[1] Department of Maxillofacial Orthognathics, Tokyo Medical and Dental University
[2] Department of Maxillofacial Surgery, Tokyo Medical and Dental University

Introduction

Skeletal Class II open bite cases often show disharmony of stomatognathic functions, such as mandibular movements, and it is sometimes difficult to establish a treatment plan and achieve postoperative stability when surgical-orthodontic treatment is applied. We report a case of improved oral function and stable occlusion by surgical orthodontic treatment combined with multi-segmental maxillary osteotomy through orthognathic surgery.

Case

A 44.5-year-old woman whose chief complaint was inability to bite with her anterior teeth, presented with a gummy smile, Angle Class II molar relationships, overjet +10.0 mm, and overbite -1.0 mm. Cephalometric analysis showed skeletal Class II with a steep mandible (SNA 83.0°, SNB 72.5°, and FMA 42.3°). Magnetic resonance imaging (MRI) of the temporomandibular joint showed bilateral anterior disk displacement, and computed tomography (CT) images showed anterior and inferior displacement of the mandibular condyle. Functional evaluation of the mandibular movement showed CO-CR discrepancy and an unstable mandibular position. She also had mouth breathing, snoring, and tongue thrust. Surgical-orthodontic treatment with an elevation of the maxilla was performed combined with Le Fort I and horseshoe osteotomy, together with anterior segmental osteotomy of the maxilla, resulting in counterclockwise rotation of the mandible and providing proper overjet and overbite. Postoperative CT images showed that the position of the mandibular condyle was improved, and functional evaluation showed convergence of the starting and end position of the condyle on open-close movement of the mandible, an increase in the maximal opening, and a decrease in CO-CR discrepancy. Snoring disappeared. More than two years after the completion of orthodontic treatment, occlusion was stable.

Discussion and Conclusion

In this case, the application of surgical orthodontic treatment combined with multi-segmental maxillary osteotomy through orthognathic surgery resulted in an improvement in the intermaxillary relationship and stomatognathic function. However, postoperative CT images showed an area of inadequate healing of the osteotomy line, which may require careful observation.

P2-04

3-dimensional evaluation of condylar position changes following two jaw surgery

Byung Su Kim*[1], Jun Lee[1]

[1]Department of Oral and Maxillofacial Surgery, Daejeon Dental Hospital, College of Dentistry, Wonkwang University

Purpose
Immediately after two jaw surgery, the position of the mandibular condyle changes. After surgery, the position of the mandibular condyle changes gradually over time. Other authors say that this may affect by the patient's posture, muscle tension, surgery method, and fixation method. The aim of this study is to investigate the change of mandibular condyle position according to the amount of postoperative condyle movement, using cone beam computed tomography of skeletal class III malocclusion patients who underwent two jaw surgery.

Materials and Methods
All of the patients(23 females and 27 males) were evaluated by cone-beam computerized tomography(CBCT) 1 month before surgery(T0), 1 month after surgery(T1), 1 year after surgery(T2). The images were reconstructed three-dimensionally and superimposed. The reference plane was established based on the anatomical structures and each coordinates are measured. Then, the statistical analysis was performed.

Results
The position of the mandibular condyle tends to move anteriorly, inferiorly, and laterally when comparing T0 and T1. When T1 and T2 were compared, regressed in all axes and there was statistical significance. The amount of changes between T1 and T2 were significantly correlated with the amount of changes between T0 and T1 ($p < 0.001$).
In addition, the angle change of the mandibular condyle increased to the XY and ZX planes between T0 and T1. The angle to the YZ plane decreased. When comparing T1 and T2, only the angle to the XY plane tended to regress.
The position and angle changes of the mandibular condyle between T1 and T0 were significantly correlated to the amount of change in T1 and T2 ($p < 0.001$).

Conclusions
In patients who underwent Lefort I and BSSRO to treat skeletal class III malocclusion, the mandibular condylar position tends to move anteriorly, inferiorly, and laterally. 1 year after surgery, the condyle position regresses in all axes. The angle of the mandibular condyle also changes, but only the angle to the F-H plane regresses significantly. In terms of position and angle, the change after one month relates to the change after one year.

P2-05

Evaluation of ultrasonic orthognathic surgery with a serrated aggressive knife tip of an ultrasonic bone cutting device

Yusuke Kato*[1,2], Naoaki Saito[1], Kanae Niimi[1], Daisuke Saito[1], Hidenobu Sakuma[1], Daichi Hasebe[1], Wataru Katagiri[1], Tadaharu Kobayashi[1]

[1]Division of Reconstructive Surgery for Oral and Maxillofacial Region, Faculty of Dentistry & Graduate School of Medical and Dental Sciences, Niigata University.
[2]Department of Oral and Maxillofacial Surgery, Uonuma Institute of Community Medicine, Niigata University Medical and Dental Hospital

Introduction
The aim of this study was to evaluate the usefulness of ultrasonic orthognathic surgery using the serrated aggressive knife tip of the Sonopet® ultrasonic curettage device in orthognathic surgeries compared to conventional methods using powered instruments.

Materials and methods
The subjects were 146 patients in whom dentofacial deformities had been surgically corrected by a combined surgery of Le Fort I osteotomy and BSSO, and they were divided into two groups: 88 patients who underwent surgery using powered instruments and 58 patients who underwent surgery using a serrated aggressive knife tip of ultrasonic bone cutting device. Intraoperative bleeding volume, autotransfusion volume and surgical time were used as items for consideration, and comparisons between the two groups were performed by a nonparametric Brunner-Munzel test.

Results
The intraoperative bleeding volume and autotransfusion volume in the ultrasonic bone cutting device group were significantly smaller than those in the powered instruments group. On the other hand, the surgical time in the ultrasonic bone cutting device group was significantly longer (by 11%) than that in the powered instruments group. Both groups showed a significant correlation between surgical time and intraoperative bleeding volume, but the regression line in the ultrasonic bone cutting device group was lower and gentler than that in the powered instruments group.

Conclusion
Ultrasonic orthognathic surgery has become safer than conventional orthognathic surgery using powered instruments because the risk of soft tissue damage has decreased. However, it is necessary to pay attention to reliable cooling of the blade in order to prevent burns of surrounding tissues.

P2-06

Changes in bone metabolism markers following orthognathic surgery

Daisuke Saito[1]※ Hidenobu Sakuma[1], Yusuke Kato[1], Daichi Hasebe[1], Wataru Katagiri[1], Isao Saito[2] and Tadaharu Kobayashi[1]

[1]Division of Reconstructive Surgery for Oral and Maxillofacial Region, Faculty of Dentistry & Graduate School of Medical and Dental Sciences, Niigata University
[2]Division of Orthodontics, Faculty of Dentistry & Graduate School of Medical and Dental Sciences, Niigata University

Introduction
Orthognathic surgery is performed to correct the position of the maxilla and/or the mandible for patients with jaw deformities. However, the detailed mechanism of bone healing and metabolism after orthognathic surgery is unclear. In this study, bone metabolic markers in patients with jaw deformities were measured over time, and changes in bone metabolic markers following orthognathic surgery and the relationship between changes in bone metabolic markers and types of jaw deformity were examined.

Materials and methods
This prospective study included 53 female patients in whom jaw deformities had been surgically corrected between July 2012 and September 2014. Informed consent to participate in this study was obtained from all subjects. The patients were divided into two groups, Class I/II group (13 patients) and Class III group (40 patients), according to the type of anteroposterior skeletal pattern. Osteocalcin (OC) and bone alkaline phosphatase (BAP) in serum were measured as bone formation markers, and tartrate-resistant acid phosphatase isoform 5b (TRACP-5b) in serum and deoxypyridinoline (DPD) in urine were measured as bone resorption markers. Peripheral blood and urine samples were taken preoperatively and 2 weeks and 6 months postoperatively for measurements of bone metabolic markers.

Results
OC was decreased in the Class III group at 2 weeks after surgery, but no significant difference was observed in the Class I/II group. BAP was increased significantly at 2 weeks and 6 months after surgery in the Class III group and at 6 months after surgery in the Class I/II group. DPD was increased 2 weeks after surgery and was decreased 6 months after surgery in both groups. TRACP-5b was increased significantly 2 weeks after surgery in the Class III group, but there was no significant difference in the Class I/II group.

Conclusion
The results suggested that bone metabolism tends to increase after orthognathic surgery. The present outcomes also suggested that bone resorption is normal but that bone formation is still increased at 6 months after surgery.

P2-07

Comparative Analysis of Complications According to Handling of Pterygoid Plate After Orthognathic Surgery: Severe bleeding, Non-union, Auditory Problem, Skeletal relapse of maxilla

Chi-Ho Moon*, Choi, Na-Rae Choi, Han-Kyul Park, Jae-Min Song, Jae-Yeol Lee, Yong-Deok Kim, Sang-Hun Shin, Uk-Kyu Kim, Dae-Seok Hwang*

Dept. of Oral and Maxillofacial surgery, School of Dentistry, Pusan National University

Introduction
In orthognathic surgery with maxillary rotation and posterior displacement, manipulation of the pterygoid plate is often required. However, due to improper manipulation of the pterygoid plate, various complications may occur, so close attention is required.

Patients and Methods
This study studied 80 patients who underwent orthognathic surgery at Pusan National University Dental Hospital from December 2015 to July 2020, and compared and analyzed complications according to the pterygoid plate handling method.
All patients were subjected to CBCT imaging on the 2nd day postoperatively to confirm the pterygoid plate, and accordingly, the type of complications, occurrence, and prognosis were confirmed during the operation and postoperative follow-up period.

Results
Among the patients who underwent Le Fort I osteotomy of the maxilla, 53 patients underwent fracture or removal of the pterygoid plate. One of these patients had maxillary non-union, and one patient complained of auditory problem, but recovered without any sequelae.

Conclusion
The pterygoid plate handling method is not considered to have a significant effect on the occurrence of complications during and after surgery.

Keywords
Two-jaw surgery, Pterygoid plate, Complications

P2-08

The Mandible Setback surgery with minimal presurgical orthodontics: Case reports

Se-Jeong Lim*[1], Hoon-Min Kim[1], Jin-Hwan Kim[2], Yeun-Hwan Ahn[2], Jang-Ho Son[1], Iel-Yong Sung[1], Yeong-Cheol Cho[1]

[1]Department of Oral and Maxillofacial Surgery, Ulsan University Hospital, University of Ulsan College of Medicine
[2]Department of Advanced General Dentistry, Ulsan University Hospital, University of Ulsan College of Medicine

The traditional treatment for skeletal malocclusion patients requiring orthognathic surgery consists of three steps : preoperative orthodontics with compensated tooth decompensation, orthognathic surgery, and postoperative orthodontics, and usually takes about 2 years. Such a method has a disadvantage in that patient's facial esthetics and mastication function before surgery may be further deteriorated, causing discomfort to the patient and proloning the entire treatment period. On the other hand, minimal presurgical orthodontics has the advantage that facial profile improvement, a major chief complain of patients, can be achieved relatively quickly and the entire treatment period is shortend. The purpose of this case series is to suggest the consideration in minimal presurgical orthodontic treatment of patients who have skeletal malocclusion.
This study reviewed six patients who underwent a bilateral sagittal split oseteotomy after minimal presurgical orthodontics and were followed for more than 1 year. The related variables were measured by cephalometric radiographs and the degree of relapse was analyzed.
As a result, in addition to the stability of the mandible, the treatment period was shortend and the patiens's satisfaction was high. However,since it cannot be applied to all patients, appropriate patient selection is necessary.

P2-09

Orthognathic surgery with Acute Normovolemic Hemodilution(ANH)

Euy-hyun Kim[1], Dong-keon Lee[1], Sung-jae Lee[1], In-seok Song[1], Hyeon-Ju Shin[2], Sang-ho Jun[1]

[1]Department of Oral and Maxillofacial Surgery, Korea University Medicine, Seoul, Korea
[2]Department of Anesthesiology and Pain medicine, Anam Hospital, Korea University Bloodless Medicine center, Korea

Orthognathic surgery is a dental surgery performed in the case of difficult to obtain the desired results with conventional orthodontic therapy. It can be applied to severe skeletal malocclusion. This surgery has been widely practiced around the world to date.
However, because the surgery is accompanied by the cutting and re-occlusion process of the bone, it is inevitable that a variety of complications such as edema or pain, bleeding can occur. Typically, in the case of mandibles, damage, including thermal injury of facial artery, maxillary bone may occur. In this case, the symptoms of the patient during / after surgery by arterial bleeding may cause unstable vital signs.
In the present place, but previously used a blood transfusion to prevent such blood loss, in order to reduce the side effects. In the case of self-transfusion, the patient has the discomfort that must be collected 2-3 times before surgery, even after storing the blood in vitro for at least a few weeks.
In order to improve these shortcomings, it was attempted to perform an orthognathic surgery with acute normovolemic hemodilution (ANH) cooperated with KU Medicine Bloodless Medicine Center. This method is diluting the blood of the general anesthesia patient during surgery, mixed in a specific plasma fluid. By adjusting the amount of plasma during surgery to maintain the normal blood amount of the patient, it is can prevent a sudden change in the patient's vital signs. In addition, there is no process of storing the collected blood separately in vitro, there is an advantage that can be re-injected with the whole blood of the fresh state immediately to the patient.
With ANH, the patient before surgery can avoid the hassle of performing self-collection, it is can prevent complications associated with the heart by preventing the load on the heart. In addition, it is possible to maintain a stable vital signs during surgery, it is possible to alleviate the side effects that occur after surgery.
In this presentation, with a case report for adverse orthodontic surgery patients with blood dilution method performed herein, to compare the hemoglobin levels with patients undergoing adverse correctional surgery through the conventional self-transfusion method to analyze.

P2-10

Comparing Stability of 1-Jaw Versus 2-Jaw Surgery in Patients with Cleft Lip and Palate

Hun-jang, Han-kyul Park, Na-rae Choi,
Jae-Min Song, Jae-Yeol Lee, Dae-Seok Hwang ,
Sang-Hun Shin, Uk-Kyu Kim, Yong-Deok Kim

Department of Oral and Maxillofacial Surgery, School of Dentistry, Pusan National University

Compared with noncleft patients, cleft patients usually exhibit 2 typical skeletal characteristics: maxillary hypoplasia induced by inherited growth deficiencies and/or strong tension from scar tissue after cheiloplasty/palatoplasty and a hyperdivergent growth pattern with clockwise rotation of the mandible.
Surgical treatment of severe maxillary hypoplasia and skeletal Class III malocclusion in cleft patients is challenging because the operation is more complex and the required amount of maxillary advancement is generally much larger in cleft patients compared with noncleft patients.
In orthognathic surgery of cleft lip and palate patients, if the mandible is in normal position in an anteroposterior position, only 1-jaw surgery can be performed. However, in patients with cleft lip and palate, the amount of maxillary advancement is limited, and it is possible to perform 2-jaw surgery that moves the mandible posteriorly as well as maxillary advancement.
The aim of this study was to compare skeletal stability between 1-jaw surgery(Le fort I or BSSO) and 2-jaw surgery in patients with cleft lip and palate
Total 39 cleft lip and palate patients(1-jaw 6 patient, 2-jaw 33 patient) who underwent orthognathic surgery at the Department of Dentistry, Pusan National University from 2013 to 2019 were enrolled in this retrospective cohort study. Lateral cephalograms were taken 2 month after surgery (T2), and 1 year after surgery(T4). To evaluate postsurgical changes (T2 to T4) in skeletodental, linear, angular, and dental measurements were analyzed using Wilcoxon test and Mann-Whitney U test.

P2-12

Digital Surgical Occlusion for Orthognathic Surgery

Seunghye Jeong[1], Jaemyung Ahn[2],
Junyoung Paeng[2], Jaesung Hong[1]

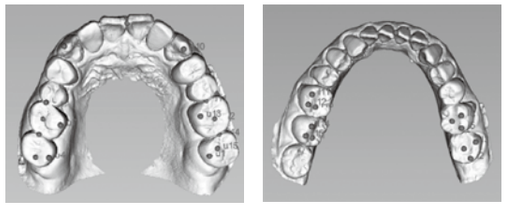
[1]Dept. of Robotics Engineering, Daegu Gyeongbuk Institute of Science & Technology
[2]Dept. of Oral and maxillofacial surgery, Samsung Medical Center, Sungkyunkwan University School of Medicine

Purpose

Orthognathic surgery is to correct jaw relationship so that patients with malocclusion have normal occlusion after surgery. Preoperative planning is essential to determine the amount of cutting and moving of upper and lower jaw for precise surgery. These days, Computer-Aided Surgical Simulation(CASS) has been used to improve surgical accuracy. A CT-based 3D skull model and a surgical occlusion model are needed for CASS, and surgery is planned so that the existing occlusion have surgical occlusion relationship. However, the 3D surgical occlusion model is still obtained by scanning with a laser scanner after being determined by the traditional method of using dental stone model and articulating paper[1].
There is some previous studies about automatically determine the digital surgical occlusion using 3D dental models. they are limited to apply only to patients without occlusal interference through sophisticated pre-orthodontic processes[2, 3]. However, the development of CASS and prosthetics has made it easier to predict surgical and orthodontics results, so the surgical first approach is being performed with minimum or non pre-orthodontics[4]. Therefore, for real clinical cases, digital surgical occlusion should be developed for use with occlusal interference.

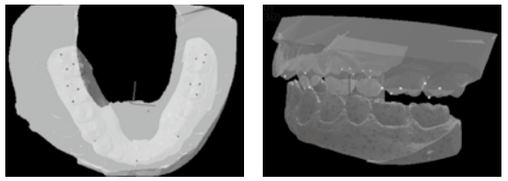
Method

Ideal occlusion is defined as the maximum contact of upper and lower dental in relation to the cusp – fossa of molar, the position of canine, and the relationship of front teeth. The user selects pairs of anatomical features that define the occlusion in a 3D dental model using mouse interface, as shown in Figure 1. Initial alignment of the upper and lower have a enough vertical distance to prevent a collision. And then, The lower is static, and the upper moves in the direction of vertically to occur a collision.
The 3D dental model consists of a triangular mesh. Triangular collision tests show the position of collision between upper and lower models and the direction of generated force. In the real world, when setting up dental stone model for surgical occlusion, tactile sense is used to find a relationship in which upper and lower are not oscillated and the maximum contact. In the 3D, the transform matrix of the upper is optimized so that the moving caused by the collision with the lower is less than the threshold value and has the maximum contact. The movement of the upper is limited to the user-defined overjet, overbite, midline ranges. If premature contact occurs and OE is required, the area and order of OE area is determined according to the order of contact between upper and lower. And then the OE is performed and the surgical occlusion is recalculated.



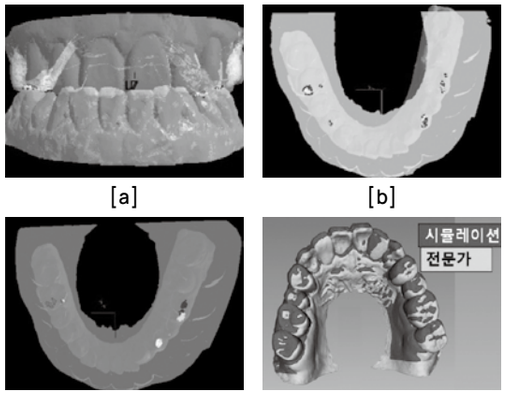
[a] [b]

그림 1. Features (a)The upper, (b)The lower.



[a] [b]

그림 2. Result of initial alignment (a)front view, (b)side view.



[a] [b] [c] [d]

그림 3. (a)surgical occlusion by simulation
(b)occlusal contact area by simulation
(c)occlusal contact area by a expert
(d)overlaying two models.

Result

In patients with premature contact, the surgical occlusion model proposed by experts and simulation was compared. Simulation found the same premature contact area as experts. After the OE, the surgical occlusion model, as shown in Figure 3(a), was finally proposed to user. The two models were qualitatively compared with the occlusal contact area and overlay (Figure 3(b)(c)(d)), and the Mean Squared Error between the same features of the two results was about 1.6 mm.

Conclusion

This study automatically determines the digital surgical occlusion model in CASS for orthognathic surgery. It can be applied even if there is occlusal interference, overcoming the limitation of the previous study. its validity was verified compared with expert results.

Reference

[1] Hammoudeh, J.A., et al., *Current status of surgical planning for orthognathic surgery: traditional methods versus 3D surgical planning*. 2015. 3(2).

[2] Xia, J.J., et al. *Automated digital dental articulation. in International Conference on Medical Image Computing and Computer-Assisted Intervention*. 2010. Springer.

[3] Deng, H., et al. *An automatic approach to reestablish final dental occlusion for 1-piece maxillary orthognathic*

surgery. in International Conference on Medical Image Computing and Computer-Assisted Intervention. 2019. Springer.

[4] Kwon, T.-G., M.D.J.M.P. Han, and R. Surgery, *Current status of surgery first approach (part II): precautions and complications*. 2019. 41(1): p. 23.

P2-13

Contributing factors affecting stability After Orthognathic Surgery for Cleft Palate & Lip Patient

Won-Bum LEE*, Han-Kyul PARK, Na-Rae CHOI, Jae-Min SONG, Jae-Yeol LEE, Dae-Seok HWANG, Sang Hun SHIN, Uk-Kyu KIM, Yong-Deok KIM

Dept. of Oral and maxillofacial surgery, School of Dentistry, Pusan National University

The cleft patients show maxillary hypoplasia induced by inherited growth deficiencies and/or strong tension from scar tissue after palatoplasty. The main purpose of orthognathic surgery in the cleft patients with maxillary hypoplasia is not only aesthetics but also anterior movement or expansion of the maxilla. However, the amount of anterior movement of maxilla is inevitably limited due to the side effects of palatal scar tissue and pronunciation.
In the cleft patient who underwent maxillary advance surgery, it has been reported in various studies that the recurrence of maxillary movement amount occurs due to the strong tension of the palatal scar tissue caused by palatoplasty. Therefore, when planning orthognathic surgery for cleft patients, overcorrection should be considered.
In the case of the recurrence tendency after posterior movement of mandible, according to various studies, the degree of preoperative orthodontic treatment, the amount of mandibular posterior movement, the fixation method and mandibular clockwise rotation are the main contributing factors has been reported.

This study was carried out in Department of Oral & Maxillofacial Surgery, Pusan National University Dental Hospital, and included a group of cleft patients with orthognathic surgery, treated during 2013-2019. Lateral cephalometric measurements (Mx. depth, McNamara's N perpendicular, SNA, SNB, ANB, Sn-GoMe) were compared for 2 months after surgery and 1 year after surgery, and contributing factors that affect postoperative stability were compared and analyzed by the Wilcoxon test and Mann-Whitney U test.

P2-14

Delayed change of facial profile after clockwise rotation of maxillomandibular complex: from postoperative 6months to 2 years

Jin-Ju Kwon*, Han-Kyul Park, Jae-Min Song, Jae-Yeol Lee, Yong-Deok Kim, Sang-Hun Shin, Uk-Kyu Kim, Dae-Seok Hwang

Dept. of Oral and Maxillofacial surgery, School of Dentistry, Pusan National University

The purpose of this study was to evaluate the changes in soft tissue delayed change according to follow-up observations of orthognathic surgery patients with clockwise rotation of the maxilla-mandibular complex as the main operation.
Among patients who underwent the maxillomandibular complex clockwise rotational orthognathic surgery from one doctor at the Department of Oral and Maxillofacial Surgery at Pusan National University Dental Hospital from January 2015 to September 2018, 15 patients with x-ray (panorama, lateral cephalogram, PA view and Cone-beam CT) were enrolled and analyzed.
For each patient, 3D analysis through onDemand-3D (Cybermed Inc, Deajeon, Korea) and Invivo-6 (Anatomage Inc, Santa Clara, USA) was performed for 6 months after surgery and 2 years postoperative flow up, respectively.
A total of 6 points (the Nasal tip, the most lateral point in the curved base line of each ala(Ac), soft tissue external gonial angle(Go), Menton) were compared and examined by the change in the transverse, vertical, and anteroposterior directions.

P2-15

Surgical-orthodontic treatment case of severe skeletal due to a persistent thumb-sucking habit through growth period

Hiroyuki Kamimoto, Norihisa Higashihori, Keiji Moriyama

Department of Maxillofacial Orthognathics, Graduate School of Medical and Dental Sciences, Tokyo Medical and Dental University

Introduction
Persistence of thumb-sucking s not only dento-alveolar features but also skeletal features, and these effects are difficult to treat. Here, we report a surgical-orthodontic treatment case of severe skeletal due to a persistent thumb-sucking habit growth period.

Case
A 22.9-year-old woman presented with an overjet +11.0 mm, an overbite -10.0 mm, and Angle II molar relationships. The maxillary dental arch and alveolar bone showed a narrow and asymmetric arch. Cephalometric analysis showed an SNA of 80.8 °, SNB of 76.1 °, FMA of 39.9°, U-1 to FH plane of 121.5°, and L1 to mandibular plane of 71.1°. Tongue-thrusting and thumb-sucking habits were observed.

Result
The thumb-sucking habit was eliminated 1 month after tongue crib therapy was started. During the presurgical-orthodontic treatment, a fan-type expansion appliance and a multi-bracket appliance were used for obtaining a symmetric dental arch and maxillary alveolar bone. Le Fort I osteotomy and sagittal split ramus osteotomy were performed for improving sagittal and vertical skeletal discrepancies. After surgery, both occlusion and facial profile were improved. Myofunctional therapy was continuously performed during the treatment.

Conclusion
Persistence of thumb-sucking habit growth period may affect the shape of the maxillary dental arch and alveolar bone, the inclination of the maxillary and mandibular incisors, and the vertical growth of the mandible. Both occlusion and facial profile were stable after 1.5 years of retention. The change in tongue position by maxillary expansion and myofunctional therapy may contribute to dento-skeletal stability. However, further long-term follow-up is necessary.

P2-16

Study of soft tissue change in upper lip and nose after backward movement of maxilla in orthognathic surgery

Suyun Seon*, Baek-Soo Lee, Yong-Dae Kwon, Byung-Joon Choi, Jung-Woo Lee, Junho Jung, Bo-Yeon Hwang, Min-Ah Kim, Joo-Young Ohe

Department of Oral and Maxillofacial Surgery, School of Dentistry, Kyung Hee University

Introduction
This study evaluates the soft tissue changes of the upper lip and nose after maxillary setback with orthognathic surgery such as LeFort I or anterior segmental osteotomy.

Method and materials
All patients with bimaxillary protrusion and skeletal class II malocclusion underwent LeFort I or anterior segmental osteotomy with backward movement. Soft and hard tissue changes were analyzed using

cephalogram taken peropertatively and 6 month postoperatively.

Results

Cluster analysis on the ratios shows 2 lines intersected at 4mm point, so that we divided the subjects into 2 groups according to posterior movement of maxilla; group A(less than 4mm, 27subects) and group B(more than 4mm, 23subjects) . Also, each group was divided according to changes of upper incisor angle(≥4°=A1, B1 or <4°=A2, B2). The correlation between the A and B group for the A'/ANS and Ls/Is (**P<0.001) was significant. A'/A(P=0.002), PRN/A(P=0.043), PRN/ANS(P=0.032), St/Is(P=0.01). The variation of the nasolabial angle between the two groups was insignificant. There was no significant correlation in the vertical movement and angle variation.

Conclusion

The ratio of soft tissue to hard tissue movement depends on the amount of posterior movement in the maxilla, showing approximately twice higher rates in most of the region in midface when posterior movement was above 4mm. The soft tissue changes by posterior movement of maxilla were little affected by angular changes of upper incisors. Interestingly, nasolabial angle had different tendency between A and B group, more affected by incisal angular changes when amount of horizontal posterior movement is less than 4mm. The resuts seem very helpful in treatment planning and prognosis of orthgnathic surgery to predict soft tissue changes related to hard tissue changes.

P2-17

Accuracy of Le Fort I osteotomy with combined computer-aided design/computer-aided manufacturing technology and mixed reality.

Masahide KOYACHI[1], Keisuke SUGAHARA[1,2], Kento ODAKA[3], Satoru MATSUNAGA[2,4], Shinichi ABE[2,4], Maki SUGIMOTO[1,5], Akira KATAKURA[1,2]

[1]Department of Oral Pathobiological Science and Surgery, Tokyo Dental College, Tokyo, Japan
[2]Oral Health Science Center, Tokyo Dental College, Tokyo, Japan
[3]Department of Oral and Maxillofacial Radiology, Tokyo Dental College, Tokyo, Japan
[4]Department of Anatomy, Tokyo Dental College, Tokyo, Japan
[5]OOkinaga Research Institute Inovation Lab, Teikyo University, Tokyo, Japan

Le Fort I osteotomy is a highly effective treatment for skeletal jaw deformities. The double splint modification method of the Le Fort I osteotomy, implemented by Lindorf et al, is highly effective for recreating a mold-based model during surgery and is widely used on a global scale. However, Mazzoni et al and Sharifi et al have reported that the repositioning accuracy of the maxilla during the Le Fort I osteotomy procedure using the double splint method is dependent on the technical expertise of the surgeon, and that errors from the preoperative model planning stage can occur during face bow transfer and splint fabrication.
This study aimed to verify the pre-operation planning reproducibility and accuracy of maxilla repositioning using new registration markers with computer aided design/manufacturing technologies and mixed reality surgical navigation, as well as the head-mount displayed HoloLens®. Eighteen patients with a mean age of 26.0 years were included. Post-operation evaluations were conducted by comparing the pre-operation virtual operation three-dimensional image (Tv) and the a month post-operation computed tomography image (T_1). The three-dimensional surface analysis errors ranged from 79.9-97.1%, with an average error of 90.3%. Results of the point-based analysis, the errors at each point in the XYZ axis were calculated for Tv and T1 in all cases. The signed values of all the calculated points in the XYZ axis had a median of -0.03 mm (max: 3.93 mm, min: -2.93 mm). The absolute values of all the calculated points in the XYZ axis had a median of 0.38 mm (max: 3.93 mm, min: 0 mm). There were no statistically significant differences between any of the points on any of the axes. These values indicate that our method was able to reproduce the maxilla position with high accuracy.

P2-18

Surgery-first Orthognathic Surgery using Clear Orthodontic Appliance in Mandibular Prognathism Patients

Myoung-Ju Kim, Jaeyung Ryu, Seunggon Jung, Hong-Ju Park, Hee-Kyun Oh, Min-Suk Kook

Department of Oral and Maxillofacial Surgery, School of Dentistry, Dental Science Research Institute, Chonnam National University

Surgery-first orthognathic approach is a method of resolving malocclusion by orthodontic treatment after orthognathic surgery without preoperative correction. It seems to reduce total treatment time and obtain immediate improvement of the facial profile or normal skeletal relationship. The observed reduction in total treatment time is related to more efficient postoperative orthodontics.
After the correction of the skeletal base discrepancy, the direction of postsurgical treatment coincides with the natural direction of spontaneous dental compensation and muscular force, thereby decreasing the time to full compensation. Moreover, orthodontic tooth movement may be facilitated by the surgically induced regional acceleratory phenomenon.
Due to increased public demand for more esthetic and comfortable treatment options for orthodontic treatment, clear aligner is the most preferred in adult patients. It is not only esthetic, but also does not cause pain or speech disturbance in the soft tissues because they are in contact with the oral cavity. And it has an advantage of easiness of oral hygiene management.
In this study, we report a case of a patient who had undergone postoperative orthodontic treatment with clear overlay appliance and improved facial profile and aesthetic anterior alignment and stable posterior occlusion without facial imbalance caused by decompensation during preoperative period, using the advantages of shortening the entire treatment time and rapid tooth movement.

P2-19

Accuracy of CAD/CAM assisted orthognathic surgery: CT evaluation in Maxilla

Ji Youn Maeng, Jin Young Choi

Department of Oral and Maxillofacial Surgery, Seoul National University Dental Hospital

Introduction

Two-jaw orthognathic surgery is commonly considered an efficient surgical method that can bring drastically improved results in patients with dentofacial anomalies. Although conventional surgical planning has generally provided satisfactory results, the procedure has its limitations. Estimation and measurement of anteroposterior movement in maxilla during surgery following conventional planning is difficult. Virtual surgical planning and 3D printed surgical materials can offer compensation to such limitations.
The purpose of this study is to retrospectively evaluate the accuracy of virtual surgical planning in two-jaw orthognathic surgery by comparing virtually planned and actual post-operative orthognathic changes of Maxilla on CT scans.

Methods

20 patienst who received 2-jaw orthognathic surgery

using FACEGIDE at Oral and Maxillofacial Surgery depart ment of Seoul National University Dental Hospital between 2019 and 2020 were selected for this retrospective study.

Results
Vertical examination showed absolute linear difference of 0.46mm at ANS, 0.62 at U1, 0.89mm at U6R, and 0.79mm at U6L. Horizontal examination showed absolute linear difference of 1.35mm at ANS, and 0.69mm at U1. Horizontal and vertical measurements at ANS exhibited statistical insignificance, with p-value of 0.0978 and 0.368. Other vertical and horizontal landmarks all showed statistical significance, with p-value less than 0.01.

Discussion
Horizontal and vertical examination showed precision with errors less than 1mm, except at ANS. Discrepancies observed at ANS may be due to ANS grinding procedure during 2-jaw orthognathic surgery. Measurements at A-point may reveal more accurate results.

Conclusion
Virtual surgical planning and 3D printed surgical saw-guides can help accurately reposition maxilla in two-jaw orthognathic surgery. The results of this study suggests a clinically acceptable post-operative results in virtually planned and guided orthognathic surgery.

P2-20

Evaluation of accuracy of automatic tracing program for lateral cephalometric radiograph

Dong-Uk Park[1], Ho Lee[1,2],
Yoon-Sic Han[1,2], Chang-Su Kim[1,2]

[1]Department of Oral and Maxillofacial Surgery, SMG-SNU Boramae Medical Center
[2]Department of Oral and Maxillofacial Surgery, School of Dentistry, Seoul National University

Purpose
The purpose of this study was to determine the accuracy by comparing automatic tracing programs and experience. Additionally, we attempted to compare the difference in accuracy between the beginner and highly experienced groups.

Methods and materials
For the past two years, a retrospective study was conducted using medical records and radiographs of patients who underwent lateral cephalometric radiography for orthodontic diagnosis. Only patients in their 20s with 28 natural teeth, excluding wisdom teeth, were included. In addition, patients with facial asymmetry, congenital facial deformity, history of facial surgery, prosthetic treatment, hearing aid users, and maxillofacial prostheses were excluded. Measurements were compared between the automatic tracing program (Laonceph (Laon People Co., Seongnam, Gyeonggi-do), group 1), beginner (with more than 1 year of experience, group 2), and highly experienced (with more than 10 years of experience, group 3; gold standard).

Results
A total of 36 subjects were used for the analysis. In ANOVA and Bonferroni's post-test, the significant differences were observed between the three groups (performed through the automatic tracing program; beginner, highly experienced) according to the AFH (P=0.038), PFH (P=0.023), facial axis (P=0.000), and NLA (P=0.000). In AFH and PFH, only a difference between groups 2 and 3 was observed. In the facial axis and NLA, there was no difference between groups 1 and 3, but there were differences in groups 1 and 2 and 2 and 3.

Discussion and Conclusion
Some limitations were observed in the automatic tracing program, but the automatic tracing program showed relatively accurate results. In addition, it was found that beginners needed reeducation for various soft tissue points around upper lip. It is believed that education is also possible using an automatic tracing program.

P2-21

A comparative study of the changes in the temporomandibular joint clicking and pain after orthognathic surgery between orthodontics-first approach and surgery-first approach

You-Song Sim*, Ying Zhai, Jeong Joon Han, Seunggon Jung, Min-Suk Kook, Hong-Ju Park, Hee-Kyun Oh

Department of Oral and Maxillofacial Surgery, School of Dentistry, Dental Science Research Institute, Chonnam National University

This study aimed to evaluate the influence of the orthodontics-first approach (OFA) and surgery-first approach (SFA) on changes in the signs and symptoms of temporomandibular joint disorders (TMDs) and to compare preoperative and postoperative orthodontic treatment duration and total treatment duration between OFA and SFA.
This retrospective study included 182 patients with malocclusions corrected via OFA and SFA and recorded variables such as age, gender, skeletal classification, and signs and symptoms of TMDs (clicking and pain disorders) before the start of the surgical-orthodontic treatment and after surgery.
Changes in the signs and symptoms of TMD and treatment duration were evaluated within each approach and compared between two approaches. A binary logistic regression was performed to assess the influence of the variables on the postoperative signs and symptoms of TMD.
There were no significant postoperative changes in temporomandibular joint (TMJ) pain for OFA and SFA, whereas a significant reduction was found in TMJ clicking after surgery for both approaches. According to binary logistic regression, the type of surgical-orthodontic treatment (OFA or SFA) was not a significant risk factor for postoperative TMJ clicking and pain, and the risk of postoperative TMJ clicking and pain was significant only when TMJ clicking existed before the start of the entire treatment, respectively. With regard to the treatment duration, SFA exhibited significantly shorter total treatment duration than OFA. The results of this study suggest that surgical-orthodontic treatment using SFA can be a feasible option of treatment for dentofacial deformities based on the equivalent effect on TMD and shorter overall treatment period compared to conventional surgical-orthodontic treatment using OFA.

P2-22

Evaluation of skeletal stability after advancement genioplasty using 3D facial CT

Lee Dong-woo*, Lee Sung-Tak, Choi So-Young, Kim Jin-Wook, Kwon Tae-Guen

Dept. of Oral and Maxillofacial surgery, School of Dentistry, Kyungpook National University, Daegu, Republic of Korea

Introduction
In previous studies, the skeletal stability of the advancement genioplasty using the lateral cephalogram has been evaluated. The purpose of this study is to analyze the observation of relapse and skeletal changes in a three-dimensional manner using 3D facial CT after advancement genioplasty.

Method
This study was performed in 19 patients who underwent advancement genioplasty at the Department of Oral and Maxillofacial Surgery at Kyungpook National University Dental Hospital and who were followed by 3D facial CT. Analysis using 3D facial CT was done through OnDemand software. The 3d facial CT 2 weeks postoperatively and the 3d facial CT 6 months postoperatively were superimposed using the OnDemand program, and the differences in the skeleton were measured.

Result
When examining the anteroposterior change, the average postoperative relapse at the anteriormost point of the hard tissue was 1.22mm, standard

deviation 0.21mm, and there was no significant difference in the vertical and horizontal change.

Discussion and conclusion

Through this study, it was proved that advancement genioplasty is a predictable and stable surgery with a low postoperative relapse rate. In addition, this study has been evaluated in three-dimensional analysis using 3D facial CT, rather only an anteroposterior aspect after advancement genioplasty using a lateral cephalogram in the previous study. So that this study is meaningful. Observing changes in soft tissues after surgery using software such as OnDemand in the future may also help predict facial appearance after surgery.

P2-23

Soft-tissue responses after advancement genioplasty

Kyoun-Tae Kim, Sung-Tak Lee, So-Young Choi, Seoung-Bak Jang, Jin-Wook Kim, Tae-Geon Kwon

Dept. of Oral and Maxillofacial surgery, School of Dentistry, Kyungpook National University, Daegu, Republic of Korea

Introduction

The objectives of this cephalometric study were to assess the soft-tissue changes 1 years after advancement genioplasty and determine the predictability of the soft-tissue response in relation to skeletal movement in mandibular prognathism patients.

Method and materials

Our subjects were 30 patients (15 male, 15 female) who underwent advancement genioplasty. The cephalometric study were to assess at immediately preoperative, immediately postoperative, 6 months postoperative, and 1 year postoperative, the amount of change in measurement items were analyzed.

Result

Mean surgical advancement at pogonion was 8.5mm. After surgery, all patients had straighter facial profiles, more harmonious lip profiles. The ratio of horizontal changes of osseous to soft tissues was found to be 1:0.83. The vertical changes are not significant. There are significant changes in the soft tissue profile such as decrease in the soft tissue thickness, facial convexity angel, lower facial submental angel and increase in mentolabial sulcus depth. In addition, effects of advancement genioplasty on the lips were small.

Conclusion

Advancement genioplasty appears to be a fairly stable procedure. 1 year after surgery, mean relapse at pogonion was 8.7 % of the surgical advancement. Part of this chage is most likely due to bone remodeling. In conclusion, patients who undergoing orthognathic surgical procedures with advancement genioplasty, had slightly less change of the thickness of the soft tissue than that of the skeletal change.

P2-24

Deep learning based Automated Skeletal Classification with Lateral Cephalometry without identifying landmarks

Jin-Woo Kim*[1], Won-Ho Kim[2], Min-Ji Kim[2], Hee-Jin Yu[3], Jongeun Choi[3]

[1]Department of Oral and Maxillofacial surgery, School of Medicine, Ewha Womans University
[2]Department of Orthodontics, School of Medicine, Ewha Womans University
[3]School of Mechanical Engineering, Yonsei University, Republic of Korea

Lateral cephalometry has been widely used for skeletal classification in orthodontic diagnosis and treatment planning. However, this conventional system, requiring manual tracing of individual landmarks, contains possible errors of inter- and intravariability and is highly time-consuming. This study aims to provide an accurate and robust skeletal diagnostic system by incorporating a convolutional neural network (CNN) into a 1-step, end-to-end diagnostic system with lateral cephalograms. A multimodal CNN model was constructed on the basis of 5,890 lateral cephalograms and demographic data as an input. The model was optimized with transfer learning and data augmentation techniques. Diagnostic performance was evaluated with statistical analysis. The proposed system exhibited >90% sensitivity, specificity, and accuracy for vertical and sagittal skeletal diagnosis. Clinical performance of the vertical classification showed the highest accuracy at 96.40 (95% CI, 93.06 to 98.39; model III). The receiver operating characteristic curve and the area under the curve both demonstrated the excellent performance of the system, with a mean area under the curve >95%. The heat maps of cephalograms were also provided for deeper understanding of the quality of the learned model by visually representing the region of the cephalogram that is most informative in distinguishing skeletal classes. In addition, we present broad applicability of this system through subtasks. The proposed CNN-incorporated system showed potential for skeletal orthodontic diagnosis without the need for intermediary steps requiring complicated diagnostic procedures.

P2-25

Intentional change of frontal-ramal inclination (FRI) of mandibular proximal segment using patient specific titanium plate with 3D design and CAD-CAM technology for the correction of facial asymmetry

Min-Ho Woo, Jin-Young Choi

Department of Oral and Maxillofacial Surgery, Seoul National University Dental hospital, Seoul, Korea

Introduction

There are various factors affecting the facial symmetry, but important factors related with the shape and symmetry of the lateral edges of the middle and lower face from lower part of the zygomatic arch to the chin are the outer surface shape and angle of both mandible ramus. This angle can be measured with frontal-ramal inclination (FRI). By using a patient-specific titanium plate made with 3D design and CAD-CAM technology, it is possible to intentionally change and maintain the proximal segment of the mandible to match bilateral symmetry during orthognathic surgery.

Methods

Among the patients who underwent orthognathic surgery including 2 jaws from 2019 to June 2020 at our hospital, 20 patients with facial asymmetry who can measure data were selected. The stl format file extracted from DICOM was reconstructed into 3D graphics using a computer 3D simulation program(FACEGIDE® , MegaGen implant, Daegu, South Korea). On a computer, FRI was measured four times before and after surgery on a computer, and the amount of change was derived. (before the patient's surgery, after virtual surgery, immediately after surgery, and after more than 6 months after surgery).

Result and discussion

When the FRI of the proximal segment of mandible was changed with a patient-specific titanium plate made with 3D design and CAD-CAM technology, the FRI after surgery had little differences compared with FRI of virtual surgery without significant errors. In addition, even in patients who followed up for more than 6 months after surgery, the amount of change remained, and asymmetry in the frontal view of the face was also significantly improved. The advantage of orthognathic surgery using patient-specific titanium plate is that the FRI can be changed and maintained relatively accurately to match the symmetry of both sides with a minimum error. Moreover, it is reported that the position of the mandibular condyle is also relatively unchanged before and after surgery.

P2-26

Maxillary posterior segmental osteomy; Case report

Mi Ri Moon*, Sang Rae Park,
Seul Ki Lee, Soo Nam Yang

Department of Oral and maxillofacial surgery,
Cheongju Hankook hospital

Introduction
Due to the long-term partial edentulous condition, it is often encountered that, due to the lack of vertical height for prosthetic restoration, prosthetic treatment according to the conventional method is impossible. Segmental osteomy is a surgical technique that can secure intermaxillary space while preserving the extruded tooth. This study aims to report a case of applying a segmental osteomy to recover the restoration space that has become insufficient due to extrusion of the maxillary molar.

Case report
A 41-year-old woman who was #26,36,37 in the state of missing, visited the Oral Surgery Clinic to restore the implant. It was more than a year after extraction, and a large amount of the alveolar bones in the maxillary molar teeth and #27 were selected downwards and touched the opposing mandibular gingiva. To create a space to be restored with an implant prosthesis, a segmental osteomy in the upper left posterior region was performed. The surgical method was performed, after local anesthesia, by incising the buccal gingival vestibule in the left posterior region and removing the flap upward. After cutting the horizontal bone above the apex of #27 using a piezo, and separating the bone using a chisel after cutting the vertical bone from the #25 distal end, and after trimming the inner bone using a bur, the fracture fragment was repositioned upward and fixed with a plate. After that, #23, 24, 25, and 27 were interlocked with the resin-wire splint. #26,36,37 implant fixtures will be placed in 6 months.

Conclusion and Discussion
As a result of measuring the occlusal space of the left posterior region with panoramic photos before and after surgery, it was confirmed that the space increased by about 3.8mm in #26 and about 4.8mm in #28. Segmental osteomy can correct the occlusal space in a short time while preserving the periodontal tissue, but it requires the establishment of a detailed treatment plan, careful operation, and management after the operation. In particular, necrosis of the bone fragment, and loss of vitality of the surrounding teeth may occur after surgery. When performing a segmental osteomy in the maxilla, be especially careful about bleeding that occurs due to the invasion of the maxillary sinus. In addition, if the blood flow to the bone fragment is not maintained during osteomy, it may lead to necrosis of the bone fragment, so the blood flow to the bone fragment should be kept to a minimum to maintain the blood flow. Although the restoration space that has become insufficient due to the extrusion of teeth can be resolved with a clinical crown lengthening through root canal treatment, a segmental osteomy can be an excellent alternative in terms of being able to preserve the periodontal tissue and teeth to the maximum.

P2-27

Effect of the position of 3rd molar on the mechanical stability of the mandible after mandibular contouring surgery during clenching task

Jae-eun Kim*, Youngjae Yoon,
Gunwoo Noh, Yong-Dae Kwon

Department of Oral & Maxillofacial Surgery, Department of Dentistry, Graduate School, Kyung Hee University, Seoul, Korea
Department of Mechanical Engineering, School of Engineering, Kyungpook National University, Daegu, Korea.
Department of Oral & Maxillofacial Surgery, School of Dentistry, Kyung Hee University, Seoul, Korea

Introduction
The objective of this study was to analyze the stress distribution of mandible on the position of third molar, clenching task and mandibular contouring surgery, using a finite element analysis(FEA).

Materials & Methods
Based on computed tomography (CT) scans and finite element methodology, three-dimensional (3D) models were obtained and prepared : pre-operative mandible (S0), mandibular angle contouring surgery(S1) and sagittal cortical ostectomy of ramus and body with angle contouring(S2). Mechanical properties of the mandible were based on Hounsfield unit measured from CT images. Boundary conditions to restrict movement on both condyle. The clenching task group was divided : Incisal clench(G1), Right unilateral molar clench(G2), Right group function(G3). Lower third molars were classified according to the presence and position(T0~T3). These various factors were applied to each model of the mandible, and the strain energy of the whole model and Von Mises stress distributions to the mandible were evaluated using finite element analysis.

Results
The strain energy and Von Mises stress distribution for mandible were high in the post-operative model and the S2 model was most vulnerable to stress during G2 clenching task. When third molars were impacted, stress was concentrated on the surgical site and the PDL area of the impacted third molar in the S2 model. The highest stress was found on the PDL area in partially and fully impacted third molar.

Conclusion
These results suggest that presence and position of impacted third molar and clenching tasks can undermine the mechanical stability after mandibular contouring surgery. So, when setting up preoperative treatment plans, it is necessary to identify various factors and consider the mechanical stability of the jaw.

P2-28

A Surgical approach using Augmented Reality(AR) navigation in orthognathic Surgery: Case report

Yejoon Jo*, Ji-Su Oh, Jae-Seek You, Hae-In Choi,
Hee-jin Kim, Jun-Seok Choi, Seong-Yong Moon

Department of Oral and Maxillofacial Surgery, School of Dentistry, Chosun University

Introduction
Orthognathic surgery is used to rearranges the positional relationship between the maxilla and mandible, and to improves the occlusal and facial aesthetics. At this time, small deviations, especially vertical deviations in the posterior part of the maxilla, cause bone deviation of the mandible and may cause changes in the shape of the face. These deviations affect the postoperative results. The development of sensor and graphic technology has made it possible to assist in successful orthognathic surgery using augmented reality technology. In this case, we report a case of 2-jaws surgery using a self-made AR navigation system.

Method
A 24-year-old male was admitted to the Department of Oral and Maxillofacial Surgery at Chosun University Dental Hospital with the complain that his lower jaw is protruding forward. He had been undergoing preoperative orthodontic treatment at local clinic 18 months before hospital visit, and severe prognathism of the mandible was observed. After 3D modeling was performed through preoperative CT scans and face scans, the preoperative plan was established in consideration of the location of the patient`s anatomical structure, occlusal state, and required amount of movement. On Sep. 17, 2020, AR-navigation surgery was performed through AR viewer. An image of the actual surgical site was obtained through a 4k camcorder, and the surgical site was tracked based on the marker on the patient`s forehead in real time on a laptop, overlapped with a pre-planned 3D model, and

displayed on the operator`s head-mounted display. The surgeon performed Lefort I osteotomy and BSSRO while viewing the image superimposed on the pre-planned model and the actual surgical site.

Result

General complication such as edema and bleeding after surgery were similar to those of other surgery. After follow-up observation, postoperative CT scans and face scans are expected to analyze the deviation between the preoperative surgery plan and the actual surgery.

Conclusion

The surgery with AR navigation introduced in this case provides the surgeon with a preoperatively planned model superimposed on the actual surgical site, minimizing the deviation between the preoperative plan and the actual surgery, and also reducing the time.

Tumor & Reconstruction

P3-01

Glomangioma of the chin : a case report

Min-Woo LEE*, Sung-Min PARK, Moon-Young KIM, Se-Jin Han, Chul-Hwan KIM, Jae-Hoon, LEE

Department of Oral & Maxillofacial Surgery, College of Dentistry, Dankook University

Perpose

To introduce a case of glomangioma of the chin

A glomangioma is a subtype of glomus tumor (another subtype being glomangiomyoma, which contains a muscular component). Glomangioma was first described by Masson in 1924. This painful, blue-red tumor is composed of specialized pericytes. It is a benign soft-tissue tumor that usually appears on the skin of the distal extremities, in the nail bed, and in subcutaneous tissue. They are relatively rare in the head and neck region. Especially, no case of a glomangioma of the chin has been published. So We present a new case of glomangioma of the chin in a 62-year-old man.

P3-02

Case report : Large Osteotoma on Right Mandible

Ga Hyung Lee*[1], Bong Chul Kim[1], Jun Lee[1, 2], Hun Jun Lim[1]

[1]Dept. of Oral and maxillofacial surgery, Daejeon Dental Hospital, College of Dentistry, Wonkwang University
[2]Wonkwang Bone Regeneration Research Institute, Wonkwang University

Osteoma is a benign osteogenic lesion characterized by proliferation of compact or cancellous bone. In the case of osteoma, depending on the location, it may cause headache, facial pain, swelling, and limit of the mouth opening, and most of the symptoms are developed by compression.

In this case report, we present a 11-year old male patient complaining of facial asymmetry. On clinical examination there was no limited mouth-opening and pain in swallowing. However, we could find a distinct facial asymmetry problem. A panoramic radiograph and a computed tomographic(CT) scan confirmed that the radiopaque lesions in the right mandibular body.

We removed the lesion with extraoral approach under general anesthesia.

The treatment of osteoma is performed when symptoms are present, and in principle, the tumor must be completely excised. However, continuous observation is required in case of incomplete removal. However, the transition from osteoma to malignancies has not yet been reported, and recurrence is known to be extremely rare. If the osteoma is large and damage to the surrounding tissues is expected during removal, It must be removed carefully. In this case, the possibility of recurrence of osteoma was continuously observed, and no recurrence or malignant conversion was observed for 6 months after surgery.

Acknowledgement

This work was supported by Wonkwang Universtiy on 2020

P3-03

A Study on the Accuracy of the Mandibulectomy and Reconstructive Surgery Using 3D Customized Implants and Surgical Guides in a Rabbit Model

Min-Keun Kim*[1], Seong-Gon Kim[1], Kwang-Jun Kwon[1], Young-Wook Park[1], Won-Rae Kim[2], Min-Ji Ham[2], Hyung-Giun Kim[2]

[1]Department of Oral and Maxillofacial Surgery, College of dentistry, Gangneung-Wonju National University
[2]Functional Materials and Components R&D Group, Korea Institute of Industrial Technology

Purpose

The objective of this study is to analyze the accuracy of the output of 3D customized surgical guides and titanium implants in a rabbit model, and to analyze the accuracy of mandibulectomy and reconstruction surgery, the accuracy of surgery results, and the correlation between the accuracy of the surgery and the surgery results including the difference in surgical results according to the accuracy of the surgery.

Method

Twenty male rabbits in 50-week-old were operated on mandibulectomy and 3D cusomized reconstruction surgery. The customized surgical guide was fabricated by conducting its design and printing at the Gangneung branch of the Korea Institute of Industrial Technology (KITECH). The analysis was performed by using images reconstructed in three dimensions of CT before and after the surgery of 20 rabbits, 3D output models, corpses, images taken during the surgery, printed implants and surgical guides, and bone fractures obtained during the surgery. The accuracy of the printed surgical guides and implants, the accuracy of the surgery, the accuracy of the surgery results, the correlation between the accuracy of the surgery and the surgery results, and the difference in clinical results according to the results of the surgery were evaluated.

Results

The output of the implants was implemented accurately within the error range of −0.03~0.03 mm, and the surgery performance varied depending on the measured area and showed an accuracy of −0.4~1.1 mm. Among the results of the surgery, the angle between the mandibular lower borders showed the most sensitive results because of the large differences between the subjects, and the intercuspal distance of the most anterior premolar represented the most accurate surgical results. A significant amount of correlation between the difference in the antero-postero length of the

mandibular upper border before and after the surgery and the the angle between the mandibular lower borders(regression coefficient=0.491, P value=0.028). In the group where surgery was performed more accurately, the the angle between the mandibular lower borders was reproduced more accurately (P value=0.021).

Discussion

The Selective Laser Melting Machine used in this study printed the implants very accurately as designed. The biggest cause of errors in performing the surgery is considered to have failed to accurately reproduce the position of the surgical guide. In addition, another important factor is that the surgical guide did not maintain a constant direction of the surgical guide. An oversized surgical tool was a factor that caused a large error. The short length of screws used for fixing the bilateral cortical bone failed to locate the implant. Considering the positive correlation between the accuracy of the surgery in the mandibular upper border and the angle between the mandibular loser border, and the more accurately reproduced the angle between the mandibular loser border, the angle between the mandibular lower border is considered a good indicator that can be used to evaluate the results of the reconstruction surgery.

Conclusion

In the surgery on 3D printed implants, the implants are output as planned within a range of error of −0.03~0.03 mm. In order to reduce errors in the results of the surgery, it is necessary to devise a positioner for the surgical guide, and to design a three-dimensional surgical guide to constantly maintain the direction of the surgery. In addition, the fixed area considering the concept of three-point fixation shall be selected for the stable position of the implant and, in some cases, the bilateral cortical bone fixation shall be considered. The angle between the mandibular lower borders is a sensitive indicator that can be used to evaluate the results of the reconstruction surgery.

Keywords

3D printing, custumized titanium implant, surgical guide, accuracy, rabbit model

Acknowledgement

This work was supported by the National Research Foundation of Korea(NRF) grant funded by the Korea government(MSIT) (No.:2018R1C1B5086579).

P3-04

Recurred Nasopalatine Duct Cyst with Intraluminal Calcification

Ji Ho Yang*[1], Bong Chul Kim[1], Hun Jun Lim[1], Jun Lee[1], Jung Hoon Yoon[2]

[1]Dept. of Oral and maxillofacial surgery, Daejeon Dental Hospital, College of Dentistry, Wonkwang University
[2]Dept. of Oral and Maxillofacial Pathology, Daejeon Dental Hospital, College of Dentistry, Wonkwang University

The nasopalatine duct cyst is a unilocular radiolucent lesion with a well defined border and is characterized by its round, oval or heart shape. Most of the nasopalatine duct cysts show complete radiolucent images inside, but a few contain radiopaque materials, and there is one paper that reports the radiopaque image inside nasopalatine duct cyst and this turned out to be the deposition of calcified material of abnormal tissues.

The nasopalatine duct cyst is caused by cystic change of the epithelial residual cells present in the nasopalatine duct, and it is also called as an incisive canal cyst. It is known to occur 3 to 4 times more frequently in women, and 30s to 50s tend to occur more frequently. Also by trauma, infection and spontaneous factors cause nasopalatine duct cyst to occur. Most of them are asymptomatic and are often found on radiographs by chance, and when infection is accompanied, pain or swelling is manifested.

In most cases, cyst enucleation is done for the treatment and if the size is large, marsupialiazation is recommended. Recurrence is known to be very rare if enucleated.

We report a case of a recurred nasopalatine duct cyst that has calcification within the lesion.

P3-05

Spontaneously decreased leukoplakia on left buccal mucosa

Jeong Hun Yoo*[1], Jung Hoon Yoon[2], Hun Jun Lim[1], Bong Chul Kim[1], Jun Lee[1,3]

[1]Dept. of Oral and maxillofacial surgery, Daejeon Dental Hospital, College of Dentistry, Wonkwang University
[2]Dept. of Oral and maxillofacial pathology, Daejeon Dental Hospital, College of Dentistry, Wonkwang University
[3]Wonkwang Bone Regeneration Research institute, Wonkwang University

Leukoplakia is a white patch or plaque that is not clinically diagnosed as another disease.There are no histologically defined features, but it is generally considered a precancerous lesion.Malignant changes in Leukoplakia occur in about 4%.The direct cause of Leukoplakia is not yet known, but it is thought that there are various causes such as drinking, smoking, ultraviolet rays, and microorganisms.Mostly, it is prevalent in people in their 40s and older, and it is prevalent in men rather than women.It mainly occurs around the lips, buccal mucosa, and gums, and 90% of Leukoplakia that has progressed to dysplasia is the Leukoplakia of the tongue, lips, and mouth.

This case was a 63-year-old patient who visited the hospital with a white lesion on the left buccal mucosa, underwent an incisional biopsy, and was diagnosed with vitiligo.At the time of incisional biopsy, the size of leukoplakia was measured to be 15mm x 8mm.The patient was taking drugs due to hypertension and hyperlipidemiaExicisional biopsy was performed under general anesthesia after about 2 months.The lesion was reduced in size to 5mm x 4mm without any special treatment. As a result of biopsy, it was finally diagnosed as leukoplakia

P3-06

The Use of a Pedicled Buccal Fat Pad for Reconstruction of Posterior Mandibular Defects: Case Report

Hyenwoo Lee*, Dong-mok Ryu, You-jin Jee, Sung ok Hong, Gwangjin Oh, Jaedeok Lee, Heeyeon Bae, Youngjin Shin

Dept. of Oral and Maxillofacial surgery, Kyung-Hee University Dental Hospital at Gangdong

Purpose

A pedicled buccal fat pad has been used for a long time to reconstruct defects in the oral cavity due to ease of flap formation and few complications. Many cases related to the reconstruction of defects in maxilla, such as closing oroantral fistula, have been reported, but cases related to the reconstruction of mandibular defect is rare. The purpose of this case report is to show that the use pedicled buccal fat pad can be an effective method for reconstruction of posterior mandibular defect.

Methods

- Patient 1 -

The patient was a male, aged 69 years, who had a clinical history of radiation therapy after resection of squamous cell carcinoma in the right tonsil and reconstruction four years ago. He visited our department due to swelling of the right mandible and pus discharge from the ipsilateral posterior dentition accompanied by tooth mobility. As a result of clinical and radiological examination, osteomyelitis was observed with partial osteonecrosis of the right mandibular body and angle. Under general anesthesia, after extractions of teeth with poor prognosis, sequestrectomy was performed intraorally and fistulas in and out of the oral cavity were sutured for closure. After 3 months of watching, osteonecrosis of the mandibular body and angle was continued and so was the pus discharge. Therefore, sequestrectomy through extraoral approach was done and right pedicled buccal fat pad was grafted by anterior traction for closure of the intra-oral

fistula to the mandibular body.

- Patient 2 -
The patient is a 53-year-old female who was diagnosed with squamous cell carcinoma in the right mandible 2 months ago. The patient underwent right. Hemimandibulectomy, fibubla free flap reconstruction, and split-thickness skin graft with thigh. After 2 months of surgery, the bone condition was maintained in good condition, but necrotic change in the reconstructed soft tissue were observed. After the removal of necrotic and inflamed tissue under general anesthesia, the ipsilateral pedicled buccal fat pad was grafted by anterior traction for, and Mucograft was sutured on top.

Results & conclusion
- Patient 1 -
It was confirmed that the fistula in the oral cavity was closed 1 month after the pedicled buccal fat pad graft, and the condition was stably maintained without additional complications through 1-year follow-up.

- Patient 2 -
It was confirmed that part of mandible and metal plate were exposed after the pedicled buccal fat pad graft, but the condition remained stable. After 7 months, metastasis of the contralateral lymph node was observed, and left lymph node dissection (Level II-IV) and plate removal were performed. It was confirmed that the fistula in the oral cavity was closed after 8 months, and it was confirmed that the condition remained stable even 3 years after the operation.

Pedicled buccal fat pad is not widely used in mandibular defects due to the limitation of anterior traction, but is an effective treatment method for reconstructing defects in the posterior mandible.

P3-07

Management of multiple keratocystic odontogenic tumors associated with nevoid basal cell carcinoma syndrome: A case report of 11-year follow-up

Hoon-Min Kim*, Se-Jeong Lim, Yeong-Cheol Cho, Iel-Yong Sung, Jang-Ho Son

Department of Oral and Maxillofacial Surgery, Ulsan University Hospital, University of Ulsan College of Medicine, Ulsan, Korea

Introduction
Multiple keratocystic odontogenic tumors (KCOTs) is one of distinguishing features seen in a majority of nevoid basal cell carcinoma syndrome (NBCCS) patients. Because of high recurrence rate of KCOT, complete surgical resection is generally recommenced as definitive treatment. In this present case, we report the management of multiple KCOTs in NBCCS with marsupialization followed by excision with peripheral ostectomy and discuss the progress of the lesions during 11-year follow-up.

Case report
A 52-year-old female was referred to the Department of Oral and Maxillofacial Surgery, Ulsan University Hospital with mandibular multiple cystic lesions in 2009.
The patient had hypertelorism and a history of surgery for multiple basal cell carcinomas 2 years ago. Radiographs revealed multiple cystic lesions in the mandible involving anterior, both posterior, and left ramal regions. Falx cerebral calcification was also observed on the CT scan.
Mutiple marsupialization followed by surgical excision to preserve inferior alveolar nerves were planned. All the lesional tissues were sent for histopathological examination and consistent with KCOT. After 8 years of surgical excision, a new lesion in the mandible was observed and excised. The patient is under close follow-up and has no sign of recurrence since then.

Conclusion
KCOT occurring in NBCCS have a higher recurrence rate as compared to nonsyndromic solitary keratocysts. Moreover, patients with NBCCS are at increased risk of developing more KCOTs in their life time, therefore long-term close clinical follow-up is needed.

P3-08

Case Report: Multiple Primary Carcinomas in Oral Cavity

Joo-Hyung Yoon*[1], Ji-Hyeon Oh[1], Min-Keun Kim[1], Kwang-Jun Kwon[1], Seong-Gon Kim[1], Young-Wook Park[1], Sang-shin Lee[2]

[1]Department of Oral and Maxillofacial Surgery, College of dentistry, Gangneung-Wonju National University
[2]Department of Oral Pathology, College of dentistry, Gangneung-Wonju National University

Introduction
Multiple primary carcinomas are 2 or more malignant tumors that are anatomically separated, not connected by neoplastically changed epithelial tissue or submucosal tissue, and have no possibility of occurrence by metastasis from one lesion to another. This case report aims to review about the case of multiple primary carcinomas occurred in oral cavity.

Case report
68-year-old man appealed pain on left posterior side of the tongue. He quitted smoking 10 years ago, and before abstaining from smoking, he smoked 1 pack of cigarettes per day. During clinical examination, 5mm-sized multiple erythematous lesions were found on left posterior side of the tongue. Biopsy was performed, and the pathological examination result mentioned that the lesion is suspicious for malignant tumor. The patient had not visited the hospital because of personal reason, and 5 months later, he appealed the tongue pain. Cytology was performed and the pathological examination result showed the lesion is highly suspicious for malignant tumor. MRI, PET-CT were taken, and the result showed the existence of primary carcinomas on left mandibular gingiva and left posterior region of tongue. Under general anesthesia, the carcinomas were removed, marginal mandibulectomy and selective neck dissection (I-III) were performed, and reconstruction was held with radial forearm free flap graft. After surgery, radiation therapy was performed. However, when 7 months passed after surgery, carcinoma recurred below the region where gingival carcinoma existed.

Conclusion
The incidence of multiple primary carcinomas on head and neck is 7~21%, and confined to oral cavity, the incidence of them is 1.4%. Therefore, the present case can be regarded as a rare carcinoma case. Multiple primary carcinomas usually occur in women or patients who have no experience of smoking, but the patient of the present case does not belong to any of the two conditions. The recurrence rate of multiple primary carcinomas is higher than single primary carcinoma. In the present case, there was a recurrence of carcinoma. The recurrence of carcinoma in this case can be explained by the concept of field cancerization, and it seemed that the recurrence is occurred by the spread of the epithelial cells which are genetically altered but histologically normal. Also, since the survival rate of multiple primary carcinomas is relatively low, compared to single primary carcinoma, long term follow-up is necessary.

P3-09

Surgical treatment of giant cell reparative granuloma of mandible: a case report and literature review

Jun-Young Jeong*, You-Song Sim, Jaeyoung Ryu, Jeong Joon Han, Min-Suk Kook, Hong-Ju Park, Hee-Kyun Oh, Seunggon Jung

Department of Oral and Maxillofacial Surgery, School of Dentistry, Dental Science Research Institute, Chonnam National University

Introduction

Giant cell reparative granuloma (GCRG) is not a true neoplasm but rather a reactive process, and its origin could be triggered by trauma or inflammation. GCRG accounts for 1~7% of all benign lesions of the jaw. This lesion affects children and young adults, predominantly females, in the 2nd and 3rd decades of life. Although it is histologically benign, it may be locally destructive and clinically mimic a malignant lesion. In this case report, we discussed the clinical, radiological and histological findings and surgical treatment for GCRG of mandible with review of literatures.

Case presentation

A 15-year-old female patient was referred from local dental clinic with a 2-day history of pain on chin and well-defined radiolucent lesion located in the symphysis of mandible. There was no history of trauma or dental problems. Bone biopsy was performed and it was diagnosed as a GCRG. Panoramic radiograph was retaken to evaluate before surgery after 1 month, and the size of the lesion increased by 1.0 cm within a month. Root canal treatment was performed on adjacent teeth (#33-44) before surgery, and immediate reconstruction of the mandible following surgical resection was performed with an autologous iliac PMCB graft using titanium-mesh. There was no evidence of postoperative complications.

Discussion and conclusion

We have successfully treated the present case by pre-operative root canal therapy, resection of the lesion and reconstruction of the jaw with an autologous iliac PMCB graft using titanium-mesh.

P3-10

A study on complications and bone healing after cyst enucleation in oral and maxillofacial area

Yongwook Jung, Hyun Jun Oh, Byoung-Moo Seo

Department of Oral and maxillofacial surgery, Seoul National University Dental Hospital

Odontogenic cysts are the most commonly observed benign lesions in the oral and maxillofacial area. Recently, various biomaterials have been developed and additional bone grafts are carried out to aid bone recovery. In this study, we investigate the complication after cyst enucleation and find out the effect of bone graft on recovery.

123 patients who underwent surgery in January 1, 2016 and December 1, 2017 for cyst enucleation in the Department of Oral and Maxillofacial Surgery in Seoul National University Dental Hospital were studied. The study examined the patients' age, gender, number and duration of post-operative visits, recurrence, pre- and post-operative infections, bone graft status and type, pathology, size, location, insertion of drain, diabetes and osteoporosis, marsupialization, pathological fractures and sensory abnormalities. The operation was performed by a one skilled surgeon. Pre-operative examination by panoramic imaging and CT were carried out. The cyst was measured in the computed tomographic image with the longest part of the length and width of the frontal plane, and with the longest part of the sagittal plane. If the cyst was measured to be larger than 3cm, and if the important anatomical structure was superimposed, contrasting procedures were preceded.

Out of the 123 cases where surgery was performed, 15 cases of infection were confirmed (8 cases with bone grafts, 7 cases without bone grafts). There was a higher risk of infection in cysts that were more than 2 centimeters in size. In addition, The rate of infection was higher in the mandible than the maxilla (6 cases of infection in the maxilla, 9 cases of infection in the mandible) and infections in the mandible all occurred in posterior mandible. The rate of infection was higher in the group of patients with bone grafts, but results were not statistically significant. Cyst recurrence was observed in 9 cases(OKC 6cases, POMC 3cases). The type of cyst affects the recurrence rate. It was difficult to confirm whether or not the bone grafts in the defects had a positive effect on bone recovery. Further researches will be conducted to identify the bone healing pattern after bone graft.

P3-11

Central xanthoma: Report of two cases

Jun-Sang Park, Hyun Jun Oh, Truc Thi Hoang Nguyen, Hye-Jung Yoon, Kyung-Hoe Huh, Soung Min Kim, Byoung-Moo Seo

Department of Oral and maxillofacial surgery, Seoul National University Dental Hospital

Xanthoma is a rare soft tissue and bone condition involving aggregation of lipid-rich foamy histiocytes. When xanthomas arise in the bones of the jaw, they are referred as central xanthoma, which recently is considered as separate and distinct diseases from other non-oral counterparts. This study is the first reported oral and maxillofacial case of central xanthoma in South Korea and we investigate the histological, radiological findings and prognosis of two cases.

2 patients who underwent surgery in 2019 and 2020 for mass excision in the Department of Oral and Maxillofacial Surgery in Seoul National University Dental Hospital were studied. We examined the patients' age, gender, past medical history, pre- and post-operative clinical features. The pre-operative radiological examination was done with panorama and computed tomographic image (CT). The radiological features of each tumor was examined using CT image, taking size, and cortical bone absorption into consideration.

Case 1

A 25-year-old male patient with both radiolucent and radiopaque lesion on the right ramus was referred. Radiological findings showed multifocal low attenuation, fibro-osseous lesion suggesting fibrous dysplasia(FD), though features were not distinctive for FD. Once pericoronitis on lower right 3rd molar was medically alleviated, the patient was treated with simultaneous iliac crest bone graft on the defect site of the jaw. The histologic findings showed the corresponding characteristics of central xanthoma. The patient was recovered without any complications.

Case 2

A 72-year-old female edentulous patient showed high attenuation lesion on the right mandible with soft tissue hyperplasia. The patient underwent extraction of lower right canine and premolar 8 months prior to visit to our outpatient clinic. The patient was treated with excisional biopsy alone under intravenous sedation and local anesthesia, due to radiologically more aggressive features suggesting malignancy. The histologic finding was confirmed as central xanthoma and the patient was recovered without any complications.

The two cases both showed central xanthoma on the mandible but showed different radiological findings. In the first case radiological information suggested fibrous dysplasia while the second case suggested malignancy. This suggests the challenge and caution regarding the clinical diagnosis of central xanthomas. Also, though curettage alone is the accepted treatment for central xanthomas, we used bone graft to assist healing of the defect area and result was successful. For accurate diagnosis, possible presentation of features of fibrous dysplasia and malignant tumors have to be taken into consideration when detecting central xanthomas in the oral maxillofacial region.

P3-12

Surgical Treatment of LargeDentigerous Cyst by Sagittal Split Ramus Osteotomy: A Case Report

JIHYE JEONG*, SUNGYU CHOI, SUNGHWI HUR, SOONAM YANG

Department of Oral and maxillofacial surgery, Cheongju Hankook hospital

Introduction

The dentigerous cyst is defined as a cyst that originates by the separation of the follicle from around the crown of an unerupted tooth. This is the most common type of developmental odontogenic cyst. Although dentigerous cysts may occur in association with any unerupted tooth, most often they involved mandibular third molar. Other relatively frequent sites include maxillary canines, maxillary third molars, and mandibular second premolars. The classic treatment for dentigerous cysts is enucleation and extraction of the involved tooth. Large dentigerous cystsmay cause cortical thinning. There is a risk of pathological fracture of the mandible.We report a case of a large dentigerous cyst on right mandible, which was treated by SSRO.

Method

A 18-year-old man was referred to the Hankook Hospital due to a cystic lesion on lower right molar. Radiographic examination revealed a large cystic lesion in the right side of the mandible, extending from the periapical region of #47 involving the body, angle, and was around 3.5 × 2.0 cm in dimensions. The third molar was embedded in the lesion. The lesion had caused thinning of the buccal cortical plate, and erosion of the lingual cortical plate.
SSRO was used to enucleate the lesion and extract the third molar with under general anesthesia. Two4-hole mini plates were applied. Intermaxillary fixation was performed for a week postoperatively.

Conclusion

There are advantages of using an SSRO to approach a large cyst of the mandible. First, it is easy to approach to the lesion and secure the surgical field. It let us not only reduce operation time but minimalize the possibility of inferior alveolar nerve injury. It can save the adjacent anatomic structureand prevent pathologic fracture. Additionally, scar is notmade on the face.
In this case, we reportthat enucleation of large dentigerous cyst in mandible bySSROwas done without complications, such as damages of surrounding anatomical structures or mandibular fracture.

P3-13

Maxillary bone reconstruction using a free fibular flap : a case report

Hyehyeon Jo*, Miri Moon, Soonam Yang

Department of Oral and maxillofacial surgery, Cheongju Hankook hospital

Introduction

The maxillary bone is connected to the cranial base, orbit, nasal cavity, soft palate, and oral palate, so there are many functional and cosmetic problems during reconstruction. After the pathological tissue in the maxilla has been removed, it can be reconstructed using a focal flap, a percutaneous flap, or a glass flap, or the oral-maxillary sinus-nasal area can be blocked by using dentures, but the used dentures are difficult to obtain retention power, causing inconvenience in use. For the reconstruction of large bone defects, iliac crest and fibula are the most preferred donors, and after the anatomical reconstruction of the osseous body, the implant-supported prosthesis plays a decisive role in the recovery of mastication function. The purpose of this report is to report a case of reconstructed maxillary bone after extensive osteomyelitis removal surgery using a free fibular flap and dental implant.

Case report

A 73-year-old female patient visited the hospital in 2017 with discomfort in the right side of the maxilla. Extensive osteonecrosis of the maxillary and palatal region, which started with Aspergillus infection, occurred, and reconstruction was performed using fibula. One year later, 3D CT scans of the reconstruction were performed and implants placement were performed.. After prosthesis treatment, the patient was able to eat a normal diet and was satisfied with the postoperative masticatory function and aesthetics during the follow-up period for 6 months after the reconstruction.

P3-14

Retrospective study of patients repaired to primary closure after removal of malignancy lesion on oral area

Jun-Seok Choi*, Seong-Yong Mon, Ji-Su Oh, Jae-Seek You, Hae-In Choi, Hee-Jin Kim, Ye-Joon Jo

Department of Oral and Maxillofacial Surgery, School of Dentistry, Chosun University

Introduction

The purpose of this study was to compare patients who had malignant lesions in the oral and maxillofacial region and primary sutured the defect site directly to those who had repaired using flaps. This study is attempt to evaluate the usefulness and advantage of closure.

Method and materials

For 10 years from January 2010 to May 2020, were investigated for patients who removed the lesion from the oral maxillofacial region at Chosun University Dental Hospital and then reconstructed using a flap and using primary suture. The survey was conducted by searching the database of Chosun University Dental Hospital. 85 patients had malignant lesions removed and 20 patients had their lesions closed using primary sutures. At the time of the patient's surgery, the type of lesion, the stage, metastasis, the age, and the presence or absence of follow-up were investigated.

Results

85 patients had their malignant lesions removed for 10 years, and 20 (23.5%) had their lesions closed using primary sutures. The types of lesions were squamous cell carcinoma, mucoepidermoid carcinoma. pTNM is distributed from stage I to stage IVB, and lymph node metastasis was suspected in 57 patients, and Neck disection was performed. Patients ranged in age from 15 to 87 years, confirming that 52 patients were being followed up. Patients who underwent reconstruction using flaps averaged 8 hours and 35 minutes, and patients who closed their lesions using primary sutures averaged 4 hours and 29 minutes.

Conclusion

After removing the malignant lesion in the oral cavity, the patient who used the primary closure did not appeal the inconvenience regardless of the type of lesion and stage and easy to evaluate the recurred lesion.

P3-15

Huge oroantral fistula closure using intraoral mucosal flap and radial forearm free flap

Kyung-Min Lee*[1], Ji-Hyun Oh[1], Kang-Min Ahn[2], Min-Keun Kim[1], Seong-Gon Kim[1], Kwang-Jun Kwon[1], Young-Wook Park[1]

[1]Department of Oral and Maxillofacial Surgery, College of dentistry, Gangneung-Wonju National University
[2]Department of oral and maxillofacial surgery, college of medicine, university of Ulsan, Seoul Asan medical center

Background

The huge oroantral fistula after large tumor resection on maxilla occurs frequently. In order to obstruct

this oroantral fistula, a method that folding radial forearm free flap to regenerate both side of mucosa in sinus floor area and intraoral area. But there are several disadvantages like excessive recipient thickness, huge donor site wound, so it would be an unaesthetic and invasive treatment plan. In this case, a patient who received partial maxillectomy due to malignant lesion had a huge oroantral fistula which was successfully reconstructed with double flap surgery using radial forearm free flap.

Case presentation
A 61 yeared old man had continuous inflammation after extraction of left upper molar teeth. (#25,26,27). It was histologically diagnosed for low graded Mucoepidermoid carcinoma, involved in left maxilla and maxillary sinus, cT2N1M0, stage III. Under general anesthesia at October 2, 2015, partial maxillectomy with selective neck dissection was performed. After then, the Op. site defect was covered by pedicled buccal fat pad. During follow up postoperatively, the lesion was recurred. Under general anesthesia at July 20, 2017, subtotal maxillectomy and prosthetic treatment using obturator was performed. Additionally, radiation therapy was performed at National cancer center. During follow up postoperatively, lung metastasis was observed, radiation therapy was performed also on lung lesion. After 2 year follow up postoperatively, prognosis of primary lesion and lung metastasis lesion were stable, and the patient wanted to improve the problems of food reflux and inaccurate pronunciation by oroantral fistula. So that the reconstruction surgery was planned for obstruction the palate. Under general anesthesia at November 15, 2019, obstruction surgery of oroantral fistula was performed. Intraoral mucosa flap was harvested for reconstruction of nasal layer to achieve primary closure of the fistula. The radial forearm free flap was grafted to the superficial layer of oral side for complete closure of the fistula. Removable partial denture was fabricated for cover the obstructed flap to repair the esthetics and occlusal function. There were no specific complications or recurrence signs on Op. area.

Conclusion
In reconstruction case of a huge oroantral fistula with radial forearm free flap, methods of additional skin graft or folding radial forearm free flap to graft should be performed for epithelization of sinus floor side. In this case, the huge oroantral fistula following resection of malignant lesion was recovered successfully with double flap surgery using oral mucosa flap and radial forearm free flap.

P3-16

Nodular Fasciitis with Bony Erosion of the Zygomatic Area : A case Report

Woo-chul Shim*, Jin-yong Cho

Department of Oral & Maxillofacial Surgery,
Gachon University Gil Medical Center

Nodular fasciitis is a benign lesion composed of fibroblastic and myofibroblastic proliferative reaction, which is confused with a malignant tumor. The lesion usually presents as a rapidly growing subcutaneous mass. 15-20% of theses tumors are located in the head and neck. Only a few cases reported in the zygomatic area.
A 50-year-old man visited our hospital with swelling of right zygomatic. The lesion had bone erosion in the right zygomatic bone, relatively grown rapidly over the previous 2 months. Contour of the lesion was round and well-defined margin with 3.5 x 2.8 x 2cm size was observed on contrast-enhanced Head and Neck CT scan.
The patient underwent complete excision via vestibular approach and lower eyelid approach. The resected mass was a uniformly whitish red colored mass on cut surface without a definite capsule. The histopathologic examination revealed a fibroblastic proliferation with myxoid and collagenous stroma, therefore the lesion was pathologically diagnosed as nodular fasciitis.
We experienced diagnosis and treatment of zygomatic nodular fasciitis showing relatively rapid growth and bony erosion, therefore, report this case with a review of the literature.

P3-17

Multiple superficial mucoceles: a case report

Sungbin Youn, Hyun Jun Oh, Jae Il Lee, Byoung-Moo Seo

Department of Oral and Maxillofacial Surgery,
Seoul National University Dental Hospital

Introduction
Mucocele occurs because of a ruptured or cut off minor salivary gland duct, which usually involves the lower labial mucosa and oral lesion. However, superficial mucocele appears single or multiple vesicle in areas where trauma is difficult to occur, such as soft palate, lower labial mucosa or retromolar pad, and occurs in epithelial-connective tissue border pathologically, and the etiology is not yet known. This case reports on the unique clinical aspects of multiple superficial mucoceles in the soft palate and lower labial mucosa and the need for diagnosis, which is the first case report in Korea.

Case report
A 21-year-old male was referred to the Oral Medicine Department because oral feeding is difficult due to multiple intraoral blisters that occurred six months ago. While in serving in the military, the patient is working on oil transportation and has absorbed oil vapor, but there has been no inconvenience. Multiple blistering lesions were observed in soft palate and lower labial mucosa, and the symptoms did not improve even though prednisolone, antibiotics, NSAIDS and nortriptyline by other dental hospital. Biopsy was requested to department of oral maxillofacial surgery for diagnosis of mucous membrane pemphigoid, and the result was confirmed to be superficial mucocele, which was identical to the results of immunofluorescence assay and the re-examination of the biopsy specimen conducted by other hospitals. The use of 0.05% dexamethasone gargle over five weeks reduced the number of blisters and the symptoms also improved.

Conclusion
Superficial mucocele was first introduced by Eveson in 1988 and was less frequent and different from the usual mucocele, and its cause was also unclear. The reported cases have been small in number and usually no symptoms, and the lesion has voluntarily disappeared, but in this case, the clinical aspects and the patient's discomfort lasted for more than six months. Although there have been reports of cases in which inflammatory reactions might be the cause through symptoms accompanied by oral lichen planus or graft versus host disease, no OLP was observed in this case. Clinical aspects of superficial mucocele are similar to pemphigoid, bullous lichen planus, and herpes lesion, which requires a discriminative diagnosis, and in this case, similar to MMP, they were also identified through immunofluorescence assay. Through this case, the diagnosis and the progress of the treatment of superficial mucocele was reported. However, the number of studies is small, and lack of established treatment, and follow-up research is needed.

P3-18

Navigation-assisted surgical resection of central giant cell granuloma in temporal bone and skull base: A case report

Tsung-Hsun HO*, Elliot Shih-Jung CHENG

Department of Oral & Maxillofacial Surgery,
National Taiwan University Hospital

A 35-year-old man had hearing impairment about 7 years ago. 3 years ago, he had a painful enlarging mass in his left pre-auricular area, so he received a biopsy surgery at a local hospital. The pathological report favored a fibrous dysplasia. Then, it was not until the pain attacked again that he came to our OPD for evaluation 6 months ago. There was a hard mass on his left TMJ without local redness and tenderness. But Intermittent pain occurred while TMJ movement, like chewing, speaking, etc. Occlusal examination appeared anterior open bite with lower

midline shift to right. CT scan showed an exophytic ground-glass sclerotic osseous lesion, about 3.6 cm X 2.0 cm X 2.0 cm in size. The lesion located at zygomatic arch of temporal bone and extended posteriorly to mastoid sinus and pectrous pyramid, inferiorly to glenoid fossa, and superiorly to cranial base. Repeated biopsy showed no overt cytologic atypia or mitotic figures of these cells. Due to the tumor extended into the basal skull, limited debulking resection of the lesion combined with orthognathic surgery to correct mandible deviation was planned. To preserve vital organ and resect as precisely as possible, navigation system was applied. The lesional margin and the resection demarcation were determined in software separately. Resected bone defect was simulated by virtual surgery planning, and was restored and mirrored from the other healthy side. Tumor resection was precisely performed under navigation assistance and the reconstruction plate was fixed on zygomatic arch as planning. After tumor resection and defect reconstruction, mandibular bilateral sagittal split osteotomy was also followed to correct malocclusion. The definite pathological diagnosis is central giant cell granuloma. Owing to limited resection of the lesion, pharmacological therapy was considered, including Denosumab, bisphosphonate, calcitonin, and regular follow-up is mandatory.

P3-19

A retrospective study on oral cancer patients with radial free tissue microvascular transfer

Yoon Hee Ma*, Jin Young Park, Won Hyuk Choi, Han Kyul Park, Na-rae Choi, Jae-Min Song, Jae Yeul Lee, Dae-Seok Hwang, Yong-Deok Kim, Sang Hun Shin, Uk-Kyu Kim

Dept. of Oral and maxillofacial surgery, School of Dentistry, Pusan National University

Introduction
As the life span is long, the incidence of oral cancer has increased recently. Despite advances in diagnostic methods, surgical techniques, and postoperative management, the prognosis of patients with oral cancer is still poor and accounts for around 5% of carcinomas. In this clinical study, retrospective data were analyzed for patients with oral cancer within the last 3 years who were operated on by the same surgical team. The purpose of this study was to investigate the factors affecting the prognosis of patients with severe oral cancer with microvascular free flap surgery and to obtain clinical data for the diagnosis and treatment planning of oral cancer and clinical data.

Method and materials
We studied 10 patients who underwent microvascular flap surgery. We analyzed the sex, age, primary site, type of carcinoma, histologic grade, stage, complication, and additional acquired retrospective clinical data, and analyzed the effect of each factor on survival rate and flap success rate.

Results
Among the patients with severe stage cancer diagnosed as stage III or above, 10 patients underwent cancer resection and reconstruction using microvascular free flap transfer. One out of 10 patients (6.6%) recurred at the primary site and consulted for palliative chemo-radiation therapy and other patients were survived. Total survival rate was 100%. As free flap types, radial forearm free flap mainly was applied. 8 of 10 patients (80%) showed flap success. The majority of the patients were diagnosed of squamous cell carcinoma. Adjuvant preoperative radiotherapy was not performed in all patients. Postoperative radiotherapy was performed in 2 patients in 10 patients (20%) to prevent cancer recurrence. The flap failure due to postoperative infection was observed in three cases. Systemic complications at one patient with old age after surgery was observed as a temporary heart failure, but he was recovered after 3 days.

Conclusion
TNM stage, recurrence at primary operation site, and cervical lymph node metastasis were significant factors on survival rate of patients. Meticulous peri-operative management for the patients was essential. Anti-thrombolytic agent prescription and infection control also were important for free flap survival. Cancer resection with simultaneous free flap tissue transfer was beneficial for the rapid recovery of jaw function and facial appearance at all patients.

P3-20

Huge Chondroblastoma on Temporomandibular joint : a case report

Heeyeon Bae*, Dong-mok Ryu, Sung ok Hong , Gwangjin Oh, Jaedeok Lee, Heeyeon Bae, Hyenwoo Lee, Youngjin Shin, You-jin Jee

Dept. of Oral and Maxillofacial surgery, Kyung-Hee University Dental Hospital at Gangdong

Objective
The aim of this report is to present a case of patient with huge chondroblastoma on temporomandibular joint.

Methods
The patient, a 52-year-old male, visited our department with edema and asymmetry of the right mandibular condyle, deviation of the mouth opening, right ear pain and slowing of the right eyebrow movement. As a result of MRI, a soft tissue lesion of about 28x28x37mm surrounded the right mandibular condyle, and the lesion invaded the right mandibular fossa and mandibular condyle, causing bone destruction.
Under general anesthesia, complete excision was performed. The lesion was observed to invade the anterior wall of the right external ear canal, and reconstruction was performed using a temporal fascia pedunculated flap. To compensate for the extensive volume loss, a fat pad graft from the right groin region was performed and covered using a temporal galeal pedunculated flap. As a result of the pathological examination, it was diagnosed as a chondroblastoma.

Result
After 1 month of operation, the mouth opening range was normal, but the slowing of the right eyebrow movement continued. In addition, tinnitus occurred due to damage of the right external ear canal. 7 month later, MRI revealed that resolved muscle edema at right masseter and pterygoid, and equivocal change of adjacent bony sclerotic change. In addition, the groin fat pad graft was stable, and no recurrence of chondroblastoma was observed.

Conclusion
Chondroblastomas, as benign tumor, most commonly occur in the bones of the limbs; there have been few reports of chondroblastoma of the temporomandibular joint, since this tumor is rarely found in the craniofacial region. In addition, this case reveals that complications that may occur depending on the degree of invasion of the surrounding anatomical structures and close consultation is necessary.

P3-21

Management of Radial Forearm Free Flap Donor Site Using Upper Inner Arm Full-thickness Skin Graft

Hyemin OH*, Jaemyung AHN, Chang-Soo KIM, Jun-Young PAENG

Dept. of Oral and maxillofacial surgery, Samsung Medical Center, Sungkyunkwan University School of Medicine

Introduction
The local flap, distant flap and free flap can be used to reconstruct the facial defect due to the oral cancer, tumors and trauma. The radial forearm free flap provides soft, flexible and thin skin like intraoral tissue and radial artery as a feeding artery. This is why the radial forearm free flap is used widely. However, the morbidity of the donor site is considerable that the management of the donor

site is significant in peri-operative period. The techniques to repair of the donor site after a radial forearm free flap decides the prognosis of the overall surgery. The healing of the donor site of the radial fascio-cutaneous flap was compromised by loss of the skin graft, exposure of a tendon, and delayed healing.
Full-thickness grafts are commonly taken from the abdominal wall or the forearm to cover the radial forearm free flap. The abdomen requires a separate operation site, which may be convenient but yields relatively thick skin. Full-thickness graft on the forearm has limitation in the size in general. Recently, we have used the upper inner arm full-thickness skin graft in the management of the radial forearm free flap and obtained successful outcome. We report this method as a recommendable management of the radial forearm free flap.

Patients and Methods

- Patients -

7 patients who were diagnosed as the malignant neoplasm at the gum, buccal cheek mucosa or palate and 1 patient who was diagnosed as false ankylosis of TMJ and oral submucous fibrosis and 1 patient who was diagnosed as the osteoradio-necrosis of jaw. All patients were operated on wide dissection of oral cavity and mass removal (added the neck dissection in case of the malignant neoplasm) then reconstructed with radial forearm free flap and full-thickness skin graft from the upper inner arm in the oral and maxillofacial surgery at Samsung Medical Center from 2018 Nov. to 2020 May.

- Methods -

All operation was conducted by the same two operators. After wide dissection of oral cavity and mass removal, radial forearm flap and its radial artery was used to reconstruct the defect area. The forearm and flap were covered with sterile drape, the tourniquet removed and the upper arm prepared with povidone iodine and draped. The graft was designed ellipse pattern and taken along the long axis of the upper inner arm, midway between the mid-axilla and the medial epicondyle of the humerus. The graft was rigorously defatted to promote acceptance. Primary closure was achieved on the donor site and the radial area was dressed with a semi-permeable occlusive dressing.

Result

All 9 patients were recovered with no hollow or shrinkage of skin at the radial forearm free flap area. The upper inner arm donor site was also well healed with thin scar line by the primary closure.

Conclusion

The radial forearm free flap was used widely as the reconstruction of the oral-maxillary defect and there are various methods to manage the defect. The upper inner arm as the full-thickness donor site is a good donor site because of the convenient approach. The procedure does not usually interfere with the main operation if it is completed before the microsurgery. The match of texture and color is good because the operation does in the same arm. The recovered site has no loss of volume so this method is recommendable for its aesthetics.

P3-22

A retrospective analysis of surgical cases of patients with advanced stage OSCC patients with Fibula Free Flap Reconstruction

Min-A Jeon, Jin-Young Park, Won-Hyuk Choi, Han-Kyul Park, Na-Rae Choi, Jae-Min Song, Jae-Yeol Lee, Dae-Seok Hwang , Sang-Hun Shin, Yong-Deok Kim, Uk-Kyu Kim

Dept. of Oral and maxillofacial surgery, School of Dentistry, Pusan National University

Introduction

The fibular flap is most suitable for reconstruction of the mandible because the appropriate length and height, soft tissue and hard tissue are simultaneously collected and dental implants are placed. In addition, many studies are being conducted to satisfy not only the functionality but also the aesthetics of the mandible. Therefore, we tried to evaluate the usefulness by analyzing the cases and prognosis of the patients who operated in the hospital.

Patients and Methods

Total 8 patients (Male:Female = 5:3) who reconstructed a mandibular defect from 2013 to 2020 at the Department of Oral and Maxillofacial Surgery at Pusan National University Dental Hospital, refer to medical records, surgical records, biopsy reports, etc. The patient's sex and age, past medical history, pathological classification, recipient site, free flap donation site, radiation treatment history, and smoking history were investigated. The use of the anti-coagulant or anti-thrombolic agent was analyzed. The causes of mandibular defects were squamous cell carcinoma in 8 cases and clear cell carcinoma in 1 case. The average age of the patient was 55.11±15 years and the average observation period was 18.25±13.6 months.

Conclusion

Of the fibular flaps performed in 9 patients, a second operation was performed due to recurrence of carcinoma in 2 case, and a part of the peroneal flap was removed due to infectious disease in 3 case. The application of fibula free flap after resection in the reconstruction of oral cancer that occurred in the mandible was fed with a surgical procedure effective for recovery of the patient's function.

P3-23

Pedicle ossification of an oral cancer patient with fibular osteocutaneous free flap: A case report

Min-Gyeong Kim*[1], Yong-Seok Choi[1], Sanghoon Lee[1], Sung-Weon Choi[1]

[1]Oral Oncology Clinic, Research Institute and Hospital, National Cancer Center

Introduction

Fibula free flap has been commonly used for maxillofacial reconstruction because it offers plenty of bones while having minimal postoperative morbidities on donor site. It also has the possibility for dental implantation and prosthetic rehabilitation. Osteogenic potential of vascularized periosteum has been postulated by some studies and most of them occurred in the fibula free flap reconstruction. In this case report, we discuss a case of pedicle ossification of fibula free flap after mandibular reconstruction following pathologic fracture of mandible after postoperative radiotherapy.

Case report

A 38-year-old male patient previously diagnosed with left buccal cheek squamous cell carcinoma underwent an operation of ipsilateral wide excision, modified radical neck dissection and reconstruction with forearm free flap on Dec 9, 2014 and the adjuvant radiotherapy was followed for a couple of months. After postoperative radiotherapy, the patient presented with trismus and intraoral mandibular bone exposure and conservative treatment was provided during the follow-up. He admitted to national cancer center hospital after having his jaw broken on Sep 9, 2017 and reconstructive surgery for left mandible with fibula free flap was followed on Oct 31, 2017. During the follow-up periods, we found pedicle ossification of fibula free flap on a CT scan while he showed no relevant clinical symptoms and the patient maintained good phonation and deglutition.

Discussion and conclusion

The pedicle ossification is uncommon phenomenon but can be misunderstood as recurrence of malignant tumor for oral cancer patients because clinical symptoms may mimic those of recurred lesion. This necessitates differential diagnosis between them and it is usually found on the follow-up radiography including CT scan and orthopantomography. Clinical symptoms include trismus, bony swelling and accompanying pain on mastication or neck movement. Surgical intervention is not recommended unless symptoms appear. The surgical technique variation like dissecting empty periosteum along with the pedicle was

recommended but its availability is controversial due to the likelihood of having a negative effect on flap viability and lack of randomized control study.

P3-24

Myofibroma in mandible of child: case report

Sumin Kim, Yeong Woo Kim,
Ik Jae Kwon, Hoon Myoung

Department of Oral and Maxillofacial Surgery, Seoul National University Dental Hospital

Introduction
Myofibroma is a rare solitary benign tumor. While it occurs mainly in the head and neck of young patients, it is very rare in the mandible. Thus, differential diagnosis and appropriate treatment methods for the mandibular lesion have not been established. Here we report a case of myofibroma in the mandible of a child.

Case report
A 4-year-old male patient was referred to the Department of Oral and Maxillofacial Surgery at Seoul National University Dental Hospital on April 21, 2020, addressing the radiolucent lesion in the right ramus of the mandible.
Enhanced computed tomography and magnetic resonance imaging showed that the lesion filling lower part of the right mandibular body and ramus shows lingual expansion led to the lingual cortical bone erosion. Invasion of medial pterygoid muscle was also observed. Overall, the lesion shows as benign mesenchymal tumor, i.e. leiomyoma, desmoplastic fibroma and myofibroma.
Open biopsy under general anesthesia was performed on May 7, 2020, and mass excision was done through extraoral approach under general anesthesia on May 26, 2020. The right inferior alveolar nerve was sacrificed with the mass. Histopathologic examination including immunofluorescence staining of the entire mass showed weak positive for Caldesmon and focal positive for SMA, confirming myofibroma.
Mouth opening was restored up to 32mm in two months postoperative. No unexpected complications or side effects were observed. No recurrence was observed during the 6-month follow-up period.

Discussion and conclusion
As mentioned in various literatures Immunofluorescence staining is the paramount for differential diagnosis of myofibroma and this case could also be confirmed as myofibroma through immunofluorescence tests such as SMA and Caldesmon. In addition, there have been various treatment methods suggested for the lesion, from partial or marginal resection of the mandible to conservative excision the treatment in this case was performed in a conservative manner considering the child's age and prognosis Until now, no side effects, complications, or recurrences have been observed It is thought that continuous follow up is necessary.

P3-25

Total Replacement of Temporomandibular Joint Using Stock Alloplastic Joint Prosthesis after Resection of Benign Lesion: A Case Report

Sung-Jae LEE*, Euy-Hyun KIM, Dong-Keon LEE,
In-Seok SONG, Sang-Ho JUN

Dept. of Oral and Maxillofacial Surgery, Anam Hospital, Korea University

Introduction
Reconstruction of the T-M joint is required in patients with dysfunction of the joint due to congenital anomalies or acquired trauma, neoplasms like fibrous/bone mass which can cause complete/partial ankylosis of the joint. Using a fossa or condylar prosthesis alone is possible for some cases, but the normal counterpart can be affected by the abnormal excessive force which can result in resorption of the normal bony or cartilaginous tissue. In this reason, Christensen first devised a total replacement surgery which substitute both fossa and condylar parts of the joint in 1965. In this case report, total replacement of T-M joint was performed in a patient with partial adhesion due to unilateral fibrous-osseous neoplasm of the joint.

Method and Materials
A 49-year-old female with no specific medical history, had a deformity at right T-M joint. At the first visit, the maximum mouth opening was 17mm. On panoramic radiograph and CBCT, severe asymmetry of the mandible and neoplasm at right T-M joint which was mixed with atypical fibrous-osseous tissue were shown. Mandibular right deviation due to adhesion of right joint was shown when mouth opening. The articular disc was replaced by the neoplasm and its shape was almost unrecognizable. Total joint replacement was performed using stock alloplastic joint prostheses, which were consisted of two parts of joint fossa and mandibular condyle. The surgical approach was through pre-auricular and retromandibular incision, and the neoplasm at mandibular condyle and articular eminence was resected. Intermaxillary fixation was performed after the resection, the articular fossa and external surface of mandibular ramus were then trimmed with rotary cutting instruments, articular joint parts were positioned and fixed with multiple mini screws.

Result
Mouth opening range was 30mm 1month after the surgery, any complications such as surgical site infection, facial nerve dysfunction, dislocation or dysfunction of the replaced artificial joint were occurred until the fifth month.

Discussion
As the recent development of digital technology and clinical appliance such as 3D printing is gradually increasing, customized artificial joints that are not ready-made are also used for reconstruction of T-M joint. In this case, the patient wanted to resolve only the mouth opening range, so that only a replacement of the joint with stock artificial prosthesis was performed. Still, it is considered that a customized artificial joint and combined use of orthognathic surgery for the correction of facial asymmetry can be an option for other similar cases.

P3-26

Giant Cell Tumor of Temporomandibular Joint : A report of two cases

Ji-Hoon KO*, Min-Sik KIM, Hae-Seong YONG,
Dae-Hoon KIM, Jong-Ki HUH

[1]Department of Oral and Maxillofacial Surgery, Gangnam Severance Hospital, Yonsei University College of Dentistry, Seoul, Korea

The giant cell tumor is a primary bone neoplasm and constitutes approximately 5% of all primary bone neoplasms. The neoplasm is benign, but focally aggressive, mainly arises from the epiphyses of long bones like in the femur or tibia. When it occurs in head and neck, it mostly affects temporal bone. However, these cases take 2% of entire giant cell tumor, which are very rare.
Clinical symptoms include pain of the affected joint area, swelling and limitation of joint movement. In general, symptoms gradually elevate with damage and degenerative change of joint, causing severe functional disorders. In some cases, it can be observed as soft tissue mass in radiographic images, but it is hard to differentiate without MRI if there is no damage to adjacent bone or cartilage tissue. The lesion needs to be removed by surgical operation.
The giant cell tumor of temporomandibular joint was pathologically diagnosed in two patients; a patient complaining limitation of mouth opening and occlusal change in posterior dentition and another patient who has been transferred from department of Neurology with severe headache. In this presentation, two cases in which the lesion was surgically removed are reported with a literature review.

P3-27

Mucoepidermoid carcinoma of the parotid gland : Case report

Minho Choi*[1], Seungwoo Cheon[1], KyuHyeon Lee[1], Je-Uk Park[1], Chang-Hyen Kim[1], JuYoung Lee[1]

Department of Oral and Maxillofacial surgery

Introduction
Mucoepidermoid carcinoma is the most common malignant tumor of the salivary gland, accounting for less than 10% of tumors of the salivary gland, but accounting for about 30% of all malignant tumors of the salivary gland. Characterized by a mixed pattern of two major cell types, epidermal cells and mucous-producing cells, metastasis due to salivary gland malignancies are rare, mainly found in bone, lung, liver and lymph nodes. In this case report, we would like to discuss the histopathological form and treatment method of this lesion of the mucoepidermoid carcinoma of the parotid gland in a 45-year-old woman.

Case report
A 45-year-old woman with a history of aplastic anemia(AA) visited the hospital with a swelling of the right facial area that began 1 year ago. PNS CT revealed that there was a solid mass with a diameter of 3cm located across the right parotid gland and masseter muscle, and the margin adjacent to the masseter musclular was relatively unclear. Fine needle aspiration test(FNAB) and ultrasound-guided biopsy showed pleomorphic adenoma. However, as a result of the biopsy performed during surgery, the lesion was diagnosed as high grade mucoepidermoid carcinoma. For further diagnosis of metastasis, PET-CT and neck MRI were performed, and metastases to the right masseter muscle and cervical lymph nodes were found. There were no findings of distant metastasis. Accordingly, parotid resection including more extensive range and right neck dissection(Level II) were planned and performed under general anesthesia.
The postoperative healing was normal, and although periodic follow-up and radiotherapy were being performed, no recurrence was observed.

Conclusion
Surgical resection should be considered for mycodermal carcinoma. In the case of tumors with high-grade Histopathological findings, extensive resection including adjacent anatomical structures may be required. Radiation therapy performed after radical neck dissection provides reasonable local control to patients with metastases, so clinicians need to consider this. . Also, It is recommended to keep in mind the possibility of malignancy if the boundary of the lesion is unclear and the lymph node metastasis is suspected on the imaging examination even if it is diagnosed as positive through the previous examination.

P3-30

Application of iliac bone graft in the oral and maxillofacial area ; Case report

Sunghwi Hur*, Jihye Jeong, Sungyu Choi, Soonam Yang

Department of Oral and maxillofacial surgery, Cheongju Hankook General Hospital

Introduction
The iliac bone graft was first introduced to the oral and maxillofacial area by Waldren in 1919.It is one of the representative autogenous bone grafts that are widely used for the purpose of reconstructing a bone defect or augmenting alveolar bone.It has been widely used for the purpose of reconstruction of bone resection sites due to tumors or reconstruction of alveolar fissures and cleft palate, and recently, it has been widely used for the purpose of increasing alveolar bone for dental implant.In this case report, we would like to report the cases implemented in our hospital for each purpose.

Case
- Case 1 -
Reconstruction of bone resection sites due to tumors
A 54-year-old female patient with a wide range of ameloblastoma in the mandibular region of area #32-45.Mandibular resection was performed to remove ameloblastoma, and then iliac bone graft was performed to reconstruct the defect.

- Case 2 -
Reconstruction of alveolar fissures and cleft palate
26 years old female patient with cleft palate
There was an oral-nasal fistula of about 2cm connected the upper anterior alveolar fissure, and iliac bone graft was performed for fistula closure and alveolar bone reconstruction.

- Case 3 -
Vertical Bone Augmentation of alveolar bone for dental implant.
A 42-year-old female patient with complete edentulous maxillary and partial edentulous mandibular with periodontal disease.Since the alveolar bone resorption of the edentulous region is very severe, the iliac bone graft was performed because it was necessary to vertical increase the alveolar bone through a large amount of bone graft for implant placement.

Discussion
As in the above cases, iliac bone graft can be used in various ways in the oral and maxillofacial area.The iliac bone graft has the advantage of being able to collect a large amount of bone and to collect both cancellous and cortical bones.Representative of the sequelae and complications that can occur at the donor site after iliac bone transplantation are gait disorder, chronic pain, loss of sensation, hematoma, change in appearance, scar, and fracture.
In bone grafts performed for the same purpose as these cases, autogenous bone can be collected from the skull, ribs, mandible, and tibia in addition to iliac bones.Considering the accessibility of surgery, the amount of bone collection, and complications of the donor, the most preferred and first considered bone is iliac bone.

Implant

P4-01

Three-dimensional Customized Titanium Mesh in Alveolar Bone Regeneration for Implant Therapy: A Case Report

Chang Kim*[1], Chang-Joo Park[1], Kyung-Gyun Hwang[1], Kwang-Sup Shim[1] , Gu-Hyun Kwon[2]

[1]Division of Oral and Maxillofacial Surgery, Department of Dentistry, College of Medicine, Hanyang University, Seoul, Republic of Korea
[2]Division of Prosthodontics, Department of Dentistry, College of Medicine, Hanyang University, Seoul, Republic of Korea

Purpose
This case report provides a detailed description of a simple and fast bone regeneration procedure using a 3-dimensional (3D) customized titanium mesh.

Material and methods
A 50-year-old male with a severe vertical and horizontal bone defect in the anterior mandible underwent implant treatment in a staged approach. The autologous bone was combined with a xenograft, and the mixture was grafted to augment the bone defect and covered with 3D customized titanium meshes, which were selected among its various types according to size and configuration of the bone defect, directly connected and immobilized on the tenting screws with minimal shaping.

Results
In a postoperative 6 month re-entry surgery, the performed titanium meshes were removed, implants were placed, and a bone core biopsy was obtained that demonstrated satisfactory new bone formation. Finally, two months later, the definitive prosthesis was installed.

Conclusion
This 3D customized titanium mesh could help an implant clinician obtain more predictable results in the guided bone regeneration (GBR).

P4-02

A case report of long-term follow-up of guided bone regeneration technique and implant restoration at the mandibular molar area with severe alveolar bone loss from a periapical lesion.

Inseok Hong, Jung ho Park, Hyun Seok, Dae-Ho Leem

Department of Oral and Maxillofacial Surgery, School of Dentistry, Chonbuk National University Dental Hospital

Dental implants are the standard when teeth are lost for various reasons. Most periapical lesions are expected to be healed naturally by removing the microbial infection and bacteria. However, if the tooth gets extracted due to a progressed periapical lesion, bones may not be healed sufficiently for an implant placement. Bone grafts and other techniques are performed to enhance bone regeneration at the lesion. There is a controversy over the necessity of a bone graft. Also, it is important to consider the timing of bone graft and implant placement after the removal of the lesion. The size of the lesion, the anatomical structure around the lesion, and the other factors must be considered for the best method and timing which remain controversial.
Remodeling of degenerated bone tissue due to a pathologic condition takes about one to two years. If the vertical bone loss is severe even after the remodeling period, a bone graft becomes challenging. For this type of bone graft, it is recommended to use autogenous bone which has a high osteogenetic properties.
This case report is about a patient who received guided bone regeneration with autograft and implant placement after severe alveolar bone loss due to a periapical lesion. The patient was followed for eleven years.

P4-03

Extraction with Immediate Full mouth implant Surgery at Mx.edentulous patient, No surgical Stent

Min-Seok Oh[1], Chul-Min Park[1], Ka-Young Seol[1], Woo- Jin Jeon[1], Kil-hwa Yoo[1], Na-Ra Kang[1], Dong-Soo Shin[2], Seong-Gu Han[2], Chan-Ik Park[3], Se-Ha Kang[3], Ji-Eun Moon[3], So-young Kim[4], Lim Lee Rang[4]

[1]Department of Oral and Maxillofacial Surgery, Sun Dental Hospital, Daejeon, Korea
[2]Departments of Periodontology, Sun Dental Hospital, Daejeon, Korea
[3]Departments of Prosthodontics, Sun Dental Hospital, Daejeon, Korea
[4]Department of Oral and Maxillofacial Surgery,Veterans Health Service Medical Center, Seoul

Treatment of a patient with few remaining teeth in a compromised condition, seeking full mouth reconstruction with extraction and immediate implant placement at his initial visit is often challenging for a clinician.
Because, the ideal placement of dental implants in a non-guided surgery while considering anatomic landmarks (e.g. anterior nasal spine, canine fossa, maxillary tuberosity, etc.) and optimal prosthetic requirements is difficult and unpredictable.
Without the use of a surgical stent, therefore, the clinician needs to place implants on both sides in a single visit to achieve predictable and symmetrical results.
Here, we want to present a successful case of a patient who had all compromised teeth removed and received immediate implant placement in full-arch without the surgical guide during his first visit.

P4-04

Implant surgery in patients with systemic disease literature review

Dong-jun Seo*, Seong-Yong Moon, Ji-Su Oh, Jae-Seek You

Department of oral and maxillofacial surgery, Chosun university dental hospital

Purpose
There are a number of papers dealing with the impact of systemic factors on the outcome of osseointegrated implants but researchers does not made consensus about this issue. This study is aimed at review preceding papers in implant surgery of patients with systemic disease.

Material & method
In this study, we based on preliminary assessment of relevant literature. We selected 18 papers and made a list of systemic disease suspected of having a negative impact on the success of osseointergration therapy. The disease and conditions retained for further analysis were as follows: diabetes mellitus(type I and II), cardiovascular disease including hypertension, osteoporosis, and patients who had chemotherapy.

Result
- Diabetes mellitus(Type I and II) -
no studies report higher failure rates for implant in diabetes patients. If the diabetes is medically well controlled, it is not considered a relative contraindication for implant placement.

- Cardiovascular disease(including hypertension) -
High blood pressure has been reported to be associated with increased bone loss. This might be because hypertension is associated with abnormal calcium metabolism, including an increase in urinary calcium excretion. One recent study, which investigated relationship between antihypertensive medications and the survival rate of osseointegrated dental implants, shows additional positive effect of these drugs. The failure rate was almost seven folds lower in antihypertensive drugs than in nonusers.

- Osteoporosis -
relationship between mandibular bone density and the bone density of the rest of the skeleton seems poor. The success rate of implants in osteoporotic bone has hardly been investigated.In a recent study, postmenopausal women not taking estrogen replacement therapy had nearly twice the maxillary implant failure rate compared to other groups. However, one retrospective study found no difference in failure rates between women receiving or not receiving hormone replacement therapy.

- Chemotherapy -
In a multicenter study, the effect of chemotherapy on patients who had undergone maxillectomies was evaluated. There was no clear effect of chemotherapy on implant survival.

Conclusion
Most systemic contraindication in dental implants are relative. Systemic health factors do not seem to be prominent but more researches are required. Since It seems to be a trend that more aging patients with systemic diseases require dental implants, clinician have to evaluate both assets and liabilities.

P4-05

Long term observation of immediately-installed implants after extraction: Retrospective clinical study

Han-Chang YU*[1], Pil-Young Yun[1], Young-Kyun Kim[1, 2]

[1]Department of Dentistry, Seoul National University Bundang Hospital, Seongnam, Korea
[2]Department of Dentistry & Dental Research Institute, School of Dentistry, Seoul National University, Seoul, Korea

Purpose
The aim of this study was to compare and analyze the survival rate, success rate, and loss of marginal bone of Osstem TS III, US II, and Dentium-Implantium implant immediate installed after tooth extraction.

Methods
A total of 44 implants were installed in 30 patients, and each product was divided into groups. To measure the marginal bone loss, panoramic and periapical radiographs were used.

Result
1 implant was removed during the study period, and TS III had a survival rate of 100%, success rate of 88%, US II had a survival rate of 100%, success rate of 100%, Implantium had a survival rate of 95%, and success rate of 89%. These results suggest that Osstem and Dentium products show good clinical prognosis when implant is immediate installed after extraction, so it may be a good treatment option in the case of indications.

P4-06

Implant placement using inferior alveolar nerve transposition: a case report

Sangrae Park*, Miri Moon, Seulki Lee, Soonam Yang

Department of Oral and maxillofacial surgery, Cheongju Hankook hospital

Introduction
The mandibular canal including the inferior alveolar nerve is an anatomical limiting factor during implant surgery in the posterior part of the mandible. The inferior alveolar nerve transposition, a technique in which the inferior alveolar nerve is displaced to the outside in order to place an implant of sufficient length in the severely atrophy mandibular posterior tooth, and then the implant is placed, has been developed and applied to the clinical practice. We report a case of implant placement using inferior alveloar nerve transposition performed here.

Method
A 76-year-old female patient visited the Oral Surgery Clinic of our hospital for dental consultation. At the time of visit, she had a tooth defect excluding #15,16,17,31,32,33,34,37. Local dentures were planned for the maxilla and implants were planned for the mandible. The height of the remaining alveolar bone above the mandibular canal is short(3mm), so the implant surgery using inferior alveolar nerve transposition was performed. In November 2019, a bone window including the buccal and occlusal surface of the right mandible was formed, and the inferior alveolar nerve was moved to the buccal side to place the implant (#46), and at the same time, implants in the areas #41, 43, and 44 were placed. After 8 months, when the final implant prosthesis was manufactured, the prosthesis at the #46 area was extended posteriorly, manufactured so as to be occlusal with the #17, and delivered.

Conclusion & Disccusion
In this case, the implant was placed by forming a bone window including the buccal and occlusal surface, not the buccal approach. Compared to the conventional buccal approach, the advantage of forming a bone window including the occlusal surface is that the surgical field of view is improved, the instrument is easier to manipulate, and the possibility of neurological abnormalities after surgery is reduced as the nerve manipulation becomes easier. Disadvantages are that there is a risk of fracture of the mandibular inferior edge because it is necessary to obtain fixation force mainly from the mandibular inferior edge, so that a long implant must be used and initial fixation strength mainly from the basal cortical bone of the mandibular lower edge. However, if the implant is placed carefully while approaching the mandibular basal bone with sufficient care, sufficient initial fixation can be obtained in the lingual cortical bone and the basal cortical bone of the mandibular inferior edge without the risk of fracture of the mandibular inferior margin. In this case, a temporary paresthesia was complained after surgery, but the paresthesia was recovered, and the results are reported as good.

P4-07

Simplified three-dimensional ridge augmentation using a deproteinized porcine-derived bone graft: A case series

Young-Hyun Kim DDS[1], Dong-Seok Sohn, DDS, PhD[2]

[1]Resident, Department of Dentistry and Oral and Maxillofacial Surgery, Catholic University Medical Center of Daegu. Republic of Korea.
[2]Professor. Department of Dentistry and Oral and Maxillofacial Surgery, Catholic University Medical Center of Daegu. Republic of Korea.

Background
Various osteoinductive and osteoconductive bone grafts have been used for ridge augmentation. Osteoconductive bone grafts such as bovine bone, allografts, and alloplasts have widely been utilized for reconstruction of alveolar defects. However, xenogenic porcine grafts are not frequently used for ridge augmentation. This study investigated the clinical efficacy of porcine-derived xenografts in ridge augmentation.

Methods
Sticky porcine bone substitute was grafted in alveolar defects with and without simultaneous implant placement for three-dimensional (3D) ridge augmentation.

Results
Favorable ridge augmentation was observed when porcine bone grafts and concentrated growth factor/ collagen barrier membranes were used in bony defects.

Conclusions
Histological and clinical findings revealed favorable new bone formation following use of porcine bone grafts in ridge augmentation. Further studies are needed to evaluate the long-term stability of porcine-derived xenografts in augmented ridges.

P4-08

Disseminated intravascular coagulation presenting as Hemorrhage after dental Implant surgery: A case report and literature review

Jae-Young Yang*, Han-Kyul Park, Jae-Min Song, Jae-Yeol Lee, Dae-Seok Hwang, Yong-Deok Kim, Uk-Kyu Kim, Sang-Hun Shin

Dept. of Oral and Maxillofacial surgery, School of Dentistry, Pusan National University

The postoperative complications after dental implant surgery can be grouped into three major categories: those related to bleeding, those related to infection and delayed wound healing, and those related to other factors such as drug allergy, nerve paralysis, etc. Most cases of postoperative bleeding can be prevented by taking a thorough history from the patient, by using as atraumatic procedure as possible, and by properly controlled local treatment. If bleeding or oozing persists after dental implant surgery, it can be stopped by additional local treatment. However, there are a few cases in which underlying diseases cause severe hemorrhage after dental implant surgery.
We report a case in which bleeding after routine dental implant surgery indicated the presence of disseminated intravascular coagulation (DIC) caused by ischemic colitis.
Disseminated intravascular coagulation (DIC) is a dynamic pathologic process in which thrombin is formed in the vascular system. It is characterized by the widespread pathologic activation of the coagulation cascade, leading to thrombosis in a variety of sites and resulting in ischemia, necrosis, and abnormalities of function of the organs concerned. The coagulation depletes clotting factors, fibrinogen, and platelets, causing bleeding to occur. This is followed by the secondary activation of the plasmin system, which breaks down fibrin into its degradation products. The fibrin degradation products (FDPs) have an inhibitory effect on platelet aggregation and adhesion, leading to aggravation of

the bleeding tendency. Although there are a long list of diseases complicated by DIC, it is most frequently associated with obstetric catastrophes, metastatic malignancy, massive trauma, and bacterial sepsis. Generally, oral and maxillofacial surgeons are neither familiar with nor careful about DIC because of a lack of clinical experience. A review of the literature of the past indicated only a small number of reports of DIC pertaining to oral and maxillofacial surgery. This case report describes such a fatal hemorrhage after dental implant surgery.

P4-09

Implant Treatment on the Area of Interpositional Bone Graft for the Management of Extensive Mandibular Defect After Tumor Resection Surgery: Report of Two Cases

Song Jay Choi*, Jun Young Jung, Hee Yeoung Jeong, You-Song Sim, Jeong Joon Han, Seunggon Jung, Min-Suk Kook, Hong-Ju Park, Hee-Kyun Oh

Department of Oral and Maxillofacial Surgery, School of Dentistry, Dental Science Research Institute, Chonnam National University

Background
Interpositional bone graft, so called “Sandwich technique” is the technique of installing grafted bone in the middle of recipient site, that shows a little of resorption of grafted bone through re-vascularizaton, so it is very useful treatment for those who need vertical alveolar augmentation.

Purpose
This study conducted a literature review with the clinical usefulness of implant installation after interpositional bone graft in patients with extensive mandibular defect associated with previous tumor resection surgery at the department of Oral and Maxillofacial Surgery, Chonnam National University Dental Hospital.

Case report 1
We have done marginal madibulectomy, vertical bone augmentation with interpositional bone graft using iliac block bone to 52 years old patients who had Odontogenic keratocyst. At 4 months later, we have done installation of 5 implants on anterior mandible area and at 6 month later, we cannot find any alveolar bone resorption and all implants showed favorable condition..

Case report 2
We have done segmental mandibulectomy, vertical bone augmentation with interpositional bone graft using iliac block bone to 34 years old patients who had recurred Ameloblastoma. At 4 months later, we have done installation of 6 implants and at 1 year later, we cannot find any alveolar bone resorption and all implants showed favorable condition.

Conclusion
Through this case report, implant treatment with interpositional bone graft on the reconstructed area is observed to have no alveolar bone resorption and a favorable clinical result of placed implant, hence which is considered a useful technique for the patients who have extensive mandibular defect due to tumor resection surgery.

P4-10

Prognosis of dental implants placed in augmented alveolar bone using mandibular block bone grafts

Sola Kim*, Jin-Young Park, Han-Gyeol Park, Jae-Min Song, Dae-Seok Hwang, Yong-Deok Kim, Sang-Hun Shin, Uk-Kyu Kim, Jae-Yeol Lee

Dept. of Oral and Maxillofacial surgery, School of Dentistry, Pusan National University

Introduction
The purpose of this study was to evaluate the survival and success of dental implants placed in alveolar bone following augmentation using mandibular block bone grafts.

Methods
A consecutive retrospective study was conducted on patients who had mandibular block bone grafts for vertical or horizontal augmentations followed by dental implantation from 2014 to 2018. Files of 135 patients who received 547 implants in augmented sites were reviewed. Implant survival, radiologic implant success (marginal bone loss), and complications were recorded. Follow-up from time of implantation ranged from 12 to 60 months. The overall survival rate was 97.8% (12 implants were removed). Complete graft loss was recorded in 4 cases. Average marginal bone loss around implants was 0.99mm.

Conclusion
Mandibular bone block graft surgery is a predictable operation for the use of dental implants. Implant placement in augmented areas presents high survival and radiologic success rates with minimal bone loss.

P4-11

A Comparative Study with Biphasic Calcium Phosphate to Deproteinized Bovine Bone in Maxillary Sinus Augmentation : A Prospective Randomized Controlled Clinical Trial

Gyeong-Mi Kim*, Seong-Yong Moon, Ji-Su Oh, Jae-seek You, Hae-In Choi

Department of Oral and Maxillofacial Surgery, School of Dentistry, Chosun University, Gwangju, Republic of Korea

Purpose
The purpose of this study was to evaluate the new graft material biphasic calcium phosphate, composed of 60% hydroxyapatite and 40% β-tricalcium phosphate and deproteinized bovine bone mineral, which is established as a predictable graft material for maxillary sinus augmentation.

Materials and Methods
Maxillary sinus augmentation was performed with different bone materials. Bone biopsies were performed on tissue harvested from the future implant bed using a trephine bur at 6 months after maxillary sinus augmentation. Resonance frequency analysis was performed immediately and at 6 months after the implant placement. Microcomputed tomography and histomorphomertric analysis were performed in all patients.

Results
Fifty-six patients (60 sinuses) were included in the study. At 6 months postoperative 31 biopsies were performed on tissues harvested from a the calcium phosphate, and 29 biopsies on tissues from the bovine bone grafts. There were no implant failures during the 20-month mean follow-up period. The overall implant stability quotient values were higher than 60, and gradually increased for 6 months. Higher new bone volume fraction and new bone surface density were observed in the calcium phosphate group compared with the bovine bone group. In contrast, residual bone graft volume in the bovine bone group was higher than that in the calcium phosphate group. Nevertheless, there were no significant differences between groups in the microcomputed tomography and histomorphometric parameters.

Conclusion
Within the limitations of the study, both graft materials demonstrated similar biocompatibility and osteoconductivity in the maxillary sinus augmentation.

P4-12

Clinical evaluation of short length implants; long -term follow-up study of previous published article

Jung-Gon Lee[1], Pil-Young Yun[1], Young-Kyun Kim[1,2]

[1]Department of Dentistry, Seoul National University Bundang Hospital, Seongnam, Korea
[2]Department of Dentistry & Dental Research Institute, School of dentistry, Seoul National University, seoul, Korea

Introduction
The purpose of this study is to evaluate the long-term prognosis of short-length implants

Method and materials
We evaluated marginal bone loss, survival rate, and success rate through long-term observation of the entire implant in the previously published article. The amount of marginal bone loss was measured after loading . In addition, We divided into two groups with Crown/ implant length ratio of less than 1.5 and an crown/implant length ratio over than 1.5. The correlation between the failure rate and the crown/implant length ratio was statistically analyzed

Results
In the recent follow-up 16 patients belonging to 'A relative case report series of model year with wide-diameter 8-mm implants in the posterior maxilla', The average survival rate of 16 implants was 100% and success rate was 100% and average marginal bone loss was 0.02±0.09mm
In the recent follow-up 19 patients belonging to 'One-year prospective study of 7-mm-long implants in the mandible: Installation technique and crown/Implant Ratio of 1.5 or less, The average survival rate of 44 implants was 100% and success rate was 97.72% and average marginal bone loss was 0.08±0.35mm
In the recent follow-up 9 patients belonging to 'A clinical study of wide implants with 5-6mm lengths in mandible', The average survival rate of 14 implants was 100% and success rate was 85.78% and average marginal bone loss was 0.43±0.87mm
In the recent follow-up 83 patients belonging to 'A retrospective clinical study of single short implants (less than 8 mm) in posterior edentulous areas.', The average survival rate of 94 implants was 100% and success rate was 92.6% and average marginal bone loss was 0.67±0.62mm
Between 2007 and 2013, 98 patients (Man: 39, Woman: 59) who was received short-length implants by 1 surgeon at OMFS of Bundang Seoul National University Hospital . A total of (167) implants were included in the study, with 94% of implant survival rate and 90.4% of success rate. There were 87 implants in G1 groups, 97.7% survival rate, 93.1% success rate, 70 implants in G2 groups, 100% survival rate and 94.3% success rate. There was no significant correlation (P=0.516<0.05) with the crown/implant length ratio and the implant failure.

Conclusion
Because it could avoid invasive surgery and reduce discomfort and complications after surgery, In patients with insufficient residual bone dimensions, Short-length implants installation can be a reliable treatment.

P4-13

Usefulness of SMARTbuilder™ for bone regeneration in severe vertical alveolar bone defects

Gyeo-woon Jung*, Jae-Seek You, Seong-Yong Moon, Ji-Su Oh, Hae-In Choi, Hye-jung Lee, Sang-yeap Park

Department of Oral and Maxillofacial Surgery, School of Dentistry, Chosun University

Generally, bone grafts due to buccal alveolar bone resorption are often required for implant placement, and bone grafts are performed using veneer block bone grafts in patients with insufficient alveolar bone width. However, autogenous bone graft has a disadvantage that the amount of bone is absorbed, and a donor part is required.
This study evaluated the usefulness of the SMARTbuilder™(Osstem, Seoul, Korea)that can be used as an alternative veneer block bone graft to increase buccal alveolar bone width through a case report.
Patients who used a SMARTbuilder™ during implant placement were investigated for buccal alveolar bone augmentation, and bone formation was evaluated through radiographs.

case
A 46-year- old female visted the chosun university hospital for implant consulting in the mandibular second molar region.
Onlay block bone graft for implant placement was performed with the remaining alveolar bone of the plant less than 5mm, but it was removed due to dehiscence and osseointegration failure on the bone graft site. After 3 month, implant placement and bone graft using a SMARTbuilder™ were performed.
After 5 months, the SMARTbuilder™ was removed, and osseointegration of the implant and bone graft materials was well healing state.

Compared to the block bone graft using autogenous bone or the bone graft using titanium mesh, the procedure is simple and relatively easy to access, and satisfactory results were observed even in the case of an operator with insufficient skill.
However, Further studies are required to evaluate the change in volume of graft material for a long time.

P4-14

Conservative treatment technique for wound dehiscence after ridge augmentation using titanium mesh

Jeong-Kui Ku*[1], Yong-Suk Choi[2]

[1]Department of Oral and Maxillofacial Surgery, Armed Forces Capital Dental Hospital, Armed Forces Medical Command, Seongnam, Korea
[2]Armed Forces Medical Command, Seongnam, Korea

Wound dehiscence after ridge augmentation is the most frequent complication, causing infection, inadequate bone healing, and loss of bone substitutes. However, a conservative treatment is hardly achieved to prevent infection during the secondary healing period due to the resident oral bacteria, wet and humid environment, and soft tissue movement in various directions. We present an effective conservative method by using the oral wound dressing material (Orascar) with omnivec splint.

P4-15

Simplified 3-Dimensional Ridge AugmentationUsing A Tenting Abutment

Ra-Hyeon Woo, Dong-Seok Sohn

Department of Dentistry and Oral and Maxillofacial Surgery, Catholic University Medical Center of Daegu, Korea

Dental implant-supported oral rehabilitation is commonly utilized in modern dentistry. However, the placement of dental implants on an atrophic alveolar ridge is still considered a challenging procedure due to insufficient and poor bone quantity and quality. To overcome an atrophic alveolar ridge at implant sites, numerous surgical procedures including guided bone regeneration (GBR) using a non-resorbable barrier membrane or titanium mesh, Onlay block grafting using an intraossous or extraosseous bone block, distraction osteogeneses and sandwich osteotomy with an interposition bone graft, and the ramus split bone technique have been utilized to overcome vertical bone deficiency. Among these procedures, GBR using a barrier membrane or titanium mesh is widely accepted for vertical augmentation of an atrophic alveolar ridge because implants can be placed simultaneously on the bony defect, and the surgical technique is relatively simple compared to a complicated augmentation procedure using a block bone technique or distraction osteogenesis. GBR using a non-resorbable membrane or titanium mesh revealed predictable and superior bone gain according to clinical studies due to superior space-

making capacity. However, these barrier membranes are susceptible to early exposure, which can cause poor bone regeneration. Preventing collapse of bone grafting placed on the defect is critical for successful reconstitution of a 3-dimensional bony defect. To minimize resorption of bone grafting, it is also necessary to over-graft the bone graft. The placement of titanium screws on the large vertical defects as tenting poles was recommended to prevent collapse of the bone grafting. However, few studies have been completed on the utilization of dental implants and tenting abutment as an alternative to tenting poles for the reconstruction of large bony defects until now. We present three cases of 3-dimensional ridge augmentation using a dental implant and tenting abutment to simplify the surgical procedure and to shorten the edentulous healing period.

P4-16

A retrospective study on marginal bone resorption 5 years after placement of locking taper implant and screw type implant

SUN GYU CHOI*, JI HAE JUNG, SUN GYU CHOI, SUNG HYUI HUA, SOO NAM YANG

Department of Oral and maxillofacial surgery, CheongjuHankook hospital

Introduction

Currently, dental implants have become a representative treatment method for recovering the edentulous space, but unlike natural teeth, implants are vulnerable to inflammation around the implants as they are directly fused with the bone without a periodontal ligament. If the peri-implantitis persists, the marginal bone loss occurs and leads to implant failure.
In order to reduce the biological complications of implants, it is recommended internal connection implants. In the internal connection implants, there are screw type implants and locking tape implants.
In this study, we would like to compare and analyze the amount of marginal bone loss after 5 years of placement of locking tape implant and screw type implant to find out the utility of locking tape implant.

Method

82 implants were selected from January to December 2014, which are more than 8mm long and can be observed after five years of implantation. Five years after the placement of selected implants, the average of mesial and distal marginal bone loss was measured. These were classified according to the type of implants and the depth of the implant and compared and analyzed.

Result

Five years after the placement of the screw type implants and locking tape implants, the marginal bone loss was 0mm and 0.13mm respectively at a depth of 1mm or less, 0.01, 0.07mm respectively at a depth of 1mm more or 2mm or less, and 0.1mm and 0.95mm respectively at a depth of 2mm or more.

Discussion and conclusion

Locking tape implants minimize microgap by cold welding of the interface between the fixture and the abutment. The high sealing of locking tape implants is known to prevent the penetration of bacteria and peri-implantitis and marginal bone loss.
In this study, it was found that the amount of marginal bone loss was lower than the locking taper implant eye screw type implants. Locking taper implants may be useful when implants in areas where oral hygiene control is difficult, and short implants that are sensitive to adsorption of marginal bone loss.

P4-17

Successful implant installation using bone desinfication drilling ; Case report

Sung-Min Lee, Young-Long Park*, Dong-Kyu Jang, Jung-Hyun Park, Jin-Woo Kim, Sun-Jong Kim

Department of Oral and Maxillofacial Surgery, Ewha Womans University Mok-Dong Hospital, Seoul, Korea

Introduction

Bone densification drilling is a new concept of implant installation method that does not execute osteotomy compared to existing dental drilling techniques. Instead of osteotomy, bone tissue is compressed and autografted in the direction of external expansion. For bone densification, alveolar bone augmentation or maxillary sinus autogenous bone graft is possible without additional alveolar bone augmentation or maxillary sinus elevation in the maxilla with a good cancellous bone/density bone ratio. In this case, we would like to introduce the results of alveolar bone augmentation and maxillary sinus autogenous bone graft using bone densification drilling.

Case 1

The woman, 73 years old, had a facial injury on August 10, 2019, and was admitted to Oral and Maxillofacial Surgery at Ewha Womans University Mokdong Hospital with #12, 22 avulsion, and #21 intrusion. In the preradiological examination of the above dental prognosis areas, the corresponding alveolar bone quality was evaluated as D-4, and on April 28, 2020, 3 implants were placed using bone densification under general anesthesia.

Case 2

The woman, 67 years old, visited the Department of Oral and Maxillofacial Surgery at Ewha Womans University Mokdong Hospital that her upper right molars were uncomfortable on March 4, 2019. On August 27, the same year, #26 extraction and bone graft were performed. In the pre-radiological examination, the site was evaluated as D-4 alveolar bone quality, and on April 28, 2020, two #26 and 27 implants were placed using bone densification drilling under local anesthesia.

Results

Bone densification drilling is an implant installation method that can obtain the effect of alveolar bone augmentation and maxillary sinus autogenous bone graft without additional surgery.

TMJ

P5-01

Treatment of temporomandibular joint disorders with artificial joint replacement

Dong-Ohk KANG*, Jaemyung AHN,
Chang-Soo KIM, Jun-Young PAENG

Dept. of Oral and maxillofacial surgery, Samsung Medical Center, Sungkyunkwan University School of Medicine

Introduction
The indication for artificial joint replacement surgery can be said to be an End-Stage TMD that can no longer be expected to recover.
Although it is difficult to expect complete recovery of the functional part of the TMJ after surgery, it is generally aimed at securing the amount of mouth opening, improvement of pain and restoring the mastication function.
In these cases, we would like to investigate the improvement of patients who were operated with artificial joint replacement surgery, and to find out the usefulness and effectiveness of the operation.

Patients and methods
- Patients -
All patients who were diagnosed with facial asymmetry or TMJ ankylosis were operated with artificial joint replacement in the oral and maxillofacial surgery at Samsung Medical Center between 2018 and 2020. The cases were performed on 7 TMJ of a total of 5 patients. And Biomet Microfixation TMJ Replacement System (Biomet Microfixation, Jackson-ville, FL) prosthesis which was allowed for domestic use was Used.

- Methods -
A Preauricular incision is made by one same surgeon, taking care of damage to the facial nerve. After approach to the TMJ and remove the mandibular fossa of temporal bone, mandibular fossa component template is applied to check the appropriate size and position. And fixation was done.
Likewise, after exposing the mandible ramus, the condyle head component template is applied to check the size and position. When the proper position is confirmed, prosthesis is fixed using micro-screws. After releasing the intermaxillary fixation, check the mouth opening movement and then suture.

Results
Two types of diseases were the main cause in patients who were performed surgery. First, in patients who were operated orthognathic surgery and artificial TMJ replacement surgery due to facial asymmetry, recovery of functional movement and symmetrical facial contour were observed. Postoperatively, clinical and radiographic analysis showed that the planned facial contour was maintained symmetrically.
Second, in the case of patients who were operated surgery due to TMD, symptoms such as Mouth opening limitation and pain were reduced.

Conclusion
As a result of observing the patient's postoperative periodic radiographs, no screw loosening or fracture of the prosthesis were observed. In addition, significant improvement and functional recovery were observed when the patient's preoperative and postoperative clinical examination results (Position of Prosthesis, Pain evaluation, and Mouth opening) were compared.

P5-02

Calcium Pyrophosphate Dihydrate Deposition in Temporomandibular Joint : a case report and literature review

Joon-Ho Jung*, Soyeon LEE, Han-Sol YOU,
Jae-Young KIM, Jong-Ki HUH

Department of Oral and Maxillofacial Surgery,
Gangnam Severance Hospital,
Yonsei University College of Dentistry, Seoul, Korea

Calcium Pyrophosphate Dihydrate Deposition Disease (CPDD) is an inflammatory disease of joints caused by the deposition of calcium pyrophosphate dihydrate (CPPD), and is also called chondrocalcinosis or pseudo-gout. It shows clinical symptoms very similar to those caused by gout and mainly occurs in large joints such as the knee and hip joints, and rarely occurs in the temporomandibular joint.
Calcium pyrophosphate dihyrdate deposition in the temporomandibular joint is characterized by osteoarthritis, joint effusion, pain, and limited joint movement on clinical and imaging tests. It is similar in clinical and imaging characteristics to synovial chondromatosis, but it can be differentially diagnosed as a crystal form that appears in the findings of histopathological examination performed using an electron microscope without decalcification process.
Therefore, in this study, we conduct a case report on calcium pyrophosphate dihydrate deposition disease (CPDD) that occurred in the temporomandibular joint and review its characteristics.

P5-03

An ultrasonographic evaluation of masseter muscle thickness in patients with parafunctional habit

Michidgerel ODKHUU*, Heon-Yeong KIM,
Jung-Hyun PARK, Sun-Jong KIM,
Dong-Kyu Jang, Jin-Woo Kim

Department of Oral and Maxillofacial Surgery,
Ewha Womans University Seoul Hospital

Introduction
The purpose of this study was to measure the masseter muscle (MM) thickness before treatment and determine the decreases in MM thickness after treatment by first visit and follow-up measurements using tablet-based ultrasonography (US) in patients with parafunctional habit.

Materials and Methods
The basic information, MM pain durations, numeric pain rating scale (NPRS) score scaled by patients were collected in patients with parafunctional habit. The MM thickness of all the 27 patients were examined and measured at a 6-month follow-up. Real-time US screening was performed bilaterally at relaxed and clenched in intercuspal position using tablet-based US for each patient.

Result
MM was found to be thicker on the right side than on the left without correlation with gender or age. There are negative correlations between pain duration, pain level and MM thickness.

Conclusion
Botulinum toxin A (BTX-A) injection is the most effectual treatment for MM pain and thickness. Furthermore, stabilization splint (SS) treatment also can decrease the thickness of MM.

Basic Research

P6-01

Correlation between mandibular morphology and masticatory muscle thickness in young korean adults between normal occlusion and class III malocclusion

Won Yong KIM, Tae Ho KIM, Sung Min PARK,
Moon Young KIM, Se Jin HAN,
Chul Hwan KIM, Jae Hoon LEE

Dept. of Oral and maxillofacial surgery, College of Dentistry, Dankook University

The aim of this study was to evaluate the relationship between masticatory muscle thickness and mandibular morphology in young Korean adults with normal occlusion and mandibular prognathism. Multidetector computed tomography (MDCT) was used to measure the masticatory muscle thickness on the right side in 100 Korean young adults (50 normal occlusion group, 50 mandibular prognathism group). Cephalometric analysis was done to measure mandibular morphology. Pearson correlation analysis was done to investigate the relationship between the masticatory muscle thickness and mandibular morphometry.

The four masticatory muscles showed positive correlation with intergonial width in all subjects. All muscles, except temporalis, positively correlated with height of the ramus and mandibular length. Positive correlation was also observed in all muscles, except medial pterygoid, with thickness of the ramus.

In the normal occlusion group, all four masticatory muscles showed positive correlation with intergonial width and ramus thickness. Positive correlation was also observed in all muscles (except lateral pterygoid) with mandibular length. Masseter and lateral pterygoid positively correlated with height of the ramus.

In the mandibular prognathism group, all masticatory muscles, except lateral pterygoid, showed positive correlation with intergonial width. The masseter muscle showed negative correlation with ANB.

The results suggest a positive correlation of the thickness of masticatory muscles with both horizontal and vertical dimensions of the mandible. However, thickness of the masseter was found to decrease in patients with increasing severity of mandibular prognathism.

P6-02

Evaluation of odonto/osteogenic differentiation potential from different regions derived dental tissue stem cells and effect of 17β-estradiol on efficiency

Young-Bum Sona*, Young-Hoon Kang[b, c]*,
Hyeon-Jeong Lee[a], Si-Jung Janga[5],
Dinesh Bhartia, Sung-Lim Lee[a],
Byeong-Gyun Jeon[d], Bong-Wook Park[b, c, et],
Gyu-Jin Rhoa†

[a] 8 Department of Theriogenology and Biotechnology, College of Veterinary Medicine and 9 Research Institute of Life Science, Gyeongsang National University, Jinju, Republic of Korea
[b] 10 Department of Oral and Maxillofacial Surgery, Changwon Gyeongsang National University 11 Hospital, Changwon, Republic of Korea
[c] 12 Department of Oral and Maxillofacial Surgery, Gyeongsang National University School of 13 Medicine
[d] 14 Department of Biology Education, Gyeongsang National University, Jinju, Republic of Korea
[e] 15 Department of Dentistry, Hanil Hospital, Jinju, Republic of Korea

Background

The dentin is a tissue, which is formed by odontoblasts at the pulp interface of the teeth that supports the enamel. Odontoblasts, the cranial neural crest cells are derived from ectodermal Mesenchymal stem cells (MSCs) and are long and polarized cells. They are present of the outer surface of dentin and play a prominent role about dentin formation. Recently, attention has been focused on induction of odontoblast using various type of MSCs and effects of the 17ß-estradiol supplementation. In this study, we establish an efficient odonto/osteoblast differentiation protocol using 17ß-estradiol supplementation while comparing the odonto/osteoblast ability of various dental MSCs.

Methods

Same donor derived four types of dental MSCs namely dental pulp stem cells (DPSCs), stem cells from apical papilla (SCAP), dental follicle stem cells (DFSCs), and periodontal ligament stem cells (PDLSCs) were evaluated for their stemness characteristics and potency towards odonto/osteoblast (Induced odonto/osteoblast) differentiation. Then 17ß-estradiol supplementation of 0 and 10μM was applied to the odonto/osteoblast differentiation media for 14 days respectively. Furthermore, mRNA and protein levels of odonto/osteoblast [U1] markers were evaluated.

Results

All of the experimental groups displayed stemness characteristics by showing adipocyte and chondrocyte differentiation abilities, expression for cell surface markers and cell proliferation capacity without any significant differences. Moreover, all dental derived MSCs were shown to have odonto/osteoblast differentiation ability when cultured under specific conditions and also showed positive expression for odontoblast markers at both mRNA and protein level. Among all, DPSCs revealed the higher differentiation potential than other dental MSCs. Furthermore, odonto/osteoblast differentiation potential was enhanced by supplementing the differentiation media with 17ß-estradiol (E2).

Conclusions

Thus, DPSCs possess higher odonto/osteogenic potential than the SCAPs, DFSCs, PDLSCs and their differentiation capacity can by further enhanced under E2 supplementation.

P6-03

Silk sericin and 4-Hexylresorcinol differentiate endothelial cells via different mechanism in diabetic model

Yei-Jin Kang[1], Ji-Hyeon Oh[1],
Min-Keun Kim[1], Seong-Gon Kim[1],
Kwang-Jun Kwon[1], Young-Wook Park[1]

[1] Oral and Maxillofacial Surgery, College of dentistry Gangneung-Wonju National University

Introduction

Angiogenesis is the process that formulates new blood vessel and it is necessary to support an environment of healing wound especially in diabetic model. 4-Hexyl resorcinol (4HR) elevates the expression of vascular endothelial growth factor (VEGF) in RAW264.7 cells via Silk sericin related hypoxia inducible factor (HIF) independent pathway. The purpose of this study was finding the pathway 4HR promotes angiogenesis.

Material and methods

As endothelial cells are important in angiogenesis, we treated the human umbilical vein endothelial cells (HUVECs) with 4HR. After that, we performed western blot for VEGF-A, VEGF-C, and transforming growth factor-β1(TGF-β1) and investigated protein expressional changes by immunoprecipitation high-performance liquid chromatography (IP-HPLC) using 96 antisera. Knockdown with small interfering RNA (siRNA) targeting to TGF-β1 and the selective chemical inhibition (A83-01) to TGF-beta receptor I kinase (ALK5) in HUVECs was used for inhibition assay. In burn model of diabetic rats with 4HR application, wound size and temperature were recorded. Capillary and epidermis regeneration was evaluated by the images from fluorescence confocal microscopy and light microscopy (hematoxylin and eosin). Immunohistochemistry and western blot analysis for tissue samples were also conducted.

Result

We found that 4HR upregulated TGF-βs/SMADs/

VEGFs signaling, RAF-B/ERK and p38 signaling, and M2 macrophage polarization pathways. 4HR also increased expression of caspases and subsequent cellular apoptosis. The inhibition assay confirmed the involvement of TGF-β signaling pathway in the 4-HR mediated VEGFs expression. Mechanistically, 4HR increased TGF-β1 production and subsequent activation of SMADs/VEGFs, RAF-B/ERK and p38 signaling, and M2 macrophage polarization. 4HR application on burn model of diabetic rats demonstrated increased level of angiogenic proteins with active capillary regeneration and wound healing.

Conclusion

Apoptotic stress on the mitochondria is induced by application of 4HR. This stress induces TGF-β1 expression, and secreted TGF-β1 protein will bind to its receptor and activates ALK5. Then, the downstream signal is generated by the RAS/SMADs pathway. This signal will increase the expression of VEGFs. The property of accelerating angiogenesis demonstrates the possibility of using 4HR as a new wound healing agent.

P6-04

Effect of Non-thermal Plasma on the Regeneration of Injured Sciatic Nerve in Rat Model

Jinyoung Park, Han-Kyul Park, Na-Rae Choi, Jae-Min Song, Jae-Yeol Lee, Yong-Deok Kim, Sang-Hun Shin, Uk-Kyu Kim, Dae-Seok Hwang

Dept. of Oral and maxillofacial surgery, School of Dentistry, Pusan National University

Introduction

The purpose of the present study is to evaluate whether the NTP could be a new alternative method as the non-invasive therapy on damaged peripheral nerve of oral and maxillofacial region.

Method and materials

A total of 10 Wistar A rats were used in this experiment. The rats were divided into three groups according to whether sciatic nerve of hind limb was injured and NTP was applied or not : Group 1 (Sham Wound, SW) - right sciatic nerve was exposed and non-damaged ; Group 2 (Nerve Damage, ND) - right sciatic nerve was exposed and damaged, NTP was not applied in this group ; Group 3 (Nerve Damage and NTP, ND-NTP) - right sciatic nerve was exposed and damaged, NTP was applied with regular intervals (three times a week). I used Static Sciatic Index (SSI) for behavior animation records. Further more, I examined nerve and muscle tissue with hematoxylin and eosin (H&E) stain and the extent of neuronal recovery was evaluated by immunofluorescence stain of MBP, NF-200 and DAPI.

Conclusion

The significant differences were observed in all analytic methods examined. NI-NTP group (group3) showed enhanced nerve regeneration compared to that of NI group (group2) in behavior, histomorphometric and immunofluorescence analysis. NTP has advantageous effect on the regeneration after peripheral nerve injury in rat model. Although the precise mechanisms underlying NTP-mediated nerve regeneration should be proved with further studies, NTP can be a sufficiently new alternative as the non-invasive method of treatment for damaged peripheral nerve, especially in the region of oral and maxillofacial surgery.

P6-05

Application of intelligent automatic segmentation of airway from cone-beam computed tomography

Jinyoung Park, Han-Kyul Park, Na-Rae Choi, Jae-Min Song, Dae-Seok Hwang, Yong-Deok Kim, Sang-Hun Shin, Uk-Kyu Kim, Jae-Yeol Lee

Dept. of Oral and maxillofacial surgery, School of Dentistry, Pusan National University

The purpose of the present study was to evaluate the accuracy and reliability of auto-segmentated airway volume measurements of cone-beam computed tomography (CBCT) compared with the manual-segmentaed airway volume measurements.
The CBCT images were analysed using the 3D slicer(a free open source software platform for biomedical research) software. Reliability and accuracy were assessed by using Student's t-test. A $P < 0.05$ was considered statistically significant. No significant statistical difference was found between the total, the internal airway volume, and the most constricted airway area measured on CBCTs compared with the manual measurements.
These results suggested that the auto-segmentated three-dimensional CBCT measurements of the airway volume are reliable and accurate. The use of CBCT imaging for the assessment of the airway can provide clinically useful information in oromaxillofacial surgeons.

P6-06

Increased risk of Osteonecrosis of the jaw following dentoalveolar surgery in patients who administrated antiresorptives

Jing-Wen LI, Jin-Woo Kim, Jung-Hyun Park, Sun-Jong Kim, HY Kim, Dong-Kyu Jang

Department of Oral and Maxillofacial Surgery, Ewha Womans University Medical Center

Introduction

Previous studies have researched the usage of biomarkers and the possible associations between bone biomarkers and the development of BRONJ, however,studies showed non-conclusive results and that additional research for investigation of new biomarker for BRONJ is necessary. The aim of the study is to identify novel biomarkers for BRONJ in vivo by evidence-based approaches to provide preliminary results for further diagnostic tests and therapeutic maneuvers.

Materials and Methods

Twenty-one BRONJ patients and twenty-two healthy controls were included in this four-phase clinical trials.All the included patients administrated BP, and they were classified at the 8 weeks after dentoalveolar surgery according to ONJ occurrence. Bone ALP, Calcitonin, Intact PTH, Osteocalcin, total P1NP, Calcium, 25-(OH) Vitamin D, Osteoprotegerin, sRANKL, SOST, TRACP 5b, Dkk-1 were analysed. Detailed research and blood analyze have been carried out for patients with or without confirmed diagnosis of BRONJ by testing the diagnostic sensitivity and specificity.

Results

For clincial trials results,repeated measures analysis of variance revealed that the Intact PTH ($p=0.00 < 0.05$) was significantly decreased in the case group compared with the control group($p < 0.05$) and the DKK-1($P=0.03 < 0.05$) was significantly increased in the case group compared with the control group($p < 0.05$).The biomarker concentrations over time between the case group and the control group were analyzed.The data demonstrated that the markers which showed significant group difference were IntactPTH and the DKK-1 ratio.In addition,receiver operating characteristic (ROC) curves of Intact PTH and DKK-1 reflect the development of BRONJ. Intact PTH, AUC (95% CI) = 0.625 (0.488–0.762), P = 0.00, DKK-1, AUC (95% CI) = 0.324 (0.197–0.452), P = 0.03.

Conclusions

These results show that IntactPTH and DKK-1 are possible biomarkers for BRONJ.These data may provide useful additional information for future ONJ research.

P6-08

Association between fatty liver index and periodontitis

Ji-Youn Kim[1], Gyu-Na Lee[2], Yong-Moon Park[3], Yu-Bae Ahn[4], Kyungdo Han[2], Seung-Hyun Ko[4], Hyun Chul Song[1]

[1]Division of Oral & Maxillofacial Surgery, Department of Dentistry, St. Vincent's Hospital, College of Medicine, The Catholic University of Korea
[2]Statistics and Actuarial Science, Soongsil University
[3]Epidemiology Branch, National Institute of Environmental Health Sciences, National Institutes of Health, Research Triangle Park, USA
[4]Division of Endocrinology and Metabolism, Department of Internal Medicine, St. Vincent's Hospital, College of Medicine, The Catholic University of Korea

It has been suggested that periodontitis is associated with metabolic abnormalities including non-alcoholic fatty liver disease (NAFLD). The fatty liver index (FLI) is a non-invasive surrogate marker and predictor of NAFLD. We aimed to determine whether FLI itself would be associated with periodontitis through a secondary analysis of previously reported nationally representative probability sample data of the Korean population. FLI was calculated from a previously developed algorithm which combines measures of body mass index (BMI), waist circumference, triglyceride, and gamma-glutamyl transferase (GGT). Periodontitis was diagnosed based on the Community Periodontal Index (CPI) developed by the World Health Organization. Of 4,272 participants, 26.1% were diagnosed with periodontitis. Higher FLI was associated with a higher prevalence of periodontitis (Odds ratio (OR) highest vs. lowest quartile of FLI,1.63; 95% confidence interval (CI), 1.23–2.16; P = 0.001 for trend) adjusting for confounding factors. In the highest FLI quartile, prevalence of periodontitis was higher in individuals with diabetes (OR highest vs. lowest quartile of FLI, 2.89; 95% CI, 1.01–8.27 for diabetic subgroup; OR highest vs. lowest quartile of FLI, 1.45; 95% CI, 1.07–1.96 for non-diabetic subgroup). In summary, FLI was associated with prevalent periodontitis.

Dentoalveolar Surgery

P7-01

The Study on Healing after Surgical Treatment of Simple Bone cyst

Youngjin Shin*, Dong-mok Ryu, You-jin Jee, Sung ok Hong, Gwangjin Oh, Jaedeok Lee, Heeyeon Bae, Hyenwoo Lee

Dept. of Oral and Maxillofacial surgery, Kyung-Hee University Dental Hospital at Gangdong

Purpose
Through a retrospective study of bone regeneration of the defect after curettage of the simple bone cyst, we compared and evaluated how much and how long spontaneous bone regeneration could occur without bone graft of the defect.

Methods
From August 2008 to September 2020, patients who visited the Department of Oral and Maxillofacial Surgery at Gangdong Kyung-Hee University Dental Hospital were diagnosed as simple bone cyst and did not undergo bone graft after simple search and curettage to promote bleeding. The preoperative panoramic photos were taken and compared at 3 months, 6 months and 12 months after the surgery. By comparing the panoramic pictures, the changes in the margin of the cyst area and the change in the morphology of the bone inside the surgical part were classified.

Results & conclusion
A retrospective review (n=14) of the radiological findings after curettage of the simple bone cyst was performed. The radiological features were classified into four categories: the boundary area and the interior of the operating area. Radiologic changes were found between 1 and 4 months after curettage in most patients. Complete bone regeneration was confirmed when more than 4 months passed after surgery. There was one case in which healing did not occur in the maxilla. In the treatment of simple bone cyst, predictive bone regeneration can be expected without bone graft of the defect after curettage.

P7-02

Efficacy of flapless implant surgery with 3D surgical guide following mandibular body block bone graft in moderate alveolar bone deficiency

Jung-Min Lee*, Na-Rae Choi, Jae-Yeol Lee, Dae-Seok Hwang, Yong-Deok Kim, Sang-Hun Shin, Uk-Kyu Kim, Jae-Min Song*

Dept. of Oral and Maxillofacial Surgery, School of dentistry, Pusan National University

Purpose
Resorption of residual bone, which occurs simultaneously with tooth loss, makes implant placement difficult. Bone grafting performed before or simultaneously with implant placement can increase the stability of the implant. The purpose of this study was to know the efficacy of autogenous bone graft using the mandibular body and then using an implant guide for an flapless implant surgery.

Method
From September 2015 to December 2019, 30 patients who visited the Department of Oral and Maxillofacial Surgery at Pusan National University Hospital, had autogenous bone graft using the mandibular body, and later had flapless implant surgery using an implant guide. Based on the patient's medical records, radiographs, and clinical pictures, bone graft and implant placement site, stability after implant placement, and bone production were analyzed.

Result
Bone grafts and implant placement locations were 23 anterior and 59 posterior among 82 implants placed in 30 patients. The average implant stability quotient (ISQ) was 81.5, and bone production ranged from 1.4mm to 3.3mm in width and 1.5mm to 4.6mm in height.

Conclusion
The autogenous bone graft using the mandibular body is effective in regenerating the width and height of the absorbed bone after tooth loss, thereby increasing the accuracy of the implant guide and, as a result, increasing the efficacy of the flapless implant.

P7-03

Case Report: 7-Year Follow-up of Autogenous Tooth Transplantation with Sinus Elevation, and Autogenous Bone Graft on Vertically Deficient Healed Ridge

Joo-Hyung Yoon[1]*, Ji-Hyeon Oh[1], Min-Keun Kim[1], Kwang-Jun Kwon[1], Seong-Gon Kim[1], Young-Wook Park[1]

[1]Department of Oral and Maxillofacial Surgery, College of dentistry, Gangneung-Wonju National University

Introduction
Compared to dental implant, autotransplantation is a procedure that is simple, less time consuming because of rapid healing, and biologic. This case report aims to review about the postoperative course of the case where autotransplantation with sinus elevation, and autogenous bone graft is successfully performed on vertically deficient healed ridge.

Case Report
The patient of this case was a 32-year old man, and he had a left maxillary first tooth which was in retained root state. Extraction of the tooth was performed. 1 year later, bone formation was completed in extraction socket, but the vertical dimension of remained bone was about 5.6mm. The remained bone was vertically deficient. Socket was formed with trephine bur, and sinus elevation and autogenous bone graft where autogenous bone gathered during socket formation was used, were done on this region. And then, left maxillary third molar was extracted and transplanted on left

maxillary first molar region. 2 weeks later, endodontic treatment of transplanted tooth was performed. During the 7-year follow up, the periodontal ligament was perfectly regenerated, and no inflammatory resorption or ankylosis was found after autotransplantation.

Conclusion

Bone formation was completed but remaining bone was not sufficient for the transplantation of the tooth on the region where autotransplantion was performed in this case. In this case, 7 years of long-term follow up was held, and during the follow up, the patient did not appeal any discomfort, mobility of the transplanted tooth or root resorption was not found. Also, the periapical radiograph images showed that the periodontal ligament was perfectly regenerated, which shows that complete regeneration of periodontal ligament can also be occurred after autotransplantation along with intentional socket formation. Furthermore, unlike implants where periimplantitis can be occurred after long term usage, better long-term stability is expected on autotransplantation since the transplanted tooth is healed with periodontal ligament. Hence, this case shows that autotransplantation can be a treatment option which is simpler, less time consuming, shows more biologic result, and better prognosis is expected in, compared to implant surgery, for this region where usually implant surgery is performed for the treatment.

Deformity

P8-01

Correction of facial deficiency using three-dimensionally planned and designed custom-made titanium implant – A case report

Santhiya Iswarya Vinothini UDAYAKUMAR*,
Jaemyung AHN, Chang-Soo KIM, Jun-Young PAENG

Department of Oral and Maxillofacial Surgery,
Sungkyunkwan University, School of Medicine,
Samsung Medical Centre, Seoul, Republic of Korea.

Background

Facial aesthetic augmentation and correction of mandibular asymmetry with the use of computer-aided design/computer-aided manufacturing custom-made titanium prosthesis/implant has shown successful results. This case report is focused on two cases of facial asymmetry corrected by using three dimensionally designed custom-made titanium prosthesis.

Case presentation

This case report reviewed two patients who had undergone surgery for facial augmentation using custom-made three-dimensionally designed titanium implants for aesthetic restoration. A 45 years old male patient diagnosed with squamous cell carcinoma of left nasal sinus and had underwent left total maxillectomy followed by left anterolateral thigh free flap 2 years ago. The patient was referred to the department of oral and maxillofacial surgery for intraoral reconstruction with fibula free flap and implants placement. The deficiency in the zygoma and infraorbital area secondary to total maxillectomy were corrected using three-dimensionally planned and designed titanium zygoma and infraorbital prosthesis and followed by fibula reconstruction. A 41 years old male patient with the past surgical history of Bilateral Sagittal Split Ramus Osteotomy 15 years ago. Following the surgery, chronic inflammation on the left angle of the mandible has led to the contour and volume loss creating a defect. The left mandibular angle defect secondary to sagittal split ramus osteotomy was corrected using three dimensionally designed titanium mesh prosthesis.

Conclusion

The three-dimensional planning, designing, and manufacturing had set new standards in treating challenging aesthetic problems and facial contour deformities. Postoperatively, both the patients showed satisfactory outcomes in facial symmetry and appearance.

P8-02

Classification of facial asymmetry using 3D Cone beam computerized tomograhy images in paitents with menton deviation

Jaeho Jang , Jinyoung Choi

Seoul National University dental hospital,
Department of Oral maxillofacial surgery

Facial asymmetry is one of the most common chief complaint in orthognathic surgery cases attributing to esthetics and functional problems; with the prevalence of 21~85%. It is caused by difference in shape, position of mandible or shape of facial structures anatomically, on each side of the midsagittal plane. There are some possible causes including unilateral condylar hyperplasia, condylar hypoplasia, asymmetric mandibular prognathism, laterognathia, functional laterognathia, craniofacial syndromes(hemifacial macrosomia, craniosynostosis, faical clefts , etc), facial trauma, infections, and tumors. According to the cause of asymmetry, differential diagnosis must be established because the treatment modality may be different.

Conventionally, facial asymmetry in oral-maxillofacial regions were thought to be caused mostly by lower third of the face which is, the mandible. Alterations in the upper facial third includes developmental asymmetry of the skull. The middle third includes maxilla and glenoid fossa, which is considered to be the most functional craniofacial complex, directly affecting the asymmetry of the face. The glenoid fossa position is determined by both the upper facial third(the roof of glenoid cavity), and the middle third(Temporomandiular joint). Recent studies propose a new classification of facial asymmetry using 3D tomographic images to help better understand the dynamics of each individual's anatomical site causing the asymmetry. Until now there has been articles which studies classification and cause of facial asymmetry using 3D CT but the number of cases were small. It's very difficult to evaluate incidence according to cause of facial asymmetry.

In this presentation, we conducted a study using 3D Cone Beam Computerized Tomographic images of patients with chief complaints of facial asymmetry and with menton deviation in Department of Oral maxillo-facial surgery, Seoul National University dental hospital. Our aim was to newly classify, and measure the incidence rate of each anatomical site causing the asymmetry through the analysis of large amount of samples; to identify and update the etiology of facial asymmetry in Korean population.

P8-03

Cleft lip surgery education with VR

Hee-Jin Kim*, Ji-Su Oh, Jae-Seek You,
Hae-In Choi, Seong-Yong Moon

Department of Oral and Maxillofacial Surgery, School of Dentistry,
Chosun University

Introduction

Cleft lip is one of the most common congenital malformations, but surgery is still difficult and can cause serious complications in the hands of an inexperienced surgeon. Traditional surgical training has relied on extensive surgical experience and vertical training from superiors. In the current educational environment, the training of residents in surgery is struggling with strict working hours restrictions, increased non-clinical work, and requests from patients who refuse to be treated by

residents. These factors have an impact on surgical experience and surgical autonomy, making surgical education difficult.
Cleft lip surgery is technically complex and requires careful attention to restore form and function in order to obtain optimal patient results. Achieving proficiency in cleft lip surgery requires extensive surgical training and expertise. The purpose of this study is to evaluate the usefulness of virtual reality-based surgical education simulation to help understand the overall cleft lip surgery.

Method
A patient model with cleft lip was implemented in virtual reality using the Unity program. The overall surgical procedure was based on the Millard method. The first is to plan the surgery. The user is prompted to select an anatomical landmark from the patient data for pre-operative planning and the position indicated by the user is compared to the position of the "gold standard". After that, the incision line is marked. If the anatomical landmark and the absolute line match the criteria, the surgical procedure is performed. A total of 30 students were trained for cleft lip surgery and then a questionnaire survey was conducted.

Discussion
There are cases in which residents do not have access to cleft lip surgery. With this fact, it is clear that simulators are a valuable educational tool, and provide a way to educate residents on the anatomical indicators and overall surgery for cleft lip surgery. This simulation has the disadvantages that it cannot reflect the actual patient's information and the sense of actual operation cannot be felt. It is regarded that this can be supplemented by using a scanner and several devices (haptic devices, etc.). Although the current technology does not fully reproduce a real operating room, simulation and VR can now provide real value for reasons of quality, safety and cost of education, and their role will almost certainly expand as computer performance and availability increase.

P8-04

Deformity Management in Hemifacial Microsomia with Unilateral Transverse Facial Cleft: A Case Report

JunYeong Lee, Song-Jay Choi, Jaeyoung Ryu, Jeong Joon Han, Seunggon Jung, Min-Suk Kook, Hee-Kyun Oh, Hong-Ju Park

Department of Oral and Maxillofacial Surgery, School of Dentistry, Dental Science Research Institute, Chonnam National University

Background
Hemifacial microsomia (HFM) is the second most common birth defect of the face, after cleft lip and palate, with incidence in the range of 1:3,500 to 1:4,500. Patients present with unilateral hypoplasia of the ear, facial skeleton (maxilla, mandibular, zygoma, and temporal bones), and surrounding soft tissue. When it is accompanied by epibulbar dermoid and vertebral malformation, it is called Goldenhar syndrome. It implicates that mutation of myelin transcription factor 1 (MYT1) gene as one cause of the syndrome.
Transverse facial cleft is 7th category of the Tessier's 15 craniofacial malformations, and occurs in one out of 80,000 and one in 100-300 patients with facial cleft. It can appear as unilateral or bilateral, and varies from a simple extension of oral commissure to complete fissure extending to the ear canal.

Purpose
Remained asymmetrical profile of facial soft tissue of operated unilateral transverse facial cleft in HFM patient was treated with Orbicularis oris muscle re-alignment, commissuroplasty using Z-plasty, and fistulectomy. The postoperative function and the improvement of symmetry compared with the non-cleft side, will be evaluated with a literature review.

Case
A 6-year-old female with commissure cleft in the right corner of mouth and a fistula in the right zygomatic area and cheek visited our department. The patient was treated by 1st cheiloplasty after birth in Vietnam in 2013. In 2019, realignment of the orbicularis muscle and heiloplasty using Z-plasty were performed in our department. As a result, the patients obtained esthetic improvement with the symmetry of both mouth corners. At 5 months later, new fistula was formed in the Rt preauricular area. At 3 months later, additional fistulectomy with sialadenectomy of Rt accessory salivary gland was done.

Conclusion
We could get good result in a 6-year-old HFM patient with operated transverse facial cleft, who was treated by orbicularis oris muscle realignment, commissuroplasty with Z-plasty, and fistulectomy.

P8-05

Maxillofacial defect restoration using patient-specific impants made of titanium or PEKK

Ci young Kim*, Jin-young Choi

Department of Oral and Maxillofacial Surgery, Seoul National University Dental Hospital

Purpose
The aim of this study was to evaluate the surgical outcomes using titanium and polyetherketoneketone (PEKK) patient-specific implants (PSI) produced by CAD/CAM manufacturing technique for maxillofacial restoration surgery.

Materials and Methods
A retrospective review was performed of all patients who underwent facial restoration surgery using CAD/CAM fabricated surgical guides and PSI at a single institution. Cause of defect, location of restoration, method of treatment, number of PSI, complication, and follow-up period were assessed.

Result
Between Jun, 2018 and Jun, 2020, 22 patients were included for different aspects of facial restoration surgery: mandibular augmentation (n=11), malar augmentation (n=10), lateral orbital wall augmentation (n =1), paranasal augmentation (n =3), frontal augmentation (n =2). Causes of defect are as follow: Dissatisfaction with previous maxillofacial surgery (n=11), maxillary retrognathism(n=8), congenital deficiency(n=3). Only one patient felt ill-fitted implantation, all the other patients were satisfied with the results. No complications related to the implants were reported.

Discussion & Conclusion
Both titanium and PEKK could be chosen as materials for augmentation with low postoperative complication rate. With the aid of CAD/CAM technology using VSP and producing precise surgical guides and PSI with materials using titanium or PEKK, facial restoration surgery could be performed precisely and safely with low complication rate.

P8-06

Three-dimensional analysis of outcome for presurgical infant orthopedics in cleft lip patients using an LED surface scanner

Jin-Kyu Kim[1], Jeongwoo Kim[2], Jun-Young Kim[1], Jin Hoo Park[1], Hwi-Dong Jung[1], Young-Soo Jung[1]

[1]Department of Oral and Maxillofacial surgery, College of Dentistry, Yonsei University, Seoul, Korea
[2]Optimized Energy Conversion Systems Lab, Department of Mechanical Engineering, Korea University, Seoul, Korea

Various appliances for presurgical infant orthopedics (PSIO) such as the presurgical nasoalveolar molding device (PNAMd) and Latham device (Ld) are used to attain optimal conditions for primary repair of lip and nose (PRoLN) in cleft lip patients. Despite the controversies over PSIO, no study has evaluated its efficacy quantitatively and limited attempts have been made to perform a three-dimensional (3D) analysis. This study aimed to analyze the 3D outcome of PNAM using an LED surface scanner. Five

unilateral cleft lip and palate (UCLP) patients were included and treated using the PNAMd. The faces of patients were digitized before and after PNAM using the Artec spider scanner, and the scanned data were analyzed using 3D software, Geomagic control X and ANSYS Spaceclaim. The columellar angle (CA), nostril curvature (NC), on both affected (NC_A) and unaffected (NC_U) sides, and gap of cleft lip (GCL) were measured for analyzing the changes in lip and nose. CA significantly increased by 12.84 degrees and NC_A by 0.037 mm-1 ($P < 0.05$). GCL significantly decreased by 8.31 mm2 ($P < 0.05$). In contrast, no significant change was observed in NC_U. These changes demonstrate that columellar deviation and horizontal nostril improved, and attainment of tension-free suture during PRoLN became easier. Further studies involving greater number of participants are warranted for the accurate analysis of the effects of PNAM. This method of analysis should also be used for analyzing the longitudinal changes in CLP patients.

P8-07

Marsupializaion in multiple cystic lesion associated with multiple cystic lesion in Pediatric patients suspected of genetic mutation

Jong-hoon Park, Jin-A Baek, Dae-ho Leem, Hyun Seok, Seung-O Ko

Department of Oral and Maxillofacial surgery, School of Dentistry, Jeonbuk National University

Occurrence of multiple cysts in jaw bone is rare compared to solitary cysts. Numerous cysts occurring in jaw bone which not accompany any syndromes are defined as multiple jaw cysts, and most of these cases in children are odontogenic keratocyst. So if multiple cysts are found on the radiograph, we suspect this syndrome and pursue clinical and pathological tests. Most multiple cysts found in the jaw are odontogenic keratocysts associated with the nevoid basal cell carcinoma syndrome, mucopolysaccharidoses and cleidocranial dysplasia, although a single dentigerous cyst is well documented in the medical literature, including the prevalence, treatment and prognosis, multiple dentigerous cysts without any systemic symptoms is unusual, Furthermore, cases involving both the maxilla and mandible are especially rare. The patient in this case had multiple cysts associated with bilateral of the mandible. In addition, as a treatment case for a 6-yer-old girl showing the cystic changes of several non-erupted teeth in the maxilla and mandible. As a surgical treatment, marsupialization was performed to induce normal eruption of non-erupted teeth rather than cystenucleation. Futher follow up is planned to rule out additional problems and the possible identification of a syndrome.

P8-08

Effective treatment of Articulation disorder: Application of Sppech-aids

D. C. Kang*, Hyun Seok, D. H. Leem, J. A. Baek, S. O. Ko, Da Wa Kim

Department of Oral and Maxillofacial Surgery, School of dentistry, Jeon Buk National University

The velopharyngeal area functions very importantly in phonetic function with velopharyngeal closure – that means soft palate, pharyngeal posterior-lateral wall intercomplexation action.
Except for nasal cavity sounds, when speaking other all sounds, the velopharyngeal area functions on closure of nasal cavity and oral cavity, and when problem takes on this function it means "Velopharyngeal disorder (VPD)".
The velopharyngeal disorder means, when speaking oral sounds, the closure of veophrayngeal port is incomplete or continuous) ,there are many causes of VPD. The most common cause of VPD is cleft palate, although successful surgery was done, about 20~50% of VPD is remained.

The treatment of VPD has three methods ;
1) Speech therapy
2) Surgery
3) Speech aids prostheses

Speech therapy is basic treatment of all VPD patients. And surgery and Speech aids prostheses are auxiliary treatments.
Now the speech aids prosthesis has effectiveness on children or adolescence patients, but in adults cases, the treatment does not show definite effectiveness.
But in this case, the adult patient who had submucous cleft palate history and shown the articulation disorder, we did speech aids prosthesis without any surgery method. We will reported about the treatment result which has been completed and the disorder has improved.

Infection

P9-01

Cemento-osseous dysplasia with secondary infection : A Case Report

Hwikang Kim*[1], Jun Lee[1], Bong Chul Kim[1], Hun Jun Lim[1], Jung Hoon Yoon[2]

[1]Department of Oral and Maxillofacial Surgery, Daejeon Dental Hospital, College of Dentistry, Wonkwang University
[2]Department of Oral and Maxillofacial Pathology, Daejeon Dental Hospital, College of Dentistry, Wonkwang University

According to WHO, osseous dysplasia is a benign odontogenic tumor of the jaws. Cemento-osseous dysplasia(COD) is defined as a fibro-osseous lesion(FOL) usually associated with tooth areas of the jaws without any neoplastic component. Clinically, cement-osseous dysplasia is asymptomatic. The radiographic aspect shows that the lesions are radiolucent but become mixed. In late stages, the lesions change into a radiopaque mass with a thin radiolucent rim.
The infection that occurs within a lesion of COD is the main complication that an individual with this condition might face. The etiopathogenesis of infected COD involves the access of oral bacteria to the COD and secondary inflammation. Symptoms such as dull pain, drainage, exposure of the lesion in the oral cavity, focal expansion and facial deformities may be seen when the lesion is infected. Trigger factor for the development of infection are chronic inflammatory periodontal disease, dental caries leading to pulp necrosis, tooth extraction, and minor irritation caused by dentures in edentulous area.
The treatment is required when infection occurs due to exposure of the lesion in the oral cavity. Surgical intervention is necessary in secondary infected cases. Because of hypovascularity, infected lesions are difficult to manage and do not respond to antibiotic medications. In this case, 57-year-old female patient who has Rheumatoid arthritis visited our clinic due to left submandibular swelling and pain.

P9-02

A Clinicostastical study of Oral and Maxillofacial infected elderly patients for the last 8 years

Sung-Ouk Kim*, Kwan-Soo Park,
Kyu-Ho Yoon, Jae-An Park

Dept. of Oral and Maxillofacial surgery, Inje University Sanggye Paik Hospital

Introduction

Infection is one of the representative disease in the area of oral and maxillofacial surgery, and is tricky diseases that can occur in a variety of ways, from a form that is well localized and can be treated simply to a form in which the infection spreads to deep tissues including the fascia and mediastinum, and is life-threatening. Compared to younger patients, elderly patients are more prone to disease due to the decline in normal immune function due to aging, and this is also the case with infectious diseases. Because most of the elderly patients have more than one systemic disease, we need to be cautious when treating infectious diseases.

Currently, South Korea has entered an aging society with the population aged 65 or older accounting for 16.1% of the total population. The increase in the elderly population indicates that in the future, not only in the oral and maxillofacial surgery area, but also in the dental area, a significant number of patients will become elderly. We investigated 121 elderly patients over 65 years of age who had been admitted to the Dept. of Oral and Maxillofacial Surgery, Sanggye Paik hospital due to infection for 8 years. We identified the age, sex, time of occurrence, and site of occurrence, and performed statistical analysis to obtain reference data for diagnosing and treating elderly infected patients in the future. The following results were in below.

Results

1. Among the 276 patients, there were 121 patients over 65 years old (43.8%) and the gender ratio was 86 patients (71%) for women, and 35 patients (29%) for men.
2. The most frequent age group was 71-75 years old (32 patients, 26.4%), and the second was 65-70 years old (27 patients, 22.3%).
3. The most common occurrence time was March (15 patients, 12.3%) and September (16 patients, 13.2%).
4. The average duration of the inpatient stay was 11.9 days (1 to 92 days), and the longest hospitalization period was 7 to 9 days (29.7%), followed by 4 to 6 days (21.5%).
5. In the case of systemic medical history, the number of patients with a history of hypertension was the most at 84 patients (67.7%), and diabetes history was the second with 41 patients (33.9%).
6. The most frequent cause of infection was odontogenic infection in 82 patients (67.7%), of which dental caries and periodontal disease accounted for the largest proportion.
7. The most mainly affected fascial space involved was submandibular space (41 patients, 33.9%) followed by buccal space (17 patients, 14%). There were 18 patients (14.9%) affected by two fascial spaces, and 15 patients (12.4%) were affected by 3 or more fascial spaces.
8. As for treatment, incision and drainage were performed in 101 patients, accounting for 83.4%, extraction only was performed in 9 patients (7.4%), endodontic treatment only in 2 patients (1.6%), antibiotic treatment only 9 patients (7.4%) were administered.
9. There were 4 patients who are expired without cure, accounting for 3.3% of the total.

Conclusion

Because the treatment period until cure is longer and the possibility of life-threatening complications is higher in the elderly patients, more consideration of the systemic medical history is required, and when diagnosing, we should take more attention to two or more fascial space infections.

P9-03

Retrospective study of Denosumab(Prolia)-induced Osteonecrosis of Jaws

Yoo Jin Hong, Sung-Tak Lee, Jin-Wook Kim,
Tae-Guen Kwon, So-Young Choi

Dept. of Oral and Maxillofacial Surgery, School of Dentistry, Kyungpook National University, Daegu, Republic of Korea

Introduction

Medication-related osteonecrosis of the jaw(MRONJ) is a necrotic bone exposure for at least eight weeks in the jaw of patients with no history of radiation therapy who had bone-modifying agents or anti-angiogenic drugs. Denosumab, a receptor activator of nuclear factor kappa-B ligand(RANKL) inhibitors, inhibits bone resorption by depletion of mature osteoclasts. Since denosumab was first introduced in Korea in 2017, the number of cases of denosumab-induced osteonecrosis of jaws has increased. Thus, the purpose of this study is to conduct a retrospective study related to denosumab-induced osteonecrosis of jaws.

Methods

252 patients who visited Kyungpook National University Dental Hospital from 2017 to June, 2020 for MRONJ were studied. 22 of 252 patients had been exposed to denosumab(Prolia).

Results

The mean age of the patients was 79.4±6.1, and all except one were female. The average number of administrations of denosumab was 1.9±1.1 times. The number of patients who have been exposed to only denosumab (group A) was 5, and that who had a history of taking both bisphosphonate(BP) and denosumab (group B) was 17. In one case, MRONJ was not induced after tooth extraction at the time of taking BP, but was observed when extraction was done after denosumab administration.

Conclusion

It has been reported that a single administration of denosumab induced MRONJ. Similar results were observed in this study, and denosumab is likely to cause MRONJ with a small number of administration. Denosumab has been introduced as a new class of safe medications. It may be more effective to skeletal-related events and convenient because it is administered every six months. However, the hypothesis that denosumab may avoid its side effect of ONJ should be rejected by several cases of denosumab-related ONJ in this data.

Since MRONJ was induced by extraction after denosumab administration, which was not observed at the time of taking BP, the hypothesis on the synergistic effect of denosumab and BP was again proved. However, it is weak to verify due to its short follow-ups and small sample sizes. Further studies are necessary to examine denosumab-related ONJ.

P9-04

A study of factors influencing Pathologic Fractures in Medication related osteonecrosis of the jaw (MRONJ)

Ju-Yeon Seo*, Sung-Tak Lee, So-Young Choi,
Tae-Geon Kwon, Jin-Wook Kim

Dept. of Oral & Maxillofacial Surgery, School of Dentistry, Kyungpook National University, Daegu, Korea

Introduction

Bisphosphonate is used to prevent osteo-related complications by reducing bone resorption in osteoporosis and malignant patients but it was first reported inducing MRONJ in 2003. Pathological fracture of the mandible may occur due to bone necrosis due to MRONJ, resulting in structural changes and bone loss in the jaw. The purpose of this study was to investigate factors what contribute pathological fractures in patients with MRONJ.

Method & Materials

This study included ten patients diagnosed with pathologic fracture caused by MRONJ between

2010 to 2020 in Dept. of OMS, KNUDH. Commonly known risk factors for MRONJ were investigated for each patient. Parameters included sex, age, underlying disease, trigger points, used drugs, route of administration, duration of drugs, duration of withdrawal. Based on the above results, it was investigated whether there are factors that can cause pathological fractures.

Result
The gender ratio was 9 female and 1 male, and the average age was 74.6±9.5. Osteoporosis was the cause of taking bisphosphonate drugs, and the other underlying diseases were hypertension, arthritis, diabetes, and hyperlipidemia. The triggering factors were implant placement and removal in 6 patients and extraction in 4 patients. Six out of ten patients were taking Risedronate-based drugs, and one patient each who took Alendronate and Ibandronate. Nine patients took the drug orally, and one took the injection. The average duration of drug administration was 38.5±31 months, and the average duration of withdrawal was 4.2±7 months.

Discussion
Based on the above results, pathological fractures in the MRONJ patient group are more common in osteoporotic patients than in malignant tumors, and who use drugs that suppress immunity or drugs with bone resorptive suppression for a longer time.

P9-05

Herpes zoster infection with meningitis presenting prodromal toothache

Juyeon Cho

Department of Dentistry, Keimyung University Dongsan Hospital, Daegu, South Korea

Herpes zoster virus (HZV) infection is reactivation of Varicella Zoster virus that entered into the dorsal root ganglia during prior chicken pox infection, then remained in a latent form. HZV is characterized by its typical unilateral vesicles and rash along with a dermatome involvement. In its early stage, the only symptom may be prodromal odontalgia. Therefore, the difficulty in its diagnosis may lead to delayed HZV treatment as well as unnecessary dental procedures. A case of HZV infection of the trigeminal nerve branch is presented here, which was not properly diagnosed at the initial examination, but later confirmed as severe HZV infection with meningitis.

P9-06

A rare case of multiple osteonecrosis of the jaw caused by daratumumab

Young-Long Park*, Sung-min Lee, Dong-Kyu Jang, Heon-young Kim, Jung-Hyun Park, Jin-Woo Kim, Sun-Jong Kim

Department of Oral and Maxillofacial Surgery, Ewha Womans University Mok-Dong Hospital, Seoul, Korea

Introduction
Daratumumab is a promising new agent for multiple myeloma (MM). Daratumumab is an IgG1k monoclonal antibody directed against CD38 which overexpressed in multiple myeloma cells. There has been no report regarding its risk on the development of ONJ. The authors report a case of a patient who simultaneously developed osteonecrosis of jaw after taking daramutumab.

Case Presentation
A 73-year-old male was presented as a referral from a hemato-oncology for left mandibular swelling and his chief complaint was pain, sensory abnormalities on left mandible. He was diagnosed with multiple myeloma in 2012, so he was taking daratumumab weekly from June to November 2015. At the time of first visit, his left mandibular bone was exposed and necrotized, so we diagnosed with MRONJ stage III and decided to perform Sequestrectomy under general anesthesia. After 3 month, we found that he developed a lesion in a different place. Mandibular anterior fistula formation was found and maxillary palatal bone was exposed and necrotized. So he underwent sequestrectomy on Maxillary palatal and mandibular anterior area. Preoperative and postoperative care and surgery method were the similar to before. Even during the follow-up period, the healing rate of the previous surgical sites was relatively slow, and inflammatory changes were also seen locally. Osteonecrosis was found around the left maxillary first premolar, so the tooth was extracted and sequestrectomy was performed under local anesthesia. He is still undergoing follow-up, and no recurrence of bone necrosis has yet been observed. Because the patient's MM improved, he stopped taking the daratumumab, and since then, it has improved significantly.

Discussion and conclusions
Among patients taking daratumumab, cases of osteonecrosis of jaw have not yet been confirmed, independent the administration of anti-resorptives, and moreover, multiple osteonecrosis of jaw cases are rare and interesting. Since daratumumab can also cause osteonecrosis of jaw, patients taking daratumumab should also be follow up for ONJ.

P9-07

The study for first choice antibiotics in maxillofacial infection

ChangHyun HONG, Kyung Su Shin, Won Jong Park, EunJooCHOI, MoonGiCHOI, KyungHwanKWON

Department of Oral and maxillofacial surgery, college of dentistry, Wonkwang University, Korea

Introduction
The principle of basic treatment of infection in the maxillofacial area is to use proper antibiotics and to perform incision & drainage. However, antibiotic treatment becomes important when incision and drainage cannot be performed or patients show signs of systemic infection. Proper antibiotic treatment should prevent the spread of infection and complications caused by systemic infection to prevent the patient from developing sepsis.

Method
In this study, a total of 36 patients who received incision & dranage and antibiotic treatment with pus culture test due to infection in maxillofacial area at Wonkwang University Dental Hospital from January to September 2020. based on radiographic images of patient, the maxillofacial space carried over to infection were investigated, and the sensitivity of bacteria and antibiotics detected was confirmed based on the pus culture test.

Result
The strain of Streptococcus strains, Gram(+) was mainly cultured regardless of the location of the space transferred to infection. However, for deep infections, non-streptococcus was relatively cultured.

Discussion
In infection in the maxillofacial area, penicilin is still known to be right early on to choose as an empirical antibiotics. This study found that the bacteria sympathetic in patients have moderate or resistant to penicillin, but aminopenicillin still shows sensitivity. Therefore, it is justifiable to choose penicillin antiotics as early antibiotics regardless of the location of the infection, but in the case of deep infection, the choice of antibiotics to effectively treat Gram(-) bacteria will also have to be considered.

P9-08

Factors influencing symptom on Cemeto-osseous dysplasia patient

In-hye NAM*, Jin-young PARK, Won-hyuk CHOI, Han-kyul PARK, Na-rae CHOI, Jae-Min SONG, Dae-Seok HWANG, Yong-Deok KIM, Sang Hun SHIN, Uk-Kyu KIM, Jae-Yeol LEE

Dept. of Oral and maxillofacial surgery, School of Dentistry, Pusan National University

Cemento-osseous dysplasia(COD) is a benign fibro-osseous lesion and there are three types of radiographic findings from early formation to maturity. It is the stage of osteolysis that appears to be radiolucent in the early stage, the stage of chalky cells containing nodular radiopaque deposits, and the stage of maturation showing nodular radiopacity with clear boundaries. Majority of these lesions are asymptomatic and no treatment is required because cementum and osseous tissue replaces normal bone tissue.

However, if symptoms such as pain or swelling occur, it means that the lesion is infected and the lesion must be excised. The purpose of this study is to compare the differences between symptomatic patients and non-symptomatic patients, and to see if there are any factors affecting the onset of symptoms. Through this, it can be helpful to identify the change pattern of the lesion or to decide whether to treat it.

In this study, 60 patients who were histologically confirmed as Cemento-osseous dyslpasia were investigated as a result of resection at Pusan National University Dental Hospital's Oral and Maxillofacial Surgery for 10 years from 2010 to 2020. 55 out of 60 were female patients and the average age was 50. Among them, 27 had symptoms such as pus, swelling, and pain, and in this study, we compared patients with and without symptoms to investigate the various factors that cause symptoms.

P9-09

Case reports : The Trratment of MRONJ with rhPTH

WonTack Shin, HY Kim, Dong-Kyu Jang, Jung-Hyun Park, Jin-Woo Kim, SJ Kim

Dept. of Oral and maxillofacial surgery, Ewha Womans University Seoul Medical center

Purpose

Parathyroid hormone (PTH) is a hormone that regulates calcium metabolism, mainly having catabolic and anabolic actions in bone. Continuous exposure to PTH can cause resorption of bone, however, intermittent administration of PTH improves bone micro-architecture, mineral density and strength. This action enables PTH to be an appealing treatment for patients with osteoporosis. Many clinical studies have shown promising results with PTH for treatment of MRONJ. In these cases, we have prescribed Forsteo to patients with osteonecrosis of jaw.

Review of Case

- Case I -

The first patient, an 83-year-old woman, was a patient with systemic diseases such as high blood pressure, arteriosclerosis, and osteoporosis. She was diagnosed with MRONJ in October 2019 and was admitted to the Oral and Maxillofacial Surgery Clinic. Sequestrectomy of necrotic bone was performed under sedation and bone morphogenic protein was transplanted. After antibiotic adjuvant therapy during the hospitalization period, symptoms improved and she was discharged from the hospital in November 2019. Afterwards, the patient started Forsteo injection from December 2019, and was injected until March 2020. No further bone necrosis was observed, and it remained without complaints of pain.

- Case II -

The second patient, a 70-year-old woman with osteoporosis, was admitted to the clinic for persistent pain after extraction of #34i and 35i implants. She was diagnosed with MRONJ and hospitalized in August 2020. Sequestrectomy of necrotic bone was performed under general anesthesia and bone formation-inducing protein with platelet-rich fibrin were transplanted into the bone. Antibiotic adjuvant therapy was performed, symptoms improved, and the patient was discharged. Forsteo injection was prescribed as a discharge drug. Continuous follow-up was conducted and normal healing state was maintained.

Discussion

Continuously produced parathyroid hormone stimulates osteoclasts to increase bone resorption, thereby increasing blood calcium. However, parathyroid hormone drugs used for the purpose of treating osteoporosis, because of their short half-life, are intermittent and a small amount of concentration is used. They show the effect of increasing bone production by osteoblasts. Accordingly, short-term use of PTH can be helpful in resolving MRONJ lesions by raising the level of scrutiny for BP therapy, which is currently widely used. Although it is now widely known that PTH assist in removing necrotic bone and accelerate healing in MRONJ patients, the optimal duration of the PTH treatment for MRONJ is another unsolved question. Therefore, continuous research is still required to evaluate the effectiveness of PTH for the treatment or prevention of MRONJ.

Gold

오스템 임플란트	tel 02 - 2016 - 7000	

Silver

보령제약	tel 080 - 708 - 8088	
제일메디칼코퍼레이션	tel 02 - 850 - 3500	fax 02 - 850 - 3535
㈜핏미	tel 070 - 4773 - 2277	
다림양행	tel 02 - 3140 - 3836	fax 02 - 335 - 1566

Bronze

㈜한국존슨앤드존슨메디칼	tel 02 - 2094 - 3951	fax 02 - 2094 - 3910
인피니투스	tel 02 - 6933 - 6265	fax 0505 - 320 - 6265
메가젠 임플란트	tel 053 - 222 - 3219	
㈜칼자이스	tel 02 - 3140 - 2675	fax 02 - 3140 - 2699
한국스트라이커	tel 02 - 565 - 7303	
㈜위메디케어-마틴	tel 02 - 2157 - 0881	fax 02 - 2157 - 0884
제이에스파마	tel 02 - 462 - 9275	fax 02 - 462 - 9276
㈜티알엠코리아	tel 02 - 2237 - 1685	fax 02 - 2237 - 2687

광고

덴티움	tel 070 - 7098 - 9134	fax 02 - 6211 - 4681
한국푸앤코	tel 031 - 254 - 4013	fax 031 - 254 - 4088
아트메디텍	tel 02 - 6482 - 6525	fax 02 - 3482 - 6520
군자출판사	tel 031 - 943 - 1888	fax 031 - 955 - 9545
삼진제약	tel 02 - 3140 - 0732	fax 02 - 335 - 1093
가이스트리히	tel 02 - 553 - 7632	fax 02 - 553 - 7634
아이오바이오	tel 02 - 3474 - 5243	fax 02 - 3454 - 1403
인솔㈜	tel 02 - 404 - 7990	fax 02 - 404 - 7992
한국팜비오	tel 02 - 587 - 2551	fax 02 - 523 - 9784
비오케이	tel 032 - 506 - 7243	fax 032 - 505 - 7243

제59차
대한악안면성형재건외과학회
종합학술대회 및 정기총회

The 59th Congress of the Korean Association of Maxillofacial
Plastic and Reconstructive Surgeons

대한악안면성형재건외과학회지

2020년 10월 25일 인쇄
2020년 10월 29일 발행

제 42권
별책 1호 2020

〈비매품〉

발행인 고 승 오
편집인 김 선 종

발행처 **대한악안면성형재건외과학회**
서울특별시 종로구 대학로 101(연건동)
서울대학교 치과병원 지하1층 169호
tel 02 - 468 - 0085
fax 02 - 468 - 0084
e-mail kam207j@hanmail.net
website www.kamprs.or.kr

The Journal of Korean Association of Maxillofacial Plastic and Reconstructive Surgeons

Vol 42, Supplement No. 1, 2020

Publisher Seung O, Ko Chief Editor Sun Jong, Kim
Korean Association of Maxillofacial Plastic and Reconstructive Surgeons

넓게 • 강하게 • 안전하게

제압한다!

FDA APPROVED

The Drug of Choice for the Empiric Therapy

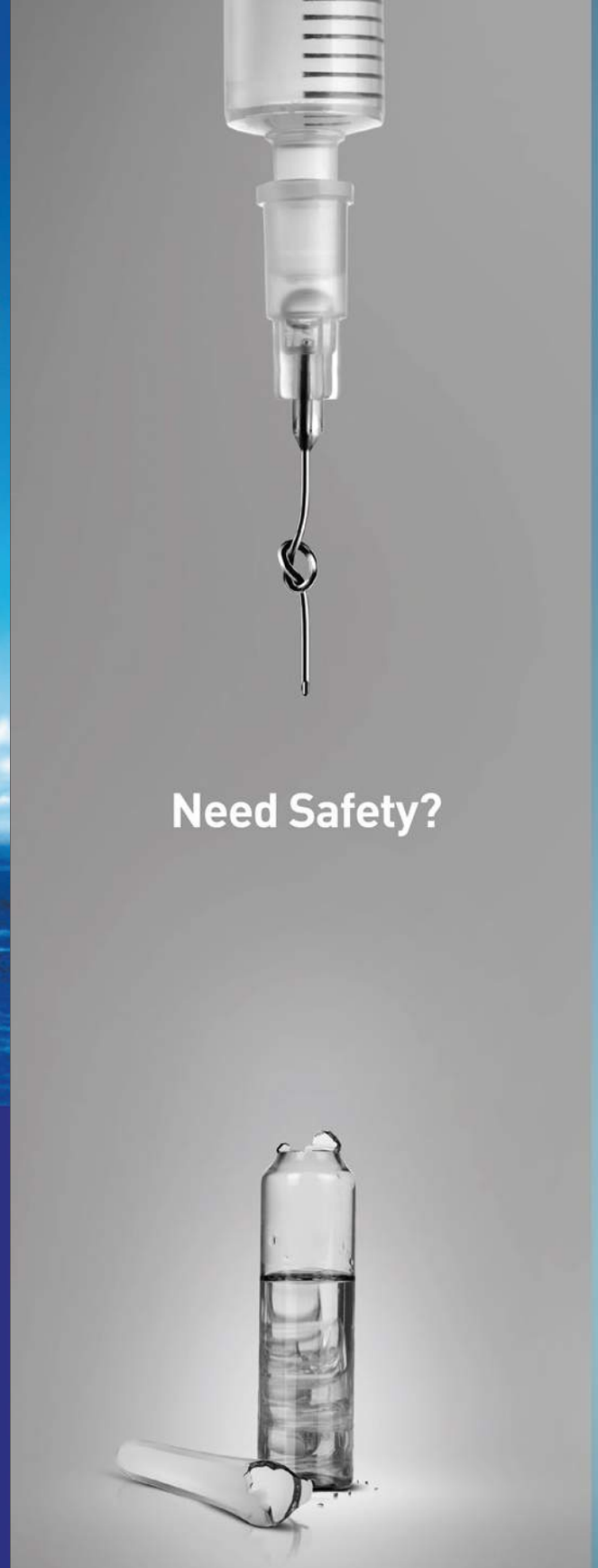
MEIACT® 정/세립

(Cefditoren Pivoxil)

- 내성균주를 포함한 St.pneumoniae, H.influenzae에 강력한 항균력 발휘
- 기존 3세대 Cephem계에 비해 G(+)균에 대한 항균력 강화
- 경구 Cephem계 항생제로는 최초로 백일해에 적응증 인정
- 산부인과 • 치과 • 안과 영역까지 적응증 확대

※ 제품에 대한 보다 자세한 정보를 원하시면 마케팅기획실 소비자 상담실 전화(080-708-8088)로 문의해 주시기 바랍니다.

보령제약



Need Safety?

이제 Vial로 더 안전하게!

국내 최초의 Vial 제형 Ramosetron 주사제

나제론®

보령제약

JEILMEDICAL

PRIMARY SYSTEM

3D Printed Patient Specific Medical Device

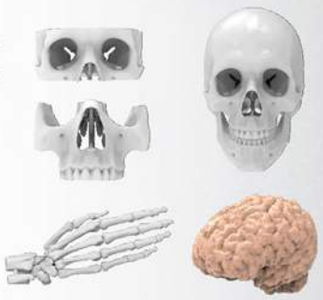
NEW PRODUCT

PRIMARY PEEK

PEEK 100% (ASTM F2026) 생체적합성 재료

RP MODEL

RP Model made with Rapid Prototyping technology. Based on the 3D data (CT, MRI), the model is made in accordance with the actual body.



Le Fórte

Mid Face / Orthognathic / Mandible Trauma / Mandible Recon.

Mid Face

LeForte 1, 2, and 3 fractures
Selected orthonathic procedures
Nasal, orbital, and zygoma region

Orthognathic

Orthognathic surgery of midface and mandible

Mandible Trauma

Trauma and osteotomy of mandible

Mandible Recon.

Reconstruction of mandible

(주)제일메디칼코퍼레이션
08378, 서울시 구로구 디지털로 34길 55, 코오롱싸이언스밸리 2차 702·703·704·705·706·804·805·807·812·815호
Tel. 02 850 3500 **Fax.** 02 850 3535 **E-mail.** jeil@jeilmed.co.kr **Homepage.** www.jeilmed.co.kr

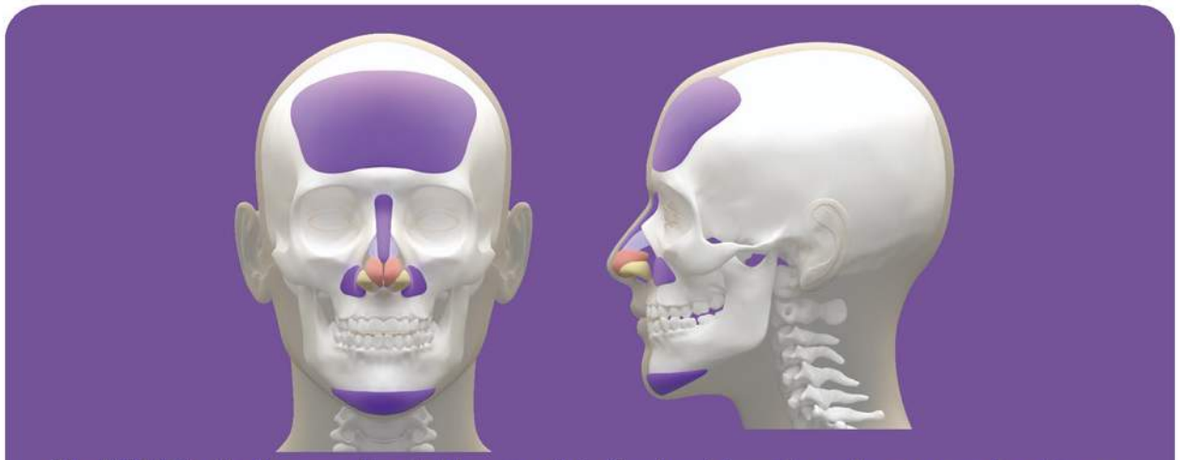
FitMe

Fitted Implant To ME

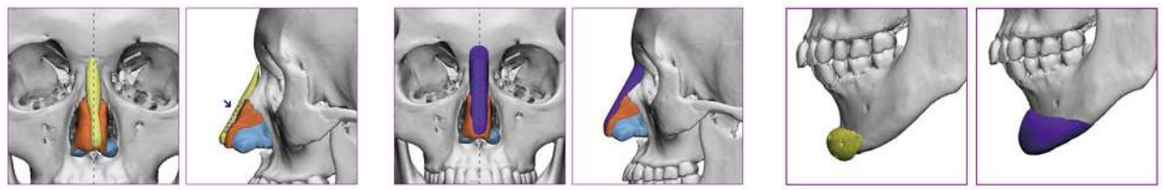
100% Customized silicone implant.
Design your face and make it come true.
Unique implant for you.

FIT ME is a customized silicone implant based on the patient's CT data which is designed to fit the affected area perfectly.

+ FIT ME is possible to design implant volume and size most suitable for patients.
+ FIT ME is premium high quality silicone implant made in Korea.
+ FIT ME is no limit for size and design
+ Fast service

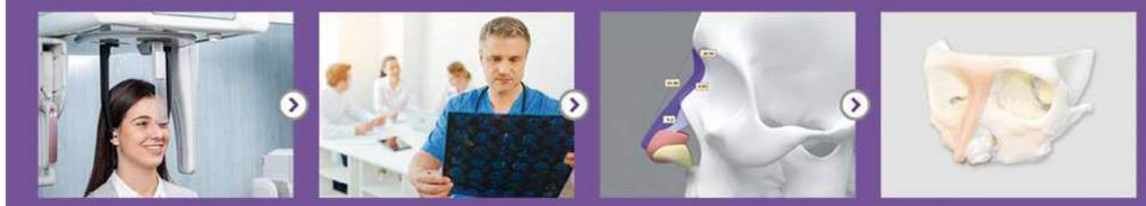


The FIT ME indications are Nasal, chin, mandible, forehead, temple, malar, paranasal and so on.



Ready-made Nasal | FIT ME Nasal | Ready-made Chin | FIT ME Chin

Manufacturing Process



Receive C.T Data from doctors | Check C.T data | Design FIT ME Implant | Manufacture silicone implant

http://www.ekeosan.com
http://www.fitme3d.kr

Contact : +82-2-466-1188
E-mail : keosan@ekeosan.com

dalim (주)다림양행

CollaStat

Bioactive Collagen Hemostat

Key Features

✓ 뛰어난 지혈작용

콜라겐 단백질 입자의 팽창으로 인한 물리적 압박과
트롬빈의 혈액응고 작용의 시너지 효과로 신속하고 효과적인 지혈이 가능하여
수술시간이 단축됩니다.

✓ 최소한의 조작

다림티센의 독자적인 트롬빈 안정화 기술로 트롬빈 용액을 준비하는
과정 없이 주사기를 결합하여 혼합하는 최소한의 조작만으로 사용 준비가 가능합니다.

✓ 적용의 편리성

Flowable한 제품으로 불규칙한 표면이나 접근이 어려운 부위에 적용이 가능합니다.

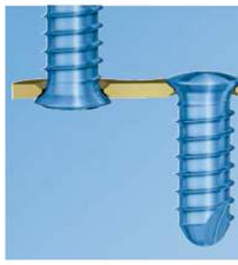
품목명: 흡수성체내용지혈용품(4등급)
허가번호: 제허 16-518호
사용목적: 외과적 수술시 체내조직을 지혈
사용기한: 제조일로부터 2년
저장방법: 1℃~25℃
용량: 3ml / 6ml

[제조원] dalim (주)다림티센
(주)다림티센
서울시 마포구 연희로31 연남빌딩 3층-5층
02)3142-0646

[판매원] dalim (주)다림양행
(주)다림양행
서울시 마포구 행월드컵북로 52-1
02)335-1657

MatrixORTHOGNATHIC.

Specialized implants and instruments
for orthognathic surgery.



CMF Matrix

DePuy Synthes
PART OF THE Johnson & Johnson FAMILY OF COMPANIES

OPTIMUS

Real Fit Reconstruction Plate

OSTEONIC
The Medical Explorer

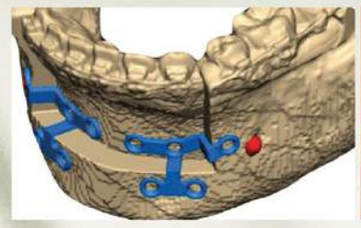
R2 GATE Turning imagination into reality

아직도 술장에서 구부리고, 자르고, 맞춰보고…?

생각대로 딱 맞아 떨어지는
페이스가이드로 바꿔보세요.

국내 12개 종합 대학병원에서
이미 사용하고 검증된
국내 최초 맞춤형
디지털 양악 솔루션은

FACEGIDE™ 뿐..



FACEGIDE는 국내최초 100%
환자 맞춤형 플레이트를 제공함으로써,
술장에서 추가적인 변형없이 그대로
사용하여 **수술시간**을 단축시키고,
정확도를 향상시킵니다.

MEGAGEN For Lifetime Smiles

TEL : 02-6003-2079 / 010-6275-6686
E-mail : facegide1@imegagen.com
www.megagen.co.kr

Digital Catalogue
핸드폰으로 QR코드를 스캔하시면
FACEGIDE 수술 영상을 보실 수 있습니다.

For demanding surgical applications look no further than **ZEISS TIVATO 700***, the latest **Advanced Visualization System from ZEISS**. Experience all new functionalities of TIVATO™ 700 from ZEISS that streamline your surgical workflows:

- **Workflow-Enhancing Visualization**
- **Ultimate Reach & Flexibility**
- **All-Digital**

Seize The Digital Future.
www.zeiss.com/tivato

ZEISS

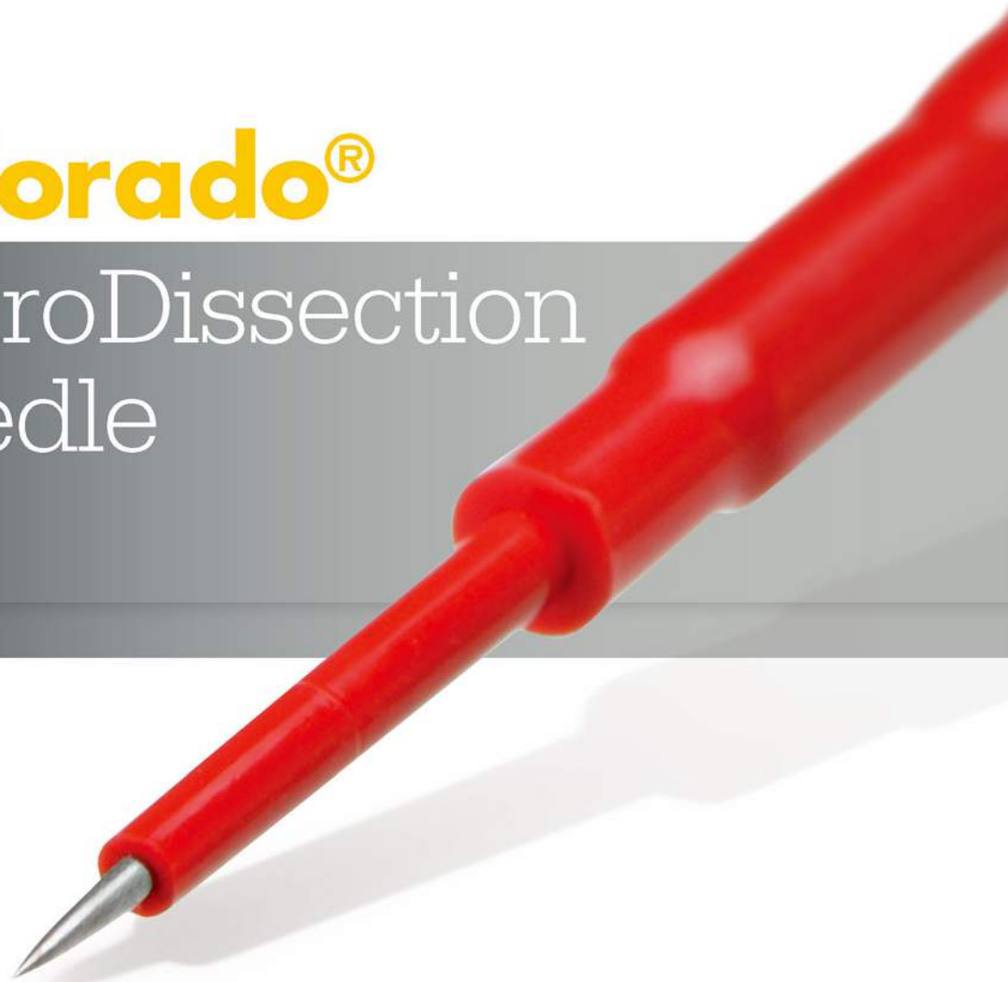
Seeing beyond

ZEISS | 자이스
서울시 마포구 독막로 101, 201호 (상수동, BR엘리텔 2층) www.zeiss.co.kr

문의전화
02-3140-2688

stryker

Colorado®
MicroDissection Needle



Precision electrosurgery

KLS martin
GROUP

위메디케어(주) Tel. 02-2157-0881
Fax. 02-2157-0884

고순도 · 고품질의 안전하고 편리한

액상 하이랙스 주

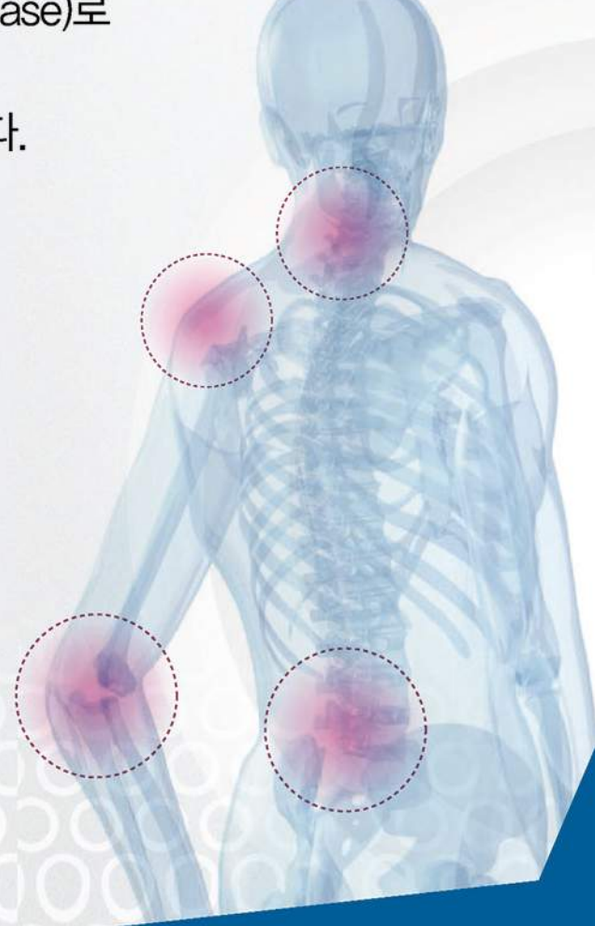
세계최초
고순도 액상
히알루로니다제
하이랙스주

Highly Purified Hyaluronidase **750 IU**
1,500 IU

액상
고순도 히알루로니다제(Hyalurondiase)로
제품의 우수한 품질은 물론,
안전성 문제를 모두 해결 하였습니다.

적용되는 분야

- 신경근 차단술
- 섬유증식증 감 소
- 신 경 성형술
- 관절 내 관절간 유착방지
- 경막 외 내시경
- 오십견



동물 유래 단백질 의약품 원료는
순도가 제품의 품질과 안전을 결정하는 가장 중요한 요소입니다.

BMI 주한국비엠아이 제품문의 031-426-4780~3

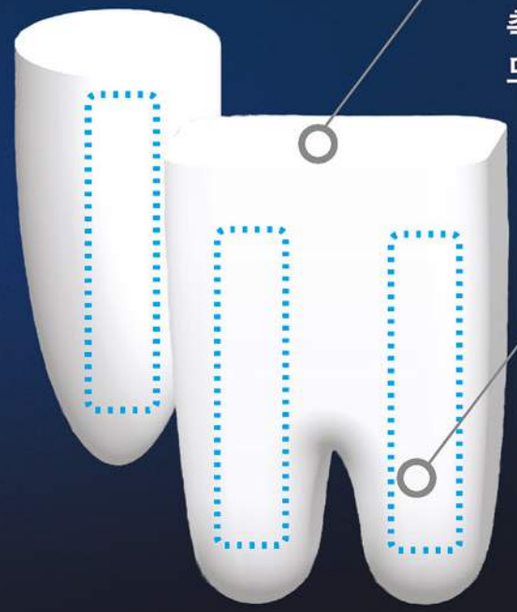
TRMKOREA

QBONPLUG®

골이식 및 소켓복원용 듀얼 플러그

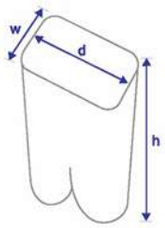
- 대구치 & 소구치용 -

조골세포 부착 및 분화
촉진을 위한 세포외기질을
모방한 하이드로젤 구조

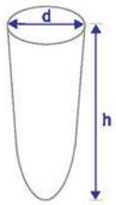


신생골 형성을 위해 삽입된
생분해성의 합성골이식재

주문정보



품목코드	
DPQBP	MM
부피 (cc)	크기 (dxwxh)
1.4	16.5x11.5x9.5



품목코드	
DPQBP	PM
부피 (cc)	크기 (dxwxh)
1.4	23x10.5

Mu-Terasil

Mucoadhesive Wound Dressing

What is Mu-Terasil® Spray Dressing?

Mu-Terasil® Spray Dressing is used for the relief of oral pain. When applied in the oral mucosa, Mu-Terasil® Spray Dressing forms a bio-adhesive film that protects and soothes oral lesions, thereby providing rapid and significant oral pain relief that lasts for up to 6~8 hours.

ACESTOP®

Soluble Hemostatic Gauze

Control Bleeding Improve Healing

Acestop® Soluble Hemostatic Gauze is a white or light yellow knitted fabric with uniform color and soft textile. It is mainly made up of sodium carboxymethylcellulose. ACESTOP® Soluble Hemostatic Gauze can quickly absorb water of exudates from wound surface to form viscous gel. It is effective in immediate hemostasis, protecting wound site and accelerating healing for trauma and post operational wound.

KFC Foo & Co Korea Co., Ltd
경기도 수원시 권선구 세지로110 강남빌딩 2층(권선동)
Tel. 031-254-4013 / Fax. 031-254-4088

Art FacialBandPLUS CN7P

[아트페이셜밴드플러스]

수술부위를 압박해 줌으로써 붓기와 혈액 또는 체액의 고임을 방지해줍니다.

- ❖ 통풍과 땀 배출이 가능한 특수 원단 사용
- ❖ 턱 부위 tight하게 압박
- ❖ 인체공학적 디자인/ 환자 압박 부위 밀착 압박 가능

Art FacialBandPLUS 적용점

*Parotidectomy (침샘 절제술) 후 사용
*double jaw surgery(양악수술)후 사용
*tooth extraction (발치)후 사용
*dental implant (임플란트)후 사용

Art FacialBandPLUS 착용목적

기존에 턱, 얼굴, 머리 수술 등을 하고 나서 붕대로 감아서 사용함에 있어서 시간이 많이 지체되었으나 이 제품을 사용하면 시간절약을 하고 간편히 치료에 많은 도움이 됩니다.아이스팩 추가로 얼음찜질 또한 가능합니다.

Art FacialBandPLUS 장점

* Art FacialBandPLUS 는 인체공학적디자인으로 환부를 완벽히 보호하며 압박 가능
* Art FacialBandPLUS 는 통풍과 땀 배출이 가능한 특수 원단 사용으로 쾌적한 착용감 보유
* Art FacialBandPLUS 는 다양한 사이즈로 개별맞춤과 동일한 수준으로 착용이 가능

SIZE	S	M	L
	소아.얼굴작은여성	일반	남성,얼굴크신남성

제조사 : 아트메디텍 Tel : 02-3482-6521
서울시 구로구 디지털로27길 24 벽산디지털밸리1차 403호

ART MEDITECH

Powerful Pain Relief

시너젯

Come at a better time
by convenient therapeutic options

Rapid onset and Persistent action in Pain relief.
Good efficacy and Well-tolerated than either agent alone.

Synerjet Tab.
(Tramadol HCl 37.5mg, Acetaminophen 325mg)
TID or QID

Synerjet SEMI Tab.
(Tramadol HCl 18.75mg, Acetaminophen 162.5mg)
TID or QID

Moderate to Severe Acute & Chronic Pain

Synerjet ER Tab.
(Tramadol HCl 75mg, Acetaminophen 650mg)
QD or BID

Synerjet ER SEMI Tab.
(Tramadol HCl 37.5mg, Acetaminophen 325mg)
QD or BID

*보다 자세한 사항은 제품설명서를 참조하시거나 **삼진제약 소비자 상담실 (080-082-1234)**로 문의하십시오. www.samjinpharm.co.kr

SAMJIN 삼진제약(주)

Geistlich
Biomaterials

수술은 술술!
잠은 솔솔~

유난히 어려웠던 수술,
덮고난 후 걱정됐던 케이스-
가이스트리히와 함께했다면
오늘도 편안히 주무실 수 있습니다.

swiss made

fb.me/GeistlichKorea
가이스트리히
가이스트리히코리아

(주)가이스트리히코리아
서울특별시 서초구 강남대로51길 1 (서초동, 511타워)
www.geistlich.co.kr
대표전화: 02 553 7632

AIOBIO

QLF Technology™

Qraypen C™

광학식 치아우식 진단장비
(의료기기 2등급)

우식&크랙 해결의 열쇠

우식&크랙 진단 가능한 광학식 치아우식 진단장치

촬영 전 Blue Light로 관찰 가능

전자 차트 및 보험청구 프로그램 호환

Qraypen C™

OraQuick ADVANCE® Rapid Antibody Test HIV-1/2

OraQuick® Rapid Antibody Test HCV

오라퀵은

KAMPRS 대한악안면(턱얼굴)성형재건외학회

발전을 기원합니다

오라퀵 어드밴스 래피드 HIV-1/2 항체 테스트

신속 HIV 항체 현장검사는 검체 채취 과정에서 인체에 직접적인 위험을 초래하지않는 안전한 검사이며, 대규모 진단법 평가 연구에서 진단 확진도가 우수한 검사법으로 확인됨

보건복지부 신의료기술 승인

2008.06.10 [고시 제 2008-52호]
2019.07.24 [고시 제 2019-156호]

인솔 오라퀵 HCV 래피드 항체 테스트

혈액 및 구강액을 채취하여 체외에서 이루어지기 때문에 안전한 검사이며, C형 간염 바이러스 감염여부를 신속하게 평가하는데 있어 유효한 검사라는 근거가 있음

보건복지부 신의료기술 승인

2011.12.21 [고시 제 2011-161호]
2019.07.24 [고시 제 2019-156호]

INSOL
Innovative Medical Solution

인솔주식회사 www.in-sol.co.kr
서울특별시 강동구 양재대로 85길 17 4~6층 02)404-7990
제품문의 : info@in-sol.co.kr 마케팅팀에 문의하세요.

FDA CE CLIA waived

ACUPAN®

Official SFAR 2008 Recommendation[1]

- Non-opioid, centrally acting analgesic
- Prevention of hyperalgesic
- Combination with other analgesics in Multimodal analgesia
- Grade 2 analgesic action, Grade 1 Safety

First Choice of Postoperative Analgesia

ACUPAN®

Nefopam hydrochloride

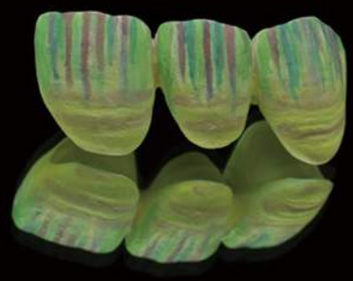
POWERFUL pain relief
in multimodal analgesia

☎ 소비자상담실 : 02-587-2551(구입문의: 경영지원부 ARS 2번 / 복약문의 : 학술부 ARS 3번) 홈페이지: http://www.pharmbio.co.kr

(주) 한국팜비오

아큐판 (ACUPAN®) 주사액 · 주성분:1앰플(2mL) 중 네포탐염산염(KP) 20mg 효능·효과: 급성통증의 대증요법, 특히 수술 후 통증 용법·용량: 1회 1앰플을 근육 또는 정맥 주사

학문과 기술
기능과 심미보철



YoonWonSang

윤원상치과기공소

02) 571.7088,7288
FAX : 571.7288
won7528@naver.com

LifeNet Health®
Saving Lives, Restoring Health

OraGRAFT®
Bio-Implants for Oral / Maxillofacial Procedures

미국 근골격계 시장 점유율 1위

40년의 노하우로 검증된 오라그래프트

- 전세계 **500만 이상** 임상의 **안전성 입증!**
- **특허받은** 멸균기술 Allowash XG로 처리하여 **동종골 조직의 안정성**을 보장합니다.
- 기증자의 **투명성**이 검증되었습니다.

OraGRAFT®

BOK Best Of Korea medical
진료가 편해집니다 — 비오케이

고객상담실 / 032-506-7243

Hyaluronic Acid Dermal Filler with Lidocaine

MONALISA

- ✔ Volume Effect and Retention
- ✔ Safe to Use on Patients
- ✔ Highly Pure Hyaluronic Acid

Long-term Stability

Dentium | GENOSS
For Dentists By Dentists | For Patients & Doctors

오른쪽 QR코드 및 주소로 접속하시면 모나리자 제품소개 및 영상,카탈로그 등 홍보자료를 보실 수 있습니다.
www.monalisamall.co.kr