English session abstract of
the 62nd Congress of the Japanese Society of
Oral and Maxillofacial Surgeons
Today, oral and maxillofacial surgeons must cope with preventing and treating Drug Induced Osteonecrosis of the Jaws (DIONJ) from several different drugs that treat osteoporosis or treat metastatic cancer deposits and may be given orally, subcutaneously, or intravenously. It is no longer just bisphosphonates, it is denosumab in ever increasing numbers and at least two growth factor inhibitors (sunitinib and bevacizumab).

For osteoporosis patients, non-surgical dental care is safe at all times. For oral surgical and periodontal surgeries, a drug holiday of nine months before the procedure and three months after the procedure significantly reduces the risk in patients taking oral bisphosphonates. For patients taking subcutaneous denosumab, a three months drug holiday before the procedure followed by another three month drug holiday after the procedure also provides a significantly reduced risk for ONJ.

For cancer patients receiving any anti-resorptive drugs or any anti-growth factor drug pretreatment dental care can reduce the incidence of ONJ later. For these patients nonsurgical dental care such as restorations, crowns, root canal therapy, dental prophylaxis, etc. is safe to perform after taking either denosumab or any bisphosphonate. However, a risk for DIONJ exists if oral surgery or periodontal surgery is performed and such drug holidays are mostly ineffective due to dosage and half-life.

For exposed necrotic bone in cancer patients, initial palliation with either penicillin based antibiotics or doxycycline and 0.125% chlorohexidine rinses are used. For refractory cases of repeated infections and pain, a pathologic fracture or maxillary sinus involvement, a resection surgery with reconstruction is necessary.

This lecture will discuss the above prevention and treatment guidelines related to each drug, each drug’s half-life and patient’s comorbidities.

References:


The need for oral and maxillofacial surgery was initially seen during and after World War I & II due to severe gunshot wounds which made an involvement of both surgeons and dentists necessary. Besides restoring the bony frame a specialized knowledge of plastic and reconstructive surgery was needed to guarantee for good functional and aesthetic results.

In the following years this expertise was extended and used in other fields of head and neck surgery, involving the repair in case of congenital anomalies (e.g. CLP), orthognathic and tumor surgery. Including major reconstructive techniques with a special respect to microsurgery this specialty developed enormously in the last decades in Germany.

In the last 15 years image data based surgery, virtual planning of complex procedures, data transfer to the OR and prefabrication of patient specific implants gave us a new avenues of approaches.

This presentation on the one hand wants to give an overview of the developments in the last decades, on the other hand should show up the challenges in the coming years.

Brief CV
Prof. Hoffmann qualified as an OMFS surgeon in 1997 at the University Hospital Tübingen and finished his PhD-Thesis in 1999. Working as consultant since 2000 he became Vice Chairman of the Dept. of Oral and Maxillofacial Surgery at the University Hospital Tübingen (Germany) in 2003. Since 2010 Prof. Hoffmann is chairing the Dept. of OMFS at the University Hospital in Heidelberg, which is one of the major units in Germany, covering a broad scope of surgical techniques. His main focus is in the field of Reconstructive Surgery, he has special interests in image data based planning, treatment of Vascular Anomalies and bone regeneration.
Changes in the epidemiology of head and neck cancers have resulted in an increasing number of younger and healthier patients being treated with definitive external beam radiotherapy (EBRT). The long-term consequences of radiotherapy in a patient population with good clinical outcomes and extended life expectancy are becoming increasingly relevant in the management of treatment-associated morbidity and mortality. Osteoradionecrosis (ORN) of the mandible is a challenging issue related to irradiation, occurring in up to 16% of patients with various types of head and neck cancers. Altered bone vascularity and opportunistic infections within the oral cavity contribute to the development of ORN, leading to an inexorable process of bone destruction that does not follow the normal sequence of healing events. Early-stage ORN is often managed using antibiotics, local wound care and hyperbaric oxygen (HBO). Advanced ORN requires surgical resection and reconstruction with healthy non-irradiated tissue. Successful management of this disease process requires an enhanced ability to identify patients at risk for ORN, monitor the effectiveness of conservative management and improve pre-operative planning to ensure clear margins at the time of resection. However, a standardized, objective staging and monitoring system for ORN is not currently available.

Dynamic contrast-enhanced magnetic resonance imaging (DCE-MRI) is a clinically available quantitative imaging method that is increasingly employed to assess microvascular function in the study of solid tumors of the head and neck. At our institution, DCE-MRI is integrated into a multimodality clinical algorithm aimed at improving the diagnosis, staging and oncologic surveillance of head and neck tumors. DCE-MRI can detect altered bone vascularity associated with bone healing, necrosis and metastatic involvement, with excellent spatial resolution. We hypothesize that DCE-MRI can be used to detect alterations in bone vascularity following irradiation to monitor ORN clinical progression and response to treatment. We are evaluating the potential of DCE-MRI to identify patients at risk for mandibular ORN, monitor response to conservative management, and determine the extent of advanced mandibular ORN to assist in surgical planning.

This work has the potential to revolutionize the diagnosis and management of mandibular ORN. For the first time, clinicians will be able to identify patients at risk for ORN and manage post-radiotherapy care appropriately. The effectiveness of currently employed conservative measures could be tested using an objective measure and improved preoperative planning could reduce the rate of surgical failure due to residual compromised bone.

Brief CV
Dr. Lai is a Professor in the Department of Head and Neck Surgery at the University of Texas MD Anderson Cancer Center and a board-certified head and neck cancer surgeon. Dr. Lai received his undergraduate degree from Stanford University and his medical and doctorate degrees from the University of California, San Francisco. He performed his residency at the University of Pennsylvania and completed his fellowship in oncologic head and neck/cranial base surgery at the University of Pittsburgh School of Medicine. His clinical expertise is in head and neck cancers with a special emphasis on oral cavity cancer, thyroid and parathyroid disease, salivary gland neoplasms and conservation laryngeal surgery. Dr. Lai takes a multidisciplinary approach to the management of head and neck cancer patients with active participation in cutting-edge treatment protocols. He has an active research program focused upon targeted therapies to head and neck squamous cell carcinoma and anaplastic thyroid cancer and reducing normal tissue toxicity related to treatment. Significant emphasis of this work is placed upon translation to the clinical setting. Dr. Lai has received research awards from the American College of Surgeons, American Head and Neck Society, American Academy of Otolaryngology, the Thyroid Head and Neck Cancer (THANC) Foundation, and the National Institutes of Health.
Orthognathic Surgery in the United States: Past, Present and Future

Private Practice Miami, Florida and Fort Myers, Florida, USA

ALCALDE Rafael E.

Oral and maxillofacial surgery (OMS) in the United States was established as a dental specialty by a group of exodontists during the annual meeting of the National Dental Association (precursor of the ADA) in Chicago in 1918. Orthognathic surgery was born in Wheeling, Virginia, 71 years before, in 1847 with the publication of a case report entitled "Case of Elongation of the Underjaw and Distortion of the Face and Neck. Caused by a Burn. Successfully Treated" in the American Journal of Dental Science. In this manuscript, Simon Hullihen MD, DDS "Father of Oral Surgery" (1936), wrote about the correction of the malocclusion and significant prognathism using mandibular osteotomies in a young lady severely burned as a child.

The cradle of early orthognathic surgery was in St. Louis, Missouri, where the orthodontist Edward Angle and the surgeon Vilray Blair (1906) worked together and described the first osteotomy of the horizontal ramus for the correction of prognathism.

Orthognathic surgery evolved significantly as our specialty was maturing with a firm base in anesthesia, trauma and exodontia. The emphasis of these three areas of dentistry, interdisciplinary work with our orthodontic colleagues and the extensive clinical exposure necessary for accreditation of the OMS residency programs in the United States, allowed for the development of orthognathic surgery as a key component of our profession.

Combined surgical and orthodontic research in the 1970s and 1980s contributed to important developments such as the popularization of the Le Fort I osteotomy and other osteotomy designs for deformity specific treatment. This combined with anatomic model surgery and rigid internal fixation made three-dimensional repositioning of the jaws more predictable and reduced the need for maxillomandibular fixation.

Modern orthognathic surgery has gone through different paradigm shifts since its origins. Research and technological advances have influenced the diagnosis, planning and treatment, allowing surgical orthodontics to go from a skeletal and functional paradigm to a soft tissue and facial esthetics paradigm in the 1990s. Despite the ability to reliably provide outstanding surgical outcomes and facilitate orthodontic therapy, the number of patients undergoing orthognathic surgery has declined over the past two decades as a result of the insurance coverage and other financial considerations.

As a response to this financial challenge, the latest shift is towards increased efficiency, decreased operating time and ambulatory procedures allowing lower costs while keeping the highest standards regarding skeletal, functional and soft tissue esthetic outcomes.

Increased efficiency, patient access to care and affordability can be achieved by avoiding unnecessarily complex surgeries. This in combination with constant communication between the members of the interdisciplinary team and utilization of simple and effective procedures in-office surgical suites or ambulatory surgery centers allowed us to reduce costly operating room time and minimize the need for prolonged postoperative admission.

We have seen how anatomic model surgery has evolved into fully computerized 3D treatment planning, navigation guided surgery and robotic surgery.

Temporary anchorage devices (TADs) facilitate orthodontic movement for the correction of malocclusions and orthopedic traction in the growing patient. These devices have evolved from the use of costly and time inefficient endosseous dental implants to plates and mini screws that can be immediately loaded, are easily placed and removed in the outpatient clinic upon completion of the desired orthodontic movement.

Last but not least, maxillomandibular advancement is becoming the preferred surgical treatment for obstructive sleep apnea. Clinical research has demonstrated that telegnathic surgery is the most reliable surgical method to address sleep apnea for those patients that are unable to comply with positive airway pressure therapy.

Updated surgical protocols, refinements of traditional techniques as well as technological advancements of our approach to the treatment of dentofacial deformities will be illustrated with clinical cases during this presentation.

Brief CV

Dr. Alcalde is a Diplomate of the American Board of Oral and Maxillofacial Surgery and American Dental Society of Anesthesiology. He specializes in the treatment of patients with dentofacial deformities and other surgical orthodontic needs. He lectures and teaches courses at national and international level and has made numerous contributions to surgical textbooks and scientific journals. Dr. Alcalde is also a reviewer for the Journal of Oral and Maxillofacial Surgery.

1985-1990: Dental Degree Universidad Central de Venezuela
1992-1997: PhD Department of Oral and Maxillofacial Surgery II Okayama University, Japan
2000-2001: Chief Resident, Rijnstate Ziekenhuis, Arnhem, The Netherlands
2002-2006: Assistant Professor Department of Oral and Maxillofacial Surgery University of Washington, Seattle
2006-Present: Affiliated Faculty, University of Washington Department of Oral and Maxillofacial Surgery University of Washington, Seattle
2007-Present: Director, Florida Oral and Maxillofacial Surgery Specialists Fort Myers, FL
2008-Present: Attending Surgeon Lee Memorial Hospital Fort Myers, FL
2009-Present: Affiliate Faculty, University of Washington Dental International University
2011-Present: Attending Surgeon South Miami Medical Center Miami, FL
Management of OMF tumors constitutes a major challenge. Treatment goals are the control of the oncologic disease as well as the aesthetic and functional reconstruction of the patient.

Aim of this lecture is to review the state of the art in the management of the tumors affecting the oral and maxillofacial region and the modern principles of cranio-maxillofacial reconstruction. Progress of the reconstructive methods, especially after the introduction of the microvascular tissue transfer techniques, allows for the morphologic and functional repair of the oncologic defect. The impact of the new digital technologies including 3D planning of resection and reconstruction and intra-operative navigation in the treatment´s results in this type of patients will be also reviewed. Introduction of these innovations have radically changed this field posing new trends and challenges concerning training and scope of the specialty of Oral and Maxillofacial Surgery.

Brief CV

Prof Dr Drhc. Julio Acero, is the Head of the Department of Oral and Maxillofacial Surgery of the Ramon y Cajal University and the Puerta de Hierro University Hospitals in Madrid, Spain, Associate Professor of Maxillofacial Surgery at the Alcala University of Madrid with National accreditation for Full Professor. He studied Medicine and Dentistry and obtained his PhD at the university in Madrid. Dr. Acero was Research Fellow at the Spanish National Institute of Health and Fellow of the Council of Europe in Germany as well as Fellow of the European Board of Oral and Maxillofacial Surgery and Fellow Ad eundem of the Royal College of Surgeons of England and Member of the Spanish National Academy of Dental Sciences. His special fields of interest are oncologic and reconstructive surgery of the head and neck and salivary gland pathology, as well as bone regeneration. He has lectured and published widely in these fields and has been appointed as invited Professor in different universities around the world including the official appointments of Honorary Professor at the University of Ferrara (Italy), the University of Belgrade (Serbia) and the University of Bucharest (Romania), Visiting Professor at the University of Florida in Jacksonville and the Vanderbilt University (USA) and Doctor Honoris Causa (University of Iasi, Romania), Honorary Member of the OMFS Societies of Argentina, Australia and New Zealand, Bulgaria, Croatia, Greece, Italy, Turkey and Macedonia. IAOMS Outstanding Committee Member Award presented in the ICOMS, Shanghai 2009, Humanitarian Award of the American College of Oral and Maxillofacial Surgeons, presented in Puerto Rico 2016. Currently President of the IAOMS (2016-2017), past Director of the Fellowships Committee of the IAOMS, Past Chairman of the IAOMS Education Committee, Dr. Acero was the Education and Training Officer of the European Association of Cranio-Maxillofacial Surgery, current President Elect of the European Association. Past Chairman of the Scientific Committee of the Spanish Association of Oral and Maxillofacial Surgery and Past-President of the Spanish Society of Oral and Maxillofacial Surgery. He has been organizing and coordinating international educational programmes in OMF Surgery throughout the world: Eastern Europe (Poland, Romania, Bulgaria and Skopje), Latin America (Peru, Paraguay, El Salvador), Asia (Indonesia, Philippines) and Africa (Kenya, Tanzania, Nigeria).
The specialty of oral & maxillofacial surgery has seen a dynamic growth and explosion in surgical advances. Parallel to this, society has grown increasingly complicated placing a premium on professional and personal time commitments. We will look at how the IAOMS is facing those challenges, providing time honored services, whilst helping our members nationally and internationally improve their careers, and advancing our specialty to the top.

Brief CV
Dr. Alexis Olsson completed his dental education at Northwestern University, and postgraduate residency training in Oral & Maxillofacial Surgery at Northwestern University Feinberg School of Medicine at Northwestern Memorial Hospital and Ann & Robert H. Lurie Children’s Hospital of Chicago in Chicago.

Dr. Olsson is Chief of Oral & Maxillofacial Surgery at Northwestern Memorial Hospital and Anne & Robert H. Lurie Children’s Hospital, and is Professor of Clinical Otolaryngology, Head & Neck Surgery at Northwestern University Feinberg School of Medicine.

Dr. Olsson serves on the Board of the International Association of Oral & Maxillofacial Surgeons, and will be President in 2018-2019. Dr. Olsson serves as Examiner for the American Board of Oral & Maxillofacial Surgeons. In addition, Dr. Olsson was elected Fellow in the American College of Surgeons (FACS) in 2016. Dr. Olsson was in the prestigious first class of single degree Oral & Maxillofacial Surgeons elected into the over 100-year-old college for medical surgeons. He is also the first such single degree surgeon in the State of Illinois to hold fellowship in the ACS.

His surgical interest lies primary and secondary reconstruction of facial trauma, oncological reconstruction of the maxillofacial region, orthognathic surgery reconstruction, implant surgery of the oral region for functional rehabilitation.
ISI-K-1）Past and Present of JSOMS

KOGO Mikihiko

The Japanese Society of Oral and Maxillofacial Surgeons gave a ceremony of the 80th anniversary at Makuhari 2 years ago. In Japan, the group of Oral Surgeons is formed in the 83 years ago, around the 1933 in Tokyo. And a study group was established then the first society was organized in 1933. After the World War II, Tokuro Akasaka and 11 oral surgeons rebuilt the society in 1947. In 1955, the number of members became 1300. Reissue of the journal (Oral surgery) was performed in 1954. In 1955, We renamed the journal as the journal of the society of oral and maxillofacial surgeons. We published the Vol.1. No.1. In 1967, the name of society has been changed to The Japanese Society of Oral and Maxillofacial surgeons. JSOMS hold 62th annual meeting this year. There is something remarkable for progress after JSOMS resumes after the World War II. The speed is Step by Step. Cancer of the oral cavity treatment, deformity of jaw operation, TMJ arthrosis treatment and Cleft operation, etc. A result of the medical progress and the effort of every oral and maxillofacial surgeons was realized. JSOMS has about ten thousand members at present. When each member makes an effort, wonderful medical treatment must be developed. I'd like to talk a dream of a future oral and maxillofacial surgery with every members in this lecture. This time is Japan and Chinese Symposium. Let’s talk about worldwide progress with everybody of the society of Chinese oral and maxillofacial surgeons.

Brief CV

1974-80 Osaka University School of Dentistry: DDS
1980-84 Osaka University Graduate School of Dentistry
Oral and Maxillofacial Surgery: Ph.D
1987-88 Osaka Medical Center, Child and Maternal Health
1988 Assistant Prof. Osaka University
1992-94 University California Los Angeles (Neuroscience) Post-Doctoral Fellow
1997 Associate Prof. Osaka University
2003-present Professor, Osaka University (Oral and Maxillofacial Surgery I)
2017 Chair Cleft Center, Osaka University Dental Hospital
2016 President, Japanese Society of Oral and maxillofacial Surgeons
President of Japanese society of Oral & Maxillofacial Surgeons
Vice President of Japanese Cleft Palate Association
Director of Japanese Stomatological Society
Director of the Japanese Society for Jaw Deformities
Chinese Society of Oral and Maxillofacial Surgery (CSOMS) is an academic institution that takes charge of the academic activities of oral and maxillofacial surgery, which is under the leadership of the Chinese Stomatological Association Council. Oral and Maxillofacial Surgery, which is focused on the surgical treatment and its main research fields is the prevention and cure of some relevant diseases of mouth, temporal-mandibular joint, salivary gland and neck region.


Eight divisions and three cooperative groups were set up in our society. Formal divisions including the division of cleft lip and palate, division of orthognathic surgery, division of trauma, division of oncological surgery, division of salivary gland diseases, division of vascular anomalies, division of medical oncology and division of alveolus surgery. Cooperative groups including the cooperative groups of the oral and maxillofacial repair and reconstruction, the cooperative groups of diagnosis and treatment of obstructive sleep apnea-hypopnea syndrome and the cooperative groups of temporal-mandibular joint surgery.

Chinese Oral and Maxillofacial Surgery of CSA has 12 national key clinical specialties, including West China School of Stomatological Sichuan University, the Ninth People's Hospital of Shanghai Jiaotong University School of medicine, Peking University Hospital of Stomatology, Hospital of Stomatological Wuhan University, China Medical University School of Stomatology, Guanghua School of Stomatological of Sun Yat-Sen University, Nanjing Stomatological Hospital Medical School of Nanjing University, Stomatological College of Nanjing Medical University, Xiangya School of Stomatology of Central South University, Stomatological Hospital Affiliated of Zhejiang University of Medicine, Beijing Stomatological Affiliated Hospital of Capital Medical University, Sun Yat-Sen Memorial Hospital of Sun Yat-Sen University. In 2016, the Ministry of Science and Technology approved the establishment of four national key clinical medical centers, including the Ninth People's Hospital of Shanghai Jiao Tong University School of medicine, West China School of Stomatological Sichuan University, Peking University Hospital of Stomatology, School of Stomatology of the Fourth Military Medical University.

**Brief CV, HE Yue**

Shanghai 9th People's Hospital, Shanghai Jiao Tong University School of Medicine, Shanghai, China
Associated Director and chief physician of Oral and maxillofacial-Head and Neck Oncology Surgery Department in Shanghai Ninth People's Hospital; Professor and doctoral supervisor of Shanghai Jiao Tong University
He is major in OMS-head and neck oncology& reconstruction, osteoradionecrosis of Jaws (ORNJ), stem cell therapy and regeneration. He has received 4 Natural Science Foundations and other foundations from Shanghai Municipality and Shanghai Jiao Tong University. He has published more than 100 scientific papers in CSSCI and international 47 SCI as first or corresponding author in his clinical and research fields. He has also participated in editing of 9 authoritative books in oral and maxillofacial field and received more than 50 times of invitations to speak in domestic and international stages.
Recent Progress and Innovation in Oral Oncology

KURITA Hiroshi

The treatment of oral cancer has been a medical challenge with limited improvement in overall survival over the past few decades. I have started oral surgeon at local university hospital in 1987. A lot of oral cancer patient visited our hospital. In this presentation, I will review my experience and discuss recent progress and innovation in oral oncology.

1. Reconstruction of surgical defect

In 1965, Bakamjian first described the deltopectoral flap. In 1976, Panje and Harashina simultaneously described the use of free flaps to reconstruct defects of the oral cavity. In 1979, Ariyan described the pedicled pectoralis major myocutaneous flap. In the late 1980s and early 1990s, the use of osteocutaneous free flaps to reconstruct mandibular defects was advanced. These distant pedicled and free flap reconstruction enabled radical resection of oral cancer.

2. Cisplatin

Cisplatin is a chemotherapy medication used to treat a number of cancers. Cisplatin was approved for use for by the Japanese government in 1983. It is still a key drug in oral cancer treatment.

3. Chemoradiotherapy

Concurrent chemoradiotherapy has advanced the treatment of locoregionally advanced (stage III/IV) head and neck cancer, allowing for functional organ preservation while maintaining or improving locoregional control compared with radiotherapy alone.

4. Targeted therapy

Epidermal growth factor receptor (EGFR) inhibitors are first targeted agents that have been approved in oral cancer in Japan. Targeted molecular therapy against EGFR has shown promise as an adjuvant therapy in preliminary studies in head and neck cancer. Recently, very interesting innovations in the field of immunotherapy (Nivolumab, a checkpoint inhibitor) have been shown to be beneficial for patients with advanced oral cancer.

5. Vital staining

Vital staining with iodine solution clearly delineates superficial spread of oral dysplastic/malignant epithelium. Use of vital staining in tumor resection reduces the risk of local recurrence.

6. Practice guide line


We expect the innovation in oral oncology. Oral cancer is one of rare cancers. We need to gather both our knowledge/effort and collect clinical date/research specimens from oral cancer patients. Organization of collaborating research and establishment of oral cancer tissue bank will be mandatory.

Brief CV

1981-1987 Student, Faculty of Dentistry Niigata University
1987- Resident and instructor, Shinshu University Hospital
1997- Assistant Professor, Shinshu University Hospital
2001- Associate Professor, Department of Dentistry and Oral Surgery, Shinshu University School of Medicine
2011- Professor and Chairman, Department of Dentistry and Oral Surgery, Shinshu University School of Medicine

Department of Oral and Maxillofacial Surgery, Peking University School of Stomatology, Beijing, China

GUO Chuan-bin, LIU Xiao-jing, ZHANG Yi, CAI Zhigang, GUO Yuxing, YU Guang-yan

Computer aided navigation is a kind of special instruments, which are connected to the navigation system to touch an anatomical position on the patient. This position is simultaneously shown in the images taken from this patient. The surgeon can thus use the instrument to 'navigate' the images of the patient by moving the instrument. We used this technique to handle the lesion under the skull base, including orbit reconstruction, resection of skull base tumors, treatment of TMJ ankylosis, removal of foreign bodies, needle biopsy, placement of radiation seeds, etc. Our experiences show that navigation technique can provide precise preoperative surgical design and navigate surgical procedures according to the design, improving surgical accuracy and raising safety.

Brief CV
Professor Guo Chuanbin is Professor of oral and maxillofacial surgery, Dean of School and Hospital of Stomatology Peking University, and Vice President of Chinese Association of Stomatology. He is also one of the Board Directors of ADT (Advanced Digital Foundation) Foundation. Professor Guo is engaged in clinical and laboratory study on oral and maxillofacial surgery and is highly experienced in the diagnosis and treatment of oral tumors and tumors in parapharyngeal space and infratemporal fossa and tumors involving the skull base. Currently he is leading a team to develop two robot systems for cranial facial surgery. He has 172 papers published, among them 54 published in international medical journals.
In early 1970s, the surgical treatment for TMJ arthrosis was just a discectomy with or without high condylectomy. However, so far the several surgical procedures such as disc repositioning/preservation surgery, arthroscopy, arthrocentesis, closed condylotomy, and the arthrotomy with possible joint replacement have been developed/refined. Overall long-term outcomes of these surgical interventions are around 80 to 90% in respectively. The arthrocentesis is likely to the first line for the surgical strategy, but some surgeons believes that the arthroscopy would be a primary procedure, or the others favor discectomy without replacement as the reliable and principle manner. Yet the common TMJ surgical strategy is controversial. The certain conjecture; the surgical strategy should be based on the Wilkes staging, i.e, arthrocentesis/arthroscopy for stage III, IV, open discectomy/arthrotomy for stage IV, V is the fact or fiction?

Herewith the author like to discuss the surgical strategy with algorithm for TMJ internal derangement with closed lock and arthrosis based upon personal experiences and by the evidence based literatures. The outline of the lecture is as follows.

- TMJ arthrocentesis is replacing to the arthroscopy as the first line in the ambulatory.
- Even in stage V joint, the arthrocentesis with lavage may be working well, not for the majority, but good long-term outcomes is reported for the responders.
  - The arthroscopic lysis and lavage is good indicated when arthrocentesis fails to perform or settle symptoms.
  - Both arthrocentesis and arthroscopy are possible to reduce the percentage of patients that need open TMJ surgery.
  - Meta-analysis disclosed the arthroscopic lysis and lavage for favor in jaw mobilization, but also showed the discectomy for favor in pain reduction as well.
  - In bilateral case, following with arthroscopic lysis with lavage or arthroscopic surgery is indicated to the principle side, the simultaneous arthrocentesis/arthroscopic lysis with lavage is good indicated to the ipsilateral side when the first intervention enabled sufficient jaw mobilization.
  - Each level of surgical interventions has its role and indications.
  - Careful reinterpretation of disease diagnosis is mandatory in all cases before proceeding to the next phase, because the side effects of surgery may be worse than the initial symptoms.

It is now clear that the algorithm for surgical management of TMD moves through arthrocentesis/arthroscopy, then simple discectomy, and lastly arthrotomy with possible joint replacement when nonsurgical and initial invasive management was refractory.

Brief CV

DDS in 1978 Kanagawa Dental University, and Ph.D (DMSc) in 1984 Kyoto University Graduate School of Medicine. From 1984 to 2006, appointed as the Assistant/Associate Professor and Acting Head of Department of Oral and Maxillofacial Surgery at Kyoto University. Visiting Assistant Professor at UCLA in 1986, Guest Professor at Wien University in 1998. Japanese Board certified OMS. International Editorial Board member of J Oral Maxillofac Surgery, International Academic Committee of JSOMS. Executive member of Jpn Soc TMJ. IAOMS and ASTMJS member and the honorary member of ESTMJS.
Disc displacement is one of the most common conditions affecting the temporomandibular joint (TMJ). In the authors' previous publications, the basic technical elements of anterior disc repositioning surgery with arthroscopy were reported on. However, the disc displacements should be divided into anterior, anterior-lateral, anterior-medial, far distance displacements, and displacement with perforation based on the different surgical techniques. The present study presents some critical differences that have allowed the safe and successful performance of this procedure during the past 2 years.

Brief CV
Chi Yang, PhD, MD, DDS, is the chief of Department of Oral Surgery in Shanghai 9th People’s Hospital. Prof. Yang’s clinical specialty is TMJ open surgery and arthroscopic surgery, complicated joint-skull reconstructions and combined treatment of joint-jaw-occlusion. Prof. Yang is international faculty of AO and S.O.R.G. He is also the vice Chairman of TMJ Disease and Occlusion Special Committee of Chinese Stomatological Association; standing committee member of Chinese Society of Oral and Maxillofacial Surgery; head of TMJ surgery cooperative group of Chinese Society of Oral and Maxillofacial Surgery; international member of the American and European TMJ Surgeons Society.
The unilateral cleft lip and nasal deformity have wide interdomal space, deviated columella and nasal tip, distally and downwardly dislocated nasal ala, and the short upper lip on the affected side. The goal of unilateral cleft lip repair is to produce the symmetrical and natural forms of lip and nose without any dysfunction, however, many patients have persistent deformities despite correction at primary lip surgery.

To facilitate an understanding of the anatomical and pathological abnormalities of unilateral cleft lip, we explain the unilateral cleft lip nose as a house built on a slope. The center pole in the house corresponds to the septal cartilage, the roof is the lateral cartilages, the pillar is vestibule, and the ground is the maxillary bone. When the ground is flat, the house can stand upright, but on a slope, the pole and roof incline to the downward side of the slope. To create a straight house on a slope, the center pole must stand upright in the center of the house, and roof and the pillar in the lower side should be advanced upwardly.

With the concept to approach each anatomical and pathological abnormality of unilateral cleft lip and nose, we have engaged primary and secondary cleft lip surgeries. Primary repair consists of 1) presurgical orthopedics using a Naso-Alveolar Molding plate to minimize surgical intervention, 2) lip repair using Cronin's triangular method, 3) simultaneous advancement of the nasolabial component that can reposition both the lower lateral cartilage and the nasal muscles, 4) expansion of the nasal vestibule using the bilateral cleft margin flap, and 5) anatomical reconstruction of orbicularis oris muscle to produce the symmetrical and smooth upper lip. All patients receive secondary bone graft at around age 8-11 years. Definitive nasal repair is carried out at around age 16-17 years by 1) open rhinoplasty through bilateral reverse U-incision, 2) fixation of the septal cartilage in the center of face, 3) reposition and fixation of the lower lateral cartilage with/without extended spreader graft on the nasal tip, and 4) sufficient expansion of the nasal vestibule using free mucosal graft.

In this opportunity, our surgical strategy and three-dimensional outcomes following the primary and secondary unilateral cleft lip and nose repair will be presented.

Brief CV
1982 Graduated from the Faculty of Dentistry, Kyushu University, Japan
1989 Associate Researcher of the First Department of Oral and Maxillofacial Surgery, Faculty of Dentistry, Kyushu University
1995 Visiting Doctor at Program SEHATI (Cleft Lip and Palate Team), Harapan Kita Children and Maternity Hospital, Indonesia (-1997)
1997 Assistant Professor of the First Department of Oral and Maxillofacial Surgery, Kyushu University Dental Hospital
2003 Assistant Professor of the Division of Maxillofacial Diagnostic & Surgical Sciences, Kyushu University Graduate School of Dental Science
2005 Professor and Chief, Department of Oral and Maxillofacial Surgery, Field of Maxillofacial Rehabilitation, Kagoshima University Graduate School of Medical and Dental Sciences
It is the big challenge about how to balance achieve normal speech and minimize maxillary growth restriction in the management of cleft palate. Previous techniques such as Von langenbeck’s flap, Two flaps, were all designed based on the principle of ‘robbing Peter to pay Paul’, so that relaxing incision will inhibit the maxillary development. Sommerlad and Furlow developed the new techniques and tried to figure out the question. However, the two excellent techniques only benefit the patients with sub mucous cleft palate and narrow cleft palate deformity.

In this section, we will present the west china technique which combined the advantage of Sommerlad and Furlow new techniques. In our treatment, lateral relaxing incision was carried out at the lateral nasopharynx wall to transform a complete cleft into an incomplete form and to extend the soft palate with Furlow’s double-opposing Z-plasty. This procedure involving Sommerlad’s levator veli palatini dissection was performed to enhance velopharyngeal functions after cleft palate is repaired. Thus, the velar muscular sling is fully restored. By the new technique, it benefited the most cleft patients, with the special advantage about balancing achieve normal speech and the minimizing maxillary growth restriction because of the velar muscular sling reconstruction and lengthen soft palate without relaxing incision in hard palate.

[Key words] individualized treatment: cleft palate: reconstructive method

Brief CV
Chairman of Medical Association of Chinese Association of Stomatology.
Prof Shi has been particularly involved in the development of the cleft lip repair (named huaxi technique -a new surgery theory). For his outstanding achievements, Professor Shi was awarded many awards including province-level teaching famous teacher award; Health and Family Planning Commission leading personnel award; two second places of province Scientific and Technological Progress Award and so on. Meanwhile, Prof. Shi’ team is using a combination of genetic, biochemical, and embryological approaches to analyze craniofacial development in the model mammalian system, the laboratory mice. Professor Shi won more than seven The National Natural Science Funds, and published more 400 publications, and edited several books including Cleft lip and Palate Primary Surgery, and so on.
Background: Physiological Breathing as a growth factor in Oral & maxillofacial field

• It has been strongly suggested that there is a relationship between sleep breathing disorders and jaw deformity (malocclusion), and attempts have been made to improve sleep breathing through treating jaw morphology.

• Especially, Asian OSA patients will be caused by maxillofacial morphology, micro-gnathic mandibular, rather than obesity.

• Many reports about the relationship between oral-maxillofacial morphology and Obstructive Sleep Apnea (OSA) have been discussed in recent years.

On the basis of those findings, Maxilla-Mandibular Advancement (MMA) or distraction osteogenesis and so on, have been adopted for OSA.

• Relapse or replacement of the occlusion after an Jaw deformity operation is believed to affect breathing, which in turn, brings about a profound effect on the stability of normal physiological functions.

Aim of MMA is widening the upper airway and stabilized breathing by advancing Maxilla and mandible.

MMA has the effect of expanding upper airway and it has been suggested to improve the sleep disordered breathing in the following 2 factors.

1. Upper airway is changing to ahead with maxilla advancement in the verophalyngeal space, and changing to lateral with mandible advancement in the orophalyngeal space. Our findings also indicated that maxillary advancement is an important factor as well than mandible.

2. MMA is improvement of the tongue position. Volume of Oral cavity is expanding by MMA and tongue is moving relatively forward.

In addition to the Genio-Hyoideus & hyo glosses Advancement (GA) is pulling a tongue to upward and adding to fitting in the oral cavity, the upper air way is expanded any more as a result.

If Obstructive Sleep Apnea caused by Micrognathia, MMA is improving sleep respiratory disorder and malocclusion.

In this opportunity, I’ll report on the current status of sleep surgery in Japan and long term results.

Bibliography


Brief CV

1983: Degree of Dental Doctor Science., from Tokyo Dental College, National board of license from JAPAN:
2002: Visiting scholar, Dept of Functional Reconstructive Surgery & sleep surgery center at Stanford University medical center, CA, USA
2012: Professor at Dept of Oral & Maxillofacial Surgery, Sleep Surgery & Research Units, Nihon University School of Dentistry
2012: President of The Japanese Academy of Dental Sleep Medicine
2012: Board of directors of The Japanese Academy of Sleep Medicine (Medical society)
2013: Board of directors of Japanese society of Oral maxillofacial surgeons (JAOMFS)
ISI-K-10) Orthognathic Surgery in China

Department of Oral and Maxillofacial Surgery,
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SHEN Guo-Fong
The salivary gland tumors are heterogeneous and diverse with variable prognosis, limitations of histopathology in the identification of patients with questionable diagnosis and aggressive disease can be overcome by developing a reliable biomarker. These biomarkers are futuristic in the development of targeted therapy. The recent research in molecular biology of salivary gland tumors identified fusion of specific genes in certain tumors, for example; the MYB-NFYB fusion are specific to adenoid cystic carcinoma, the CRTC1/3-MAML2 fusion to mucoepidermoid carcinoma, and the ETV6-NTRK3 fusion to secretory carcinoma. Moreover the identification of these specific fusion oncogenes lead to the recognition of new entities and reclassification of salivary gland tumors. However there has been some debate as to whether a subset of Warthin tumor harbor the CRTC-MAML2 fusion, we recently proposed that a subset of Warthin tumor with CRTC-MAML2 fusion gene should be considered as a new variant of mucoepidermoid carcinoma. Further, in secretory carcinoma, an unknown (non-NTRK) genes appeared to fuse with ETV6 (ETV6-X fusion) and the MASC possessing ETV6-X fusion might show an invasive histology. These findings provide a novel insight into the oncogenesis, histopathology, diagnosis, treatment, and prognosis.

Brief CV

2017-Present: Staff, Dept. of Oral and Maxillofacial surgery of Ogaki municipal hospital
2015-Present: Lecturer, Dept. of Maxillofacial surgery, School of dentistry, Aichi-Gakuin University
2016-2017: Fellow, Shanghai ninth people's hospital
2012-2015: Assistant professor, Dept. of Maxillofacial surgery, School of dentistry, Aichi-Gakuin University
2010-2012: Staff, Dept. of Maxillofacial surgery of Inazawa municipal hospital
2004-2006: Staff, Dept. of Maxillofacial surgery of Toyohashi municipal hospital

2004 Graduated from Kyushu University, Faculty of Dental Science

CERTIFICATION

Japanese Specialist of Oral and Maxillofacial Surgeons
The Fellow of the International Board for the Certification of the Specialists in Oral and Maxillofacial Surgery (FIBCSOMS)
ISI-Y-2) Antitumor Platelet-Mimicking Magnetic Nanoparticles

Objective: Nanoparticles possess the potential to revolutionize cancer diagnosis and therapy. The ideal theranostic nanoplateform should own long system circulation and active cancer targeting. Additionally, it should be nontoxic and invisible to the immune system.

Material & Methods: Here, the authors fabricate an all-in-one nanoplatform possessed with these properties for personalized cancer theranostics. All-in-one platelet-mimicking PLT-MNs were fabricated by the following three steps: (1) preparing PLT-vesicles, (2) synthesizing clustered MNs, and (3) then coating MNs with PLT-vesicles. Platelet-derived vesicles (PLT-vesicles) along with their membrane proteins are collected from mice blood and then coated onto Fe3O4 magnetic nanoparticles (MNs). The resulting core–shell PLT-MNs, which inherit the long circulation and cancer targeting capabilities from the PLT membrane shell and the magnetic and optical absorption properties from the MN core, are finally injected back into the donor mice for enhanced tumor magnetic resonance imaging (MRI) and photothermal therapy (PTT).

Results: Platelets from the donated blood further coated onto Fe3O4 magnetic nanoparticles. After the systematic circulation, PLT-MNs enriched in the tumor microenvironment by the enhanced permeability and retention (EPR) effect. Owe to the cancer targeting ability inherited from PLTs, PLT-MNs were closely bonded with cancer cells. Considering the magnetic property and optical absorption ability of MNs, our biomimetic NPs were further used for enhanced cancer magnetic resonance imaging (MRI) and photothermal therapy (PTT).

Conclusion: Compared to our previously RBC membrane NP, this NP not only could prolong the circulation time and could achieve active target and the iron oxides' Magnetic resonance imagining ability make real-time diagnosis come true. Except the diagnosis ability, this NP have Cancer therapy via photothermal therapy (PTT). The new biomimetic Nano-platform based on the basic research would promote our fundamental research to drug delivery system (Translational Research).

Keywords: Platelets, magnetic resonance imaging, photothermal therapy, biomimetic nanoparticles.

Brief CV

I'm Lin-Lin Bu, from School of Stomatology, Wuhan University. One of my researches focus on Head and Neck Squamous Cell Carcinoma (HNSCC) in tumor biology signaling pathway (including oncogene STAT3, immune checkpoint: PD-1/PD-L1, CTLA-4) and its theranostic potential in future application. Also, we try to make our basic fundamental research to application using Materials Science collaboration with our collaborator in School of Physics and Technology, Wuhan University. My collaborators and I devoted some efforts for fabricating cell membrane coated on Fe3O4 nanoparticles advantages and used them for cancer imaging/therapy.
Hypoxia is a common feature of cancer and thus is a prognostic factor for many types of cancer. Clinically, the prognosis of cancer with low oxygenation level is poor, and there is strong evidence that hypoxia in tumor microenvironment is related to tumor angiogenesis and malignant progression. 18F-FMISO has been used in clinical and pre-clinical studies to provide spatially resolved images for localizing and quantifying tissue hypoxia. 18F-FMISO can detect tumor hypoxia noninvasively. Hypoxia-inducible factor (HIF-1) is a key player in the transcriptional response to low oxygen in many types of cancer. Most transcriptional responses to low O2 are mediated by HIFs, highly conserved transcription factors that control the expression of various angiogenic, metabolic genes.

18F-FMISO imaging of hypoxia in head and neck cancer remains challenging. It is unclear whether 18-FMISO PET can identify tumor angiogenesis and HIF-1α expression in oral squamous cell carcinoma (OSCC). We evaluated the relationship among 18F-FMISO PET uptake, HIF-1α expression, and tumor angiogenesis in OSCC.

[Materials and Methods]
In this retrospective study, immunohistochemistry were performed for CD31 and HIF-1α on 40 OSCC specimens. Each patient was evaluated by both FMISO-PET before surgery, and the tumor-muscle ratio (TMR) of FMISO-PET were measured. The threshold for the hypoxic volume based on TMR was set at 1.25 (TMR ≥ 1.25: hypoxic tumor and TMR <1.25: non-hypoxic tumor). The association between CD31 and HIF1-α expression and 18F-FMISO uptake (TMR ratio) in the tumor was analyzed statistically. The microvessel density (MVD) in tumor was quantitatively analyzed by Image J.

[Results]
18F-FMISO uptake in the primary site of OSCC indicates a hypoxic environment with HIF-1α expression. CD31-positive vessel area was increased in the hypoxic tumor compared with that in a non-hypoxic tumor. The tumor vessel in the hypoxic tumor was morphologically more irregular and tortuous than that in the non-hypoxic tumor.

[Conclusion]
We demonstrated a significant relationship between 18F-FMISO TMR and CD31 and HIF1-α expression in OSCC. In the future, we will perform detailed research on the relationship between tumor angiogenesis and 18F-FMISO uptake.
Tumor associated macrophages (TAMs) are a main source of pro-inflammatory cells in tumor microenvironment which accelerate cancer progression, but its underlying mechanism is still largely unknown. Our previous study revealed that macrophage inducible C-type lectin (Mincle, also called Clec4e) is de novo expressed by inflammatory macrophages and plays a critical role in acute kidney disease and unilateral ureteral obstruction. Here we report that Clec4e is also specifically up-regulated in TAMs of human and murine tumor tissues compared to the splenic macrophages. Importantly, Clec4e functions to promote TAM-associated cancer invasion, as silencing Clec4e in TAMs significantly reduces cancer cell migration in vitro. By using PCR array, we identified that Clec4e mediates the production of IL-6 in TAMs and that knockdown of Clec4e on TAM largely reduced melanoma migration. Furthermore, silencing Clec4e locally at the tumor tissues by ultrasound-microbubble system dramatically inhibits the cancer progression, which was associated with the reduction of serum IL-6 levels in two synergic melanoma and lung cancer bearing mouse models, suggesting that Clec4e may promote cancers via IL-6-dependent mechanism. Mechanistic study discovered that the Clec4e-Syk-NFκB circuit may be a novel mechanism for activation of TAMs and tumor progression since inhibition of Clec4e, Syk, or NFκB suppressed expression of Clec4e and IL-6 on TAMs, thereby inhibiting tumor progression in B16F10 melanoma. In conclusion, the Clec4e-Syk-NFκB circuit is a novel mechanism for activation of TAMs that promote tumor progression; thus, targeting TAM-specific Clec4e may represent as a new and effective therapy for cancer.

Brief CV

Chunjie Li, associate professor from Department of Head and Neck Oncology, West China Hospital of Stomatology. His research interests are Evidence-based Dentistry, Reconstructive Surgery and Tumor Microenvironment. He has published more than 40 articles which are all indexed by SCI. And he is the vice editor-in-chief or editorial board of several books. He is also in charge of or takes part in several National Natural Science Funds of China.
INTRODUCTION: Epidermal growth factor (EGF) is overexpressed in many cancers and is associated with worse prognosis. EGF binds to its cell surface receptor (EGFR) and EGFR undergoes dimerization and, which induces EGFR auto-phosphorylation. This auto-phosphorylation elicits downstream signal transduction cascades, leading to cell survival and proliferation. Phosphorylated EGFR (p-EGFR) is translocated to the cytoplasm and degraded in lysosomes, which causes suppression of downstream signaling cascades in normal cells. However, in cancer cells, p-EGFR is accumulated in the nucleus, which increases cancer cell activity.

Nicotine, which is one of the main components of tobacco, is absorbed through oral mucosa and pulmonary alveoli by smoking, and moves to blood. Nicotine in blood binds to nicotinic acetylcholine receptor (nAChR) in central nervous system and relates to tobacco addiction. Recently, it has been reported that nicotine promotes proliferation and invasion in breast cancer cells through EGFR activation. However, the role of nicotine in oral squamous cell carcinoma (OSCC) is still unknown, although oral cavity is most exposed organ to tobacco smoke. Therefore, this study assessed the effects of nicotine on OSCC cells.

METHODS: The effects of nicotine on the proliferation, migration and invasion of OSCC cells were assessed with or without nAChR inhibitors. EGFR phosphorylation and downstream signaling pathways were analyzed by western blotting. Subcellular localization of p-EGFR was investigated by immunofluorescence staining and western blotting. A mouse xenograft model was prepared by inoculating mice with suspensions of OSCC cells subcutaneously into the footpad of each mouse. Nicotine was administrated intraperitoneally daily for 3 weeks. Popliteal lymph node metastases from xenografted tumors were examined histologically. p-EGFR localization in specimens of xenografted tumors was examined by immunohistochemistry.

RESULTS: Nicotine upregulated proliferation, migration and invasion of OSCC cells, however nAChR inhibitors reduced that effects. Nicotine induced phosphorylation and nuclear translocation of EGFR. In addition, an in vivo experiment revealed that nicotine increased popliteal lymph node metastases and nuclear translocation of p-EGFR in xenografted tumors. nAChR inhibitor suppressed nuclear translocation of p-EGFR and lymph node metastases of xenografted tumors.

CONCLUSIONS: Taken together, nicotine enhanced lymph node metastasis of OSCC cells in animal model. The mechanism underlying the tumor metastatic effects of nicotine in OSCC cells consists of upregulation of cell proliferation, migration and invasion via the activation of EGFR.

Brief CV
1997 Okayama University Dental School
2003 Okayama University Graduate School of Medicine and Dentistry
2007 Harvard Medical School, Pathology, Postdoctoral fellow
2010 Okayama University Hospital, Oral and Maxillofacial Surgery, Assistant Professor
2010 Yokohama City University Hospital, Oral and Maxillofacial Surgery, Visiting Clinical fellow
2012 Okayama University Hospital, Advanced Critical Care and Emergency Center, Assistant Professor
2014 Japanese Board Certified Specialist in Oral and Maxillofacial Surgery
2015 Fellow of the International Board for the Certification of Specialists in Oral and Maxillofacial Surgery
2016 Okayama University Graduate School of Medicine, Dentistry and Pharmaceutical Sciences, Oral and Maxillofacial Surgery, Assistant Professor
Cross-talking between tumor cells and immunocytes contributes significantly to tumor progression. The present study was to investigate the mechanism of regulatory lymphocytes, especially regulatory T cells (Tregs) and regulatory B cells (Bregs) in tumor microenvironment of tongue squamous cell carcinoma (TSCC). We first demonstrated the expression of Foxp3 in TSCC cells and its clinical significance, and performed a genome-wide analysis using a combination of CHIP-on-chip and whole-genome microarrays assays to reveal the relationship between direct and indirect targets genes of Foxp3 in TSCC cells and provide molecular basis of cancer cell-derived Foxp3 function. Then we used TSCC cells and lymphocytes co-culture, as well as animal model to investigate the relationship between Tregs and Bregs, and revealed that the increased expression of Bregs in the TSCC microenvironment favored the differentiation of resting CD4 + T cells and influenced the prognosis of TSCC patients.

Brief CV
Dr. Yujie Liang is now working as attending surgeon and associate professor in Guanghua School and Hospital of Stomatology, Sun Yat-sen University. She is the youth member of Committee of the Oral and Maxillofacial Surgery in Guangdong Stomatology Association and Chinese Stomatology Association, and also the youth member of Committee of the Head and Neck Tumor, Guangdong Anti-cancer Association and Chinese Anti-cancer Association. Her research interests is oral oncology. She has accomplished 3 scientific research grants and published 22 international journal articles.
ISI-Y-7) Clinical Utility of Jaw Reconstruction with Particulate Cancellous Bone Marrow and Custom-Made Titanium Mesh Tray

YOSHIOKA Norie, SASAKI Akira

The objects of jaw reconstruction after tumor resection is to recover the continuity of bone, to improve the esthetic problem, which is mainly facial contour, and to achieve the functional occlusion with dental prosthesis. Although there are various methods for jaw reconstruction, vascularized bone graft has been a “gold standard” so far. Particulate cancellous bone marrow (PCBM) and custom-made titanium mesh tray (Ti-mesh tray; ULTRA FLEX MESH CUSTOM:UFMC®) has been reported as the other methods for jaw reconstruction with good outcome. The advantage of this method is to fabricate Ti-mesh tray using reconstructed 3D model by mirroring residual side of the mandible. In this way, an adequate alveolar ridge could be reconstructed with Ti-mesh tray and PCBM for the dental prosthesis with implant or denture. Besides, symmetric facial contour could be obtained. For these reasons, we have applied this method as the secondary reconstruction in malignancy and for the immediate reconstruction in benign tumor respectively since 2014. The aim of our study is to evaluate the clinical utility of PCBM and custom-made Ti-mesh tray for jaw reconstruction, including the patient’s quality of life, through a retrospective investigation on 11 patients (6 male and 5 female) from April 2014 to May 2017. The age of 11 patients at the transplantation of PCBM, which was harvested from bilateral posterior ilia, was from 42 to 78 (average 66.0) years old. 8 patients were lower gingival SCC and 3 patients were ameloblastoma. The amount of harvested PCBM for each patient was ranged from 23 to 42g. There were no significant complications except one case in which a Ti-mesh tray fracture occurred after one year of transplantation of PCBM. 4 patients were performed dental implant placement in the 5-16 months after transplantation of PCBM and the osseointegration on the reconstructed mandible was achieved successfully. These patients were restored by bone-anchored denture. 2 patients were applied removable denture and their oral function is acceptable. The rest of patients are planning for the dental implant prosthesis. Although soft tissue management is one of the issues concerned, we have a favorable outcome at present and PCBM with Ti-mesh tray seems to be a valuable method for mandibular defects to restore facial contours and alveolar ridge.

Key words: mandibular reconstruction, PCBM, custom-made titanium mesh tray

Brief CV

1993-1999 Okayama University Dental School
1999-2003 Okayama University Graduate School of Dentistry
2005-present Okayama University Graduate School of Medicine, Dentistry and Pharmaceutical Sciences, Department of Oral and Maxillofacial Surgery, assistant professor
2005-present Harvard Medical School, Department of Pathology, postdoctoral research fellow

Qualified Certification
Japanese Board Certified Specialist in Oral and Maxillofacial Surgery
Fellow of the International Board for the Certification of Specialists in Oral and Maxillofacial Surgery (FIBCSOMS)
General Clinical Oncologist by Japanese Board of Cancer Therapy
Composite mandibular defect results in significant functional and cosmetic deformity. Vascularized fibula flap was known as the workhorse flap for mandibular reconstruction. Despite its many advantages, the low vertical height of the fibula is a potential drawback for osseointegrated dental implants and facial contours. Therefore, we proposed an improved vertical dimension mandibular reconstruction concept: double barrel(DB) fibula or dental implant distraction(DID) technique. DB technique is referring to fibula folded into double barrel in restoring the mandibular height; whereas DID technique is referring to single barrel fibula aligned to the inferior margin of mandible with immediate fibula distraction to achieve the mandibular height. Nevertheless, the native mandible is not in straight profile, the marginal arc (lower border) is wider and the occlusal arc (alveolar ridge) is narrower. The marginal arc is determining the contour of the lower third of the face. The occlusal arc is responsible for prosthodontics rehabilitation. Meanwhile, occlusal rehabilitation is the most important goal in mandibular reconstruction. Thereby, we proposed occlusion orientated DB or DID. Our study started with mandibular defect classification, followed by introducing the optimal treatment algorithm. For Brown’s Class I ± c, II ± c or III defect, both occlusion orientated DB or DID is indicated. Occlusion orientated DB is preferable is patient is indicated for post-operative radiotherapy(PORT). However, for Brown Class IV ± c defect, occlusion orientated DID is preferable owing to the limited maximum length of vascularised fibula, DID can be restoring the mandibular length and height without compromise. Our novel treatment algorithm allows a consistent and reliable method in addressing composite mandibular defects. In conclusion, the shape of the reconstructed mandible after double arc reconstruction resembles the native mandible, and masticatory function is good with the use of a dental implant or removable denture prosthesis, or even without prosthodontics.
Stem cells, scaffolds, and signaling molecules have been extensively investigated as tools for tissue engineering and regenerative medicine of several tissues and organs. A technique has been developed whereby autogenous human mesenchymal stem cells (hMSCs) from the patient's bone marrow are combined with platelet-rich plasma and we reported that these materials had been used as bone graft materials with predictable results. However, several issues with stem cells remain to be addressed, including tumorigenesis, poor survival of implanted cells, and transmission of infectious disease. However, as implanted stem cells may contribute to tissue regeneration not only via pluripotency, but also via paracrine effects, conditioned media (CM) and secretomes from stem cell cultures may help address these issues.

We previously reported that CM from hMSCs (MSC-CM) contain numerous cytokines and these cytokines regulate angiogenesis, migration and osteogenesis in host mesenchymal stem cells, and thus may accelerate regeneration of bone and periodontal tissue including first-in-human study. We also investigated the effects of CM from stem cells from human exfoliated deciduous teeth (SHED-CM) on peripheral nerve regeneration. We showed that SHED-CM could promote axonal regeneration and functional recovery in a sciatic nerve defect rat model by enhancing axon growth, peripheral nerve tissue angiogenesis, Schwann cells migration, proliferation, and activation, and neuron survival. Therefore, SHED-CM promotes peripheral nerve regeneration through various processes, leading to functional recovery. In this presentation, oral and maxillofacial tissue regeneration using CM based on our serial studies will be overviewed.

Our current studies for future clinical application will be also introduced. We are trying to apply our finding about peripheral nerve regeneration using SHED-CM to the recovery of dysphagia and aspiration pneumonia, which is becoming a serious problem in an aging society. The pharmaceutical manufacturing will be also important for future clinical application. The active ingredients of CM or secretomes should be determined and one of our approaches will be introduced.

Our studies indicated that CM and secretomes from stem cells enhanced the tissue regeneration by recruitment and activation of the endogenous cell. These facts mean that the regenerative medicine using CM and secretomes have a possibility to replace the conventional regenerative medicine following by stem cell transplantation in some situation, which has several hurdles for clinical application.

Brief CV

1998 DDS, Osaka University Faculty of Dentistry
2002 PhD, Osaka University Graduate School of Dentistry
2002 Department of Oral and Maxillofacial Surgery (OMFS), Higashi-Osaka Municipal General Hospital
2005 Department of OMFS, Osaka University Dental Hospital
2006 Department of OMFS, Nagoya University Hospital
2010 Assistant Professor, Department of OMFS, Nagoya University Graduate School of Medicine
2015 Lecturer, Department of OMFS, Nagoya University Graduate School of Medicine
2016-Present: Associate Professor, Division of Reconstructive Surgery for Oral and Maxillofacial Region, Department of Tissue Regeneration and Reconstruction, Niigata University Graduate School of Medical and Dental Sciences
Reconstruction of Maxillary Defects with Computer-assisted Techniques

Department of Oral and Maxillofacial Surgery, Peking University School and Hospital of Stomatology, Beijing, China

ZHANG Wen-bo, YU Yao, WANG Yang, LIU Xiao-jing, MAO Chi, YU Guang-yan, GUO Chuan-bin, PENG Xin

Objective: Maxillary defects after tumor ablation can cause severe esthetic and functional deformities. Nowadays, computer-assisted techniques have been widely used in oral and maxillofacial surgery. We aimed at improving the clinical outcome of maxillary defects by using computer-assisted techniques.

Methods: A consecutive series of patients with maxillary tumors underwent maxillectomy and free fibula flap reconstruction in our department between 2011 and 2014 was reviewed. The patients were divided into two groups. Computer-assisted techniques such as virtual planning and surgical navigation were used for patients in one group, and individual fabricated titanium mesh was used for orbital floor defect reconstruction. Meanwhile, conventional surgery was performed in the other group based on surgeons’ experience. The three-dimensional fibular positions were evaluated in the two groups. Differences between the postoperative position of the fibular segments and the virtual plan in the computer-assisted surgery group were evaluated. The postoperative globe projection and orbital volume were also measured and the incidence of postoperative complications was evaluated.

Results: The three-dimensional position of the fibula flap in the computer-assisted surgery group, including the vertical distance (p=0.013), horizontal position (p=0.019) and extension of the posterior end (p=0.041), was significantly more accurate and nearer to the ideal position than that in the conventional surgery group. The average difference between the actual postoperative position of the fibular segments and the virtual plan in the computer-assisted surgery group was <5 mm. The average postoperative globe projection was 15.91 ± 1.80 mm on the affected side and 16.24 ± 2.24 mm on the unaffected side (p=0.505), while the average postoperative orbital volume was 26.01 ± 1.28 mL and 25.57 ± 1.89 mL, respectively (p=0.312). There is no significant difference on the complications of the patients. All patients were satisfied with their postoperative facial symmetry.

Conclusion: Application of computer-assisted techniques such as virtual planning and surgical navigation significantly improve the clinical outcomes of maxillary reconstruction.

Brief CV
Dr. Wen-bo Zhang, attending at department of oral and maxillofacial surgery, Peking University School and Hospital of Stomatology, was graduated with degree of Doctor of Medicine from Peking University School of Stomatology in 2014. Research interests includes oral oncology, reconstruction of oral and maxillofacial defects, especially devoting to the application of computer-assisted techniques used for reconstruction of oral and maxillofacial defects and has published 12 issues during last 5 years.
ISI-Y.11) Neuronal Crest Cells Derived from Human iPS Cells: Differentiation, Multilineage Potential and Dramatic Fate

Department of Dentistry and Oral Surgery, Keio University
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Ouchi Takehito, Morikawa Satoru, Nakagawa Taneaki, Kawana Hiromasa

Although rapid and remarkable advances have been made in dentistry, numerous patients still suffer from craniofacial related-diseases such as oral malignant tumor, medication related-osteoncrosis of the jaw and congenital craniofacial malformation. As a fact, developing, pathogenic and regenerative mechanisms are yet to be completely elucidated in some diseases. To understand these fundamental mechanisms, our group applied human iPS cells to craniofacial developmental biology and regenerative medicine. Craniofacial connective tissues are intricately composed of bone with neurovascular bundle, both are derived from neural crest cells (NCCs). Here, we introduce our study on application of human iPS cells derived-NCCs with multilineage potential and high cell viability.

Developmentally, the NCCs have the potential to develop into neural and mesenchymal cells, therefore they are attractive cell source for our understanding of craniofacial development. The NCCs are localized in the neural folds of fetal tissues. Cells migrate into various areas and regulate skeletal tissues. Abnormal migration and differentiation of NCCs lead neurocristopathy, like Treacher Collins syndrome.

Our group designed the generation of NCCs from human iPS cells, and originally isolated the LNGFR (+) THY-1 (+) population. The LNGFR (+) THY-1 (+) cells showed the phenotype of neural cells in neural crest maintenance condition. Cells also expressed CD29, CD73, CD105 and CD146, which are known as mesenchymal stem cells (MSCs) markers. The LNGFR (+) THY-1 (+) cells differentiated into mature mesenchymal lineages including osteocyte and chondrocyte in each induction medium. In addition, the LNGFR (+) THY-1 (+) cells demonstrated active motility, a common feature of NCCs and MSCs. These assays revealed that LNGFR (+) THY-1 (+) cells strongly proliferated and showed the characteristics of NCCs and MSCs in vitro.

In order to evaluate the adaptation and differentiation potential in vivo, the LNGFR (+) THY-1 (+) cells were transplanted into the humanized immunodeficient adult mice. Transplanted cells survived in vivo, and they could generate the various types of mature cells. Remarkably, vascular recruitments of murine hosts were seen in the transplanted group.

The present study shows that human iPS cells-derived NCCs, especially LNGFR (+) THY-1 (+) cells have multipotent differentiation ability in vitro, and environmental adaptation capacity in vivo. The NCCs derived from human iPS cells technology opened a new perspective on next challenges in craniofacial developmental biology and regenerative medicine.

Brief CV

Education:
2011  D.D.S. Tokyo Dental College
2017  Ph.D. (Dr. of Medical Science), Keio University

Employment:
2011-2013:  Resident, Department of Dentistry and Oral Surgery, Keio University School of Medicine
2013-2017:  Postgraduate Training Course, Department of Dentistry and Oral Surgery, Keio University School of Medicine
2017-Present:  Instructor, Department of Dentistry and Oral Surgery, Keio University School of Medicine
2017-Present:  Visiting Scientist, Laboratory for Marmoset Neural Architecture, Brain Science Institute RIKEN
Purpose: This study evaluated the retrospective outcomes of implant-borne dental rehabilitation in patients with mandibular defects reconstructed with a bula free ap. Materials and Methods: Patients with segmental mandibular defects were enrolled in this cohort study. Defects in these patients were caused by oral neoplasm, trauma, and osteoradionecrosis. The patients were treated with a bula free ap procedure and dental implant-borne prostheses between 1988 and 2010. Clinical and radiographic data were evaluated; Kaplan-Meier survival analysis and Poisson regression analysis were used to evaluate implant survival parameters. The statistical significance (α = .05) of the results was determined.

Results: Seventy-four patients were selected in this study. All patients were available for continuous follow-up. Nine patients (12.1%) developed bular graft complications postoperatively: 3 in donor sites and 6 in recipient sites. One hundred ninety-two implants were inserted, and 18 implants failed (9.3%). Overall implant survival in patients was 90.1%, 83.1%, and 69.3% after 5, 10, and 20 years, respectively. In 152 implants, probing depth (PD) ranged from 2 to 3 mm. In 31 implants, PD was greater than 5 mm. In 9 implants, PD was greater than 7 mm. The highest implant failure rates were expected for men (odds ratio [OR] = 2.948; 95% confidence interval [CI], 1.10 to 7.85; P = .031), patients receiving primary bula free ap reconstruction (OR = 3.696; 95% CI, 1.16 to 11.73; P = .027), and patients receiving radiotherapy (OR = 5.269; 95% CI, 1.40 to 19.7; P = .014). Conclusion: Fibula free ap procedures and implant-borne prostheses proved to be reliable approaches for rehabilitation of mandibular defects and oral function. The overall postoperative bula free ap and peri-implant complication rates proved to be low. Regular follow-up visits and proper oral hygiene maintenance contributed to the long-term successful treatment.
Ameloblastomas are benign and slowly-growing odontogenic tumors. However, they show an aggressive potential for local invasion and have a high recurrence rate compared to other odontogenic tumors.

Either conservative or aggressive surgery is selected as treatment for this kind of tumor, after considering the clinical background and pathological nature. With large tumors, surgeons will often select aggressive surgery, a marginal or segmental resection of the mandible. Cases of jaw resection, including the condyle and/or wide anterior region is however associated with many complications: loss of jaw bone support, deformities, dysfunction, and psychological distress even after reconstruction. The morphological changes of the oral cavity are directly related to the oral function including mastication, swallowing, speech, and facial esthetics.

To avoid these disadvantages we have performed a unique procedure, termed the "Dredging Method" since 1973. This method aims to eradicate the tumor and restore the form and function of the jaw through bone generation. The "Dredging Method" involves four steps: Deflation, Enucleation, Dredging, and Follow up.

Ameloblastomas are known to occur most commonly at the site of the lower molars. The teeth involved in the tumor are almost always extracted because recurrence commonly occurs around the teeth. Utilizing a "modified-Dredging Method", we aim to preserve both the jawbone and the teeth involved in the tumor.
The Outcome of Juvenile TMJ Anterior Disc Displacement and the Effect of Joint-Jaw-Occlusion Comprehensive Treatment on These Patients

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SHEN Pei

Temporomandibular joint (TMJ) anterior disc displacement (ADD) is one of the most common TMJ diseases, with a high prevalence in adolescents and young adults. Excepting for leading to clicking, joint pain, a limited range of mouth opening and masticatory difficulty, TMJ ADD also has a correlation with mandibular growth. Whether ADD can result in condylar height decrease which leads to or deteriorates dento-maxillofacial deformities in juvenile patients? On the other hand, can condylar resorption be prevented or does condylar remodeling happen after disc reposition? There were lack of relevant studies. In the present study, we carried out a longitudinal retrospective study to evaluate the nature outcomes of TMJ ADD in adolescents and young adults patients with a mean follow-up of 10.2 month. The joint and jaw changes were compared before and after follow-up and a Cox proportional hazard regression model was used to estimate the risk of condyle resorption. Besides, joint-jaw-occlusion comprehensive treatment (that is disc reposition combined with functional appliance and/or orthodontics) was performed on this population. The joint and mandible changes before and after treatment were assessed. Our results showed that ADD in adolescents can lead to restriction of condyle growth and dento-maxillofacial deformities, while disc reposition could block condyle resorption and make condyle remodeling.

Brief CV

Graduate School: Shanghai Jiao Tong University
Speciality: the etiology of TMJ idiopathic condylar resorption and joint-jaw-occlusion combination treatments
Degree: Master’s degree
Hospital affiliation: Ninth People’s Hospital Shanghai Jiao Tong University School of Medicine
Department: Oral surgery

Education
2005.09 - 2010.07 China Medical University, Oral Medicine, Bachelor Degree
2011.08 - 2014.07 Shanghai Jiaotong University, Stomatology, Master’s Degree
2014.08 - now Department of Oral Surgery, Ninth People’s Hospital, College of Stomatology, Shanghai Jiao Tong University School of Medicine, Resident Doctor

Page 39
The aim of this retrospective clinical study was to evaluate the feasibility of newly developed uncalcined and unsintered hydroxyapatite (u-HA) particles and poly-L-lactide (PLLA; u-HA/PLLA) composite sheets with tack fixation for intraoperative navigation-assisted and computer-assisted orbital fracture reconstruction suffering from relatively large orbital wall defects with ophthalmological malfunction and deformities. Osteosynthetic bone fixation and reconstruction systems made from u-HA/PLLA composites have recently drawn attention for effective application in maxillofacial reconstructive surgery because of their bioactive, osteoconductive and bioresorbable properties.

Although one limitation of these resorbable fixation systems in the clinical setting was the complicated drill hole tapping, required for screw fixation. In this regard, we have reported the feasible application of a u-HA/PLLA sheet with the tack fixation technique for intraoperative navigation-assisted orbital wall reconstruction; this approach may be suitable for fragile and anatomically complicated periorbital-maxillofacial bony regions.

The study included 34 consecutive patients (23 Male, 11 Female, mean age: 45.1 years) with medium to large and high complexity orbital wall defects (4 type II defects, 21 type III, 9 type IV). The patients were treated at the Maxillofacial Trauma Center in the Department of Oral and Maxillofacial Surgery, Shimane University Hospital, Shimane, Japan, from September 2014 to March 2017. The mean follow-up period was 9.1 months (range, 6 to 24 months). Overall, the application of this navigation-assisted and computer-assisted u-HA/PLLA sheet with tack fixation gave excellent stability for orbital wall reconstruction at the infraorbital rim, and provided stable and satisfactory ophthalmologic functional results with no intraoperative or postoperative complications. Furthermore, the boney regenerative optimal healing was confirmed at the complicated fracture reconstructed sites at 6 months’ follow-up CT (computed tomography) evaluation in all the patients.

In conclusion, this u-HA/PLLA composites orbital reconstruction material could be an optimal next-generation bioactive, osteoconductive, and bioresorbable bone alternative implant for the reconstruction of relatively large orbital wall defects, which could be well applied using navigation-assisted and computer-assisted computer-assisted surgery.

Brief CV
Dr. Takahiro Kanno, DDS, PhD, FIBCSOMS, graduated from School of Dentistry and Graduate School, Kyushu Dental College in 2001 (D.D.S.) and obtained Ph.D degree (Maxillofacial Surgery) in 2005. He worked at The Div. of Oral-Maxillofacial Surgery of Kagawa Prefectural Central Hospital (2005-2012). He studied abroad for clinical fellowships (AO fellow and IBRA fellow) at The Dept. of Oral and Maxillofacial Surgery, Ludwig-Maximilians-Universität Munich, Germany (2006) and at The Dept. of CranioMaxillofacial Surgery, University of Bern, Switzerland (2007). He is now employed by Shimane University Faculty of Medicine as a full time medical faculty (2012-present). He is Associate Professor, Vice-Director of The Dept. of Oral and Maxillofacial Surgery (Director & Chair: Prof. Joji Sekine) and Chief Surgeon of the Maxillofacial Trauma Center, Shimane University Hospital. AO-CMF International Faculty.
This study focused on dental abnormalities caused by genetic diseases, especially, the characteristic features of alveolar bone and tooth in pycnodysostosis patient caused by cathepsin K (CTSK) mutation. Pycnodysostosis (OMIM 265800) is a rare autosomal recessive bone dysplasia caused by the mutations of cathepsin K (CTSK) gene. In addition to bone dysplasia, the patients also show specific oral and craniofacial abnormalities. However, the detailed pathohistological character of dental abnormalities related to dysfunctional CTSK has never been reported. Based on a pycnodysostosis patient with novel compound heterozygous mutations of CTSK gene (c.87 G>A p.W29X & c.848 A>G p.Y283C), we demonstrated molecular pathogenesis of the novel missense mutation p.Y283C and highlight the histological changes of his teeth. The nonsense mutation p.W29X was predicted to terminate polypeptide synthesis in the proregion, thereby eliminating the entire mature enzyme. The novel missense mutation p.Y283C is evolutionarily conserved in 11 representative species, might change H-bond and affect the cleavage site of pro-CTSK by three-dimensional structure modeling analysis. Furthermore, over-expression of CTSK p.Y283C mutant in COS-7 cells produced unaffected mRNA and protein levels but a reduced CTSK enzyme activity. On the other hand, micro CT scanning, hard tissue section technique and atomic force microscopy analysis demonstrated that the soften cementum was significantly thickened and full of cementocytes, and that the disorganized bone structure was the main character of alveolar bone. In conclusion, the mutation p.Y283C in CTSK didn’t affect the mRNA and protein levels of CTSK; however it reduced CTSK enzyme activity and caused the histological and ultrastructural changes of cementum and alveolar bone. Furthermore, systematic analyses of CTSK expression in the late stage of tooth germ development were performed. As a result, we found that CTSK was abundantly expressed in the ameloblasts during secretory and maturation stages (P5 and P10) by immunohistochemistry stainings. During dentinogenesis, the staining was also intense in the mineralization stage (P5 and P10), but not detectable in the early stage of dentin formation (P1) and after tooth eruption (P20). Then through zymography and digestion test in vitro, CTSK was proved to be capable of hydrolyzing Emdogain and also cleaving Amelogenin into multiple products. Our results shed lights on revealing new functions of CTSK and pathogenesis of pycnodysostosis in oral tissues.

Brief CV

Yang Xue, Ph. D degree, is attending doctor and lecturer of Department of Oral and Maxillofacial Surgery, School of Stomatology, the Fourth Military Medical University (FMMU). She was mainly engaged in the diagnosis and treatment of diseases in dental and alveolar surgery and proficiency in molecular diagnosis of genetic diseases. And for the first time, she established Human CTSK gene mutation database in the world. She is responsible for 1 NSFC grants (No. 81300861) and 1 Young talents support program sponsored by FMMU, has published more than 30 research peer reviewed papers in international journals and Chinese journals, such as Orphanet J Rare Dis, J Dent Res, PLoS ONE and Oral Dis.
A first European styled medical school in Japan was leading to establish by a Dutch military physician "Johannes Lijdius Catharinus Pompe" under the support by a local government in 1850s in Nagasaki. There, systematic western medical training was conducted.

In the early Meiji Era, Japanese medicine was set out on the path to modernization. In 1872, Prussian military physicians, Dr. Mueller and Dr. Hoffmann, were invited for setting up a medical school and medical training for Japanese by the new Meiji government. They had adapted the German Gymnasium system to the medical school in Tokyo. Faculty of medicine of Tokyo Imperial University traces back to this institute.

Thirty German lecturers were appointed at the Tokyo medical school in 10 years time. One of them was Dr. Erwin von Baelz. He was invited to the school in 1876 and served as a professor for 26 years there in Japan. His contribution was not only for the modernization of Japanese medicine, but also for writing a considerable record of the rapid modernization of Japanese society. His diary is also considered as a very important record in Meiji Era in Japan. I'd like to present you his remarks that we still should learn from him.

Brief CV

2017- Visiting Professor, Department of Oral-, Cranio- and Maxillofacial Surgery and Plastic Surgery, University of Freiburg, Freiburg, Germany
2016- Director, Oshima Private Dental Office, Frankfurt am Main, Germany
2013 Dr. med. dent. (PhD), Medical Faculty at University of Freiburg, Freiburg, Germany
2012 National license (Dental medicine), Germany
2008-2017 Senior researcher/Clinical Associate/Assistant Professor, Department of Oral-, Cranio- and Maxillofacial Surgery and Plastic Surgery, University of Freiburg, Freiburg, Germany
2002- Associate Professor, Faculty of Health Sciences, The Municipal Institute for International Co-operation, Japan
1997- Consultant for Occupational Medicine (examination administered by the Japanese Ministry of Health, Labour, and Welfare), Japan
1991-1997 Research and Clinical Associate, Department of Oral and Maxillofacial Surgery, Kyoto University Graduate School of Medicine, Japan
1985-1991 School of Dentistry (Dental medicine), Asahi University, Japan
With a prevalence of 2 – 4 % Obstructive Sleep Apnoe Syndrome (OSAS) represents a frequent occurring disease in the German population. Most cases are treated with a CPAP-Mask (Continuous positive Airway Pressure) or mandibular protrusion appliances.

At our institution OSAS is comprehensively investigated by means of pharyngo-endoscopy and polysomnography which leads to respiratory disturbance index (RDI). Thereby localization and cause of OSAS often can be determined and surgery of both jaws is regularly discussed.

Maxillary advancement offers significant and long lasting enlargement of the upper airway and sometimes a pre-existing dysgnathia can also be corrected in the same setting.

Planning for bimax. surgery follows the requirements and experiences of orthognathic surgery. Here we perform a standardized analysis of facial harmony according to Rob Mule, who is a Dutch orthodontist.

In most cases a significant advancement of app. 10 mm combined with a counterclockwise pitch of the bimaxillary block is performed. The Le Fort I osteotomy is additionally stabilized with bone grafts harvested from the iliac crest. The sagittal split osteotomy of the mandible is done according the Wegener mostly modified according to Hunsuck and stabilized with positional screws.

We present clinical cases of OSAS pre- and postop. and discuss functional parameters like RDI index, dental occlusion and facial aesthetics.

The role of bimax surgery in OSAS needs to be discussed with other medical specialties to prove the benefit of a relative extensive surgical procedure which not only leads to stable results but avoids further use of CPAP masks thus enhancing significantly quality of life.
Progressive Condylar Resorption (PCR) is defined as progressive mandibular head absorption and volume reduction. One cause of PCR is the excessive loads on the mandibular head following the set forward surgery of mandible by osteotomy. It is said that PCR is a condition which shows the shortening of the diameter of the higher portion of mandibular ramus, retraction of the mandible, and the anterior opening at biting by the clockwise rotation of mandible.

In order to investigate the pathophysiology of PCR after orthodontics surgery, we underwent additional orthodontics surgery for 4 PCR patients who were performed orthodontics surgery at other hospitals. We analyzed these cases and examined their prognoses. As a result, in 4 cases, stable dental occlusion positions were obtained after our additional operations, and there were no exacerbation of PCR. From these results, we suggest that ensuring the stable occlusion position is important for PCR therapy as shown in early literatures.

We performed the anterior removing surgery of mandible in 19 cases in 2003-2015, and in these 19 cases, we also examined the temporal changes of the mandibular head after surgery. As a result, two patients were recognized slight deformity of the mandibular heads after the operation, even though they did not show clinical PCR.

In this report, I discuss the results of these analyses.

Brief CV

2003: D.D.S. (Aichi Gakuin University)
2003-2007: PhD degree. (Dept. of Maxillofacial Surgery of Aichi Gakuin Univ.)
2009-2011 Div. of Oral-Maxillofacial Surgery of Aichi Saiseikai Hospital
2011-2012 Dept. of Pathology, Graduate School of Medical Science, Nagoya City Univ.
2012: Aichi Gakuin University Faculty as a full time stuff (Lecturer), the Dept. of Maxillofacial Surgery (Former director & head: Prof. Kazuo Shimozato)
2016: Clinical fellowships at the Dept. of Oral and Maxillofacial Surgery, Ludwig-Maximilians-Universität Munich, Germany (Prof. Dr. med. Dr. med. dent. Michael Ehrenfeld)

Specialty: Molecular clinicopathologic analyses of oral cancer and precancerous lesion. Orthognathic surgery
For many years the extraction of premolars has been a proven tool in the orthodontist’s hand to reduce frontal crowding and to create sufficient space to align a perfect dental arch.

From the surgical point of view, however, the removal of (mostly four) healthy premolars produces a number of disadvantages:

1.) in order to close the gaps the orthodontist has to move all the other teeth
2.) the smaller dental arches reduce the space for the tongue and harm the orthodontist’s long term result
3.) the collapse of the nasal floor usually impairs the nasal breathing
4.) the buccal corridors unfavourably grow and the profile worsens after premolar extractions

Instead of that, simultaneous distraction of the maxilla and the mandible offers a causal therapy with a better functional outcome (more space for the tongue, improved nasal breathing), better aesthetic effects (full dental arches, harmonic profile) and more stable long term results.

With 25 years of experience in the technique of (histo-) distraction to avoid premolar extractions the indication, the required appliances the surgical procedure in minimal invasive technique and the success will be demonstrated in various clinical cases.

Brief CV

1987-1993
Department of Maxillofacial and Plastic Surgery University Hospital Frankfurt:
Development of Lithotripsy of salivary gland stones (Japan)
Development of osteodistraction in facial bones
Development of minimal invasive surgical procedures in orthognathic surgery
1993-2017
Head of Center for Orthognathic Surgery in Bad Homburg with 500 surgical cases per year
Numerous publications and lectures in international meeting concerning combined orthognathic/surgical cases
Introduction
Bacterial resistances against antibiotics are increasing throughout all medical fields and the appropriate antibiotic therapy becomes progressively important. Especially in orthognathic surgery the semi-contaminated wound areas raise the question for the required length and type of antibiotic prophylaxes.

Material and Methods
In this prospective study, 90 patients undergoing orthognathic surgery were included and distributed into a group with a strictly perioperative antibiotic prophylaxis (PAP; n=45) and a prolonged postoperative prophylaxis (PPP; n=45). General patients’ characteristics, clinical course and incidence of infections were recorded.

Results
The two groups did not show any significant differences in age (p=0.753), gender (p=0.433), general diseases (p=0.188), or extension of surgery (p=0.204). There was one infection with the need of a surgical revision in the PPP group, and none in the PAP group. There was a raise in temperature and inflammatory markers in 4 patients of the PAP group. Symptoms relieved after intravenous antibiotic application.

Conclusion
Extended antibiotic prophylaxis seems not necessary in orthognathic surgery. A careful postoperative surveillance is necessary though.
Thanks to the introduction of modern computerized technology, new strategic methods in maxillofacial orthognathic surgery are emerging for precise diagnosis and communication and for precise surgical planning, actual simulation both in skeletal and soft-tissue, and functional assessment. The main challenges for modern comprehensive management in orthognathic surgery are the complex three-dimensional (3D) geometry involved, the need for precision in facial symmetry to maintain the aesthetic profile, and functional revision. Focused comprehensive treatment that includes complex oral rehabilitation requires highly reliable computer-assisted surgery, especially in patients with severe maxillofacial deformity, such as those with severe asymmetry or congenital malformation/anomaly-related deformity (e.g., cleft lip and palate).

The goal of the complex procedure for these patients is to accurately simulate surgical interventions using virtual models, by for example using actual 3D computer simulation and stereolithographic models, in order to improve surgical preparation and treatment outcomes. Their use, including surgical navigation assistance and less invasive surgical instruments such as piezoelectric surgical device, will enable smarter surgical procedures to be performed.

This lecture will focus on two key areas: the feasibility of current computer-assisted digital orthognathic surgery in the comprehensive treatment of severe maxillofacial deformity, including precise preoperative planning and simulation techniques; and the future targets of maxillofacial functional evaluation, which from our clinical experience are occlusion, temporomandibular joint function, and the airway. Furthermore, the most up-to-date trend of surgery early (first) orthognathic surgery is also discussed with active German and Japanese Oral-Maxillofacial Surgeons through this fruitful international symposium.

Brief CV

Dr. Takahiro Kanno, DDS, PhD, FIBCSOMS, graduated from School of Dentistry and Graduate School, Kyushu Dental College in 2001 (D.D.S.) and awarded Ph.D degree (Maxillofacial Surgery) in 2005. He worked at The Div. of Oral-Maxillofacial Surgery of Kagawa Prefectural Central Hospital (2005-2012). He studied abroad for clinical fellowships (AO fellow and IBRA fellow) at The Dept. of Oral and Maxillofacial Surgery, Ludwig-Maximilians-Universität Munich, Germany (2006) and at The Dept. of CranioMaxillofacial Surgery, University of Bern, Switzerland (2007). He is now employed by Shimane University Faculty of Medicine as a full time medical faculty (2012-present). He is Associate Professor, Vice-Director of The Dept. of Oral and Maxillofacial Surgery (Director & Chair; Prof. Joji Sekine) and Chief Surgeon of the Maxillofacial Trauma Center, Shimane University Hospital. AO-CMF International Faculty.

Specialty: • Surgical treatment of oral, head and neck cancer and reconstruction
  • Maxillofacial trauma  • Orthognathic surgery  • Oral-maxillofacial implant surgery
Introduction
In recent years, CAD/CAM-procedures have increasingly been introduced to orthognathic surgery. The aim of this study was to demonstrate the current scope of computer-assisted procedures in orthognathic surgery, their benefits and remaining challenges.

Material and methods
A review of all patient cases with orthognathic surgical procedures in the period from 2012 to 2016 was carried out. The evaluation included the cases in which a virtual surgical planning with subsequent transfer via CAD/CAM-made surgical aids was executed.

Results
In a total of 32 patients, CAD/CAM-assisted orthognathic surgery was performed (18 female, 14 male, mean age 26.3 years) including 24 bimaxillary and 7 single jaw osteotomies as well as an isolated genioplasty. Virtual planning was carried out on the basis of high-resolution CT data sets (layer thickness 0.625 mm) and as part of an interactive web session with commercial providers. CT derived skeletal data were fused with occlusion data. CAD/CAM-manufactured STL models, surgical splints, osteotomy guides and positioning aids were made for a total of 30 patients. In 20 cases, osteosynthesis plates were prebent and in 9 cases occlusal-independent positioning aids were used. In 4 cases, patient-specific CAD/CAM-made osteosynthesis plates were manufactured.

Discussion
Computer-assisted procedures have the advantage of being able to gather surgical simulation in a single 3D model (bone-occlusion-soft tissues). Cephalometry, soft tissue and airway analysis and bony interferences can be assessed three-dimensionally, which is particularly advantageous in the case of complex, asymmetrical defects. The option for CAD/CAM-production of STL models, occlusal splints, osteotomy guides and positioning aids as well as patient-specific osteosynthesis plates is provided. Currently, there are limitations concerning the exact transfer of the virtual planning into the intraoperative situation, soft tissue predictability and virtual assessment of occlusal relationships.

Conclusion
Taking into account the current limitations, CAD/CAM-procedures are valuable aids in orthognathic surgery that can contribute to problem analysis, precision and time saving.

Brief CV
Education
10/2008 Medical doctor, MD
10/2004 - 10/2008 Study of medicine, Technische Universität München (TU), Germany
05/2004 Dental degree, DMD
05/1999 - 05/2004 Study of dentistry, Ludwigs-Maximilians-Universität München (LMU), Germany
Experience
11/2014 - present Specialist OMFS, Department of Oral and Maxillofacial Surgery, LMU München, Germany (Chair: Professor Michael Ehrenfeld)
06/2009 - 11/2014 Resident, Department of Oral and Maxillofacial Surgery, LMU München, Germany (Chair: Professor Michael Ehrenfeld)
10/2007 - 12/2007 Internship, Department of Oral & Maxillofacial Surgery University of Hong Kong, Hong Kong
09/2006 - 10/2006 Internship, Massachusetts Eye and Ear Infirmary, Head and Neck Surgery, Harvard University, Boston, USA

Memberships and affiliations
Member of the German Society of Oral and Maxillofacial Surgeons
Member of the Laboratory of Experimental Surgery and Regenerative Medicine (ExperiMed), LMU München
Accuracy of 3D Hard & Soft Tissue Simulation for Orthognathic Surgery

YAMAUCHI Kensuke

Digital maxillofacial diagnostic imaging has become widely available and provides 3-dimensional (3D) and multiplanar views of the bony structures comparable to those available using computed tomography (CT). In our department, we have applied this 3D imaging technique for facial evaluation, simulation for orthognathic surgery and computer-assisted design and manufacturing procedure (CAD/CAM) guided surgery. 1) Evaluation: Facial 3D imaging was taken by handy-type optical 3D scanner (Eva, Artec 3D, Luxembourg) and data was transferred to 3D evaluation software (3D-Rugle, Medic Engineering, Japan). Qualitative and quantitative changes were evaluated for the patients of orthognathic surgery. 2) Simulation: We have used two kinds of software that can be included the occlusal relationship. Simplant O&O and Proplan CMF (Materialize, Belgium) accept the images by optical scanner for dental plaster model. The dental images are augmented to the skull or alveolar region by its own programs. Then 3D virtual diagnosis and 3D virtual segmentation was performed for bimaxillary surgery. Simulations based on the occlusal relationship can be predicted the accurate position and relationship between the proximal and distal segments. 3) CAD/CAM guided surgery: A complete CAD/CAM workflow for the surgery has 4 steps. 1) Create a virtual 3D skull model augmented with patient’s dental images. 2) Virtual planning of surgical procedure (cutting line) and repositioning the bone segment. 3) Design the intermediate surgical wafer for repositioning maxillary segment. 4) 3-dimensional printing of the wafers for surgery (Digitalwax 020D, DWS, USA). The CAD/CAM intermediate surgical wafer has an advantage for accurate maxillary repositioning to transfer the simulation to real surgery.

The purpose of this study is to evaluate the accuracy of 3D hard and soft tissue using CAD/CAM surgical wafers for bimaxillary orthognathic surgery.

Brief CV

September 2012 : Dept. of Oral and Maxillofacial Surgery, Tohoku University Graduate School of Dentistry (Sendai, JAPAN)
April 2011-March 2012: Dept. of Cranio-maxillofacial Surgery, Maastricht University (The Netherlands)
April 2003-August 2012: The Second department of Oral and Maxillofacial surgery, Kyushu Dental College (Kitakyushu, JAPAN)
April 2011: JBCT certified General Clinical Oncologist (JBCT; Japanese Board of Cancer Therapy)
Squamous cell carcinoma of head and neck (SCCHN) should be considered as locally advanced cancer. The treatment of locally advanced SCCHN remains contentious and controversial. Traditional methods to treat oral cancers include surgery, radiation therapy and chemotherapy according to patient’s clinical cancer stage. Drawbacks of each method had profoundly affected the quality of life of each individual patient. How to increase the survival rate for oral cancer patients and how to improve their life quality are the important issues which clinicians should take into consideration when they made treatment plans for the oral cancer patients. Lip cancer is not uncommon caner of the oral cavity. Lip cancer comprises approximately 0.6 percent of all cancers in the US. In the United States, incidence of lip cancer is about 1.8 per 100,000 population. In Australia, its incidence is as high as 13.5 per 100,000 population in males. In Taiwan, lip cancer has lower incidence than that in Western countries. 90% of lip cancer occurred on lower lip and oral commissure is involved in 0.7% to 6.1% in all cases. Lip cancer is very common in white male smokers who are in their sixth decade of their life. In Taiwan, however, lip cancer occurred on male non-retired labors from their third decade to five decade of life. Appropriate treatment for this malignancy should have goals maximizing survival while minimizing functional and cosmetic compromise associated with their management. Reconstruction of lip or oral commissure defects aims to get oral competence and providing an acceptable appearance. Clinically, satisfactory reconstruction of defects affecting the lip commissure is always challenging. Treatment options and reconstructive considerations would affect the post-operation life quality of lip cancer patients profoundly. Surgical first treatment for this type of oral cancer patients would create saliva drooling, air leakage, speaking or eating compromise. These common consequences after cancer surgeries affect patient's life quality, which in turn affect whole families and society in many ways. Non-surgical first treatment comprised of induction chemotherapy followed by palliative surgery or CCRT for lip cancer or oral commissure cancer patients could preserve functional and cosmetic appearance. Patients can go back to their jobs and social life easily without any sacrifice.

**Brief CV**

**Education background**

1. Post-graduate student in Dental School of Harvard University, U.S.A. Degree: DMSc (1993-1997)
2. Dental School of National Defense Medical Center, Taiwan, Degree: DDS (1977-1983)

**Experience**

1. Tri-Service General Hospital, Taipei, Taiwan. Resident, Chief resident, attending physician, Director of Division of Oral and Maxillofacial Surgery since 1972-2010.
2. Dental school of National Defense Medical Center, Taipei, Taiwan. Teaching assistant, instructor, clinical associated professor since 1983 to 2016.
5. Association for Dental Science of Republic of China, Taiwan Supervisor 2002-2008

**Current position**

1. Taipei Tzu Chi Hospital, Buddhist Tzu Chi Medical Foundation. Director of Division of Oral and Maxillofacial Surgery, since Jan. 2011
2. Taipei Tzu Chi Hospital, Buddhist Tzu Chi Medical Foundation. Head of Dental Department, since Mar. 2017
3. Ministry of Health and Welfare, Taiwan National health insurance dispute mediation committee member. since 2012 to now
4. Taiwan Association of Oral and Maxillofacial Surgeons Chairman, Board Examination Committee, since Mar. 2017
IS3-1-2) Locoregionally Recurrent Head and Neck Squamous Cell Carcinoma: Incidence, Survival, Prognostic Factors, and Treatment Outcomes

Department of Oral and Maxillofacial Surgery, Wan-Fang Hospital, Taipei, Taiwan

LIN Charles Kuan-Chou

Purpose:
For locoregionally recurrent head and neck squamous cell carcinoma (HNSCC), appropriate therapeutic decisions remain unclear. We examined the treatment outcomes of a national cohort to determine suitable treatments for and prognostic factors in patients with locoregionally recurrent HNSCCs at different stages and sites.

Patients and methods:
We analyzed data of >20-year-old patients with HNSCC at American Joint Committee on Cancer clinical stages I–IV without metastasis from Taiwan National Health Insurance and cancer registry databases. The index date was the date of recurrent HNSCC diagnosis. Recurrent HNSCC was defined as the annotation of locoregional recurrence with tissue proof in cancer registry databases. The enrolled patients were categorized into four groups: Group 1 comprised those undergoing chemotherapy (CT) alone; Group 2 comprised those receiving reirradiation (re-RT) alone (total radiation dose ≥ 60 Gy through intensity modulation radiation therapy [IMRT]); Group 3 comprised those receiving concurrent chemoradiotherapy (CCRT) alone (irradiation total dose ≥60 Gy through IMRT); and Group 4 comprised those receiving salvage surgery with or without RT or CT.

Results:
We enrolled 4,839 and 28,664 HNSCC patients with and without locoregional recurrence, respectively (median follow-up, 3.25 years). Locoregional recurrence rate and incidence were 14.44% and 40.73 per 1,000 person-years, respectively. Age ≥ 65 years, Charlson comorbidity index (CCI) score > 6, advanced clinical stage at first diagnosis, and recurrence-free interval < 1 year were significant independent prognostic risk factors for overall survival as per univariate and multivariate Cox regression analyses. After adjusting for age, sex, CCI scores, clinical stage at first diagnosis, and recurrence-free interval, adjusted hazard ratios (aHRs; 95% confidence intervals [CIs]) for overall mortality in recurrent clinical stages I and II were 0.63 (0.45–0.89, p = 0.009), 0.65 (0.52–0.83, p < 0.001), and 0.32 (0.26–0.40, p < 0.001) in Groups 2, 3, and 4, respectively, whereas they were 1.23 (0.99–1.52, p = 0.062), 0.69 (0.60–0.79, p < 0.001), and 0.39 (0.34–0.44, p < 0.001) for Groups 2, 3, and 4, respectively, for overall mortality in recurrent clinical stage III and IV.

Conclusions:
Age, CCI score, clinical stage at first diagnosis, and recurrence-free interval are significant independent prognostic factors for overall survival of recurrent HNSCC patients. Regardless of recurrence stage or site, salvage surgery is the recommended first recurrent HNSCC treatment choice. Re-RT alone and CCRT are more suitable for inoperable recurrent early-stage oral and nonoral cavity recurrent HNSCCs, respectively.

Brief CV
1. Department Chair of Oral and Maxillofacial Surgery, Wan-Fang Hospital
2. Executive Director and Chairman of Medical Promotion Committee, Taiwanese Association of Oral and Maxillofacial Surgeons
3. IAOMS Councilor of Taiwan
4. Specialist of Taiwanese Association of Oral and Maxillofacial Surgeons
5. Specialist of Taiwan Academy of Facial Plastic and Reconstructive Surgery
6. Specialist of Taiwan Head and Neck Society
7. Faculty of Taipei Medical University
Potential Mechanisms of Drug Resistance of OSCC to Cisplatin

Oral squamous cell carcinoma (OSCC) accounts for near two-thirds of head and neck squamous cell carcinoma (HNSCC) in the male population of Taiwan. Despite the recent advancement of treatment modalities, the overall survival for OSCC remains unsatisfactory for the past decades. The therapeutic failure mainly comes from the failure of loco-regional control or the development of distant metastasis. Cisplatin-based chemotherapeutic regimen provides a significant survival benefit for locally advanced HNSCC diseases by post-op adjuvant concurrent chemo-radiotherapy (CCRT) and disease control for relapse diseases. However, this treatment effects is limited if tumors have endogenous or acquired chemo-resistance to cisplatin. For HNSCC, EGFR related signaling is one of the most important pathways in the cancer formation and disease progression, and drug resistance. In our studies, cisplatin treatment would upregulate the activator of mTORC1, p62, in EGFR dependent manner in OSCC cells to enhance mTORC1 activity. The upregulated mTOR activity not only maintained the cell proliferation capacity under cisplatin treatment but enhanced the properties and expanded the subpopulation of cancer initiating stem cells (CICs) in OSCC. The CIC population was notorious for their intrinsic resistance to conventional chemo-radiotherapy. When cisplatin-resistant sub-clones was generated by cultivated in gradually and long-term escalating doses of cisplatin, mTOR activity and its activator p62 were up-regulated. However, the sensitivity to cisplatin of these resistant cells could be resumed by p62 knock-down, and rapamycin or metformin treatment. In a cohort of advanced HNSCC patients, higher mTOR activity was correlated with a poor prognosis in OSCC patients, which can be attributed to a higher local recurrence rate even after received post-operative cisplatin-base adjuvant therapy. We also found when treated with cisplatin, OSCC cells would automatically increase HB-EGF expression, a potent EGFR ligand, in Akt/COX2 dependent manner. This signaling axis constituting a self-augmented feedforward loop was able to increase the expression of DNA repaired protein, ERCC1. This pathway may also contribute to cisplatin-resistance in OSCC patients. From our result, EGFR signals and its downstream mTORC1 activity play critical roles in the resistance to cisplatin-based regimes. Therefore, the combinational uses of anti-EGFR drugs, like Cetuximab or the under-developing Raplogs are good approaches to overcome the cisplatin resistance for adjuvant therapies of OSCC. To explore more potential mechanisms of drug resistance may greatly benefit OSCC patients in preventing tumor recurrence and ultimately improve the treatment outcome.

Brief CV

Education
Ph.D. University of Texas, MD Anderson Cancer Center, USA 2009
DDS Dental School, National Yang-Ming University, Taiwan 1994
Clinical History
A. Professional Experience
Attending Doctor, Oral & Maxillofacial Surgery, Taipei Veteran General Hospital 2010-Present
Assistant Professor of Dental School, National Yang-Ming University 2011-Present
Instructor of Dental School, National Yang-Ming University 2002-2004
B. Fellowship/Residencies
Oral & Maxillofacial Surgery, Taipei Veteran General Hospital, Taiwan 1996-2002
C. Internships
Taipei Veteran General Hospital, Taiwan 1993
Objectives: This study assessed whether the hypermethylated \textit{ZNF582} and \textit{PAX1} genes in oral epithelial cells could be used as biomarkers for oral dysplasia and oral cancer detection.

Materials and methods: Oral epithelial cell samples were obtained from normal oral mucosa control subjects, oral precancer patients, and oral squamous cell carcinoma patients. Methylation levels of \textit{ZNF582} and \textit{PAX1} genes were quantified by real-time methylation-specific PCR after bisulfite conversion.

Results: We found that the methylation levels and positive rates of methylated \textit{ZNF582} \textit{(ZNF582}	extsubscript{m}) and \textit{PAX1} \textit{(PAX1}	extsubscript{m}) elevated gradually as oral disease severity increased. We also discovered an abrupt elevation in gene methylation level from mild dysplasia to moderate/severe dysplasia and a marked increase in gene methylation-positive rate from mild dysplasia to moderate/severe dysplasia for \textit{ZNF582}	extsuperscript{m} and \textit{PAX1}	extsuperscript{m}, respectively, indicating that both \textit{ZNF582}	extsuperscript{m} and \textit{PAX1}	extsuperscript{m} are effective biomarkers for differentiating moderate dysplasia or worse oral lesions (MODY+). When \textit{ZNF582}	extsuperscript{m}/\textit{PAX1}	extsuperscript{m} tests were used for identifying MODY+ oral lesions, the sensitivity, specificity, and odds ratio were significantly higher. Moreover, patients with areca-quid chewing habit alone or in combination with cigarette smoking and/or alcohol drinking were also found to have relatively high methylation levels and positive rates of \textit{ZNF582}	extsuperscript{m} and \textit{PAX1}	extsuperscript{m}.

Conclusion: Hypermethylated \textit{ZNF582} and \textit{PAX1} genes in oral epithelial cells are effective biomarkers for the detection of oral dysplasia and oral cancer.
From Basic Science on Tumor Angiogenesis to Novel Anti-Cancer Strategy

HIDA Kyoko

Tumor blood vessels play important roles in cancer progression.

We have also shown that TECs are different from normal endothelial cells (NECs) in many aspects, such as gene expression or chromosomal abnormality.

Heterogeneous vascular morphology has been described in various tumor types, at different stages of tumor progression. Recently, we demonstrated TECs were heterogeneous by recruiting two types of TECs isolated from high metastatic tumors or low metastatic tumors. We found that high metastatic tumor-derived TEC showed upregulation of angiogenesis or stem-related gene expressions and were more resistant to anti-cancer drugs with chromosomal abnormality, compared to low metastatic tumor-derived TEC.

Furthermore, we found that TEC-derived biglycan enhanced tumor metastasis via increasing tumor intravasation. Biglycan gene promoter was demethylated in high metastatic tumor derived TEC. These results suggested that TECs were heterogeneous depends on tumor malignancy and the difference in the properties of TECs contribute to regulating tumor cell behavior, which provides new insights into TEC biology and tumor-stromal cell interactions within the tumor microenvironment. A novel anti-angiogenic therapy targeting TEC heterogeneity may be developed in future as a means of improving overall anti-tumor efficacy. Further studies on TEC heterogeneity will facilitate the selection of suitable anti-angiogenic therapies.

Brief CV

Short education history
1992 Clinical Fellow, Oral maxillofacial Surgery, Hokkaido University Graduate School of Dental Medicine
1998 Doctor of Philosophy, Hokkaido University Graduated School of Dental Medicine
2001 Research fellow, Vascular Biology Program, Children’s Hospital, Harvard Medical School, USA
2005 Assistant Professor, Oral Pathology and Biology, Hokkaido University Graduate School of Dental Medicine
2009 Associate Professor (Independent), Vascular Biology, Hokkaido University, Graduate School of Dental Medicine
2014 Associate Professor, Vascular Biology, Frontier Research Unit, Institute for Genetic Medicine, Hokkaido University

Fellowship
1998-2000 Research Fellowship for Young Scientists (Japan Society for the Promotion of Science)
2002-2004 Postdoctoral Fellowship for Research Abroad (Japan Society for the Promotion of Science)

Awards
2. The Japanese Society of Pathology Research Awards, 2010
4. The Society of Japanese Women Scientists Award, 2017
The concept of tissue engineering and regenerative medicine has been widely accepted in these days, and many clinical studies have been performed including studies of bone and periodontal regenerative medicine.

We have developed a technique whereby autogenous human mesenchymal stem cells (hMSCs) from the patient’s bone marrow are combined with platelet-rich plasma for use as an alternative to the conventional bone graft material such as autogenous bone, which is considered as "gold standard", and bone substitutes with predictable good prognosis for fifteen years. Thanks to the glorious achievements left behind by our seniors, this technique was approved as the advanced medical treatment by the Ministry of Health, Labor and Welfare in Japan last year.

On the other hand, recent studies revealed that the implanted stem cells contributed tissue regeneration by their pluripotency as well as by the paracrine effects of their secretomes. Many secretomes were accumulated in the conditioned media (CM). We previously reported that CM from hMSCs (MSC-CM) contain numerous cytokines and these cytokines regulate angiogenesis, migration and osteogenesis in host mesenchymal stem cells, and thus may accelerate regeneration of bone and periodontal tissue. We have already started the clinical study for alveolar bone regeneration using MSC-CM since 2012.

This presentation summarizes applied state-of-the-art research in the important translational research that has already been performed in Nagoya University Hospital and discusses the problem of the stem cell therapy especially in the oral and maxillofacial region. Tissue regeneration using CM based on our serial studies including the clinical study will be also overviewed.

Brief CV
1998 DDS, Osaka University Faculty of Dentistry
2002 PhD, Osaka University Graduate School of Dentistry
2002 Department of Oral and Maxillofacial Surgery (OMFS), Higashi-Osaka Municipal General Hospital
2005 Department of OMFS, Osaka University Dental Hospital
2006 Department of OMFS, Nagoya University Hospital
2010 Assistant Professor, Department of OMFS, Nagoya University Graduate School of Medicine
2015 Lecturer, Department of OMFS, Nagoya University Graduate School of Medicine
2016-Present Associate Professor, Division of Reconstructive Surgery for Oral and Maxillofacial Region, Department of Tissue Regeneration and Reconstruction, Niigata University Graduate School of Medical and Dental Sciences
Healthcare associated infections (HAI) are the most frequent adverse event in healthcare worldwide. At any given time, the prevalence of health care-associated infection in developed countries varies between 3.5% and 12%. Patients that spend time in intensive care units (ICU) have a significantly higher rate of HAI; approximately 30% of these patients are affected by at least one HAI.

An increasing number of patients present for surgery with co-morbidities, including patients with conditions that may compromise their immune systems. This can present an even greater challenge to the health care team. In recent years, there has been progress in the control of HAI’s, including surgical site infections. Several agencies, including the US Centers for Disease Control and the World Health Organization provide guidance on strategies that prevent post-surgical infections among patients. Development of a systematic approach to infection prevention intended to protect even the most vulnerable patients has been shown to significantly reduce infection rates.

This course will focus on the latest infection prevention practices that have been shown effective in preventing HAI’s, particularly surgical site infections. Establishing evidence-based protocols and providing appropriate training and education to all personnel involved in patient care are essential in ensuring a safe environment for care.