



**International Society for Maxillofacial Rehabilitation**



8<sup>th</sup> Meeting

**International Congress on Maxillofacial Rehabilitation**

**September 25-27, 2008**

**Bangkok, Thailand**

# ISMR Bangkok 08

*conference program*

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# **International Society *for* Maxillofacial Rehabilitation**

**The ISMR Welcomes You to the 8<sup>th</sup> Meeting of the  
INTERNATIONAL CONGRESS ON MAXILLOFACIAL REHABILITATION  
September 25-27, 2008 Bangkok, Thailand**

**Mahidol University, Faculty of Dentistry | Chulalongkorn University, Faculty of Dentistry**



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## HISTORY OF THE ISMR

The Department of Dentistry and Maxillofacial Prosthetics at the Cleveland Clinic Foundation; Memorial Sloan Kettering Cancer Center, Department of Surgery – Dental Service; and the University of California at Los Angeles – Maxillofacial Clinic were instrumental with the creation and development of the ISMR.

The First International Congress on Maxillofacial Prosthetics was held in Palm Springs, CA - USA. The leading maxillofacial professionals from around the world delineated on the rehabilitation of the head and neck cancer patient. Four hundred delegates from 36 countries participated. This initial meeting acknowledged that the subspecialty of maxillofacial prosthetics requires multidisciplinary fields of science and health care and proceedings from the First International Congress on Maxillofacial Prosthetics were published. A Second Congress provided educational opportunities in Asia. Held in Seoul, Korea, it attracted 350 enthusiastic participants. The principal organizers of this meeting were the Korean Academy of Prosthodontics and the Korean Academy of Oral and Maxillofacial Surgery, with support from the Japanese Academy of Maxillofacial Prosthetics. Donations were distributed to the Korean Academy of Prosthodontics. Our Third Congress traveled to Europe and was held in Torino, Italy. Our international delegation represented 28 countries investigating the latest in education, research and maxillofacial technology. Donations were presented to the University of Turin, Maxillofacial Department. The Fourth Congress was a joint meeting with the American Academy of Maxillofacial Prosthetics, held in Kauai, Hawaii. The combination of these two organizations provided a unique and “monumental” meeting. The Fifth Congress was held in Okinawa, Japan and was a joint symposium with the Japanese Academy of Maxillofacial Prosthetics, attracting over 350 international delegates. The Sixth Congress was held in Maastricht, The Netherlands, in cooperation with the Division of Maxillofacial Prosthetics of the Dutch Society of Temporomandibular Disorders and Prosthetic Dentistry. Our Seventh Congress was held on the island of Maui jointly with the American Academy of Maxillofacial Prosthetics. The current Eighth Congress is here in Bangkok, Thailand. Plans are under way to meeting in Italy in 2010.

The Future- International conferences and scholar exchanges promote maxillofacial rehabilitation, providing the science and laboratory technology of maxillofacial rehabilitation to other health care workers. Society meetings are designed to travel worldwide, providing exposure to many Third World countries that are just beginning to develop maxillofacial expertise in cancer therapy, surgical oncology, radiation oncology and medical oncology. To assist in this development, the Society is presently establishing worldwide “Outreach” programs. Local prosthodontists will be trained in the disciplines of maxillofacial techniques so that they may establish their own programs and improve maxillofacial rehabilitation in their respective countries.

Through the support of its members and private donations, the Society seeks to promote this scientific field to encompass continued educational programs, research, and patient service. Technology is available and constantly emerging. Disbursement and exchange of maxillofacial prosthetics has benefits for those in all societies. Many third world and developing countries have not been exposed to the field of maxillofacial prosthetics. Exposure through teaching and exchanging scientific knowledge to health care workers ultimately raises the quality of life functions and esthetics for the patients.

Outreach- Teaching programs to third world countries are being developed to bring knowledge, supplies, equipment, training of dentists and laboratory technicians, and the art and science of maxillofacial prosthetics. Previous trips to Vietnam, El Salvador, Nigeria, Mongolia, Bolivia, Thailand and Sierra Leone have introduced maxillofacial prosthetics by identifying, training health care workers and restoring oral function and esthetics to children and adults. Shriners Children Hospitals provide treatment to children needing plastic reconstructive or restorative surgery as a result of burns, scarring and deformity of the face. The ISMR has provided grants to the Los Angeles California Shriners Children Hospital.

Recently, the ISMR has established a partnership with the UN Millennium Project. After nine months of discussions and negotiations with UN officials and the Columbia School of Dentistry and Harvard School of Dental Medicine, a team representing the ISMR, led by Drs Ian Zlotolow and Kim H. Teoh, will be traveling on an initial oral assessment trip for two weeks to Ethiopia. The UN Millennium Project is directed by Jeffrey Sachs, PhD, a professor of economics from Columbia University (Earth Institute), who was appointed by Kofi Annan of the United Nations to set up programs in deprived regions of the world to eliminate extreme poverty in a 15 year period. The ISMR is proud to be considered a partner in this endeavor and encourages its members and sponsors to participate in this global initiative. We look forward to the future and our potentially rewarding Outreach Programs for this UN project and other populations around the world.

## WELCOME FROM THE ISMR PRESIDENT

Dear Conference Colleagues,



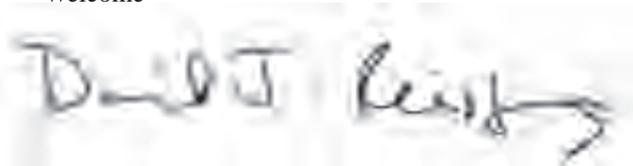
Welcome to beautiful Thailand and the 8<sup>th</sup> International Congress on Maxillofacial Rehabilitation. The very spirit of cooperation and collegiality that has been the hallmark of our organization is epitomized in the efforts of Mahidol and Chulalongkorn Universities and their faculty and staff members who to help organize such a significant and successful conference. Our previous educational congresses have been organized worldwide, attracting the leading scholars in our field and allowing regional colleagues the opportunity to disseminate the science of maxillofacial rehabilitation, offering a forum that is truly international in scope and philosophy. I am confident that you will agree that this congress is no exception. We owe our Thailand colleagues many thanks for their efforts in helping to organize yet another successful international exchange of ideas.

The **ISMR** is committed to the advancement of the art and science of rehabilitation. Our membership encompasses many of the known leaders from around the world, whose specialties include: Surgery, Prosthodontics, Speech Pathology, Anaplastology, Dental Oncology and Radiation and Medical Oncology. I am certain that our program this year will honor that commitment.

I would like to take this opportunity to thank our Corporate Sponsor, Biomet 3i; our Platinum Patron, Cochlear; Exhibitors, Factor II, 3M Thailand Ltd., Accord Corporation Limited, Atos Medical, Dental Vision Co., Thanes Development Co. Ltd., Materialise NV, and Colgate Palmolive (Thailand); and Subscribers Zimmer Dental, Osteo Med L.P., J. Morita Corporation, Ivoclar Vivadent Inc. and Quintessence Publishing for their very important support of our congress and their commitment to international education.

Finally, I would like to thank you for attending the congress. I know you will learn much in the educational sessions, but I also encourage you to use the congress as an opportunity to reconnect with old friends and make new ones and, of course, enjoy the beauty that is Thailand.

Welcome

A handwritten signature in black ink that reads "David J. Reisberg". The signature is written in a cursive, flowing style.

David J. Reisberg  
ISMR President



**WELCOME ADDRESS FROM THE DEAN, FACULTY OF DENTISTRY,  
MAHIDOL UNIVERSITY, BANGKOK, THAILAND**



Faculty of Dentistry  
Mahidol University  
Wisdom of the Land

**Welcome Message from the Dean  
Faculty of Dentistry, Mahidol University  
ISMR Congress 2008  
25 – 27 September 2008**



On behalf of the Faculty of Dentistry, Mahidol University, Bangkok, Thailand, it is my distinct pleasure to invite you to be my special guest at the Eighth International Society of maxillofacial Rehabilitation (ISMR) Congress, 25 – 27 September 2008, here in Bangkok, Thailand.

This three-day Congress will serve as a tremendous opportunity to enhance closer ties among our organizations as well as disseminate expert knowledge and experience. Your participation at this important meeting would bring great honor to our global assembly.

Special events promise to provide quality time to develop our dental community through Keynote Presentations from leading scholars from the UK, the USA, Canada, Switzerland and regional experts from Thailand. The meeting also features Workshops conducted by world renowned resource persons from The Netherlands, Belgium, The USA, Canada, Japan and Thailand as well as Oral and Poster Presentations and Competition.

Time is available for us to have meetings for networking, planning human and material resource exchanges and discussing the potential for international research collaboration. And most importantly, I hope you will all have the chance to meet old friends and make new acquaintances, while enjoying the uniquely diverse traditions of the Kingdom of Thailand.

I personally look forward to seeing you in Bangkok soon.

A handwritten signature in cursive script, reading 'Theeralaksna Suddhasthira'.

Assoc. Prof. Theeralaksna Suddhasthira, D.D.S., Ph.D., ABOMS  
Dean, Faculty of Dentistry, Mahidol University

**WELCOME ADDRESS FROM THE DEAN, FACULTY OF DENTISTRY,  
CHULALONGKORN UNIVERSITY, BANGKOK, THAILAND**



Chulalongkorn University  
Faculty of Dentistry  
Bangkok, Thailand

**Welcome Message from the Dean  
Faculty of Dentistry, Chulalongkorn University  
ISMR Congress 2008  
25 – 27 September 2008**



Dear delegates and friends,

On behalf of faculty of Dentistry, Chulalongkorn University, it is my great pleasure to extend a very warm welcome to all delegates who have come from around the world to participate in 8th International Congress on Maxillofacial Rehabilitation.

Recently, prevalence of patients with Maxillofacial defects has increased dramatically all over the world. This meeting is held to facilitate the exchange of scientific knowledge and clinical cases in Maxillofacial Rehabilitation to improve the standard of care for our patients.

I am looking forward to a very successful congress, in which cutting-edge technological progress meets research advancement.

I also invite you to use this unique opportunity to explore the authenticity and beauty of Thailand. I hope that not only will you acquire new scientific knowledge, but you will also gain new friends and new experience of Thailand's tradition and culture.

Best regards,

Thitima Pusiri  
Dean of Faculty of Dentistry  
Chulalongkorn University

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## CONFERENCE OVERVIEW

### Wednesday, September 24th

10:00	ISMR Board Meeting	<i>(Officers &amp; Councilors)</i>
18:30	<b>*Poster Session and Competition</b>	
19:00	Exhibit Reception	

### Thursday, September 25th

08:00 Opening Ceremony

#### Session I - Plenary Session: Cranio-Maxillofacial Rehabilitation: Team Approach

12:00 Conference Luncheon

#### Session II - Plenary Session: Acquired Maxillary and Mandibular Defects

17:15 Session Adjourns

19:30 Reception & Banquet *(Elective- Fee required)*

### Friday, September 26th

#### Session III - Plenary Session: Cleft Lip and Palate/ Dental Oncology

12:45 Session Adjourns

12:45 Conference Luncheon

12:45 **ISMR Members Business Lunch**

14:15 Social Outing *(Elective- Fee required)*

### Saturday, September 27th

#### Session IV - Plenary Session: Evidence-Base Research/ Tissue Engineering

12:30 Conference Adjourns

#### 14:00 - 17:00 Concurrent Maxillofacial Workshops *(Elective Fee required)*

1. Facial Prosthetic Materials - Factor II
2. Digital Technology in Maxillofacial Prosthetics
3. Basics of Radiation Therapy and Oral Sequelae: Management of Head and Neck Irradiated Patient
4. Quality of Life: Evaluating Functional Assessment and Treatment Outcomes in Maxillofacial Prosthetics
5. Immediate Loading Implant Therapy with NobelGuide™

17:00 ISMR Conference Adjourns

### Sunday, September 28th Workshop

*(Elective Fee required)*

#### 09:00 - 17:00 Rehabilitation of Auricular Defect with the Hands-on Laboratory

*Includes: lunch, materials, lecture notes, and CD of related literatures/laboratory procedures.  
Round trip Transportation to Salaya Campus, Mahidol University from Royal Orchid Sheraton.*



## SOCIAL EVENTS



### Wednesday, September 24, 2008

#### Poster Session & Exhibit Reception

Duration: 19:00 – 21:00 hrs

The ISMR Poster Session is truly remarkable tool to see the accomplishments of today's talent in the Maxillofacial Rehabilitation field. We invite all delegates to join us to view these posters and thank our Sponsors for their generous support.

We encourage all delegates to visit exhibit booths to review the latest advancements and services in the field. Light appetizers and beverages will be served.

*Dress: Casual*



### Thursday, September 25, 2008

#### Reception, Banquet & Award Ceremony

Duration: 19:00 – 22:00 hrs

Fee: \$75 US

Make plans to attend our Congress Banquet and help us acknowledge various lecture and poster awards. Recognition will be giving to outstanding contributions to the field of maxillofacial rehabilitation. Entertainment throughout the evening will be an assortment of Thai performances. A colorful and wonderful evening you should share with your colleagues.

*Dress: Business Attire*



### Friday, September 26, 2008

#### ISMR Social Outing

#### Tour of the Grand Palace followed by Sunset dinner cruise

Duration: 13:30 – 20:00 hrs

Fee: \$75 US

Visit the **Grand Palace** to see the most important and sacred shrine in the Kingdom, the Temple of the Emerald Buddha (Wat Phra Kaew), with its solid green jade Buddha image, truly complements anybody's visit to Thailand. For just about 150 years, Bangkok's Grand Palace was not only the home of the King and his court, but also the entire administrative seat of government. Within the crenelated walls were the country's war ministry, state departments, and even the mint. Thai Kings stopped living in the palace full time around the turn of the twentieth century, but the complex remains the seat of power and spiritual heart of the Thai kingdom.

Following the tour, join us for an exotic cruise along the Chaophraya and view breathtaking & stunning architecture along the riverbanks.

*Dress: Modestly- No Shorts, no open toe shoes, and shoulders must be covered*

## CONFERENCE ELECTIVE ACTIVITIES



### Wednesday, September 24, 2008

#### Full Day Trip to Ruin of Ayutthaya

Duration: 08:00 – 17:00 hrs

Fee: \$60 US /person

Depart Bangkok on an air-conditioned coach to Ayutthaya, the former capital of Thailand. Ayutthaya was founded in the 14<sup>th</sup> Century by the Thais of the lower Chao Phraya River plain, and it soon became the dominant city-state. Its kings annexed Sukhothai in the 15<sup>th</sup> Century, and made Ayutthaya the largest city in South East Asia, deeply impressing the Europeans who began to trade with them in the 16<sup>th</sup> Century. The city was sacked and burnt by the Burmese in 1767, leading to the foundation of a new capital, Bangkok, after the Burmese had been driven out.

Visit the summer palace of the present modern day Chakri Dynasty, Bang Pa-In. Continue on to the principal sights in Ayutthaya – the gigantic bronze statues of Wat Monkol Borpith, the three ancient pagodas at Wat Phra Srisanpetch, and Wat Chai Wattanaram which was burnt by the Burmese over 200 years ago. Explore the surviving monuments on foot. (Optional) 15-minute elephant ride (2 persons / elephant), \$20 US /person

***Dress: Modestly- No Shorts, no open toe shoes, and shoulders must be covered.***



### Thursday, September 24, 2008

#### Half Day Excursion to Damnern Saduak Floating Market

Duration: 08:00 – 13:00 hrs

Fee: \$33 US /person

Enjoy a leisurely and scenic drive through the countryside. Along the way, see salt farmers working in the salt field. A stop is made at a local farmhouse to see the preparation of coconut sugar.

Visit the Damnern Saduak floating market in the Ratchaburi province. Observe the timeless lifestyle of the native Thai people as you explore Damnern Saduak in a speedboat as it winds its way through busy canals, passing boats with vendors selling fruits, food and other commercial wares.



### Friday, September 26, 2008

#### Half Day Tour of Jim Thompson's Museum and Silk Store

Duration: 09:30 – 12:30 hrs

Fees: \$30 US /person

Visit the Jim Thompson's House, a museum filled with Asian antiques and historical memorabilia. The extensive collection is housed in six old teak houses, all built along ancient Thai architectural styles and by Jim Thompson himself.

You'll get an excellent feel for Thai architecture and design in this well preserved home. Mr. Thompson came to Thailand at the end of World War II and revitalized the Thai Silk industry. His disappearance into the Malaysian jungle in 1967, remains a mystery to this day.



## **Saturday, September 27, 2008**

### **Half Day Tour to Temples of Old Bangkok**

Duration: 10:00 – 13:00 hrs

Fee: \$20 /person

Visit three different temples in the City. Wat Saket's major feature is the Golden Mount, at one point Bangkok's highest point and offers a panoramic city view from the top. We also visit Ban Bat, a small community well known for making monk's alms bowls (bat) in the traditional way. Wat Suthat is noted for its large bronze Buddha image, its murals, and the giant Swing at the front of its temple. At Wat Ratchanatdaram we visit one of Bangkok's most unusual structures the Loha Prasart (the Metal Palace).

*Dress: Modestly- No Shorts, no open toe shoes, and shoulders must be covered.*

## **POST CONFERENCE TOURS**



## **Sunday, September 28-30, 2008**

### **Option #1**

#### **Phuket, Thailand**

Spend some quality time on the beaches of Phuket, Thailand. Spectacular scenery, stunning tropical sunsets and warm blue sea awaits you at Asia's most popular beach destination. This island provides an unbeatable combination of perfect silky soft white palm-lined beaches, superb hospitality and one of the finest resort hotels in Thailand, Le Meridien Phuket Beach Resort.

*Rates include two nights accommodations and one day tour*

\*\$290/ Sharing Twin Room    \*\$415/ Single Room

\*Room fees are based on a cost per person

Airfares are not included in package price.

Airfares and transfer are based on availability and ticket fare at time of reservation. *Tour operator will provide cost of airfares and transfers when making your reservations.*



### **Option #2**

#### **Angkor Wat, Cambodia 3 Day Vacation Package**

Journey into the past and explore some of the magnificent wonders of the Oriental world. This 3 day post Conference Tour will be filled with mysterious, cultural adventures you surely will not want to miss. Covering an area of several hundred square kilometres, Angkor will take your breath away. Set amongst tranquil landscaped gardens along the beautiful tree-lined Charles de Gaulle Avenue, *Sofitel Royal Angkor* is the closest hotel to the stunning ruins of Angkor Wat, the largest religious monument in the world. Ideally located near traditional markets and local areas of interest.

*Rates include two nights accommodations and two tour days*

\*\$365/ Sharing Twin Room    \*\$565/ Single Room

\*Room fees are based on a cost per person

Airfares are not included in package price.

Airfares and transfer are based on availability and ticket fare at time of reservation. *Tour operator will provide cost of airfares and transfers when making your reservations.*

## CONFERENCE SCHEDULE

### Wednesday, September 24th

- 10:00 ISMR Board Meeting (*Officers & Councilors*)  
18:30 \***Poster Session and Competition**  
19:00 Exhibit Reception

### Thursday, September 25th

8:00am Opening Ceremony

#### Session I - Plenary Session: Cranio-Maxillofacial Rehabilitation: Team Approach

Keynote Presentations & Discussion

- 08:15 **1 John Beumer**  
*Maxillofacial Rehabilitation: The Team Approach at UCLA*
- 08:45 **2 M.L. Theerathavaj Srithavaj**  
*Craniofacial Rehabilitation: The Success and Failure using Team Approach*
- 09:15 **3 Masaaki Goto**  
*Use of the Dental Implants for Maxillofacial Rehabilitation*
- 09:45 Discussion

#### Abstracts

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- 10:30 4 Shogo Ozawa - *Implant Assisted Maxillofacial Prosthesis Using Magnetic Attachments*
- 10:45 5 B. Srinivasan - *Challenges To Development Of Maxillofacial Prosthodontics In A Resource Constrained Country- India*
- 11:00 6 Somkeat Implee - *Patients With Reconstruction Of Craniofacial Or Intraoral Defects At M.D. Faculty Of Dentistry, Chulalongkorn University: Measure Quality Of Life*
- 11:15 7 Manju V - *Rapid Prototyping In Maxillofacial Prosthetics.*
- 11:30 8 Udey Vir Gandhi - *Quality Of Life Assessment: Rehabilitated Intraoral Cancer Patients In Kolkata, India*
- 11:45 9 Surakit Visuttiwattanakorn - *Surgical Aspects For Auricular Implant In Congenital Deformed Patient At Mahidol University*
- 12:00 Conference Luncheon

#### Session II - Plenary Session: Acquired Maxillary and Mandibular Defects

Keynote Presentations & Discussion

- 13:30 **10 Dennis Rohner**  
*Reconstruction of Acquired Maxillary and Mandibular Defects using Prefabricated Fibular Flaps*
- 14:00 **11 Betsy Davis**  
*Maxillary Reconstruction: Surgical and Prosthetic Considerations*
- 14:30 **12 Mark Marunick**  
*Rehabilitation of Tongue/Mandible Defects: Surgical and Prosthetic Considerations*
- 15:00 Discussion

#### Abstracts

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- 15:45 13 Pravej Serichetaphongse - *Reconstruction of Total Maxillectomy Patient with Fibular Free Flap: A Case Report*
- 16:00 14 Hisham El Fattah - *The Effect of Pre-Prosthetic Surgery on Prosthetic Restoration of Maxillary Defect*
- 16:15 15 Takafumi Otomaru - *What Is The Most Important Predictor Affecting Masticatory Function Among Mandibulectomy And Glossectomy Patients?*
- 16:30 16 Henk Verdonck - *Assessment Of Vascularity In Irradiated And Non-Irradiated Alveolar Bone By Laser Doppler Flowmetry*
- 16:45 17 Joseph Huryn - *Interarch Fixation Utilizing Mini Dental Implants For Mandibulectomy and Fibula Free Flap Reconstructive Surgery*

- 17:00 18 Elvin Woei Jian Leong - *Survival Rate Of Endosseous Implants Using A Cad-Cam Immediate Loading Treatment Protocol: A Series Of 50 Implants.*
- 17:15 Session Adjourns
- 19:30 Reception & Banquet (*Elective- Fee required*)

## Friday, September 26th

### Session III - Plenary Session: Cleft Lip and Palate/ Dental Oncology

Keynote Presentations & Discussion

- 08:15 **19 David Reisberg**  
*Current Overview of Cleft/Craniofacial Care*
- 08:45 **20 Mark Chambers**  
*Salivary Function Following Intensity Modulated Radiation Therapy to Reduce Parotid Dose*
- 09:15 **21 Prasit Pavasant and Pitt Supaphol**  
*Differentiation of Dental pulp stem cell on HA/PCL (Hydroxyapatite/Polycaprolactone) scaffold*
- 09:45 Discussion

#### Abstracts

- 10:30 22 Chaivut Prunkngarmpun - *Three Monosyllables For Standard Words In Nasometer Test: Applied To Evaluate Dento-Maxillary Prosthesis*
- 10:45 23 Ana Soares - *Oral Care Protocol Combined With Lasertherapy Prevents Oral Complications Induced By Head & Neck Cancer Treatment*
- 11:00 24 Ken Inohara - *New Method For Standardized 3-D Vocal Tract Reconstruction By Using Diagnostic Ct Images*
- 11:15 25 Lisette Van Der Molen - *Functional Outcomes In Head And Neck Cancer Patients Treated With Chemoradiationtherapy (Crt): A Systematic Review*
- 11:30 26 Kharel Aayush - *Effects Of Sodium Bicarbonate Rinses On Dental Plaque Ph And Selective Oral Micro-Organisms In Radiated Head And Neck Cancer Patients*
- 11:45 27 Wareeratn Chengprapakorn - *Bacterial Colonization On Maxillofacial Prostheses*
- 12:00 28 Weihong Ren - *The Effects Of Prosthodontic Treatment On The Oral Function Related Quality Of Life For Maxillary Tumor Patients*
- 12:15 29 Niki Ghaem - *Maghami Intensity-Modulated Radiation Therapy And Its Influence On Pre Radiation Dental Treatment*
- 12:30 30 Bhavani Venkatachalam - *Dental Management Of The Chemoradiation Patient*
- 12:45 Session Adjourns
- 12:45 Conference Luncheon
- 12:45 ISMR Members Business Lunch (members only)** Riverside Room 5
- 14:15 Social Outing (*Elective- Fee required*)

## Saturday, September 27th

### Session IV - Plenary Session: Evidence-Base Research/ Tissue Engineering

Keynote Presentations & Discussion

- 08:30 **31 John Wolfaardt**  
*Maxillofacial Prosthetics: Can We Create the Future*
- 09:00 **32 Adrian Sugar**  
*Distraction Osteogenesis: Autogenous Tissue Engineering*
- 09:30 **33 Neal Garrett**  
*Outcomes on Maxillectomies with Conventional and Implant Restorations*
- 10:00 Discussion

*Abstracts*

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- 10:45 34 Guofeng Wu - *Computer - Aided Design and Rapid Manufacture for an Orbital Prosthesis*
- 11:00 35 Jaijam Suwanwela - *Genetic Markers for Accelerated Bone Loss of Edentulous Jaws*
- 11:15 36 Puneet Anand - *Rationale of Tissue Engenering in Maxillofacial Prosthetics*
- 11:30 37 Geert Van Der Laan - *Non-Survivor Data in Quality of Life Research - Part 1 of 2*
- 11:45 38 Chiquit Linden Van Den Heuvell - *Non-Survivor Data in Quality of Life Research: Final Questions in Head and Neck Oncology - Part 2 of 2*
- 12:30 ISMR Conference Adjourns
- 14:00 - 17:00 **Maxillofacial Workshops** *Elective Fee required*
1. Facial Prosthetic Materials - Factor II Pompadour Room
  2. Digital Technology in Maxillofacial Prosthetics Riverside Room 1
  3. Basics of Radiation Therapy and Oral Sequaleae: Management of Head and Neck Irradiated Patient Riverside Room 6
  4. Quality of Life: Evaluating Functional Assessment and Treatment Outcomes in Maxillofacial Prosthetics Riverside Room 7
  5. Immediate Loading Implant Therapy with NobelGuideTM Riverside Room 2

**Sunday, September 28th** Workshop *Elective Fee required*

09:00 - 17:00 **Rehabilitation of Auricular Defect with the Hands-on Laboratory**

Salaya Campus,  
Mahidol University

*Includes: lunch, materials, lecture notes, and CD of related literatures/laboratory procedures. Round trip Transportation to Salaya Campus, Mahidol University from Royal Orchid Sheraton.*



## POSTERS

Abstract	Table	Author	Title
41	1	Fann Ai Lian	<i>The Use Of Esthetic Conformer Shell After Socket Reconstruction - A Case Report</i>
42	2	Yuichiro Amano	<i>A Case Report Of The Obturator Prosthesis Supported With Implants For Maxillary Defect</i>
43	3	Pokpong Amornvit	<i>An Alternative Exodontia In Irradiated Head And Neck Patient: A Pilot Study</i>
44	4	Kazuya Asami	<i>Evaluation Of Obturator Prostheses On Masticatory And Speech Functions</i>
45	5	Tomomi Baba	<i>Laboratory Procedures Using Double Processing Technique For Fabrication Of Maxillary Obturators</i>
47	7	Francesco Bassi	<i>Public And Oral Health Management In Developing Countries: An International Master</i>
48	8	Marco Bertschinger	<i>Prosthetic Rehabilitation Of A Patient With Severe Trismus After Chemoradiation And Subsequent Development Of Myositis Ossificans In The Masseter Muscles – A Case Report</i>
49	9	Anne-Gaëlle Bodard	<i>Oral Rehabilitation In 23 Patients With Microvascular Free Fibula Flap</i>
50	10	Jiras Bunnag	<i>Identifying Microflora In Carious Lesion Of The Head And Neck Irradiated Patients</i>
51	11	Jiras Bunnag	<i>Modified Denture Plates Using Bilateral Technique Manipulation In Trismus-Induced Head And Neck Irradiated Patients: A Pilot Study</i>
52	12	Duangduan Chamchong	<i>The Prosthodontic Management For Partial Maxillectomy Patient With Rampant Caries ; A Case Report</i>
53	13	Vatsana Chanthamalin	<i>Total Glossectomy Rehabilitation With Tongue And Palatal Drop Augmentation Prostheses: A Case Report</i>
54	14	Pimnaraporn Chearskul	<i>Comparative Color Changes Between Three Different Color Types To Mdx-4-4210 Medical Grade Silicone</i>
55	15	Wareeratn Chengprapakorn	<i>Bacterial Colonization On Maxillofacial Prostheses</i>
56	16	Natdhanai Chotprasert	<i>Facial Silicone Bond To Two Resins With Five Primers</i>
57	17	Mark Danbe	<i>Intraoral And Extraoral Conformers: How To Shape Tissue After Surgery</i>
58	18	Chollada Dangsuwan	<i>Conventional Removable Partial Denture (Rpd) For Partial Mandibulectomy Patient</i>
59	19	Frans De Beer	<i>Closure Of A Nasal Septal Perforation With A Individually Designed And Manufactured Silicon Button Using A Stereolithographic 3-D Model. A Case Report.</i>
60	20	Auttawit Decha-Umphai	<i>Simplified Technical Approach To Fabricate Hollow-Bulb Obturator</i>
61	21	Kanchan Dholam	<i>Dental Rehabilitation In Grafted Maxillae And Mandible</i>
62	22	Fahima Fatmasari	<i>Evaluation Of Heat-Polymerized Polymethylmethacrylate (Pmma) Resin And Ethyl-Vinyl Acetate (Eva) For Attenuation Of Secondary Electron Released From Gold Alloy Crown After Co60 External Beam Radiation</i>
63	23	Alexander Filippovich	<i>Differential Diagnosis And Treatment Of Myotonic And Myofascial Syndroms Of Neck Pain</i>
64	24	Ayako Hagino	<i>Investigation Of The Factors Influencing The Outcome Of Prostheses On Speech Rehabilitation Of Mandibulectomy Patients</i>
65	25	Ying Han	<i>Effect Of Nano-Oxides On Color Stability Of Pigmented Maxillofacial Silicone A-2186 Subjected To Outdoor Aging.</i>
66	26	Mikage Hasegawa	<i>A Novel Impression Method For Maxillary Defect Using Customized Silicone Rubber.</i>
67	27	Satoru Hojo	<i>A Case Report Of Mandibular Prosthetic Reconstruction By Denture Of Special Metal Frame Design.</i>
68	28	Kazuhiro Hori	<i>One Step Curing Technique Of Hollow Obturator With Thermoforming Unit</i>
69	29	Ray Hovijitra	<i>Implant-Supported Speech Aid Prosthesis In Soft Palate Defect Patient: Case Report</i>

Abstract	Table	Author	Title
70	30	Watcharin Hovichitr	<i>Corrective Rehabilitation In Improper Position Of The Implants On Segmental Mandibular Arch And Total Glossectomy In Edentulous Patient</i>
71	31	Morio Iijima	<i>Evaluation Of Conventional, Immediate Implant-Overdentures And Metal Base Dentures Fabricated At 3-Month After Implantation</i>
72	32	Yuttana Intaranongphai	<i>The Fabrication Of Palatal Ramp In Conventional Complete Denture For Mandibulectomy Patient</i>
73	33	PC Jacob	<i>Duplicating An Existing Implant Supported Bar To Fabricate An Auricular Prosthesis</i>
74	34	Nuttaporn Jangrod	<i>Anatomical Undercut To Retained The Large Orbital Prosthesis</i>
75	35	Nuttaporn Jangrod	<i>Fabrication Of An Orbital Prosthesis For Limited Depth Of Orbital Defect: A Case Report</i>
76	36	Ting Jiao	<i>New Cad/Cam System Was Developed To Fabricate A Mimic Prosthesis</i>
77	37	Chiaki Kadota	<i>Comparison Of Food Mixing Ability Among Mandibulectomy Patients</i>
78	38	Katsura Kaneda	<i>Application Of A Split-Type Obturator For Extensive Maxillary Defect</i>
79	39	Aswini Kumar Kar	<i>Prosthodontic Management In Post-Surgical Hemimandibulectomy Patients: A Challenge</i>
80	40	Sanketh Kethireddy	<i>The Ocular Defect And Prosthetic Outcome: An Mufd Experience</i>
81	41	Jugo Kondo	<i>Relationship Between The Tongue Pressure During Swallowing And Post-Operative Dysphagia In Glossectomy Patients</i>
82	42	Rungnapa Kosonittikul	<i>Multidisciplinary Approachs For Reconstruction An Acquired Partial Mandibulectomy Patient: A Case Report.</i>
83	43	Shigeto Koyama	<i>Evaluation Of Auricular Prostheses Made Of Adhesive Silicon</i>
84	44	Yoshihiro Kubo	<i>Fabrication Of Dento-Maxillary Prosthesis After Maxillary Antrostomy</i>
85	45	Kenneth Kurtz	<i>Ectodermal Dysplasia: Early Aggressive Intervention?</i>
86	46	Piyanas Kuysakorn	<i>Development And Evaluation Of An Oral Health Related-Quality Of Life Questionnaire For Thai Oral Cancer Patients</i>
87	47	Vojkan Lazic	<i>Restoration Of A Lateral Facial Defect With Prosthesis</i>
88	48	Cheong-Hee Lee	<i>Denture Acrylic Incorporated With Silver Nano-Particles: Its Antifungal Effect And Physical Characteristics</i>
89	49	Pratya Loonta	<i>Modification Of The Conventional Removable Partial Denture For An Optimal Seal Between Nasal And Oral Cavity In Maxillectomy Patient</i>
90	50	Michael Lum	<i>A Multidisciplinary Approach To The Management Of Amelogenesis Imperfecta</i>
91	51	Sherry Mei	<i>Innovative Retentive Designs Of Surgical, Interim, And Definitive Obturators After Removal Of Extensive Scca</i>
92	52	Shin Miyamae	<i>Evaluation Of Occlusal Reconstruction For Masticatory Function For Mandibulectomy Patients</i>
93	53	Mai Murase	<i>Mai Murase The Evaluation Of Voice Production In Mandibulectomy Patients Using Nhr And Grbas</i>
94	54	Yoshihiro Nakasato	<i>A Clinical Report Of Prosthodontic Treatment After Total Glossectomy</i>
95	55	Siriporn Nimmuntavin	<i>Rehabilitation Of Partial Maxillectomy Patient With Hollow Bulb Obturator After Traumatic Injury</i>
96	56	Yuichiro Nishiyama	<i>Force Control On Occlusal Reconstruction Of Prosthetics For Defected Jaw</i>

Abstract	Table	Author	Title
97	57	Yuichiro Nishiyama	<i>Regulation Of Denture Strength In Occlusal Reconstruction Of Maxillary Prosthesis</i>
98	58	Matthew Obuhoff	<i>Processing A Hollow Obturator: The Ucsf Technique</i>
99	59	Meiko Oki	<i>A New Method Of Facial Prosthesis Using Ct Data And 3D-Rapid Prototyping</i>
100	60	Hari Parkash	<i>A Retrospective Study Of 275 Patients Of Prosthodontic Rehabilitation Following Maxillectomy</i>
101	61	Douangsavanh Pengmanivong	<i>Odontosil Silicone Bond To Heat Polymerizing Acrylic Resin By Using Four Primers</i>
102	62	Jaruwan Phoprom	<i>Management Of Percutaneous Soft Tissue Around Extraoral Implant And Its Outcome</i>
103	63	Peeranuch Prayadsab	<i>Biocompatibility Of Silicone Elastomer Used In Chulalongkorn University</i>
104	64	Pongsatorn Putongkum	<i>Radiographic Analysis Of Facial Structure In Orbital Deformed Patients</i>
105	65	Ongart Puttipisitchet	<i>Implant Retained Speech Aid Prosthesis In Edentulous Cleft Lip And Palate Involving Soft Palate Defect: A Case Report</i>
106	66	Vorathum Punya-Ngarm	<i>Used Of Auricular Prosthesis With Retention Magnet.</i>
107	67	Alessio Rizzatti	<i>A New Protocol For The Treatment Of Mucositis In Course Of Radiotherapy For Head And Neck Cancer: A Clinical Study.</i>
108	68	Saengdeun Sakeao	<i>Two-Piece Obturator With Silicone Bulb Extension To Nasal Cavity In Total Maxillectomy Patient</i>
109	69	Sasiwimol Sanohkan	<i>Implant Retained Orbital Prosthesis Using Console Abutment: A Case Report</i>
110	70	Guido Schirotli	<i>Immediate Loading Of Dental Implants With Prefabricated Restoration Placed With Flap-Less Computer Guided Surgery In The Anterior Maxilla Reconstructed With Autogenous Calvarial Bone Block Grafts. A Case Report</i>
111	71	Guido Schirotli	<i>Immediate Loading Of Zygoma Implants With Prefabricated Restoration Placed With Flap-Less Computer Guided Surgery . A Case Report</i>
112	72	Arun B. Sharma	<i>Long Term Follow Up Of Implants Placed In Grafted Alveolar Clefts</i>
113	73	Binit Shrestha	<i>Relining Of Mahidol University Stock Ocular Prosthesis For A Fast Fabrication</i>
114	74	Stephane Simart	<i>New Design Implant, Free Flap And Radiotherapy</i>
115	75	Jean-Pierre Simon	<i>Options For A Fixed Implant Restoration Following Mandibular Reconstruction</i>
116	76	Pimnara Sitthikhunkitt	<i>An Evaluation Of Microorganism Adherence To Different Surfaces Of Facial Prosthetic Silicone : An In Vitro Study</i>
117	77	Andrea Smith	<i>Multidisciplinary Treatment Planning For The Ectodermal Dysplasia Patient</i>
118	78	Nithideth Somsanith	<i>Mandibular Guided Prosthesis For Mandibular Discontinuity Defect With Muscle Reprogramming Course</i>
119	79	Rujana Somsopon	<i>Neutral Zone Technique For Denture Fabrication In Partial Mandibulectomy Patient</i>
120	80	Masoumeh Soujouidi	<i>Designing And Fabrication Of Silicone Auricular Prosthesis With Supportive Retention</i>
121	81	Yuka Sumita	<i>Effects Of A Denture Adhesive In Edentulous Maxillectomy Patients</i>
122	82	Pontida Suppapaibul	<i>The Efficacy Of Palatal Lift Prosthesis: A Case Report</i>
123	83	Kiyotaka Suzuki	<i>Association Between Morphological Factors Of Condyles And Mandibular Alveolar Ridge Shape In Complete Denture Wearers</i>
124	84	Supreeya Taeng-On	<i>Restorations Of Large Facial Defect To Attached With Maxillary Obturator In Total Maxillectomy Patient</i>
125	85	Ali Tahmaseb	<i>Computer-Guided Implant Placement: 3D Planning Software, Fixed Intraoral Reference Points And Cad/Cam Technology To Restore Edentulous Patients: In Vitro And Clinical Trial</i>

Abstract	Table	Author	Title
126	86	Jun Takebe	<i>Effects Of Ionizing Radiation On In Vitro Differentiation Of Osteoblasts</i>
127	87	Komes Teeraparinyawan	<i>An Interim Obturator For Partial Maxillectomy : A Case Report</i>
128	88	Khim Hean Teoh	<i>Patient Satisfaction With Ocular Prosthesis - A Quality Of Life Survey.</i>
129	89	Sroisiri Thaweboon	<i>Oral Colonization Of Candida Species In Patients Receiving Radiotherapy In Head And Neck Area</i>
130	90	Sita Thaworanunta	<i>Color Degradation Of Facial Silicones: Comparative Study Between Medical Grade And Food Grade Facial Silicones</i>
131	91	Sita Thaworanunta	<i>Restoration Of A Complicated Intraoral And Extraoral Defect Case Using Osseointegrated Implant</i>
132	92	Sita Thaworanunta	<i>Treatment Denture Assisted For Maxillary Undeveloped Arch In Irradiated Orbital Prosthesis</i>
133	93	Arune Tirasriwat	<i>A Silicone Feeding Obturator: A Laboratory Procedure</i>
134	94	Arune Tirasriwat	<i>The Comparison Between Two Types Of Feeding Obturator For Cleft Lip And Palate Patient</i>
135	95	Rie Toda	<i>A 23-Year-Following Of A Patient With Post-Radiotherapy Prosthetic Treatment: A Case Report</i>
136	96	Doan Minh Tri	<i>A Large Facial Defect Resulting From A Surgical Malformation Utilizing A Two - Piece Facial Prosthesis</i>
137	97	Doan Minh Tri	<i>Effect Primer On Bond Strength Of Silicone To Autopolymerizing Resin</i>
138	98	Naoki Tsukimura	<i>Co-Culture Effect Of Peripheral Blood Mononuclear Cells On Osteoblasts</i>
139	99	Michelle Uy	<i>Alternate Design Of Implant Retained Auricular Prosthesis Using Locator Attachment: Case Report</i>
140	100	Manju V	<i>Comparison Of Mandibular Implant- Supported Over Denture Retained With Ball, Bar And Magnetic Attachments.</i>
141	101	Lisette Van Der Molen	<i>Multidimensional Function Assessment In Advanced Head And Neck Cancer</i>
142	102	Robert Van Oort	<i>A Reproducible Pigment Dispensing System Applicable In The Production Of Facial Prosthesis Analysed With A Color And Translucency Spectrophotometer</i>
143	103	Tong-Mei Wang	<i>"Screw Hole-Positioning Guide": A Method To Assist Mandibular Reconstruction</i>
144	104	Preeda Wansook	<i>Laboratory Technique In Modifying Immediate Surgical Obturator Bulb During Radiation Therapy</i>
145	105	Anun Wjitworawong	<i>Refabrication Of Implant Retained Auricular Prosthesis Using Attachment Pick-Up System</i>
146	106	Wanwisa Wongseedakaew	<i>Maxillary Obturator Prosthesis Rehabilitation Following Partial Maxillectomy For Polymorphous Low-Grade Adenocarcinoma</i>
147	107	Apinya Wongwattanasilp	<i>Oculopalpebral Prosthesis For Rehabilitating A Patient With Orbital Defect,A Case Report</i>
148	108	Meria Yazdani	<i>Fabrication Of Partial Ear Prosthesis With Suction Suspension After Silicon Test. (Case Report</i>
149	109	Varunya Yanasarn	<i>Treatment Of Radiation Induced Mucositis By Using Thai Herbal</i>
150	110	Go Yoshimura	<i>Antimicrobial Activity Of Thai Medical Herbal Extracts Against Mutans Streptococci And Candida Albicans In Vitro Study</i>
151	111	Go Yoshimura	<i>Digit Prosthesis: A Clinical Report</i>
152	112	Fumi Yoshioka	<i>Fabrication Of Facial Prosthesis Following Preprosthetic Consultation With 3D Modeling Technique</i>
153	113	Atiphan Pimkaokum	<i>Reconstruction of Total Maxillectomy Using Zygoma Implants with Bar Retained Obturator: A Case Report</i>



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# WORKSHOPS



## WORKSHOPS

**Saturday, September 27th** Time: 2:00pm-5:00pm

The following 5 workshops are concurrent and you may select one. Workshops require a fee: **\$75**

### **Workshop #1 Extrinsic Coloration of Silicone Elastomer (Factor II)**

**Room Location and Attendance:** Pompadour room

**Special requirements for the above workshop:** None

**Description of Workshop:** The intent of this workshop is to demonstrate the use of extrinsic coloration, there are numerous solutions to applying extrinsic pigment to silicone elastomer, Factor II would like to demonstrate a simple technique which is currently being used in many hospitals and clinics throughout the world. The use of crosslinked pigments; application and solutions to applying pigments to the surface of silicone elastomers.

Discussion of the various forms of silicone elastomers, primers, and solvents which are available and the advantages of those various products in daily clinical practice. Time will be allocated for a hands on experience so the participant will leave the seminar with a better understanding of the products which are available in today's market.

**Instructional Level:** Powerpoint presentation (lecture, demonstration, some hands-on)

**Course Objective Outline:**

- To instruct the participant in a comprehensive overview of applying extrinsic pigments (coloration) to silicone elastomer.
- Discussion of various elastomers and their uses.
- Solvents uses applications and availability basic differences.
- Primers, applications and availability

### **Workshop Instructors:**



**John D. McFall**

John D. McFall is the Executive Director of Factor II Inc., founded in August of 1978 to supply reconstructive clinicians with a consolidated supply source of materials, equipment and information. After eight years in Dental Prosthetics, four with the U.S. Navy then working in both private and commercial dental laboratory work 4 additional in removable prosthetics.

John trained at The University of Texas, M.D. Anderson Hospital, by Joe B. Drane DDS and Ariyadasa Udagama, DDS in Maxillofacial Prosthetics in 1976. He has been continually involved in the development of materials to enhance the art and science of maxillofacial prosthetics. Factor II has been involved with all of the major manufactures since 1978 in keeping pace with the development of silicone elastomers; Companies such as : Dow Corning, Nusil Silicones, Rhodia Silicones, Applied Silicones, GE silicones and the latest player to add to this list is now Bluestar Silicones of the Republic of China.



**Diane McFall**

The future of this specialty lies in education and intends to pursue this concept by bringing the manufacturer closer to the lab to understand the clinical needs of the maxillofacial industry.

## Workshop #2      3D Maxillofacial Surgery Simulation with SurgiCase CMF (*Materialise*)

**Room Location and Attendance:** Riverside 1 room - **Attendance limited to 20**

**Special requirements:** Personal laptop with mouse and a CD-drive to transfer software program.

**IMPORTANT-** Software program has to be loaded prior to the workshop at the Materialise exhibit booth.

**Description of Workshop:** This “hands-on” workshop will focus on the use of SurgiCase CMF, software for virtual surgical planning for a variety of maxillofacial reconstructive procedures. The pre-operative placement of epithesis implants will be demonstrated and operated by the participants. The use of surgical guides that assist the surgeon during an operation will also be addressed.

**Instructional Level:** Hands-on

### Course Objective Outline:

- Introduction to Materialise and SurgiCase CMF
- Demonstration of different clinical cases, showing the advantages of pre-operative planning in SurgiCase CMF
- Hands-on by doctors; all participants will do a basic surgery simulation on a test case

### Workshop Instructors:



#### Dr. Henk Verdonck

Henk Verdonck was born in Valkenswaard, the Netherlands, on April 28<sup>th</sup>, 1955. He started his dental education at the University of Nijmegen and graduated in 1979. From 1980 till 2000 he was a general practitioner, at the beginning full time and later on part time. In the early nineties he started and finished his education as a prosthodontist at the Daniel de Hoed Cancer Center, Rotterdam, and was trained by Leo Visch. From 2000 on he is full time active as a maxillofacial prosthodontist at the University Medical Centre Maastricht. He is especially involved in the treatment of head and neck oncology patients.

#### Marian Duron

Marian Duron holds an MSc degree in Kinesiology and Rehabilitation Sciences, a Specialization degree in Biomedical and Clinical Engineering and a Master degree in Bio-Informatics, from the Catholic University of Leuven, Belgium. As department manager of CMF, she has been leading Materialise’s developments in the virtual maxillofacial surgery simulation field since 2003.



#### Maarten Zandbergen

Maarten Zandbergen holds an MSc degree in Mechanical Engineering from the Catholic University of Leuven and specializes in Biomechanics and Biomedical applications at the division of Biomechanics and Engineering Design. As Product Specialist for SurgiCase CMF, he is responsible for new developments in the virtual maxillofacial surgery simulation field at Materialise.

## **Workshop #3      Basics of Radiation Therapy and Oral Sequelae: Management of Head and Neck Irradiated Patient**

**Room Location and Attendance:** Riverside 7 room - Attendance limited to 50

**Special requirements for the above workshop:** none

**Description of Workshop:** Oral cancer is one of the most prevalent and devastating conditions in the world. From the World Health Organization Report 2004, oral cancer is considered to be the sixth leading cancer in the world and is considered the third leading cancer in South East Asia. Oral cancer exhibits not only mortality but also morbidity to patient populations acquired from both surgical and cancer conjunctive therapies. Squamous cell carcinoma is considered to occur in 96 percent of oral cancers. The other four percent is comprised of sarcomas.

It is inevitable to avoid the effects caused by radiation therapy of the head and neck region. Even though surgical removal of the tumor seems to have a good success rate, additional radiation therapy is also widely used in this group of patients.

A team approach is crucial for successful therapy and long term follow-up for head and neck cancer patients. The effect of radiation exhibits multiple hard and soft tissue complications. There are multiple modalities to treat and manage in this group of head and neck irradiated patients. This workshop will further expand on these topics.

### **Workshop Instructor:**



**Dr. M.L. Theerathavaj Srithavaj**

Director, Maxillofacial Prosthetic Clinic  
International Training Center for Maxillofacial Rehabilitation (ITC Max)  
Mahidol University Faculty of Dentistry

Dr. M.L. Theerathavaj Srithavaj completed his D.D.S. degree from New York University College of Dentistry in 1994 where he continued his postdoctoral training program for Advanced Education in Prosthodontics, completed in 1996. He attended a fellowship in Maxillofacial Prosthetics at the Memorial Sloan-Kettering Cancer Center in New York City, in 1997. He was appointed Clinical Assistant Professor at New York University College of Dentistry in 1997. After several years in the USA, in 1998 he joined the staff at Mahidol University Faculty of Dentistry at the Department of Prosthodontics in Thailand. He began establishment of the Maxillofacial Service in 1999 and presently, Dr. M.L. Theerathavaj Srithavaj is an Assistant Professor in Maxillofacial Prosthetics and Dental Oncology at the Faculty of Dentistry, Mahidol University. He also serves as Clinical Director of the Maxillofacial Prosthetics Clinic at the Phayathai Campus in Bangkok as well as the Clinical Director at the International Training Center for Maxillofacial Rehabilitation (ITC-Max) at the Mahidol University Salaya Campus in Nakorn Pathom Province in Thailand. In addition, he is one of the original founders of the only International Program in Maxillofacial Prosthetics (3 years training program) in Thailand. This unique academic program is approved by the Ministry of Education, The Royal Thai Government. Multiple research publications are produced from his service by his team at Mahidol University. This not only helps the medical and public health community to understand and cooperate within the field of Maxillofacial Rehabilitation, but ultimately serves for the benefit of our patients.

**Instructional Level:** lecture

**Course Objective Outline:**

- To understand the processes of radiation therapy that affects oral and head and neck tissues.
- To understand the clinical effects of radiation therapy to oral and head and neck tissues, during and post radiation therapy.
- To understand the clinical and biological entities in these types of patients.
- To understand preventive and therapeutic means.

## **Workshop #4      Functional Assessment and Treatment Outcomes in Intra-oral Rehabilitation**

**Room Location and Attendance:** Riverside 6 room - **Attendance limited to 50**

**Special requirements for the above workshop:** none

**Description of Workshop:** The intent of this workshop will be to provide the participants with an overview of current techniques for functional outcomes assessment related to speech, chewing, swallowing, and quality of life in patients who have defects of the maxilla / soft palate, and the mandible. The workshop will be delivered in two parts. First, indications for the use of a series of functional outcomes assessment methods, as well as a critique of these methods, will be provided. Second, a prosthodontic perspective related to intra-oral rehabilitation will be presented. This will include discussion of the role of the prosthodontist in the rehabilitation of disorders of the maxilla/soft palate and mandible. Specific patient cases will include: 1) rehabilitation of the palatopharyngeal complex with the use of nasopharyngoscopy as a tool to achieve superior functional outcomes; 2) rehabilitation of patients with disorders of the tongue that prevent normal tongue-palate contact (palatal augmentation prostheses); and 3) quality of life results related to rehabilitation of the mandible; including the use of implant-supported prostheses.

**Instructional Level:** lecture

**Course Objective Outline:**

- Understanding of the functional outcome assessment techniques that currently exist
- Become a more critical consumer of specific functional outcome assessment technique.
- Understanding of the rehabilitation process related to prosthodontic intervention in special populations including those with disorders of the palatopharyngeal complex, as well as those with restrictions in tongue movement
- Understanding of the role of implant-supported prostheses in affecting quality of life outcomes

### **Workshop Instructors:**



#### **Jana Rieger**

Jana Rieger is a Clinical and Research Fellow at the Craniofacial Osseointegration and Maxillofacial Prosthetic Rehabilitation Unit (COMPRU). Dr. Rieger established and is Program Director of both the Head and Neck Surgery Functional Assessment Laboratory and the Stomatognathic Function Laboratory at COMPRU. She holds a joint appointment between COMPRU and the University of Alberta, where she is an Associate Professor in the Department of Speech Pathology and Audiology. Dr. Rieger is currently supported by the Alberta Heritage Foundation for Medical Research as a Heritage Researcher (Population Health Investigator). She is studying the effect of pharmaceutical and surgical interventions to determine the most effective approach to prevent xerostomia and maintain functional ability and quality of life in patients with head and neck cancer. Other current research interests include determination of function after surgical reconstruction and prosthetic rehabilitation of structures of the head and neck.



#### **Harry Reintsema**

Harry Reintsema graduated from Dental School in Groningen in 1982 and defended his Ph.D.-thesis in 1988. He is working as a dentist / maxillofacial prosthodontist since 1984, and is head of the UMCG Center for Special Dental Care and Maxillofacial Prosthetics since 2003. His fields of interest concern e.g. the dental / prosthetic treatment of Head-and-Neck Oncology patients and patients with congenital or acquired oro-facial defects, and dental (implant-)treatment in general. He is (co-)author of several articles and books on implant dentistry and maxillofacial prosthetics, and has participated in the organization of several conferences and workshops on maxillofacial prosthetic subjects. He has been on the board of the Dutch Society for Gnathology and Prosthetic Dentistry (NVGPT) from 1992- 2002 and member of the ISMR executive council since 2007.

## Workshop #5 Immediate loading implant therapy with NobelGuide™

**Room Location and Attendance:** Riverside 2 room - **Attendance limited to 30**

**Special requirements for the above workshop:** none

**Description of Workshop:** From CT scan to final restoration, learn how NobelGuide™ makes implant placement predictable. Upon completion of this course, the audience will understand that treatment planning and implant placement with NobelGuide™ to restore various situations.

**Instructional Level:** lecture

### Course Objective Outline:

- Computer-based protocols to plan the treatment
- Radiographic guide and CT scan protocol
- Planning in Procera Software
- Surgical procedure with surgical template and flapless technique
- Immediate loading implant therapy with NobelGuide™

### Workshop Instructor



#### Dr. Yasuhiro Kizu

Dr. Yasuhiro Kizu received his D.D.S. in 1993 and his Ph.D. in 1997 from Tokyo Dental College. He joined the department of Oral Medicine, Oral and Maxillofacial Surgery in Tokyo Dental College was promoted to Assistant Professor in 1997. He was the chief instructor at this department in 2000. From 2002 to 2003, he was a research fellow of the Craniofacial Osseointegration and Maxillofacial Prosthetic Rehabilitation Unit (COMPRU), Misericordia Hospital, University of Alberta, Canada. He did a fellowship with Dr. John Walfardt and Dr. Gord Willkes at this center. In 2006, He was promoted to Senior Assistant Professor in Tokyo Dental College. Currently, He is the Director in Yokohama Oral Implant Center-Kizu Dental Clinic and Clinical Senior Assistant Professor in Tokyo Dental College. He is an official instructor of Nobel Guide™ system in Nobel Biocare Japan. He has a particular interest in 3D treatment planning and Oral and Maxillofacial reconstruction using osseointegrated dental implants.

## Sunday, September 28th

### Workshop #6



The following workshop will be held at  
**The International Training Center for Maxillofacial Rehabilitation**  
Maha Chakri Sirindhorn Dental Hospital  
Salaya Campus, Mahidol University

Workshop time: 8:00am-5:00pm  
Workshop is an elective and requires a fee: **\$75**

**Fee includes:** Roundtrip transportation from Conference Hotel (Royal Orchid Sheraton) to Salaya Campus, Mahidol University, lunch, materials, lecture notes and CD of related literature/laboratory procedures.

**Workshop Title:** Rehabilitation of Auricular Defect with the Hands-on Laboratory

**Location and Attendance:** Salaya Campus, Mahidol University -

**Attendance limited to 20**

**Special requirements for the above workshop:** none

**Description of Workshop:** Auricular defects have both congenital and acquired etiologies. The rehabilitation using prostheses and processes from evaluation, diagnosis, and treatment planning are crucial factors to determine criteria in



treating the patient. This workshop is a full day course and is composed of two parts, didactic and laboratory sessions. We will begin by discussing the causes of auricular defects and possibilities for surgical reconstruction. The presentation will then move to a discussion of auricular prosthetics with emphasis on implant retained prostheses. A hands-on laboratory will follow where each attendee will have an opportunity to participate in the multiple phases of prosthesis fabrication.



**Workshop Lecture Instructor:** Dr. Natdhanai Chotprasert

**Hands-on for 6 hours:** Maximum of 20 students (*one instructor per one student*)

**Instructors:** Dr. Benjapote Yoteneungnit, Dr. M.L. Theerathavaj Srithavaj, Dr. Nithideth Somsanith, Dr. Sita Thaworanunta, Dr. Natdhanai Chotprasert, Dr. Arunee Tirasriwat, Dr. Ongart Puttipisitchet, Dr. Pokpong Amornvit, Dr. Watcharin Hovichitr, Dr. Ray Sone Hovijitra, Dr. Saketh Kethi Reddy, Dr. Michelle Rodeo Gae Uy, Dr. Go Yoshimura, Dr. Aayush Kharel, Dr. Binit Shrestha, Dr. Varanya Yanasarn, Dr. Nuttaporn Jangrod

**Head Technician:** Mr. Anun Wjitworawong

**Associate Technicians:** Mr. Preeda Wansook, Ms. Supreeya Taeng-on, Ms. Saengdeuan Sakaew, Mr. Samart Promyu

**Assistant Technician:** Miss Pornpatara Rochanakit, Mr. Amakorn Poommoon, Vattavee Kumbannarak, Mr. Sakchai Muangpool, Miss Paranya Khanphonoi

**Instructional Level:** lecture/Hands-on workshop

Our service will provide the DVD and CDs Materials and Computer Assisted Instructions Text materials free of charge from Mahidol University Faculty of Dentistry. The enrolled individual will have the opportunity to observe auricular prosthetics on patients both adhesive and extraoral implant retained type.

**Course Objective Outline:**

- Review Auricular anatomy, defect etiology and classification
- Basic to advanced prosthetic treatment planning and rehabilitation for auricular deformed patients
- To be able to select materials used for extraoral prosthesis fabrication
- Laboratory procedures
- To be able to learn technical aspects on silicone prosthesis fabrication
- Knowledge and experience sharing

Workshop instructors consist of the full-time instructors, residents, and prosthetic technicians in the Mahidol University Faculty of Dentistry Maxillofacial Prosthetic Service, which is the largest facility in South East Asia rehabilitating craniofacially deformed patients and providing, dental oncological care. Our Service also has state-of-the-art equipped facilities at both Phayathai and Salaya Campuses.

The premier facility at Salaya Campus is aptly named the International Training Center for Maxillofacial Rehabilitation. Our Service has a three-year training program accredited by The Ministry of Education of The Royal Thai Government. In addition, our Service was visited by the South East Asia Association for Dental Education and multiple institutions. It is also well-recognised by medical institutions in Thailand.

In total the Service consists of 5 full-time instructors, 9 part-time instructors, 10 prosthetic technicians, 22 dental assistants, 5 administrative staff, and 1 nurse. This amazing company of 65 full-time and 9 part-time team members is also augmented by multitudes of medical and healthcare specialists that are part of a comprehensive multifaceted Maxillofacial Rehabilitation Team. With our combined experience, patient load of more than 5,500 per year, and the wide range of patients that come through our doors, we welcome your input and you are sure to benefit enormously from your short time with us.

## INVITED SPEAKERS



### **John Beumer, DDS, MS**

Dr. Beumer received his dental degree from the University of California, San Francisco in 1967. He went on to complete postdoctoral training programs in Oral Medicine (UCSF, 1970) and Prosthodontics (UCLA, 1975). He has over 150 publications in the medical and dental literature including a book devoted to Maxillofacial Prosthetics and is the co-inventor of the UCLA abutment (with Wynn Hornberg CDT). Currently he is Distinguished Professor and Chair, Division of Advanced Prosthodontics, Biomaterials and Hospital Dentistry, and director of the residency program of Maxillofacial Prosthetics, UCLA School of Dentistry. He has received lifetime achievement awards from the American Academy of Maxillofacial Prosthetics, the American College of Prosthodontists, and the Greater New York Academy of Prosthodontics and an honorary degree from the University of Turin.



### **Mark Chambers, DMD, MS**

Dr. Chambers received his D.M.D. and M.S. degrees in Biological Sciences from the University of Louisville, in Louisville, Kentucky. He completed his training in combined Prosthodontics at the University of Louisville and a fellowship in Maxillofacial Prosthetics and Dental Oncology at The University of Texas M. D. Anderson Cancer Center (MDACC) where he also received an American Cancer Society Clinical Fellowship in Oncology.

Dr. Chambers is currently the Deputy Chief and Fellowship Coordinator in the Section of Oncologic Dentistry and the Director of Clinical Research and an Associate Professor in the Department of Head and Neck Surgery at MDACC. He is a member of numerous local, national, and international organizations, and serves on the AAMP Board of Directors. His current federal- and corporate-sponsored research activities include efficacy trials of pharmacological agents in managing and preventing radiation-induced mucositis, xerostomia, and osteoradionecrosis; drug delivery systems; alternative oral medicine; and maxillofacial biomaterials.



### **Betsy K. Davis, DDS**

Dr. Betsy K. Davis is an Associate Professor of Otolaryngology-Head and Neck Surgery in the College of Medicine at the Medical University of South Carolina (MUSC). She also is an Associate Professor of Oral & Maxillofacial Surgery in the College of Dental Medicine at MUSC, and Adjunct Professor with Clemson University. Dr. Davis is a cum laude graduate of Wofford College and received her D.M.D. degree from the Medical University of South Carolina. Dr. Davis pursued graduate training in Prosthodontics at the University of Iowa where she received her Certification and Master's degree in Prosthodontics. She joined the faculty at Ohio State University where she taught and practiced from 1989-1992. Davis completed her fellowship training in Maxillofacial Prosthetics at M.D. Anderson Cancer Center in Houston, Texas.



### **Neal Garrett, PhD**

Neal Garrett, PhD, is Professor of Advanced Prosthodontics, Biomaterials and Hospital Dentistry and Director of the Jane and Jerry Weintraub Center for Reconstructive Biotechnology at UCLA School of Dentistry, and has directed a dental research laboratory at the Department of Veterans Affairs Greater Los Angeles Healthcare System since 1989. He received his MA and PhD in Psychology from the University of Southern California. He is an Honorary Fellow of the Academy of Prosthodontics and received the Distinguished Scientist Award for Research in Prosthodontics and Implants from the International Association for Dental Research in 2008. His research has been supported by multiple grants from the National Institute of Dental and Craniofacial Research and/or Department of Veterans affairs since 1982, and he has established the functional efficacy of several different prosthodontic treatment modalities. He has authored over 100 scientific articles and abstracts, principally on the functional and psychological outcomes of prosthodontic treatment.



**Masaaki Goto, DDS, PhD**

Graduated from Dental Faculty of Kyusyu University, Fukuoka, Japan, 1977. Graduated from PhD course at the Department of Oral and Maxillofacial Surgery, Kyusyu University, 1981. Medical Staff at the Department of Oral and Maxillofacial Surgery, Saga Medical School from 1981 to 1986. Assistant Professor at the Department of Oral and Maxillofacial Surgery, Saga Medical School from 1986 to 2002. Chief Professor at the Department of Oral and Maxillofacial Surgery, Saga Medical School from 2002. Chair person of the committee of international cooperation of JSOMS. President of Japanese Academy of Maxillofacial Prosthetics, 2007-2008



**Mark Marunick, DDS, MS**

Dr. Marunick received his DDS from the University of Michigan in 1975. He received his MS in Prosthodontics from the University of Michigan in 1980 and completed a Residency in Maxillofacial Prosthetics at UCLA in 1981. In 1986, he accepted a full-time position in the Department of Otolaryngology, Head and Neck Surgery at Wayne State University School of Medicine where he is an Associate Professor. He is Chief of Dentistry at the Detroit Medical Center and is Director of Maxillofacial Prosthetics at the Barbara Ann Karmanos Comprehensive Cancer Center. He is a Consultant to the John Dingell VA Medical Center in Detroit and to the Henry Ford Health System, and is an Adjunct Clinical Professor in the Department of Biologic and Material Science, Division of Prosthodontics at the University of Michigan where he teaches Maxillofacial Prosthetics to the Prosthodontic Graduate Residents.



**Prasit Pavasant**

Dr. Prasit Pavasant completed his DDS at Chulalongkorn University, Bangkok, Thailand in 1986 and his PhD in Cell Biology at Georgetown University, USA in 1995. He is currently an Associated Professor, Department of Anatomy, Faculty of Dentistry, Director of Graduate Program in Oral Biology and Head of the Research Unit of Mineralized Tissue, Department of Anatomy, Faculty of Dentistry at Chulalongkorn University, Bangkok, Thailand.



**David J. Reisberg, DDS**

Dr. David Reisberg received his dental degree from Case Western Reserve University in 1977. He received a specialty certificate in Prosthodontics from Tufts University in Boston and one in Maxillofacial Prosthetics from The University of Chicago. He has been Director of the Maxillofacial Prosthetics Clinic at The University of Illinois Medical Center in Chicago since 1981. In 1998, he was named Medical Director of The Craniofacial Center there. He is on the Board of Directors of the American Academy of Maxillofacial Prosthetics and current president of Ameriface, an organization that supports people with facial differences. He is proud and honored to serve as president of the ISMR.



**Dennis Rohrer, PD Dr. med. et Dr. med. dent**

Dennis Rohrer qualified in both dentistry and medicine in Zurich between 1985 and 1990. He achieved a Special Degree in Maxillofacial Surgery in 1999 and is currently a Senior Consultant at the Cranio Facial Center Hirslanden (cfc) in Aarau, Switzerland. He is a member of numerous national and international organizations. He was awarded a PhD degree in 2005 at the University of Basel, Switzerland. He has had a number of special fellowships and has been a Research and Clinical Fellow in the Dept for Plastic Surgery at the Singapore General Hospital in 2000. He has extensive postgraduate education and experience in reconstructive maxillofacial surgery having held numerous residencies and consultant posts. He has published numerous articles on maxillofacial and reconstructive surgery.



**M.L. Theerathavaj Srithavaj, DDS**

Dr. M.L. Theerathavaj Srithavaj completed his D.D.S. degree from New York University College of Dentistry in 1994 where he continued his postdoctoral training program for Advanced Education in Prosthodontics, completed in 1996. He attended a fellowship in Maxillofacial Prosthetics at the Memorial Sloan-Kettering Cancer Center in New York City, in 1997. He was appointed Clinical Assistant Professor at New York University College of Dentistry in 1997. After several years in the USA, in 1998 he joined the staff at Mahidol University Faculty of Dentistry at the Department of Prosthodontics in Thailand. He also serves as Clinical Director of the Maxillofacial Prosthetics Clinic at the Phayathai Campus in Bangkok as well as the Clinical Director at the International Training Center for Maxillofacial Rehabilitation (ITC-Max) at the Mahidol University Salaya Campus in Nakorn Pathom Province in Thailand.



**Adrian W Sugar, FDSRCS(Eng, Ed) FDSRCPS MDhc Hon Fellow(UWIC)**

Consultant / Senior Lecturer in Cleft and Maxillofacial Surgery  
Morrison Hospital and Swansea University Medical School  
ABM University NHS Trust, Swansea SA6 6NL, Wales, UK

Adrian Sugar's main interests are craniofacial deformity and trauma, craniofacial and oral implants. He established in Wales in 1987 the first UK multidisciplinary team for the use of craniofacial implants and in 1994 the first UK team to carry out distraction osteogenesis in the head and neck. He is Director of the South Wales Cleft Unit and Training Director for OMFS in Wales. He has a special interest in the treatment of hemifacial microsomia and secondary cleft deformities as well as in the use of 3D planning technology. Adrian is an active lecturer internationally with AO, is Chair of the international AO Research Fund and sits on the International AO Specialty Board for Cranio-Maxillofacial Surgery. He chairs the UK NHS Cleft Development Group which oversees all cleft care in the UK.



**Pitt Supaphol**

Dr. Pitt Supaphol completed his PhD in Polymer Engineering at the University of Tennessee, Knoxville, USA in 1999. Since then he has received the SARIF Graduate Research Assistantship Award from the University of Tennessee, Knoxville, USA in 1999, Thailand's Young Scientist Award, Foundation for the Promotion of Science and Technology under the Patronage of H.M. the King, THAILAND in 2002, the Science and Technology Research Grant (11th), Thailand Toray Science Foundation, Thailand 2004, the Overseas Research Assistance, The Asahi Glass Foundation, JAPAN and Science and Technology Research Grant (12th), Thailand Toray Science Foundation, Thailand in 2005, TRF Research Scholar, The Thailand Research Fund (TRF), Thailand 2006-2009, and Outstanding Researcher, Chulalongkorn University, Thailand in 2006. Furthermore, he has 116 publications (including those accepted for publication) in peer-reviewed journals.



**John Wolfaardt, BDS, MDent. (Prosthodontics), PhD**

Dr. Wolfaardt is a Director of the Institute of Reconstructive Sciences in Medicine (iRSM) and is appointed as a Full Professor in the Faculty of Medicine and Dentistry, University of Alberta, Canada. His clinical and research interests are in the area of maxillofacial prosthetics with particular emphasis in the area of head and neck reconstruction, osseointegration and treatment outcomes. Dr Wolfaardt has led the development of the research program at COMPRU. His research interests involve treatment outcomes, digital technologies in head and neck reconstruction and biomechanics of osseointegrated implants. Dr Wolfaardt has a special interest in quality management and he led the quality initiative that enabled iRSM to register an ISO9000 quality system for the clinical and research aspects of osseointegration care. Dr Wolfaardt has published widely in refereed journals and lectured both nationally and internationally on maxillofacial prosthetics, osseointegration in head and neck reconstruction, challenges of introduction of advanced digital technology, knowledge work, teamwork and quality management. Dr Wolfaardt is elected to the Boards of the International Society of Maxillofacial Rehabilitation, the American Academy of Maxillofacial Prosthetics and the International College of Prosthodontists.

# LECTURE PRESENTATIONS



### 1

#### **Maxillofacial Rehabilitation: The Team Approach at UCLA**

**Beumer, J.**

**UCLA School of Dentistry**

**Division of Advanced Prosthodontics and**

**Weintraub Center for Reconstructive Biotechnology**

**Los Angeles, CA USA**

In times past, treatment of oral and facial cancers resulted in severe oral dysfunction and disfigurement, but today it is possible to restore almost all patients to near normal form and function enabling them to continue to have normal and productive lives. How has this come to happen? What has changed? In the 1980's technical improvements were made, for example the development of osseointegrated implants and free vascularized flaps, but in recent times the most significant improvements have been the result of improved collaboration between dental and medical researchers and clinicians. This presentation will focus on the specific issues important to achieving useful collaborations and outline some future challenges.

### 2

#### **Craniofacial Rehabilitation: Success and Failure Using the Team Approach**

**Srithavaj, M.L. T**

**Maxillofacial Prosthetic Service**

**Mahidol University Faculty of Dentistry**

**Bangkok, Thailand**

Rehabilitation of craniofacial deformities using prostheses has limited parameters to obtain optimal function, depending on the type of defect, adjunctive cancer therapy, the location and remaining or missing structures. In each specific case, a team approach must have effective communication to determine the extent of deformity and procedures involved. A cooperative and well-coordinated team will ensure the success of the craniofacial rehabilitation.

For the irradiated patient or patient with compromised disease, adhesive retained prostheses can be fabricated; some have functional or non-functional purposes depending on the size of the defect. The definitive outcome varies, especially for large extraoral defects, with heavy weight, that need intraoral prostheses as additional connections. Sometimes, it is also difficult for the surgeon to predict the size of the defect, in extensive cancer cases, and the prosthesis prognosis cannot be fully achieved as planned. However, certain facial deformities can use additional techniques to maintain the retention by means of anatomical undercuts, eyeglasses as well as facial adhesive materials.

For the auricular and orbital prostheses that are suitable for using osseointegrated implants for retention, the success or failure depends on the type of bone, original disease or syndromes, age of patient and other general health issues to have optimal osseointegration. To date, the number of patients rehabilitated with orbital or auricular prostheses totals 238 patients at our Service.

At present in our Maxillofacial Prosthetic Service, Faculty of Dentistry, Mahidol University, the number of orbital deformed patients totals 89, 77 of which are restored with adhesive retained prostheses and 12 restored with a total of 44 extraoral implants (Entific, Sweden). The number of cases of auricular deformed totals 149 patients, 103 of which are restored with adhesive retention and 35 restored with 85 extraoral implants (Entific, Sweden). The auricular group with extraoral implants has 100 percent success rate in terms of osseointegration; on the other hand, the orbital deformed group has a success rate of 88.6 percent (lost five implants).

The success of the extraoral implants to retain the prostheses should consider the following:

1. Implants remain osseointegrated
2. No soft tissue inflammation around the implant
3. Patient shows satisfaction by frequently wearing the prosthesis
4. The follow-up visits

The home care instruction in this group of patients is crucial to prevent tissue inflammation. Patient growth after extraoral implant placement changed multiple abutment heights. Revision of the soft tissues is another complicated procedure causing morbidity in patients wearing extraoral implant-retained prostheses.

### 3

#### **Use of the Dental Implants for Maxillofacial Rehabilitation**

**Goto M.**

**Saga Medical School**

**Dept. Oral and Maxillofacial Surgery**

**Saga, Japan**

**Purpose:** Early functional and cosmetic rehabilitation will play a great roll in the patient after maxillary or mandibular resection. We usually use dental implants to retain the maxillary prosthesis of the patient without abutment teeth. Implants are installed into the residual jaw bone or grafted bone. Epitek system developed by Dr. Farmand, Germany, is used for the retention of facial prosthesis. This system is able to be adapted to the thin bone after tumor resection. We will report our treatment procedures for maxillofacial rehabilitation using implants.

**Methods & Materials:** Development of image scanning devices like CT and laser scanner makes us possible to acquire precise maxillofacial morphological information of patient. CT data can provide us bone and soft tissue morphology of the face, and a stereolithography model can be fabricated with CT data. This skull model represents the shape of the bone in actual size and enables us to simulate surgery with actual instruments and materials that we use in the operation. We usually decide the locations of the dental implants using skull model, bend and weld the Epitek plates to adapt the surface of the skull model. Furthermore, we simulate the facial prosthesis using mirror image technique on the computer graphics. We can perform the precise operation to install the implants according to the simulation and preparation.

**Results:** We have used the dental implants for the patients resected jaw bones since 1988. Total success rate is 92.9%, in maxillary bone 86.6% lower than in mandible 97.3%, and in irradiated bone 92.2% lower than in non-irradiated bone 93.7%. The facial prostheses retained Epitek system has passed 10 years in the first case of our clinic. The facial prostheses must be re-fabricated in 5 years because of the change of color. However Epitek implants continue to retain the facial prostheses.

**Conclusion:** Dental implants have been recognized as predictable dental materials and are very useful to perform high quality of life in the patients after jaw bone resections.

### 4

#### **Implant Assisted Maxillofacial Prostheses Using Magnetic Attachments**

**Ozawa, S.\*, Amano, Y., Miyamae, S., Yoshioka, F., Tanaka, Y.**

**Aichi-Gakuin University**

**Department Of Removable Prosthodontics**

**Nagoya, Aichi, Japan**

**Purpose:** It is desirable for a maxillofacial prosthesis to gain additional retention and stability using osseointegrated implants. In clinical situation, however, it is not always feasible for installing implants to the residual jaws, and also it should avoid applying non axial forces to the implants. We have applied magnets for stud attachments over 20 years with successful clinical results. The purpose of this study is to introduce magnetic attachments to implant assisted maxillofacial prostheses.

**Methods & Materials:** A prototype magnetic attachment for implant fixture was developed in 1995. Clinical trial of overdenture for normal edentulous mandible was started using the magnetic attachment. The attachments were installed on the fixture individually and the implants were not splinted. After 10 and more years clinical evaluations were performed using periotest and panoramic X-rays. After the trial an implant assisted overdenture for acquired maxilla defect were fabricated with four implant abutments.

**Results:** After 10 years of the clinical trial, 5 out 10 cases were evaluated for the magnetic attachment. All implants and abutments were functioned very well without any symptoms. Panoramic X-ray examinations revealed that tissue around the implant were maintained with minimum bone resorption. Magnetic assemblis which were installed on the overdenture were subjected to wearing, and half of them were replaced due to loss of attractive forces. A functional evaluation of the obturator prosthesis demonstrated that significant increase of biting forces and masticatory ability.

**Conclusion:** Long term success of implant supported magnetic attachment for normal edenturous jaw encouraged us to apply for maxillofacial patients. Appling magnetic attachment to maxillofacial prosthesis is effective not only for gaining retention and stability, but also ease of maintenance and lower the fabrication costs.

## 5

### **Challenges To Development Of Maxillofacial Prosthodontics In A Resource Constrained Country- India**

**Srinivasan B\*,Van Oort R.P.\*\* , Reintsema H.\*\***

**\* Maxillofacial Prosthodontist, Ruby Hall Cancer Centre**

**D.Y.Patil Dental College, Pune, India**

**\*\* Maxillofacial Prosthodontist, Universitair Medisch Centrum,**

**Groningen, The Netherlands**

**Purpose:** Maxillofacial Rehabilitation following Head-Neck ablative surgery is today a norm in many of the developed countries. It is not uncommon to find the surgeon and prosthodontist working in tandem. The end result is often a patient who is not only disease free but also adequately reconstructed and rehabilitated, ensuring his reintegration into society.

**Methods & Materials:** However, similar patients in the Indian sub continent are not so fortunate and often go unrehabilitated. The incidence and prevalence of maxillofacial cancer in India is much higher than that in the resourceful countries, yet the opportunities to rehabilitation are scant. Maxillofacial Prosthodontists in India have to combat poor surgeon and patient awareness and hence compliance, inadequate training and laboratory support and insufficient access to materials. The requisites of silicones for facial prostheses for the developing world are different. Currently, available silicones and facial prosthetic materials are often expensive and have to stand the test of high variations in climatic conditions, especially in a tropical country like India. Knowledge of silicone chemistry and behaviour could help us using alternative materials with similar properties.

**Results:** Techniques need to be modified which are more economical and hence feasible.

**Conclusion:** This presentation highlights the challenges facing maxillofacial prosthodontists and patient care in India and the attempts to overcome them.

## 6

### **Patients With Reconstruction Of Craniofacial Or Intraoral Defects At M.D. Faculty Of Dentistry ,Chulalongkorn University : Measure Quality Of Life Implee,S.**

**Faculty Of Dentistry ,Chulalongkorn University , Thailand**

**Maxillofacial Prosthesis Department**

**Bangkok, Thailand**

**Purpose:** patient with reconstruction of craniofacial or intraoral defects experience a profound impact on their Quality of life (QOL). This impact on is influenced by the patients medical conditions and the treatment interventions. The treatment of head and neck pathology has profound and long-term effects on patient]s overall health, appearance, speech, communicate, eat and swallow. Quality of life is measure that encompasses many of these variables and can be used as an outcome measure. The purpose of this study was investigate the relationship between Quality of life(QOL) Pre-Treatment and Post-Treatment Maxillofacial Prosthesis.

**Methods & Materials:** This study used a slightly modified Mayo Medical School Maxillofacial Prosthesis Quality of life Questionnaire included Craniofacial and intraoral defects between Pre and Post-treatment. A Maxillofacial Prosthesis QOL Questionnaire with a visual analog scale with 10 question items concerning prosthesis and/or eating problems, the present state health ,psychological and physical well being ,life satisfaction. A Quality of life Questionnaire was delivered to 30 extraoral prosthesis patients and 30 intraoral prosthetics patients to elucidate their degree of satisfaction with several parameter, including prosthetic use, care, quality, durability, longevity and function. In addition, issues relating to self-image, socialization frequency, and income-earning ability before and after rehabilitation were survey.

**Results:** The view of 60 respondents demonstrated a general satisfaction with their prostheses. A majority believed that their prostheses fit comfortably, and most were satisfied with cosmetic. In addition, a preponderance of respondents reported no substantial alteration in social activity after rehabilitation.

**Conclusion:** The survey revealed a high degree of patient satisfaction with maxillofacial prostheses.

## 7

### Rapid Prototyping In Maxillofacial Prosthetics

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**Purpose:** The purpose of the study is to compare the ease of fabrication, accuracy, surface texture, potential advantages and disadvantages of rapid prototyping technology (RP machine and vacuum casting methods) and conventional methods in the fabrication of silicone auricular prostheses.

**Methods & Materials:** A quasi-experimental study conducted on 5 patients in an age group of 25 to 35 years who had partial / total auricectomy defects. Prostheses were fabricated through RP machine (Spectrum 510) and vacuum casting technique using 3D CT reconstructed images and also by conventional method. All the three methods were standardized before fabrication. Each prosthesis was evaluated for accuracy of dimensions, surface texture and marginal adaptation by 15 randomly assigned independent observers. Self rating by the patients and an assessment of ease of fabrication were also done. The data obtained were compared and evaluated using Chi-square test and t test.

**Results:** Patient acceptance and accuracy in dimensions of the prosthesis yielded superior scores in case of RP machine & vacuum casting technology. Time for fabrication and material consumption showed statistically significant ( $p=0.001$ ) advantage for the rapid prototyping over conventional methods. Though marginal adaptation and surface texture showed higher scores for RPT it was not statistically significant.

**Conclusion:** The study demonstrates the definite advantage of a unique method for the fabrication of silicon prosthesis using rapid prototyping technology for maxillofacial rehabilitation.

## 8

### Quality Of Life Assesement: Rehabilitated Intraoral Cancer Patients In Kolkata, India

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**Purpose:** Quality of Life is subjective. Everyone has their idea of what Qol of head & neck cancer patient is and probably each person is correct. The aim of this study was to understand what the head & neck cancer patients of Kolkata, West Bengal in India with treated intraoral cancer defect thought about their QOL. The objective of this pilot study is to conduct a questionnaire based survey in Kolkata of such patients of intraoral maxillofacial defect.

**Methods & Materials:** 16 (10male & 6female) randomly selected subjects with treated intraoral cancer were presented with a questionnaire similar to the one used in The Milton J.Dance,Jr Head & Neck Rehabilitation Center, Baltimore QOL survey & asked to answer questions .

**Results:** 8 out of 16 subjects felt that their general health was not as good as before cancer & 5 said that this general health was about the same as before while 3 felt that they had absolutely fine general health. According to 10 subjects speech was extremely important part of their QOL, 6 felt was very important as well.

**Conclusion:** For the patients of treated intaoral cancer of Kolkata it was most important to be able to speak clearly & communicate whereas appearance & chewing was secondary.

## 9

### **Surgical Aspects For Auricular Implant In Congenital Deformed Patient At Mahidol University**

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**Purpose:** To describe and report the anatomical sites when placing extraoral implant for congenital auricular deformed patients for a successful both surgical and restorative treatment for patients

**Methods & Materials:** Seventeen patients with congenital auricular deformed was evaluated. All patients were diagnosed as Hemifacial Microsomia and referred from Maxillofacial Prosthetic Service. Extraoral implants were placed for either unilateral or bilaterally and subsequently restored with implant-supported auricular prosthesis. The total of 60 implants were placed. Anatomical limitation of the positions of implant and bone thickness in this group were evaluated and the site for each extraoral implant were varied depending on the parameter of the bone availability. Soft tissue around the implant also was evaluated.

**Results:** All of the extraoral implants were successfully osseointegrated (100%). However, due to the anatomical limitation, angulations and distance between implant exhibited some problems for restorative procedure of the auricular prosthesis. The preparation of the site is crucial including skin grafting, location selection of implant placement, and consideration of treatment for particular case.

**Conclusion:** Even though, the parameter of the extraoral implants depends on the anatomical bone sites, the diagnosis of the congenital malformation, soft tissue reaction to obtain the best possible treatment planning, the team must have an interdisciplinary approach to have a successful surgical and restorative for auricular prosthesis treatment. This presentation will reveal the recommendation and surgical experience and treatment planning that our Mahidol University has done for the past 8 years.  
KEY WORD: Extraoral implant, Surgical Treatment, Hemifacial Microsomia, Auricular defect

## 10

### **Reconstruction of Acquired Maxillary and Mandibular Defects using Prefabricated Fibular Flaps**

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The reconstruction of acquired maxillary and mandibular defects is a demanding procedure. To fulfill the patient's request there is need for a meticulous preoperative planning. Adequate esthetical outcome, satisfactory functional rehabilitation and reduced number of surgeries should be the aim of treatment.

The use of free vascularized free flaps for the reconstruction of extended defects is nowadays the standard procedure. Correct positioning of the flap, adequate reconstruction of soft tissue, functional rehabilitation of the occlusion are the main tasks that decide about success and about the level of quality of life for the patient. Based on a 3-D model of the patient's skull the desired shape of the fibula, the position of the dental implants, the extension of the suprastructure and the amount of needed soft tissue can be determined. In first procedure implants are placed in the fibula and a vestibuloplasty is performed simultaneously at the lower limb. In the second stage the reconstruction of the defect is carried out using the preplanned reconstructed occlusion as a guide for orientation.

In a series of cases the development, the technical planning, the surgical steps and the results will be presented.

## 11

### **Maxillary Reconstruction: Surgical and Prosthetic Considerations**

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Maxillary reconstruction is a challenging endeavor in head and neck surgery. Maxillary defects often result in functional deficits of speech intelligibility, swallowing and mastication which makes reconstruction difficult and controversial. Several methods have been proposed for reconstruction depending upon the resultant bony and soft tissue defect.

Prosthetic obturation seeks to seal the nasal cavity from the oral cavity. However, failure to completely seal off the two cavities often results in problems with leakage of food and liquids through the nose and hypernasal speech. Patients often complain of the maintenance associated with a prosthesis and malodor as well. Surgical reconstruction, on the other hand, may provide for a complete separation of the oral and nasal cavities. However, the use of bulky flaps may limit orodental rehabilitation. It is clear that either of these modalities may impact a patient's quality of life and functional outcome.

The purpose of this presentation is to outline the surgical and prosthetic considerations of maxillary reconstruction and the role of each modality in reconstruction.

## 12

### **Rehabilitation of Tongue/Mandible Defects: Surgical and Prosthetic Considerations**

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Patients with tongue/mandible defects frequently experience alterations in speech, mastication, swallowing, salivary control, and appearance. Advances in surgical reconstruction and prosthodontic techniques have diminished some of these disabilities, but elimination and resolution for full functional rehabilitation has remained elusive for many of these patients.

The principles of oral competency and mastication will be reviewed to elucidate the problems and challenges encountered when restoring patients with these defects with or without reconstruction or failed reconstruction. Knowledge of these principles will guide the development of realistic treatment plans and expectations for functional and cosmetic outcomes.

The application of sound prosthodontic principles in light of these presenting deficits is essential for successful rehabilitation. This presentation will emphasize these principles in treating these patients.

## 13

### **Reconstruction Of Total Maxillectomy Patient with Fibular Free Flap : A Case Report**

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**Purpose:** Most of the patients who acquired maxillary defects can function comfortably with maxillary obturator. However, with total maxillectomy patients, retention from teeth and skin graft can not be achieved thus maxillary obturator could not be worn with out additional retention from zygoma implants in these patients. Faculty of dentistry, Chulalongkorn university develop new way to approach these patient by reconstruction total maxilla with fibular free flap and restored their function and esthetics with fixed prosthetics.

**Materials and methods:** a 56 year old Thai male who has undergone partial maxillectomy 8 years ago and since then live with maxillary obturator had lost his last tooth on maxilla from periodontal disease and heavily cantilever from obturator was admitted to Faculty of Dentistry, Chulalongkorn university for reconstruction of total maxilla. Fibular free flap was prepared with pre-operation angiogram to test for quality of blood vessels. Free flap was placed and fixed with zygomatic arch and nasal spine with plates and screws. Oro-nasal opening was closed with free flap. After 6 months of bone healing, CT scan was employed to determine quality of bone graft for implant placement. 6 Astra tech implants with 3.5 and 4.5 diameters were placed. Fixed prosthesis was fabricated to achieve function and esthetic of this patient.

**Result:** Patient adapted well with bone graft and dental implant. He received 12 unit bridges over dental implants.

**Conclusion:** Surgical approach to close the hard palate defects is recommended in total maxillectomy patients. The quality of the function obtained with this reconstruction is very promising.

## 14

### The Effect Of Pre-Prosthetic Surgery On Prosthetic Restoration Of Maxillary Defect

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**Purpose:** After maxillectomy, prosthetic restoration of the resulting defect is essential step because it signals the beginning of patients rehabilitation . An obturator used to restore the defect should be comfortable, restore adequate speech, deglutition, and mastication, and is acceptable cosmetically, success will depend on the size and location of the defect and the quantity and integrity of the remaining structures, in addition to Pre-prosthetic surgical preparation of defect site. Preoperative cooperation between Prosthodontist and surgeon may allow a resultant defect that is more amenable to obturation such as retaining the premaxilla or the tuberosity on the defect side and maintaining the alveolar bone adjacent to the defect of an abutment tooth This study was carried out to evaluate the effect of Pre-prosthetic surgical alterations during maxillectomy on the enhancement of the prosthetic prognoses as part of rehabilitation oral cancer patient.

**Methods & Materials:** This study was carried out on 24 cancer patients[(13 male-11femal)Their age ranged from 33 to 72 mean age years)] treated at National Cancer Institute, Cairo university between 2003- 2007 whom under went immediate prosthetic reconstruction after maxillectomy surgery to remove malignant tumor as apart of cancer treatment. Patients were divided into groups according to extension of the lesion to orbital floor:

Group 1: Limited resection of maxilla without resection of orbital floor .

Group 11: Resection of maxilla with resection of orbital floor with preservation of the glob.

**Results:** Outcome variables measured included facial contour and aesthetic results, speech understandability, ability to eat solid foods, oronasal separation, socializing outside the home, and return-to-work status. Flap success, donor site morbidity, and orbital complications were also studied.

**Conclusion:** This study concluded that corner stone to improve the prosthetic restoration of maxillary defect resulting maxillary resection as part treatment of maxillofacial tumor depend on the close cooperation between prosthodontist and surgeon, and also can be achieved by combination of surgical and prosthetic technique which can be controlled pre-prosthetic surgery during maxillectomy.

## 15

### What Is The Most Important Predictor Affecting Masticatory Function Among Mandibulectomy And Glossectomy Patients?

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**Purpose:** After surgical resection, patients are anxious about their masticatory function. Thus prosthodontists need

to explain about predictors that affect masticatory function and how a prosthesis can improve rehabilitation of this function. However it is difficult to predict masticatory function before prosthetic treatment among mandibulectomy and glossectomy patients. We aimed to reveal a numerical formula that could predict the food mixing ability of the masticatory function among mandibulectomy and glossectomy patients.

**Methods & Materials:** The subjects were 20 patients who had undergone mandibulectomy and/or glossectomy. Five predictors were assessed; whether mandibulectomy or not, whether continuity of mandibular bone or not, the number of residual mandibular teeth and occluding units, and tongue mobility, which was evaluated with a tongue mobility test. As well, the mixing ability index (MAI) was evaluated with a mixing ability test. A multi-regression analysis was used to examine these five predictors affecting MAI with prosthetic treatment.

**Results:** The regression equation we determined was as follows:  $MAI = -1.12 + -0.38(\text{whether mandibulectomy or not}) + 0.30(\text{whether continuity of mandibular bone or not}) + 0.06(\text{number of the residual mandibular teeth}) + 0.18(\text{occluding units}) + 0.02(\text{tongue mobility score})$ .  $R^2$  was 0.83 and adjusted  $R^2$  was 0.77 ( $p < 0.001$ ).

**Conclusion:** The regression equation was calculated from five predictors, whether mandibulectomy or not, whether there was continuity of the mandibular bone or not, the number of the residual mandibular teeth and occluding units and the tongue mobility score. These five predictors could predict MAI.

## 16

### Assessment Of Vascularity In Irradiated And Non-Irradiated Alveolar Bone By Laser Doppler Flowmetry

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**Purpose: A. Animal study** The purpose of the animal study was to confirm that Laser Doppler Flowmetry (LDF) is a reproducible method for assessing maxillary and mandibular alveolar bone vascularity and that maxillary and mandibular alveolar bone vascularity is less in irradiated bone when compared to non-irradiated bone. All maxillary and mandibular premolars and molars of 6 Göttingen minipigs were extracted. After a 3-months healing period, 3 minipigs received irradiation at a total dose of 24 Gy. At 3 months after irradiation, 5 holes were drilled in the residual alveolar ridge of each edentulous site of all minipigs. Local microvascular blood flow around all 120 holes was recorded by LDF, prior to implant placement. In 1 irradiated and 1 non-irradiated minipig, an additional hole was drilled in the right edentulous maxillary site in order to be able to perform repeated LDF recordings. The alveolar bone appeared less vascularized in irradiated than in non-irradiated minipigs. The effect of radiation showed to be more pronounced in the mandible than in the maxilla. LDF was demonstrated to be a reproducible method for assessing alveolar bone vascularity.

**Methods & Materials: B Clinical study** To reduce the risk of osteoradionecrosis due to a surgical intervention, such as implant insertion, and to raise implant success rates in irradiated patients, assessing a minimum vascularity level facilitating reliable implant placement is necessary. Normal values of vascularity of the various alveolar sites in humans have to be measured to come to a standard for bone vascularity. These values may not only vary from person to person, but may also be depending on the individual amount of local alveolar bone. The symphyseal bone vascularity of twenty edentulous patients was measured. The results presented in this study are clarifying that LDF can be used for measuring mandibular symphyseal bone vascularity at implant sites during implant insertion. Further research validating LDF's use in human beings, especially in those who have undergone radiation therapy for head and neck cancer is necessary.

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## 17

### **Interarch Fixation Utilizing Mini Dental Implants For Mandibulectomy And Fibula Free Flap Reconstructive Surgery**

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**Purpose:** Mandibular defects following neoplasm resection cause severe alterations in morphology. These alterations can be reconstructed with the use of microvascularized free flaps. Function and cosmesis can be returned nearly to a pre-surgical level provided the reconstructive team has a stable foundation on which to set the flap. Edentulous patients pose a challenge in this regard. Osseointegrated implants placed prior to the ablative surgery can be utilized to aid in retention of a fixation prosthesis thus transforming the edentulous into a pseudo-dentate patient. The result is a more stable foundation for the reconstructive team to inset the flap and provide for an improved result. The following clinical report presents a fixation procedure using mini dental implants to aid in alignment for a completely edentulous patient for fibula free flap surgery.

**Methods & Materials:** A 64-year-old male who is completely edentulous with a diagnosis of recurrent squamous cell carcinoma of the gingiva of the left mandible presents prior to a left segmental mandibulectomy and fibula free flap reconstruction. Duplicates of the patient's complete dentures were made and arch bars were attached to the dentures. Mini implants were placed in the maxilla and mandible prior to the ablative surgery and the duplicate maxillary and mandibular implant overdentures were used to align and fixate the edentulous mandible.

**Results:** This provided a stable occlusal relationship and guidance for the Plastic and Reconstructive team to insert the fibula flap.

**Conclusion:** Mini dental implants offer a quick and efficient way to stabilize an interarch fixation device during fibula free flap reconstruction of an edentulous patient undergoing segmental mandibulectomy

## 18

### **Survival Rate Of Endosseous Implants Using A Cad-Cam Immediate Loading Treatment Protocol: A Series Of 50 Implants**

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**Singapore, Republic Of Singapore**

**Purpose:** The purpose of this case series was to report on the survival rate of functional rehabilitation of edentulous jaws using the "Teeth-in-an-hour" treatment protocol.

**Methods & Materials:** 8 patients (5 females and 3 males) with at least one fully edentulous jaw were included in this clinical series. Immediately-loaded, implant-supported, fixed complete denture rehabilitation using Procera™ "Teeth-in-an-hour™" planning software and CAD-CAM-guided, pre-fabricated definitive implant prostheses were completed for all the patients. 5 to 7 implants were placed in each edentulous arch. One individual was simultaneously treated in the maxilla and the mandible. A total of 9 fully edentulous arches were rehabilitated. All cases were completed between January 2007 and January 2008. A total of 50 Tiunite surface implants were placed.

**Results:** One implant was removed due to soft tissue problem. One patient required the fabrication of a new definitive prosthesis in full-ceramic material. Survival rate of the implants was 98%.

**Conclusion:** Implant survival rate in this protocol was comparable to the conventional protocol over a one year period. Prosthodontic complication was rare.

## 19

### **Current Overview of Cleft/Craniofacial Care**

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At one time, the prosthodontist played a major role in the management of patients with clefts. Extensive dental restorations and speech aid prostheses were commonplace. With advances in surgery and orthodontic care, the role of the prosthodontist has diminished. Still, there are valuable contributions that the prosthodontist may make as a member of the cleft team.

This presentation will provide an overview of prosthodontic care for patients with cleft. Included will be presurgical infant appliances, speech aid prostheses, and methods for tooth replacement; both interim and definitive. Emphasis will be placed on the importance of the team approach to cleft care.

## 20

### **Salivary Function Following Intensity Modulated Radiation Therapy to Reduce Parotid Dose**

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The standard radiation for advanced oropharyngeal tumors typically involves administering a high radiation dose to the major salivary glands bilaterally. In most cases this causes a marked reduction in salivary output. Xerostomia is the most prevalent late side effect of radiation for head and neck malignancies and is cited by patients as the major cause of decreased quality of life. In addition to its effects on subjective well-being, decreased saliva output causes alterations in speech and taste, decreased oral wound healing, difficulties with mastication and deglutition that create secondary nutritional deficiencies, and proliferation of caries forming organisms.

In recent years, conformal radiation techniques have evolved which may allow irradiation of targets in the head and neck defined on planning CT scans, while sparing substantial portion of the major salivary glands. These techniques include "standard" conformal radiotherapy using beams-eye-views, static segmental intensity modulation, and dynamic intensity modulation techniques (*IMRT*). It has been demonstrated that using these techniques, adequate irradiation of the targets while sparing major salivary glands is feasible in patients with head and neck cancer. Early clinical experience has demonstrated substantial sparing of saliva flows following radiation and suggests an improvement of tumor control and of xerostomia, compared with patients receiving standard radiation techniques.

This presentation will demonstrate the salivary flow rates of patients with oropharyngeal cancer treated with IMRT techniques (major salivary gland sparing) as a single center experience (The University of Texas M. D. Anderson Cancer Center).

## 21

### **Differentiation of Dental Pulp Stem Cells on Polycaprolactone (PCL)/Hydroxyapatite (HAp) Scaffold**

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Scaffolds of polycaprolactone (PCL)/hydroxyapatite (HAp) were prepared by solvent-casting and solute-leaching techniques. Sucrose, as the porogen, was used to generate an interconnected porous structure. The average diameters

of the pores being in the range of 400-500  $\mu\text{m}$ , with the interconnectivity of the pores being found to increase with an increase in the amount of sucrose. However, the increased in the pore interconnectivity had an adverse effect on the mechanical properties of the scaffolds. The incorporation of HAp particles caused the scaffolds to be more rigid. Further treatment of the scaffolds with an aqueous solution of NaOH increased the hydrophilicity of the scaffolds, as evidenced by the observed increase in the water uptake. The potential for actual use of the scaffolds for bone tissue regeneration was first evaluated with mouse pre-osteoblastic cells (MC3T3-E1), in which the cells spread well over the scaffold surface.

The ability of PCL/HAp scaffold for supporting dental pulp stem cells (DPSC) differentiation was evaluated. DPSC were established from deciduous pulp tissue and the stem cells property of DPSC was confirmed by STRO-1 immunostaining. DPSC were seeded on the scaffold and cultured in the presence of ascorbic acid and organic phosphate up to 3 weeks. The expression of dentin matrix protein (DMP)-1 and osteocalcin (OC) were examined by reverse transcription polymerase chain reaction (RT-PCR). Alizarin red S staining was performed to evaluate the calcium deposition. For in vivo analysis, scaffolds containing DPSC cells were implanted subcutaneously in nude mice and the amount of bone formation was determined histomorphometrically. The results indicated that the expression of both DMP-1 and OC by DPSC seeded on the scaffold increased as early as day 3 when compared with the control culture. The staining of calcium was more profound in DPSC growing on the scaffold than that of the control at day 21. Bone formation was observed at the site of transplanted scaffold containing DPSC. Therefore, using DPSC as a source of osteogenic cells in combination with PCL/HAp scaffold could be one of an interesting choice for bone tissue engineering.

## 22

### Three Monosyllables For Standard Words In Nasometer Test: Applied To Evaluate Dento-Maxillary Prosthesis

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**Purpose:** The purpose of this study was to establish an evaluation method using a Nasometer, with several monosyllabic test words, to reveal the efficiency of dento-maxillary prostheses without limitations due to language or ability to read.

**Methods & Materials:** 20 normal Japanese and 20 international adults, were asked to read 7 monosyllables, (5 vowels and 2 combined vowels, /a/, /i/, /u/, /e/, /o/, /am/, /aj/), 6 times each and 12 Japanese maxillectomy patients were asked to read only 3 monosyllables (/a/, /am/, /aj/) 10 times each. The "Nasalance Score" was calculated using a Nasometer (Nasometer II, model 6400 KayPENTAX, Lincoln Park, NJ, USA). The coefficient of variation (CV) was used to evaluate each monosyllable that not exceeds 0.33 and results from those groups were compared by ANOVA.

**Results:** Three monosyllables /a/, /am/, /aj/ of all three groups produced nasalance Scores with CVs of less than 0.33. In the Japanese group, these monosyllables produced scores of 0.27, 0.23 and 0.32, respectively, while in the international group they produced scores of 0.32, 0.18 and 0.33 respectively and in the Japanese maxillectomy patients group they produced scores of 0.28, 0.09, 0.29. respectively. There is significant difference in all pairs of monosyllables when compared group1 to group 2, and group1 to group 3 ( $p < 0.05$ ).

**Conclusion:** Using a Nasometer, these three monosyllables, /a/, /am/ and /aj/, could be used as standard test words for the primary evaluation of dento-maxillary prostheses, especially of maxillary obturators. It seems to be better that each individual language should have its own mean nasalance scores in each monosyllable to be the standard value. However, further clinical studies are required to clarify the efficiency of these three monosyllables.

## 23

### **Oral Care Protocol Combined With Lasertherapy Prevents Oral Complications Induced By Head & Neck Cancer Treatment**

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**Purpose:** Radiotherapy on Head & Neck (HN) fields often leads to oral mucositis (OM). The purpose of this study was to assess the effects of an Oral Care Protocol (OCP) including Low Laser Energy (LEL) and intra oral devices on the rate of treatment-induced oral complications caused by HN Cancer local treatment.

**Methods & Materials:** Between January 2004 and March 2008, 46 patients received Intensity-Modulated Radiation Therapy (IMRT) on HN fields for HN malignancies at Albert Einstein Hospital, Sao Paulo, Brazil, in combination with an experimental OCP: 23 patients were treated by exclusive IMRT (G1) and 23 received IMRT combined with chemotherapy (G2).The total radiation dose ranged from 35 to 70 GY, with mean single daily fractions of 2,02 Gy. All 46 patients were included in our OCP and were prospectively evaluated for OM and patient-reported outcomes. The OCP consisted of routine oral hygiene care and an LEL protocol (prophylactic and curative).Symptom check-list, including measures of pain, saliva quality, dysphagia, and ability to speech, and oral examination were performed once weekly. Symptoms were scored from 0 to 10 (10=worst symptom) and OM was graded according WHO. Summary statistics were used to describe the results.

**Results:** The median radiation dose delivered per patient was 60 Gy (range: 35-70). At the 60 Gy the proportion of patients with any OM was 5(10,86%) and OM of grade 1 – 4 were as follows: 13( 28,26%), 26(56,52%),2 (4,34%),and 0(0%) respectively. In exploratory analysis, no statistically significant differences were found between groups G1 and G2. Feeding tube was required for OM by only 1 patient. The average percentage of weight loss during treatment was 4, 9.

**Conclusion:** Our study showed that a protocol with intensive patient monitoring, using LEL, comprises a promising supportive therapy to reduce acute complications from HN cancer treatment. Randomized trials are warranted to better define its role on patient quality of life.

## 24

### **New Method For Standardized 3-D Vocal Tract Reconstruction By Using Diagnostic Ct Images**

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**Purpose:** Accurate vocal tract models of head-and-neck cancer patients are expected to help investigation of their speech disorder and prosthetic rehabilitation. The purpose of this study is to establish a new standardized method for reconstructing three-dimensional (3-D) vocal tract models by using the X-ray computed tomographic (CT) images that were already taken for post-operative diagnosis. Especially we focused on determination of threshold for binary conversion that was generally dependent on operator's subjective judgment.

**Methods & Materials:** Five patients' diagnostic CT images were obtained after the surgery. Each patient's minimum settings of Hounsfield number of buccal fat-pad (BFP) were measured, because fat tissue's Hounsfield number is the lowest in human body. Thresholds were set every 50 H.U.s from bottom line of BFP to -1024, the images were

converted binary, and evaluated. The optimum threshold between soft tissue and air was determined performed nonlinear multiple regression analyses. The vocal tract models were reconstructed.

**Results:** The five patients' minimum settings of Hounsfield number of BFP were obtained from their CT images. From the nonlinear multiple regression analyses, the optimum threshold was determined as minus 150 H.U. from each patient's minimum settings of Hounsfield number of BFP. By using this new method, determination of threshold for binary conversion was standardized. The patients' solid models of the vocal tracts were successfully reconstructed.

**Conclusion:** Using our new method, 3-D vocal tract models were successfully reconstructed. These models make possible many things. The doctor can simulate the change of patient's speech following the surgical resection and can give the information to the patient about the level of speech impairment. And addition, the maxillofacial prosthodontist can simulate and determine the optimal form of the prosthesis. All above can be done before the surgical operation.

## 25

### **Functional Outcomes In Head And Neck Cancer Patients Treated With Chemoradiationtherapy (Crt): A Systematic Review**

**Van Der Molen, L.\*, Van Rossum, M.A., Burkhead, L.M., Smeele, L.E., Rasch, C.R.N., Hilgers, F.J.M.**

**Netherlands Cancer Institute**

**Department Of Head And Neck Oncology And Surgery**

**Amsterdam, The Netherlands**

**Purpose:** Organ preservation with chemoradiationtherapy (CRT) has become an accepted treatment modality in advanced head and neck cancer. Unfortunately, organ preservation is not synonymous with function preservation. The aim of this review was to assess the effects of the disease and CRT on functions such as mouth opening (trismus) in head and neck cancer patients. The second aim was to search for (evidence-based) techniques/strategies which could alleviate or rehabilitate the loss of function(s) associated with CRT.

**Methods & Materials:** Two databases were searched (time-period January 1997 to August 2007) for the terms head and neck cancer and CRT. One of the functional outcomes searched was trismus. In total 15 relevant articles were identified that met the inclusion criteria: N>10; tumour location in the oral cavity, nasopharynx, oropharynx, hypopharynx or larynx; pre and post measurements mentioned; measuring the outcomes dysphagia, trismus, quality of life, nutrition or pain.

**Results:** The majority of the studies that met the criteria focused on the outcomes swallowing, quality of life, and nutrition. Two studies reported on the outcome pain, and no paper included reported on the outcome trismus. Only one paper reported on the outcome trismus but this paper did not meet the inclusion criteria N>10. Only two papers mentioned rehabilitation options, but not on trismus and specific information was lacking.

**Conclusion:** Data on the effects of trismus after CRT is lacking, and in view of the more pronounced side effects of CRT in comparison to RT alone, more reports would have been expected. Dijkstra et al [2004] documented that the effects of therapeutic interventions of trismus are hardly investigated and evidence supporting prevention and treatment programs is generally not provided. Further long-term research is essential to determine the effects of known and newly developed rehabilitation measures.

## 26

### **Effects Of Sodium Bicarbonate Rinses On Dental Plaque Ph And Selective Oral Micro-Organisms In Radiated Head And Neck Cancer Patients**

**Kharel A, Srithavaj T, Thaweboon S, Choonharuangedej SMahidol University Faculty Of DentistryMaxillofacial Prosthetics And RehabilitationBangkok, Thailand**

**Purpose:** The consequence of radiation therapy to head and neck regions causes decreased salivary flow with subsequent reduction in the buffering capacity and alteration of oral microflora. This results in an increased risk of developing radiation-induced caries. The purpose of this study was to investigate the changes in selective cariogenic

microflora and dental plaque pH between subjects who received radiation therapy and normal controls following 1M sodium bicarbonate rinses.

**Methods & Materials:** Dental plaque pH measurements were made at baseline and after 10, 30 and 60 minutes following a sucrose rinse. Culture was carried out to assess levels of Mutans streptococci, Lactobacilli and total bacterial count. Each subject was given distilled water and sodium bicarbonate rinses for a period of two weeks each. Following this, pH measurements and bacterial culture were repeated.

**Results:** The results showed no significant difference in the plaque pH profile after using sodium bicarbonate rinses in both irradiated and non-irradiated subjects. There was a significant difference in Lactobacilli level between the control and experimental groups for all the phases ( $p < 0.05$ ). Increased Lactobacilli levels were found in irradiated subjects following sodium bicarbonate rinses.

**Conclusion:** The baseline plaque pH in irradiated subjects did not show higher acidity compared to normal healthy individuals and showed a delayed recovery of plaque pH to neutral levels. Following sodium bicarbonate rinses, there was an increased Lactobacilli count without any sustainable effect on the plaque pH. Further research can be done investigate the spectrum of micro-organisms other than MS and Lactobacilli in head and neck radiated patients along with the effect of sodium bicarbonate rinses on these micro-organisms.

## 27

### **Bacterial Colonization On Maxillofacial Prostheses**

**Chengprapakorn, W Arirachakaran, P Serichetaphongse, P Thamronganansakul, N Chulalongkorn University  
Maxillofacial Prosthodontics Units Faculty Of Dentistry  
Bangkok, Thailand**

**Purpose:** This study aimed to determine micro-organisms colonized on maxillofacial prostheses. They are a source of infection that is responsible for irritation, skin rash and inflammation around craniofacial implants. Moreover, the study was designed to investigate the origin of pathogens of these clinical finding.

**Methods & Materials:** Patients who received extra-oral prostheses from maxillofacial prosthodontics clinic, Faculty of Dentistry, Chulalongkorn university were recruited to participate in this study. 10 patients who have been wearing auricular prostheses between 1-3 years with and without craniofacial implants were included. Overall assessment of patients' defect and hygiene of prostheses were made and recorded. Cotton swab was prepared to collect samples from tissue side of prostheses, skin underneath prostheses, around craniofacial implants and control group from patients' neck. Samples were transferred in PBS and culture for pure culture. Pure colony was picked and identify genus and species of micro-organism by biochemical test. The result was collected and reported.

**Results:** Gram negative bacilli and gram positive cocci were found from skin, prostheses and craniofacial implants' samples. Klebsella Pneumonia and Staphylococcus aureus were commonly found in all subjects.

**Conclusion:** Staphylococcus aureus identified here is known to be the cause of inflammation.

## 28

### **The Effects Of Prosthodontic Treatment On The Oral Function Related Quality Of Life For Maxillary Tumor Patients**

**Ren, W.  
Capital Medical University  
Prosthodontics Of Beijing Stomatological School  
Beijing, China**

**Purpose:** Oral function related quality of life in patients with maxillary tumor worsens during and shortly after surgical treatment. This clinical study evaluated oral function related quality of life of these patients with prosthodontic treatment longitudinally.

**Methods & Materials:** Patients in this study were 9 individuals with maxillary tumor who had their surgery

treatment in Department of Maxillofacial Surgery and had their prosthodontic treatment which includes provisional and permanent treatment in the Department of Prosthodontics. The satisfaction with their oral function including speech, eating, aesthetics, sociality and with overall quality of life after operation at 2 week (without prosthodontic treatment), three weeks (with Immediate surgical obturator), 12 weeks (with permanent obturator) were recorded on 0-100 visual analogue scale. One-way analysis of variance (ANOVA) were performed to determine whether the differences in these mean scores were significantly different at different time.

**Results:** At 2 week, three weeks, 12 weeks, the mean scores is 15,80,100 on speech; 20,60,75 on eating; 15,50,80 on aesthetics; 20, 82.5 100 on sociality; 28, 70,85 on overall quality of life. ( $p < 0.05$ ).

**Conclusion:** The oral function related qualities of life in patients with maxillary tumor were improved with provisional and permanent prosthodontic treatment significantly. The quality of speech and sociality return normal and the quality of eating, aesthetics and overall quality of life were still compromised.

## 29

### **Intensity-Modulated Radiation Therapy And Its Influence On Pre-Radiation Dental Treatment**

**Ghaem-Maghani, N. Ucla School Of Dentistry Division Of Advanced Prosthodontics, Biomaterial, & Hospital Dentistry Los Angeles, Ca Usa**

**Purpose:** The purpose of this presentation is to discuss how IMRT effects the preradiation dental treatment in comparison to conventional technique.

**Methods & Materials:** The head and neck includes many critical structures in close relation to each other. Often, radiation therapy administered to head and neck tumors involves salivary glands. Salivary gland function changes significantly after receiving dose  $\geq 26$  Gy. Therefore one of the most serious side effects of radiation is xerostomia.

**Results:** This dramatically reduces the quality of life. To minimize the radiation dose to critical structures many different Radiation techniques have been introduced. Intensity-modulated Radiation Therapy is an advanced technique that has gain popularity in treating the head and neck tumors.

**Conclusion:** This presentation will discuss the benefits and the risks of this treatment and how it effects the way we evaluate patients prior to radiation therapy.

## 30

### **Dental Management Of The Chemoradiation Patient**

**Venkatachalam, B**

**University Of California, Los Angeles**

**Advanced Prosthodontics**

**Los Angeles, Ca, United States**

**Purpose:** There has been an expanding utilization of chemotherapy concomitant with radiation either alone or following post-operative ablative surgery over the last few years. Early data evaluating the efficacy of post-surgical chemoradiation treatment regimens indicate that it may have a beneficial effect in local-regional control and overall survival rates in patients with presence of microscopic disease at resected margins or multinodal involvement.

**Methods & Materials:** Almost all patients who undergo chemoradiation therapy develop oral complications. These complications and long-term effects are frequently very severe due to the exacerbation of local tissue reactions as a result of systemic toxicity.

**Results:** Oral mucositis requiring aggressive pain management, rampant dental caries and periodontal disease due to changes in oral microflora, increased risk of osteoradionecrosis, laryngeal edema leading to tracheostomies, severe trismus as a result of scarring and fibrosis of the muscles of mastication, impaired deglutition mechanisms and aspiration necessitating PEG tube placement the are some of the common side effects of chemoradiation.

**Conclusion:** Dental management of these patients requires close supervision and care before, during and after medical treatment is completed with an emphasis on meticulous oral hygiene.

This presentation will address the impact of chemoradiation in the head and neck region and will outline the role of the maxillofacial prosthodontist in the treatment and care of these patients.

## 31

### **Maxillofacial Prosthetics: Can We Create the Future?**

**Johan Wolfaardt**

**Professor and Director**

**Institute for Reconstructive Sciences in Medicine (iRSM)**

**University of Alberta/Caritas Health Group/Capital Health**

**Edmonton, Alberta, Canada**

Maxillofacial prosthetics is placed at a pivotal point internationally. Remarkably, this pivotal point carries both opportunity and challenge in both developed and developing societies with regard to delivery of maxillofacial prosthetic care. Maxillofacial prosthetics hold a unique position in the intersection between medicine and dentistry. The pivotal point that has been reached and the unique position held by maxillofacial prosthetics needs to be understood for maxillofacial prosthetics to realize its role for the future.

In its broad context, the complexity of techniques in head and neck reconstruction has increased the need for maxillofacial prosthetic care. Equally, the volume and complexity of patients in need of care has escalated. While this has occurred, development of technology used in treatment planning, simulation and delivery of care has evolved at great speed. These technologies are evolving very rapidly in digital technologies, materials and regenerative medicine. The convergence of these technologies carries great strategic importance to the future of maxillofacial prosthetics. It may be speculated that maxillofacial prosthetics, if it chooses to seriously engage technology convergence, is better positioned than any other discipline to hold a pivotal role in head and neck care. To realize this role, maxillofacial prosthetics will need to restructure its education and training process to provide the development of knowledge workers who have the capacity to deliver not only clinical services but also research and development activity of high value in the areas of strategic technology convergence. In this regard, maxillofacial prosthetics has an important role to play in translational research with strategic technology convergence. Curiously, the application of several of these technology areas will be driven by developing economies and so the management of change for maxillofacial prosthetics is thought to apply equally to both developing and developed societies.

The presentation will discuss technology convergence that provides maxillofacial prosthetics with clinical as well as translational research and development opportunity. The purpose of the presentation is to stimulate thought on future strategic direction in respect to education, training, and care delivery in maxillofacial prosthetics.

## 32

### **Distraction Osteogenesis: autogenous tissue engineering**

**Sugar, Adrian\***

**Cleft and Maxillofacial Unit**

**Morrison Hospital and Swansea University Medical School**

**ABM University NHS Trust, Swansea, Wales, UK**

Summary: The gradual lengthening of limb bones was perfected in Kurgan, Siberia by Ilizarov over 40 years from around 1950. It was not until 1992 that cranio-maxillofacial surgeons (McCarthy 1992) started to adapt these techniques to the bones of the craniofacial skeleton. Until this time, interventions to correct major congenital facial deformities in the growing child usually involved major bone grafting and osteotomy procedures which often failed to achieve their objectives.

Distraction Osteogenesis (DO) is perhaps the ideal way to lengthen a bone and as part of the same overall procedure to induce the production of new bone without the need for grafting. Suddenly the limits became those of need rather than possibility but the evidence to identify the correct indication and long term follow-up was not available.

We started our work using DO in Wales in 1994 and this has mostly centred on the management of craniofacial bone deficiency syndromes. Today we have a much clearer understanding of what works, perhaps more importantly what does not work, about when to intervene and about long term follow-up. This presentation will attempt to illustrate this.

## 33

### **Outcomes of Maxillectomies with Conventional and Implant Restorations.**

**Garrett, N.**

**UCLA School of Dentistry**

**Division of Advanced Prosthodontics and**

**Weintraub Center for Reconstructive Biotechnology**

**Los Angeles, CA USA**

Facial appearance and functional integrity of the oral cavity are critical for self-esteem and psychosocial well being. The structural deficits of the maxillectomy patient not only reduce the ability to chew and influences food choices for nutrition, but impacts eating enjoyment and social interaction. Advances in prosthetic rehabilitation based on dental implants for the maxillectomy patient appear to provide a treatment modality that may adequately restore function and improve patient perceptions of treatment and oral health related quality of life. However, there remains only limited evidence of the functional and perceptual benefits of the implant-based prostheses over conventional obturators.

Our longitudinal, within-subject trial to determine whether or not conventional or implant retained obturators restore patients' oral functions and quality of life to their status just prior to their surgery will be utilized to discuss the difficulty in providing good supporting evidence in this patient group, as well as provide estimates of prosthesis impact on masticatory function.

## 34

### **Computer-Aided Design And Rapid Manufacture For An Orbital Prosthesis**

**Wu, G. \*, Bi, Y., Zhou, B., Zhao, Y.**

**Fourth Military Medical University**

**Department Of Prosthodontics**

**Xi'An, Shaanxi, China**

**Purpose:** Traditionally, facial prostheses are generated from hand-sculpted wax patterns. New advanced computer-aided design and manufacture technologies have recently been introduced and demonstrated significant advantages for Maxillofacial Prosthetics. However, the usefulness of these techniques for fabricating orbital prostheses has still been proved beyond a shadow of a doubt. The purpose of this research is to present a novel approach for fabricating a wax orbital prosthesis pattern directly by machine.

**Methods & Materials:** A new optical (structured-light) scanner developed a color digital model of patient's unaffected orbital contour, which was copied and then mirrored to generate the orbital prosthesis contour data. Then an ocular prostheses database was applied to ascertain the ocular prosthesis's size and position to the orbital prosthesis. Eventually a Selective Laser Sintering machine (SLS) directly manufactured the wax pattern of the definitive orbital prosthesis from the 3-dimensional orbital data.

**Results:** A digital color model of the patient face was acquired which consisted of 428278 triangles. The duration time of scanning was about 4 seconds. The contour of orbital prosthesis was successfully designed by Geomagic Studio software combining with the 3D ocular model. The wax pattern of the orbital prosthesis was automatically customized by SLS machine in 2 hours and fitted the patient's face very well. The patient was very satisfied with the definitive orbital prosthesis.

**Conclusion:** This research presents a novel approach that integrates a new optical digitizing (scanning) technique, 3-dimensional ocular prostheses database and Selective Laser Sintering technique to achieve the computer-aided design and manufacture for the unilateral orbital defect rehabilitation. It is time and cost more effective, which can be supposed to replace the traditional handmade techniques of facial prostheses in the future.

## 35

### Genetic Markers For Accelerated Bone Loss Of Edentulous Jaws

Suwanwela J.\*, Nishimura I.

University Of California, Los Angeles

Department Of Advanced Prosthodontics

Los Angeles, Ca United States

**Purpose:** Lack of denture stability and retention because of severe residual ridge resorption (RRR) was the most prevalent complaint, and may contribute to a reduction in quality life for these patients. Numerous surveys of edentulous patient have addressed the potential etiologic factor contributing to severe RRR; however they have not resulted in any meaningful conclusions. Wound inducible transcript-3.0 (wit3.0) is a newly identified gene from tooth extraction cDNA library in rats. Wit3.0 has been postulated to induce oral wound contraction and thus may play a role in underlining bone resorption. The purpose of this project is to examine wit3.0 allele of subjects exhibiting clinically severe RRR for single nucleotide polymorphism (SNP)-derived amino acid substitutions or haplotypes.

**Methods & Materials:** 18 complete edentulous patients who have clinically severe RRR were recruited from UCLA dental clinic. The subjects' existing panoramic dental radiographs were used to measure the mandibular bone height. The chromosomal DNA samples were prepared from mouth wash and amplified by polymerase chain reaction (PCR) specific to the wit3.0 allele. The PCR products were sent for sequencing. Furthermore, the wit3.0 allelic haplotypes were evaluated by the set of tagging SNPs using Taqman protocol.

**Results:** Out of 18 subjects, 6 (33.33%), 6 (33.33%), and 6 (33.33%) were classified as PDI class II, III, and IV, respectively. Average concentration of genomic DNA isolated from mouth wash was 84.84( $\mu$ g/ml). DNA sequencing of exon 5 revealed that our subjects did not carry postulated coding SNPs. Thirteen unique haplotypes were predicted in the subjects of this study, two of which occurred at a frequency of 16.6%. In the first three SNPs, one SNP outside wit3.0 gene at 5' end and first two SNPs within wit3.0 gene, the haplotype block shows common haplotype among 9 subjects (50%).

**Conclusion:** While SNP-derived amino acid substitutions were not found in our subjects with severe RRR, there is evidence that common haplotypes of wit3.0 gene are associated with these subjects. To our knowledge, this is the first genetic survey of edentulous patients and the information from this study may be utilized to begin development of a novel genetic diagnostic test to identify patients with prognosis of severe residual ridge resorption.

## 36

### Rationale Of Tissue Engenering In Maxillofacial Prosthetics

Anand, Puneet.

Harsaran Dass Dental College

Department Of Advanced Prosthodontics

Ghaziabad, U.P, India

**Purpose:** To enhance the overall outcome of treatment in patients undergoing Maxillo Facial Prosthetics Rehabilitation.

**Methods & Materials:** Data was obtained from different hospitals & different surgeons, for patient's receiving Maxillofacial Rehabilitation, treated with & without tissue engenering during the course of treatment to evaluate the outcome of treatment.

**Results:** Tissue engineering did enhances the outcome of the maxillofacial prosthesis.

**Conclusion:** Tissue engineering if possible must be done for almost every patient undergoing Maxillofacial Rehabilitation.

## 37

### Non-Survivor Data In Quality Of Life Research - Part 1 Of 2

**Laan G.J. Van Der \***, **Linden Van Den Heuvel G.F.E.C. Van**  
**University Medical Center Groningen**  
**Center For Special Dental Care And Maxillofacial Prosthetics, Dept. Oral And**  
**Maxillofacial Surgery**  
**Groningen, The Netherlands**

**Purpose:** One of the goals of QoL research is to gather information about the possible results as well as the probable burden of therapy, physically and mentally. It seems inevitable in this kind of research to look at survivors only. Considering the fact that about half of the patients will die within five years, this method might give a biased view on the subject. We would like to make two suggestions: 1. To incorporate the evaluation of treatment decisions of non-survivors when considering treatment options for future patients, and 2. To take into account reflections on the question “Has it all been worth it?”.

**Methods & Materials:** A qualitative contribution based on our own clinical experience and conclusions drawn from a previous workshop on this topic. The question will be raised whether or not everything that is technical possible is always in the best interest of the patient.

**Results:** Awareness of the relevancy to include non-survivor data in QoL research.

**Conclusion:** Decision making in (head and neck) oncology is characterized by the importance of careful contemplation, whether the burden of treatment outweighs the benefit of it. On the other hand, there is a general intrinsic drive to ‘go for survival’. The use of outcomes of QoL research in helping patients in the difficult process of decision making in oncology makes it mandatory to include data gathered in the group of non survivors. The question “Will it be worth it?” and “Has it been worth it?” should be an integral part of decision making in oncology treatment teams.

## 38

### Non-Survivor Data In Quality Of Life Research: Final Questions In Head And Neck Oncology- Part 2 Of 2

**Linden Van Den Heuvel G.F.E.C. Van \***, **Laan G.J. Van Der**  
**University Medical Center Groningen**  
**Center For Special Dental Care And Maxillofacial Prosthetics, Dept. Oral And**  
**Maxillofacial Surgery**  
**Groningen, The Netherlands**

**Purpose:** One of the goals of QoL research is to gather information about the possible results as well as the probable costs of therapy, physically and mentally. It seems inevitable in this kind of research to look at survivors only. Considering the fact that about half of the patients will die within five years, this method might give a biased view on the subject. The purpose of this presentation is to urge the importance of including non survivor data in the decision making process of oncological treatment.

**Methods & Materials:** A videotaped, English subtitled, interview with the spouse of a deceased patient, who had undergone an extremely invasive and mutilating oncological treatment.

**Results:** Some insight in considerations in a real life oncology case where a patient died relatively shortly after extremely invasive and mutilating treatment.

**Conclusion:** The question whether all technically possible treatments are to the benefit of the individual patient cannot always be answered positively. It is relevant to include the experience of non-survivors in the difficult decision making process in oncology, for treatment teams as well as for patients and their relatives. The question “Will it be worth it?” and “Has it all been worth it?” should be openly discussed, within treatment teams as well as with the patient!

# POSTER PRESENTATIONS



## 41

Table 1

### **The Use of Esthetic Conformer Shell After Socket Reconstruction – A Case Report**

**Fann A.L.\* ; Sim N.H. , Teoh K.H.**

**National Dental Centre, Singapore**

**Singapore**

**Purpose:** Transparent plastic or glass conformers are routinely used after an enucleation, evisceration, or socket reconstruction procedure to maintain the socket volume, shape and fornices. Although conformers maintain the shape and size of the socket, they do not improve the appearance of the patient until an ocular prosthesis is fitted six weeks later. This presentation will illustrate the fabrication of an esthetic conformer that improves patient's appearance and serves as a postoperative conformer.

**Methods & Materials:** A 46-year old female presented at the Oculoprosthetic Clinic of Singapore National Eye Centre is requesting for a new ocular prosthesis. Her right eye was enucleated with simultaneous intra-orbital implant replacement when she was thirty, due to severe eye infection. Clinical examination revealed a moderately contracted right anophthalmic socket. The intra-orbital implant had migrated inferolaterally, hence shortening the inferior fornices. Due to the socket contracture, the ocular prosthesis was ill-fitting and had an upward gaze. The treatment plan was to remove the migrated implant and reconstruct the socket using dermis fat graft followed by a new ocular prosthesis. An impression of the socket was taken for fabrication of an esthetic conformer. The iris colour was matched to the natural eye and the position verified in wax pattern before being converted into acrylic. The intaglio surface of the esthetic conformer was hollowed out to create room for the graft. Two small holes were created for drainage and application of medication.

**Results:** The esthetic conformer was inserted immediately after the reconstruction. Patient was comfortable and was pleased with the cosmetic benefit afforded by the esthetic conformer. She was able to return to work without the need for a patch.

**Conclusion:** The esthetic conformer serves as an interim prosthesis that provides early cosmetic rehabilitation and improved quality of life for patients.

## 42

Table 2

### **A Case Report Of The Obturator Prosthesis Supported With Implants For Maxillary Defect**

**1Amano, Y.\*, 1 Ozawa, S., 1Tanaka, Y., 1Miyamae, S., 2Naitoh, M., 3Nabeshima, H., 1Hirai,H.And 1Shigemori,T.**

**School Of Dentistry, Aichi-Gakuin University**

**1 Department Of Removable Prosthodontics, 2 Department Of Oral And Maxillofacial Radiology 3 The First Department Of Oral And Maxillofacial Surgery**

**Nagoya City,Aichi Pref. Japan**

**Purpose:** Obturator Prostheses applied for maxillary resection requires retention and stability against the gravity and functional forces. Residual ridge and teeth are utilized to support the obturator, however, long term application often results in lost of the abutment teeth and ridge resorption. Fabrication of the obturator for edentulous maxilla is difficult, because tissue undercut of the defect is the only region to provide retention of the prosthesis. In this study we experienced a case of maxillary defect in which dental implants were applied to support the obturator with magnetic attachment.

**Methods & Materials:** A patient was 64 year-old female at the first examination who underwent radiation therapy and right maxillary resection. An obturator prosthesis was fabricated and overlaid on anterior teeth on left side utilizing magnetic stud attachment. After nine years of installation, the abutment teeth had to be extracted due to periodontal disease. Prior to the extraction, placement of four dental implants was planed on the left residual ridge.

Four magnetic attachments for implants were selected, and the final obturator prosthesis was fabricated with the support of the implants.

**Results:** The position of the implant was examined by simulation of the final prosthesis and CT scan. Four implants (Replace™ RP10mm) were installed and covered for integration for six months. Two anterior teeth were utilized to keep the retention of obturator until implant integration was achieved. After adjustment of the final prosthesis, masticatory performance was evaluated by the test food. As a result, objective evaluation demonstrated well recovery of masticatory function and the patient satisfaction was also granted.

**Conclusion:** Four implants provide enough retention and stability for the obturator prosthesis. Although oscillation of the obturator was minimized, a risk of stress concentration on implant neck due to oblique loading was considered. Magnetic attachments provide shifting movement without loss of the retention. This case report suggest that implant supported magnetic attachment is a effective treatment of choice for designing maxillofacial prosthesis.

## 43

Table 3

### **An Alternative Exodontia in Irradiated Head and Neck Patient: A Pilot Study**

**Amornvit P\*, Sirthavaj T, Chotprasert N, Uy M, Vittanatipa N**

**Mahidol University Faculty Of Dentistry**

**Maxillofacial Prosthetics And Rehabilitation**

**Bangkok, Thailand**

**Purpose:** Osseoradionecrosis (ORN) is a problem when the tooth is extracted in the field of radiation. The purpose of this study was to find an alternative treatment to eliminate such problem that may induce ORN. To extract the hopeless tooth in then irradiated field in Head and Neck irradiated region without using HBO.

**Methods & Materials:** Four patients with the history of Head and Neck irradiated were presented in this study. Total dosage of radiation was more than 6,000 cGy. Teeth in irradiated field were diagnosed with hopeless for restoration and the remaining roots were covered with caries lesions. Seven teeth, three anterior and four posterior teeth, were treated by mean of alternative exodontia not by the standard procedure of simple extraction. Various designed using orthodontic wires were used to perform force eruption procedure for slow force activation every two week for 3-6 month range depending on the shape and length of a root. Once the remaining root exposed from the osseous tissue by radiographic examination, the simple extraction from the gingival was performed.

**Results:** All of the remaining roots were coronally removed from the bone by using the force eruption procedure. An average of clinical visit was 8 visits to removed the root from the bone. All the sites were evaluated by radiographic mean to observe the present bone. There was no osteoradionecrosis found and patients were restored with removable partial denture to for function.

**Conclusion:** Multiple procedures of alternative exodontias are more frequently perform at our service and it may be cost effective to be used rather than the HBO. The pilot study will present the clinical outcome and procedure that we recommend to be use for the betterment for quality of life in this group of patient requiring extraction.

## 44

Table 4

### **Evaluation Of Obturator Prostheses On Masticatory And Speech Functions**

**Asami K.\*, Miyamae, S., Okazaki, S., Ozawa, S., Amano, Y., Yoshioka F., Tanaka, Y.**

**Aichi-Gakuin University, School Of Dentistry**

**Department Of Removable Prosthodontics**

**Nagoya, Japan**

**Purpose:** Maxillary resections due to cancer or injury result in serious functional problems to the patients, and those are required prosthetic rehabilitation. Especially a perforation to the nasal cavity disturbs speech and masticatory

function. Surgical closure is one of the choice of treatments, however, bulky flaps often hinder the fabrication of the prosthesis. The aim of this study was to evaluate obturator prosthetics on functional aspects.

**Methods & Materials:** Maxillectomy patients who had treated in our clinic participated on this study. They were categorized with or without perforation. The surgical closures include both primary closure and flap reconstruction. The masticatory efficiency test by using test foods, measuring the occlusal force, questionnaires to the patients were performed. As for speech evaluation, the speech and conversation intelligibilities and blowing tests were applied. Each test result was compared between the two groups.

**Results:** The masticatory ability tests which utilize a wax cube and gummy jelly demonstrated objective value of this function, which were correlated to the subjective masticatory scores from the questionnaires. For the categorized each group comparison, the masticatory performance did not show significant differences. Speech and conversation intelligibilities and blowing tests showed the significant improvement of the speech by wearing the obturator prostheses in the patients with the perforation group. However, the results from the speech evaluation did not show any definite differences on each group.

**Conclusion:** The obturator prostheses are effective on improvement of the speech function for the maxillectomy patients with perforation. Although it did not show any significant differences between the two groups for masticatory performance, further study needs for increasing case numbers and detail investigation focused on the defect characterization.

## 45

Table 5

### Laboratory Procedures Using Double Processing Technique For Fabrication Of Maxillary Obturators

**Baba T.\*, Pedroche D., Roumanas E.**  
**University Of California, Los Angeles**  
**Maxillofacial Prosthetics**  
**Los Angeles, Ca Usa**

**Purpose:** A number of techniques are currently used for fabrication of maxillary obturators. One of the limitations of many of these techniques is the ability to control the thickness and weight of the prosthesis.

**Methods & Materials:** The double processing technique demonstrates a number of advantages especially for large defects when the obturators need to be extended aggressively to engage the surgical defect to maximize retention, stability and support of the prosthesis. Using the double processing technique, laboratory technicians can optimize the thickness of the bulb to provide clinicians a light weight, well adapted and stable processed record base.

**Results:** This is particularly helpful in edentulous patients for accurately recording the maxillomandibular relationship and for evaluation of esthetics and phonetics during the wax try-in. The teeth and palatal portion of the prosthesis are subsequently added to the base using a second heat cure processing cycle.

**Conclusion:** This poster will describe the double processing technique and materials used at the UCLA maxillofacial prosthetics laboratory for fabrication of maxillary obturators.

## Public and Oral Health Management in Developing Countries: An International Master

**Bassi F.\*, Vecchiati G., Atkinson Sardo-Infirri J., Notaro V., Preti G., University Of Turin**

**Prosthodontic Section, Department Of Biomedical Science And Human Oncology, School Of Dentistry, University Of Turin, Italy. Cooperazione Odontoiatrica Internazionale In The European Centre For Intercultural Training In Oral Health (Ecitoh) Turin, Italy**

**Purpose:** Training of dental workers in developing countries is one of the key activities in the field development of primary health services. These include basic oral health care, especially for the poorest communities. Training of personnel for public health structures is of particular relevance in those difficult situations which see a lack of human and economic resources and technologies that are feasible and affordable. In these situations it is often impossible to satisfy the growing needs of their poorest populations, who are usually left without essential oral care, or emergency treatment for severe infection and pain. Post graduate courses for training of dental professional personnel have already been proposed. Nearly all such courses require participants to travel and live in a foreign country; this causes a great waste of time in adapting to a new culture, long absences of essential personnel in the public services. All of these increase the overall cost of the training and often result in students not returning to their home countries.

**Aim:**

- Training dental professionals in organizing and management in oral health activities within public health in Developing Countries
- Integrating the knowledge of dental professionals from Developed Countries who are interested in deepening oral problems in Developing Countries
- Creating a net made by dental professionals from different origin and culture engaged in activities and programmes about oral health in Developing Countries

**Methods & Materials:** Contents:

Health systems and oral health in Developing Countries, Influence of Health International Cooperation and influence of relations among Universities on improvement of oral health and of health systems Health service funding, Factors affecting health service, Strategic planning of health service, Basic principles of management of human, physical and financial resources, Elements of health economy Methods and techniques of prevention, cure and prosthodontic treatment in countries at low income. Programme

Module 1: Human evolution and health in Developing Countries.

Module 2: Financial and human resources in health systems.

Module 3: Policy and management elements in oral health field

Module 4: Methods and techniques of prevention, cure and prosthodontic treatment in countries at low income.

**Conclusion:** Information Requisites for admission: Degree, English language knowledge, Age 24 - 55 year

Enrolment from November the 1st 2008 to September 2009 and Submission has to be sent on-line COI, via Nizza 230, 1126 Torino, Italy. Tel: +39 011 6708185, fax: +39 011 6708183, e-mail: coingo@tin.it.

## 48

Table 8

### **Prosthetic Rehabilitation Of A Patient With Severe Trismus After Chemoradiation And Subsequent Development Of Myositis Ossificans In The Masseter Muscles – A Case Report**

**Bertschinger, M.**

**University Of Zurich, Dental School**

**Clinic For Masticatory Disorders, Removable Prosthodontics And Special Care Dentistry  
Zurich, Switzerland**

**Purpose:** Trismus is a frequent and problematic consequence of radiation therapy in the head and neck area. A 41 year old female patient was diagnosed with a squamous cell carcinoma of the nasopharynx in 2000 and was treated with radiotherapy and concomitant chemotherapy. Subsequently she developed a progredient trismus, which was ultimately diagnosed as myositis ossificans of the masseter muscles. The maximal mouth opening could be finally maintained at the level of 10 mm by a stringent mouth opening training. The problem of the trismus regarding the dental and prosthetic therapy will be adressed and the managing of impression taking and the handling of all the prosthetic components will be discussed.

**Methods & Materials:** An interdisciplinary team consisting of a radiooncologist, a maxillofacial surgeon and a maxillofacial prosthodontist was involved in treatment planning. After analyzing dose and field of radiation therapy, it was decided to extract all the hopeless teeth and replace them by implants to restore the oral function. Subsequently the implants were restored with fixed partial dentures. To overcome the problems with trismus, partial impressions were taken and part of the implant superstructure was screwed in horizontally.

**Results:** It was possible to restore the oral function by means of a fixed partial denture despite of a limited mouth opening. Oral function and esthetics could be restored and the oral hygiene maintained with a stringent oral hygiene protocol.

**Conclusion:** The patients expectations regarding oral function and esthetics were completely fulfilled. The interdisciplinary approach made it possible to manage this complex situation.

## 49

Table 9

### **Oral Rehabilitation In 23 Patients With Microvascular Free Fibula Flap**

**Bodard, A.G.\*, Salino, S., Lucas, R., Breton, P.**

**Centre Léon Bérard And Hospices Civils De Lyon**

**Oral Surgery**

**Lyon, France**

**Purpose:** 23 patients treated by microvascular free fibula flap after mandibular resection were addressed for oral rehabilitation. After clinical and radiological examination, oral implants were placed under general anaesthesia. After 6 months for osteointegration, the prosthesis was placed. The success of the rehabilitation was evaluated by 3 criteria : occlusion, quality of soft tissues and patient's satisfaction.

**Methods & Materials:** 17 men and 6 women, mean age 46 were treated. 75 implants were placed. 6 implants were lost. 3 implants were not loaded. 10 fixed prostheses and 13 removable dentures were realized. Occlusion was considered as "good" for 16 patients and "bad" for 7. Soft tissues were "favourable" for 13 patients and "unfavourable" for 10. Patient's satisfaction was reached for 17 patients. The clinical follow up after implantation was 35.1 months.

**Results:** Implant success rate was 81.2%. Loss of some implants could be avoided when due to non bicortical placement. 2 implants were not loaded because of their buccal placement which could lead to soft tissues inflammation and mechanical complications. Hyperplasia was noticed for 3 patients. Occlusion could not be totally provided for 7 patients because of position of the graft. Aesthetics was acceptable for all patients.

**Conclusion:** Quality of life is highly increased with the placement of oral implants in microvascular free fibula flap. This technique is safe but further work must be done to reduce the number of non loaded implants to optimize functional aspects of the prosthesis.

## 50

Table 10

### **Identifying Microflora In Carious Lesion Of The Head And Neck Irradiated Patients**

**Bunnag J\*, Srithavaj T\*, Thaweboon S\*\*, Choonharuengdej S\*\***

**Mahidol University Faculty Of Dentistry**

**\*Maxillofacial Prosthetics And Rehabilitation, \*\* Microbiology**

**Bangkok, Thailand**

**Purpose:** Radiation induced caries is one of the complication after radiotherapy in head and neck cancer patients. This complication is not a direct effect from radiation therapy but rather it is an indirect. The effect of radiation does not destroy salivary glands and further cause xerostomia. Reducing in salivary flow and changing the oral microbial environment as well as reducing pH. As the pH reduces the risk of bacterial causing caries increase in amount and induced the dissolution of the tooth structure. Many studies have been done to identified microflora after radiotherapy in specimens from oral cavity such as saliva, plaque, however, the closer look should be concentrated on the cervical areas that are a distinct location of radiation induced carious lesion. This study is to identify microflora in radiation induced caries lesion.

**Methods & Materials:** Ten dentin caries samples were collected from cervicle lesions of ten patients who received radiotherapy bilateral side of the head and neck region. The range of radiation is between 6,000-8,000 cGy. The sample were cultured in MSB agar, Rogosa's agar, CFAT agar and CHROM agar to identified Streptococcus mutans, Lactobacilli, Actinomyces and Candida albicans respectively. After incubation, all samples were counted and calculate to CFU/mg

**Results:** The Lactobacilli is the major microorganisms in dentin carious lesion followed by Candida albicans and Streptococcus mutans. However, Actinomyces cannot be cultured.

**Conclusion:** Streptococcus mutans regarded as pioneer microflora to adhere on enamel and root surface. They also played important role in initial caries lesion. In deep lesion, due to acidic environment, Lactobacilli which is more aciduric than Streptococcus mutans becomes a major population. While Actinomyces spp. cannot be detected in carious lesion maybe due to the culturing technique for Actinomyces is very sensitive and very difficult to grow. The role of Candida albicans is only helping Streptococcus mutans and Lactobacilli in dissolving organic substance from tooth structure. However, there are also some reports revealed that C. albicans can cause carious lesion as well. Keywords: Identifying/microflora/carious lesion/irradiated patients.

## 51

Table 11

### **Modified Denture Plates Using Bilateral Technique Manipulation In Trismus-Induced Head And Neck Irradiated Patients: A Pilot Study**

**Bunnag J, Srithavaj T, Thaworanunta S**

**Mahidol University Faculty Of Dentistry**

**Maxillofacial Prosthetics And Rehabilitation**

**Bangkok, Thailand**

**Purpose:** In head and neck cancer patients, trismus can be induced from surgical complications and/or radiation therapy. Both curative and palliative radiation therapy can induce trismus in this group of patients. Radiation induced

trismus creates difficulties in oral hygiene care, dental procedure maintenance, as well as prosthetic rehabilitation of any deformed part of the oral cavity. Delayed effects of radiation therapy may cause further severe complications such as oral candidiasis, radiation induced caries, and ultimately, osteoradionecrosis. The purpose of this study is to develop a method for the proper use of trismus appliances and clinical management in dentate to edentulous patients.

**Methods & Materials:** Eight patients with trismus from the Maxillofacial Prosthetics Service, Department of Prosthodontics were classified into two groups; Group I: posterior partially edentulous patients and Group II: completely edentulous patients. Modified plates were used with mouth opener cork screws. Instructions using the mouth opener cork screws were given to each patient. Patients were observed and progress was recorded at one week and three weeks. Mann-Whitney test was used to compare the maximum mouth opening between Group I and Group II. Repeated measure analysis of variance was used to test the significant differences of all data. The level of significance was set at  $P=0.05$ .

**Results:** After three weeks, modified plates were beneficial to all patients in increasing maximum opening 11 to 19 mm from the initial record. Mean  $\pm$  standard error of mean for mouth opening at the third week ( $28.3 \pm 2.06$  mm) was statistically significant from before ( $14.0 \pm 2.45$  mm;  $P<0.05$ ) and at first week ( $15.4 \pm 2.56$  mm;  $P<0.05$ ) The treatment result between groups 1 and 2 showed no significant differences ( $p = 1.000$ ).

**Conclusion:** Using modified plates and bilateral technique systems in posterior partially edentulous as well as completely edentulous patients can be an option for clinical use in treating trismus-induced head and neck irradiated patients.

**KEY WORDS:** radiation induced trismus, anti-trismus appliance, trismus exercise

## 52

Table 12

### The Prosthodontic Management For Partial Maxillectomy Patient With Rampant Caries ; A Case Report

Chamchong,D. And Sae-Lee,D.

Khon Kean University

Prosthodontics

Muang , Khon Kean

**Purpose:** This poster described the prosthodontic management for partial maxillectomy patient with rampant caries.

**Methods & Materials:** A 60-year-old Thai patient who had a left partial maxillectomy defect, examination revealed a side effect of limited jaw opening after receiving a 6,000 cGy radiation dosage, muscle stretching exercise was given to the patient. During a waiting period to regain a sufficient space for prosthodontic treatment, patient was lost in contact. The patient returned with a problem of rampant caries exposed to pulp on all remaining teeth due to improper oral care. Since extraction need to be avoided for the prevention of osteoradionecrosis, root canal treatment was chosen as a treatment of choice. A reconstruction with cast post and core with full veneer crown was followed for upper anterior teeth to provide optimal esthetic and retention for obturator prosthesis. An overdenture with attachment was constructed to provide retention, stability and supporting for lower arch.

**Results:** The prosthodontics management of a partial maxillectomy patient with rampant caries was satisfied and succeeded with cast post and core with full veneer crown and obturator prosthesis for upper arch and overdenture with attachment for lower arch.

**Conclusion:** A complex prosthodontic management can regain oral function and esthetic for partial maxillectomy patient. However, an intensive care with a proper treatment should be a mandatory for preventing severe side effects and avoiding complex treatments in order to reduce cost and time used for management.

## 53

Table 13

### **Total Glossectomy Rehabilitation With Tongue And Palatal Drop Augmentation Prosthesis: A Case Report**

**Chanthamalin V, Hovijitra Rs, Amornvit P, Srithavaj T**  
**Mahidol University Faculty Of Dentistry**  
**Maxillofacial Prosthetics And Rehabilitation**  
**Bangkok, Thailand**

**Purpose:** To rehabilitate the tongue deformity due to the gun shot wound.

**Methods & Materials:** The case report revealed the total lost of tongue of a Thai patient who cannot be able to swallow and speak. The remaining teeth still fully intact but the palatal drop and tongue prosthesis was fabricated with the silicone prosthesis.

**Results:** Both palatal drop prosthesis and tongue prosthesis allowed the patient to increase the capacity to swallow and reduce the remaining odonous space. The speech appeared to be more intelligible but cannot fully restore.

**Conclusion:** The quality of life of a patient after post operative follow-up appeared to be better, however, the physiologic function of the missing organ cannot fully restored

## 54

Table 14

### **Comparative Color Changes Between Three Different Color Types To Mdx-4-4210 Medical Grade Silicone**

**Chearskul P, Kanchanasavita W, Urapepon S, Srithavaj T**  
**Mahidol University Faculty Of Dentistry**  
**Maxillofacial Prosthetics And Rehabilitation**  
**Bangkok, Thailand**

**Purpose:** The esthetics of facial prosthesis depends on multiple factors such as technique of fabrication, site and location of the defect, and materials properties. The most widely used material is silicone elastomer. Facial prostheses usually have an average service life of 10 to 12 months, but in Thailand, the prostheses may have to be replaced more often due to discoloration of the facial prostheses from the exposure of sunlight. The purpose of this study was to compare color degradation among three different intrinsic colorant types when mixing in MDX 4-4210 medical grade silicone.

**Methods & Materials:** Twelve groups of MDX 4-4210 elastomers were prepared and mixed with the red, yellow and blue colors of different colorant types (Liquid silicone mixed color, Silicone paste color and Artists' dry color pigments). The specimens were exposed to UV-light for a period of 240, 720, 1440 and 2880 hours. CIE L\*a\*b\* values were measured by the spectrophotometer. The color differences ( $\Delta E^*$ ) among three primary colors and three different color types were tested and analyzed using split-plot ANOVA with repeated measures. Mean values were compared with Bonferroni's method at 0.05/k significance level, where k was the number of comparison groups.

**Results:** The result of this study revealed that the UV-light influenced the color change in silicone in all three different colorant types at a level of statistical significance ( $P < 0.0006$ ). In the Liquid silicone mixed color and Artists's dry color pigment group, more significant discoloration occurred in red and blue than yellow.

**Conclusion:** A comparison of the discoloration within each primary color of each colorant type revealed no statistical difference between colorants

## 55

Table 15

### **Bacterial Colonization On Maxillofacial Prostheses**

**Chengprapakorn, W Arirachakaran, P Serichetaphongse, P Thamronganansakul, N Chulalongkorn University  
Maxillofacial Prothodontics Units Faculty Of Dentistry  
Bangkok, Thailand**

**Purpose:** This study aimed to determine micro-organisms colonized on maxillofacial prostheses. They are a source of infection that is responsible for irritation, skin rash and inflammation around craniofacial implants. Moreover, the study was designed to investigate the origin of pathogens of these clinical finding.

**Methods & Materials:** Patients who received extra-oral prostheses from maxillofacial prosthodontics clinic, Faculty of Dentistry, Chulalongkorn university were recruited to participate in this study. 10 patients who have been wearing auricular prostheses between 1-3 years with and without craniofacial implants were included. Overall assessment of patients' defect and hygiene of prostheses were made and recorded. Cotton swab was prepared to collect samples from tissue side of prostheses, skin underneath prostheses, around craniofacial implants and control group from patients' neck. Samples were transferred in PBS and culture for pure culture. Pure colony was picked and identify genus and species of micro-organism by biochemical test. The result was collected and reported.

**Results:** Gram negative bacilli and gram positive cocci were found from skin, prostheses and craniofacial implants' samples. Klebsella Pneumonia and Staphylococcus aureus were commonly found in all subjects.

**Conclusion:** Staphylococcus aureus identified here is known to be the cause of inflammation.

## 56

Table 16

### **Facial Silicone Bond To Two Resins With Five Primers**

**Chotprasert N, Srithavaj T, Kanchanavasita W  
Mahidol University Faculty Of Dentistry  
Maxillofacial Prosthetics And Rehabilitation  
Bangkok, Thailand**

**Purpose:** Primers are used as aids to increase the bond strength between acrylic resins and facial silicone. A Literature review suggests that different kinds of primers, acrylic resins, and facial silicones have different effectiveness in the bond strength. Objective: The purpose of this study was to evaluate the tensile bond strength of two acrylic resins (autopolymerizing and light-polymerizing acrylic resins) and facial silicone using five primers and no primer as a control group.

**Methods & Materials:** One hundred and twenty specimens were divided into twelve groups, ten specimens each, according to the combination of two acrylic resins / facial silicone / five primers and no primer. All specimens were loaded in tension mode in the Universal Testing Machine with a crosshead speed 50 mm/min until the bonding failure occurred.

**Results:** The results showed a significant difference in the interaction of five primer and two acrylic resins on tensile bond strength to facial silicone ( $p < 0.001$ ). The highest bond strength was found with combination light-polymerizing acrylic resin / A306 when bonded with facial silicone. For the autopolymerizing acrylic resin used to bond to facial silicone, the highest tensile bond strength was found in Epicon group, followed by A330G, SOFRELLINER TOUGH, A304, and A306. For the light-polymerizing acrylic resin group, the highest tensile bond strength was found in A306 primer, followed by A304, A330G, Epicon, and SOFRELLINER TOUGH.

**Conclusion:** These findings show that the best silicone/primer combination generating the highest bond strength is light polymerizing acrylic resin / A306.

## 57

Table 17

### **Intraoral And Extraoral Conformers: Can Tissue Be Shaped Post-Surgery?**

**Danbe, M.L., Kurtz, K.S., Schiff, B.A., Staffenberg, D.A.**  
**Montefiore Medical Center / Albert Einstein College Of Medicine**  
**Department Of Dentistry**  
**New York, NY, USA**

**Purpose:** Occasionally, grafted tissue does not heal satisfactorily. Both intra and extra-oral instances of this occurrence are presented. The first patient, an eight-year-old boy, had a unilateral soft tissue defect of the nose due to a dog attack. After reconstructive surgery, the nostril constricted to reveal a minimally patent airway. An intranasal conformer was developed to correct this defect. The second patient had an unanticipated facially disfiguring internal adhesion post-maxillectomy surgery. Supplemental corrective surgery was performed to lyse the adhesion and place a new split thickness skin graft. A conforming obturator was delivered intraoperatively in an attempt to prevent repeat scarring. Showing how to shape tissue, when surgery is not able to.

**Methods & Materials:** Fabrication and insertion of two conformers will be outlined.

**Results:** Treatment outcomes will be shown, as well as positive and negative steps along the way.

**Conclusion:** The changes that can be made to the tissue after surgery are a great benefit to patients in need. Where surgery has failed their expectations, prosthodontic conformers bring them closer to their ideal physical appearance.

## 58

Table 18

### **Conventional Removable Partial Denture (Rpd) For Partial Mandibulectomy Patient**

**Dangsuwan,C, Sae-Lee,D.**  
**Khon Kean University**  
**Prosthodontics**  
**Muang , Khon Kean , Thailand**

**Purpose:** For the patient diagnosed with malignant oral lesion invading the mandible, a partial mandibulectomy is unavoidable. Since the surgical defect could impair esthetic and chewing function, therefore a definitive reconstruction is needed. The present study reviewed a treatment for partial mandibulectomy patient by using conventional removable partial denture (RPD).

**Methods & Materials:** A 39-year-old, female patient who was diagnosed with malignancy ameloblastoma. The patient had undergone partial mandibulectomy with iliac bone graft and subsequently was referred for a prosthesis. The defect was classified as Class IV mandibular defect according to Cantor and Curtis (1971). The patient received an interim acrylic partial denture for 4 months during wound healing period and the conventional RPD was constructed as a definitive prosthesis. Results : The result from this study indicated that a proper conventional RPD could provide a remarkable improvement of patient's esthetic and masticatory function.

**Results:** The result from this study indicated that a proper conventional RPD could provide a remarkable improvement of patient's esthetic and masticatory function.

**Conclusion:** The conventional RPD may be an alternative treatment option that can restore the defect to normal function and appearance and may impart the positive psychological effect on the patient's personality.

## 59

Table 19

### **Closure Of A Nasal Septal Perforation With A Individually Designed And Manufactured Silicon Button Using A Stereolithographic 3-D Model. A Case Report**

**De Beer, F.P.; Zylker, T.**

**University Of Maastricht**

**Maxillo Facial Reconstruction.**

**Maastricht, Limburg, Netherlands**

**Purpose:** A perforation of the nasal septum can be very uncomfortable for many patients. Obstruction of the nose passage caused by turbulence, crusting and epistaxis are the main reasons for discomfort. The current way of treatment is a general device constructed using 2 connected soft silicone flanges which can be trimmed at the time of placement. The shape and seating of these buttons is not very precise. With CT-images and Simplant software, a stereographic model is made of the perforation and the surrounding structures. Soft silicon is used to manufacture a button shaped on the stereographic model. This way a button is produced with a very close fit.

**Methods & Materials:** After a CBCT-scan (Cone Beam Computer Tomography) with a slice distance of 0,4mm, a virtual section of the nose septum is made with the help of imaging software. This section is digitally send for rapid prototyping of a model. The model's dimensions must be some smaller then the actual perforation. If the fit was too tight damage could be done to the surrounding tissue. The model of the perforation is used to make a button with 2 component self curing soft silicon. The silicon is placed in close contact to the model. Curing takes 2 hours on 70 C. After curing, the button is removed from the model. After finishing, the button is ready to be placed in the septal perforation of the patient. A patient was treated with a button with a dimension 23 x 16 mm oval shaped.

**Results:** Immediately after placement a relief was noticed. Minimizing the turbulence gives the patient the sensation of a smooth airflow and less obstruction. After a 3 months recall the situation was evaluated. The device was still in place and the patient was satisfied with the result. The result of a smooth airflow still exists. Epistaxis and crusting was reduced to a minimum. In the past the patient was treated with a general devise and had negative experiences, mainly losing the device and poor fit.

**Conclusion:** The patient was satisfied the result and to be treated with the individually designed button. This case will be a start for more intensive research.

## 60

Table 20

### **Simplified Technical Approach To Fabricate Hollow-Bulb Obturator**

**Decha-Umphai, A. And Juntavee, N.**

**Khon Kaen University**

**Prosthodontics, Faculty Of Dentistry**

**Maung, Khon Kaen, Thailand**

**Purpose:** Both open and closed hollow obturators allow for the fabrication of a lightweight prosthesis that is readily tolerated by the patient while effectively extending into the defect. The closed hollow obturator prosthesis gives more beneficial than closed hollow obturator because of the prevention of fluid and food accumulation, reduction air space, and allow for maximum extension. The purpose of this poster is to present an alternative method of closed hollow-bulb obturator fabrication that is simple in technique and using only the heat-polymerized acrylic resin.

**Methods & Materials:** Once the flask is ready to be packed, place a small amount of heat-polymerized acrylic resin at the apex of defect and lateral wall to ½ of defect. Trim the putty-type of poly-vinyl siloxane size less than surrounding defect 2 mm. and put it in the center of the defect. Cover the acrylic resin with a celluloid sheet that overextend on to the acrylic resin by 3-4 mm in all directions. Continue to packing obturator prosthesis in the conventional method. Split the upper-lower half of flask after complete curing, remove the putty mass and celluloid sheet. Mixed the

heat-polymerized acrylic resin again and lining around the junction of acrylic resin and processing again. When complete polymerization, finishing and polishing the obturator prosthesis.

**Results:** Finalize the thickness of the bulb walls when the obturator is deemed comfortable to the patient. After seal the lid with autopolymerizing acrylic resin, the closed hollow-bulb obturator decreased weight and had air-tight seal.

**Conclusion:** The technique presented in this poster is practical for patients who have an exciting closed hollow obturator or might need one in the future. Furthermore, this method is simple and similar to conventional technique that convenience, time, and cost saving.

## 61

Table 21

### **Dental Rehabilitation In Grafted Maxillae And Mandible**

**Dholam K.\*, Pusalkar, H**  
**Tata Memorial Hospital**  
**Dental & Prosthetic Surgery**  
**Mumbai, Maharashtra, India**

**Purpose:** Cranio-facial Implant rehabilitation is a new technology that provides an improved quality of life to patients with facial disfigurement. In the discontinuity defect, the bone grafts and simultaneous endosseous implant placement provides anchorage for the prostheses.

**Methods & Materials:** We report to you our experience of implant retained dental rehabilitation in grafted maxilla and mandible in head and neck cancer patients at our Institute. Two cases of maxilla, seven cases of mandible with free fibular reconstruction were treated. Five patient had received radiotherapy after tumour excision and reconstruction. One patient had undergone surgery, chemotherapy and radiotherapy. There was no recurrence for two years. Reconstruction with primary insertion of implants was planned for the patients.

**Results:** Implant retained removable denture and fixed bridge were fabricated for the two patients who underwent free fibular reconstruction following maxillectomy. In case of grafted mandible two fixed removable prosthesis and five implant retained complete dentures were fabricated

**Conclusion:** The reconstruction of missing teeth and their supporting structures with natural or synthetic substitutes is the objective of oral implants. The ultimate goal is to restore patient to normal contour, function, comfort, esthetics, speech and health regardless of the atrophy, disease or injury of the stomatognathic system.

## 62

Table 22

### **Evaluation Of Heat-Polymerized Polymethylmethacrylate (Pmma)Resin And Ethyl-Vinyl Acetate (Eva)For Attenuation Of Secondary Electron Released From Gold Alloy Crown Afetr Co60 External Beam Radiation**

**Fatmasari F\*, Narkwong L\*\*, Srithavaj T\*, Thannanonta C\*\*, Chotprasert N\***  
**\*Mahidol University Faculty Of Dentistry, \*\* Mahidol University Faculty Of Medicine**  
**Ramathibodhi Hospital**  
**\*Maxillofacial Prosthetics And Rehabilitation \*\*Radiation Oncology**  
**Bangkok, Thailand**

**Purpose:** The use of radiation mouth guard is recommended to be used for the radiation therapy when there is multiple metal dental restorations to protect the patient from the radiation induced oral mucositis. The objectives of this study are to measure the dose enhancement with the presence of gold alloy crown and to evaluate the attenuation of material

which are heat polymerized Polymethylmethacrylate (PMMA) and Ethyl Vinyl Acetate (EVA) to secondary electron released from gold alloy crown after Co-60 external beam radiation using different thickness of the mouth guard used.

**Methods & Materials:** A high gold alloy (Au 74%) crown was fixed on natural tooth and the dose readings were taken at five positions on the bolus material. The dental model was irradiated with 180 cGy (90 cGy for each direction) 900 and 2700 beam directions (left and right laterals) of  $\gamma$ -ray beams with averaged energy 1.25 MeV. To measure the material attenuation, radiation mouth guard with 2.0, 3.0, and 4.0 mm thick were placed on the model and irradiated at the same radiation conditions. The measurements were repeated for four times. The model analysis of three way ANOVA was used in this study.

**Results:** The result showed that gold alloy crown had influence in the mean dose at the buccal and lingual positions of the crown when left and right lateral beam direction were exposed. The dose readings with radiation mouth guards generally was lower than without, with PMMA significantly attenuate radiation was more than EVA. Four millimeter thickness of radiation mouth guard gave the lowest dose when comparing to 2.0 mm thickness. But there is no statistically significant when comparing between 2.0 and 3.0 mm thickness of both materials. ( $P < 0.05$ ) The PMMA radiation mouth guard exhibited a significant lower dose than the EVA radiation mouth guard ( $P < 0.05$ )

**Conclusion:** The effective mean in selection of types of materials and thickness of radiation was clearly stated from the result that the radiation mouth guard with 2.0 mm thickness PMMA is effectively reduced the dose enhancement with minimum dosage reduction to the target volume. When considering to used the radiation mouth guard one can also select both thickness and the material used to reduce the scattering of radiation rays in patient with multiple metal dental restorations.

KEY WORDS: GOLD ALLOY CROWN, BACKSCATTER RADIATION, RADIATION MOUTH GUARD

## 63

Table 23

### Differential Diagnosis And Treatment Of Myotonic And Myofascial Syndromes Of Neck Pain

Filippovich An, Smychek Vb

Research Institute Of Medical And Social Assessment And Rehabilitation, Minsk, Belarus  
Minsk, Belarus

**Purpose:** Methods: The dynamic monitoring of 195 patients with myotonic and myofacial syndromes of neck pain was done against the control group of 45 people. An extended neurological examination was carried out which included roentgenometry of cervical and vertebrocranial areas of spinal column, electromyography of 7 to 9 relevant muscles, finding of the “key” muscle and the overall computer aided assessment of osteomuscular, cardiorespiratory and oxygen transport system disorders. Results: Clinical and electromyographic criteria for diagnosis of myotonic and myofascial syndromes of neck pain were identified based on the occurrence rates. The role of major system disorders in pathogenesis of neurological manifests of neck pain was studied. New therapeutic approaches to stopping pain and myotonic syndromes were developed; the effectiveness of early rehabilitation measures was demonstrated. The prevailing myotonic syndromes were identified which were the musculus obliquus capitis inferior syndrome (in 68, or 39.4% patients); supescapular area syndrome (33% of patients); musculus scalenus anterior and musculus scalenus medius syndromes (18.9%); musculus pectoralis minor syndrome (9.7%). Hypodynamia caused system disorders were noted in 78.3% patients including excessive body mass and fat content; reduced blood circulation rate and heartbeat volume and the pronounced decrease of PWC170. The most informative spondylographic findings were reduced thickness of posterior areas of intervertebral disks from CI to CVII (52.3 to 77.9% of patients), cervical lordosis impression (76.4%) and uncovertebral arthroses (58.2%). Conclusions: The most seriously affected (“key”) muscles in neck pain patients were found. Diagnosis and treatment strategies for neck pain patients were developed.

**Methods & Materials:** The dynamic monitoring of 195 patients with myotonic and myofacial syndromes of neck pain was done against the control group of 45 people. An extended neurological examination was carried out which included roentgenometry of cervical and vertebrocranial areas of spinal column, electromyography of 7 to 9 relevant muscles, finding of the “key” muscle and the overall computer aided assessment of osteomuscular, cardiorespiratory and oxygen transport system disorders.

**Results:** Clinical and electromyographic criteria for diagnosis of myotonic and myofascial syndromes of neck pain were identified based on the occurrence rates. The role of major system disorders in pathogenesis of neurological

manifests of neck pain was studied. New therapeutic approaches to stopping pain and myotonic syndromes were developed; the effectiveness of early rehabilitation measures was demonstrated. The prevailing myotonic syndromes were identified which were the musculus obliquus capitis inferior syndrome (in 68, or 39.4% patients); suprascapular area syndrome (33% of patients); musculus scalenus anterior and musculus scalenus medius syndromes (18.9%); musculus pectoralis minor syndrome (9.7%). Hypodynamia caused system disorders were noted in 78.3% patients including excessive body mass and fat content; reduced blood circulation rate and heartbeat volume and the pronounced decrease of PWC170. The most informative spondylographic findings were reduced thickness of posterior areas of intervertebral disks from CI to CVII (52.3 to 77.9% of patients), cervical lordosis impression (76.4%) and uncovertebral arthroses (58.2%).

**Conclusion:** The most seriously affected (“key”) muscles in neck pain patients were found. Diagnosis and treatment strategies for neck pain patients were developed.

## 64

Table 24

### **Investigation Of The Factors Influencing The Outcome Of Prostheses On Speech Rehabilitation Of Mandibulectomy Patients**

**Hagino A.\*, Inohara K., Sumita Y.I., Taniguchi H.**

**Tokyo Medical And Dental University**

**Department Of Maxillofacial Prosthetics, Graduate School**

**Tokyo, Japan**

**Purpose:** Speech rehabilitation with prosthodontic treatment after mandibulectomy is difficult and there are no detailed reports about speech rehabilitation of mandibulectomy patients with prosthodontic treatment. The aim of this study was to investigate the factors influencing the outcome of prostheses on speech rehabilitation of mandibulectomy patients.

**Methods & Materials:** Eleven patients (6 males and 5 females) with mandibulectomy without glossectomy participated. A Speech Intelligibility (SI) Test was applied without and with a prosthesis. Four factors were determined from the medical records. Two acoustic features were investigated. Five questionnaires were sent out to evaluate subjectively. These eleven items were entered into stepwise multiple regression models to determine the predictors of the differences in SI score without and with a prosthesis.

**Results:** Three variables, the ease of tongue movements, whether soft tissue grafting was undertaken or not and whether the mandibular bone was continuous or not, contributed to the recovery of speech ability with prosthodontic treatment.

**Conclusion:** From our study, clinicians can inform patients of the prognosis prior to start prosthodontic treatment that speech ability is difficult to rehabilitate with prosthodontic treatment in patients with a discontinuity defect or who have undergone soft tissue grafting, but speech ability can be recovered with a prosthesis which supports tongue mobility.

## 65

Table 25

### **Effect Of Nano-Oxides On Color Stability Of Pigmented Maxillofacial Silicone A-2186 Subjected To Outdoor Aging**

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**\*Department Of Prosthodontics; \*\*Department Of Restorative Dentistry And Biomaterials**

**\*Xi'an,Shannxi, China; \*\*Houston,Texas, USA**

**Purpose:** This study attempted to observe whether nano-oxides improve the color stability of pigmented maxillofacial elastome after subjecting to outdoor aging.

**Methods & Materials:** Each of 3 nano-oxides (nano TiO<sub>2</sub>, nano ZnO and nano CeO<sub>2</sub>) at 1%, 2%, 2.5% concentrations were combined with each of 5 intrinsic pigment types (nopigment, red, yellow, blue, or a mixture of the 3 pigments), Silicone A-2186 without nano-oxides or pigments served as a control group, for a total of 46 experimental groups of elastomers. Five specimens of each elastomer were tested, for a total of 230 specimens. In each group of the study, all specimens were aged outside for 1 month, 3 months, 6 months, 9 months, 12 months. CIE L\*a\*b\* values were measured by a spectrophotometer. The color differences (Delta E\*) were subjected to repeated-measures analysis of variance. For statistical analysis, 3-way ANOVA and Fisher's PLSD test were performed to determine if there were statistically significant differences (p<0.05) among the three of nano-oxides with different concentrations and different pigment types.

**Results:** When the nano oxides were tested at all concentrations, nano CeO<sub>2</sub> color had the most color change, and nano TiO<sub>2</sub> had the least after 12 months; For yellow pigment adding with 3 nano oxides at all concentrations showed the biggest color changes. The control group showed great color change than others. All the nano oxides at 3 concentrations were significantly different from each other.

**Conclusion:** Comparing to all concentrations of nano TiO<sub>2</sub> and nano ZnO groups, nano CeO<sub>2</sub> did not protect pigmented silicone A-2186 from color degradation very well; All the 3 nano oxides mixing with yellow pigment had the greatest color changes. Among all the nano oxides groups tested, nano TiO<sub>2</sub> remained the most color stable over time.

## 66

Table 26

### A Novel Impression Method for Maxillary Defect Using Customized Silicone Rubber

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Nihon University School Of Dentistry. Department Of Partial Denture Prosthodontics  
Tokyo, Japan

**Purpose:** The impressions for maxillary defects, having complicated shapes may be difficult to remove due to the flow of the material into the undercuts. Thermoplastic wax, silicon or irreversible hydrocolloid impression materials are currently utilized for maxillofacial prosthesis. However, these impression materials are sometimes dangerous, inaccurate and difficult to use. This study examined the availability of an impression method using silicone rubber mixed with Vaseline for the impressions of maxillary defects.

**Methods and Materials:** Silicone impression material (FusionII, GC, Japan : FS) and customized silicone impression material (mixed Vaseline with FusionII: VF) were evaluated for elastic recovery, strain in compression and detail reproduction, according to ISO4823. Also VF was evaluated in several weight ratios of Vaseline and compared each elastic recovery and strain in compression.

**Results:** Result of the 27wt% Vaseline of VF test showed, Strain-in-compression was 15%, which was approximately equal to the irreversible hydrocolloid impression material, and the Elastic recovery of this material was 99.0%, the same rate as silicone impression material. The VF for detail reproduction satisfied the 20µm on the standard of ISO4823.

**Conclusion:** This Vaseline mixture silicone impression material has both the advantages of irreversible hydrocolloid impression material and silicone impression material. This novel method enables doctors to take impressions that include the complicated undercut, with high accuracy, and also prevent injury to the weak tissue upon removal. Therefore patients would be spared the possibility of pain and damage of their tissue. In this study, we suggest this novel impression method has the potential to take impressions effectively.

## 67

Table 27

### **A Case Report Of Mandibular Prosthetic Reconstruction By Denture Of Special Metal Frame Design**

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**\*)Kanagawa Dental College,\*\*)University Of Southern California, \*\*\*)Yokohama College Of Dental Technorogy.**

**The Rehabilitation Of Maxillofacial Prosthetics.**

**Yokosuka Kanagawa Japan**

**Purpose:** Mandibular tumor resection including surrounding tissues to ensure clear margins for the lower jaw. Reconstructive procedures performed included surgical and prosthetic coordinations. Social and psychological issues relating the impact of successful surgical and prosthetic procedures are important for the restoration of quality of life (QOL). The purpose of this paper is to present a case report of mandibular prosthetic reconstruction following large resection, using and specialized prosthetic surface prosthetic design. The design of the prosthesis is described and reported.

**Methods & Materials:** Chief complaint of dysmasesis and limited oral function. Post-surgical complications included a soft tissue dehiscence of the reconstruction plate. Re-occurrence of dehiscence to the repaired areas occurred with soft tissue swelling resulted in removal of reconstruction plate (2004) and a resulting intraoral defect requiring of prosthetic reconstruction and prosthesis placement for functional restoration.

**Results:** Special design considerations and materials are required for the construction of a tooth borne prosthesis utilized for the larger mandibular discontinuity defect areas. The large tumor resection and subsequent titanium plate removal resulted in larger defect devoid of supporting mucosa of sufficient loading quality. A new design is demonstrated in this case presentation utilizing a titanium denture frame design with a three-dimensional lattice structure. Functional assessment of chewing using a visual analog scale (VAS) and patient evaluation to assess recovery of function was calculated.

**Conclusion:** Advantages of metal support framed prosthesis are as follows: improved durability, dimensional stability and strength, hygiene, soft tissue adaptation and denture sense . Subjective levels of comfort are reported for this prosthesis. These advantages contribute to improved phonetics, and speech pronunciation A mandibular prosthetic reconstruction with the meshwork structure is reported and demonstrated improved phonation and oral functional improvement. Assessments were reported with a VAS of chewing function and speech testing.

## 68

Table 28

### **One Step Curing Technique of Hollow Obturator with Thermoforming Unit**

**Hori,K.1), Miyamoto,T.2), Ono,T.1), Maeda,Y.1)**

**Osaka University Graduate School Of Dentistry**

**1)Department Of Prosthodontics And Oral Rehabilitation 2)Dental Laboratory**

**Suita,Japan**

**Purpose:** Although a hollow obturator is often applied to dento-maxillary prosthesis, it has a few problems such as complexity of fabrication and water leakage to inside. We have invented one step curing technique of hollow obturator with thermoforming unit. In this presentation, we compared the water leakage into the obturator between our new technique and conventional methods.

**Methods & Materials:** In the one step curing technique, after dewaxing the wax denture fabricated conventionally, one size smaller hollow body was fabricated with Erkodule (1.5mm thickness, Erkodent) and set into the investment mould as a core. Then the circumferential part of obturator was cured by the pour type resin (Palapress vario, Heraeus Kulzer) under 0.15MPa, 55 degrees Celsius. 12 hollow obturators (53mm across, 1.5mm thickness) were

fabricated by this technique and conventional methods with Unifast-III (GC) and Super Bond (Sun Medical) each. Each obturator was immersed in colored water (1% fuchsin), and pressurized 30 seconds with the pressure pod. Pressure was increased by 0.05MPa from 0.05 MPa to 0.3MPa for determining the pressure threshold at which colored water leaked into the obturator. For the statistical analysis, the survival rate was calculated with Kaplan Meier method.

**Results:** Even at the pressure of 0.3MPa, no leakage was observed in the obturators by the one step curing technique (100% survival rate). Survival rate of obturators by the conventional method with Unifast-III was 41.3% and that with Super Bond was 11.1%.

**Conclusion:** This technique allowed control of thickness and weight of obturator by amount of relief in fabricating small hollow body. Our results suggested that this technique had the superiority in the water leakage tolerance into the obturator.

## 69

Table 29

### **Implant-Supported Speech Aid Prosthesis In Soft Palate Defect Patient: Case Report**

**Hovijitra Rs, Srithavaj T, Chotprasert N, Thaworanunta S**  
**Mahidol University Faculty Of Dentistry**  
**Maxillofacial Prosthetics And Rehabilitation**  
**Bangkok, Thailand**

**Purpose:** To restore an acquired soft palate deformity using osseointegrated implant-supported speech aid prosthesis and removable partial denture.

**Methods & Materials:** A total of eight osseointegrated implants were used to restore the prostheses, five of which were placed on the maxilla and three on the mandible (Nobel Biocare™, Göteborg, Sweden). On the maxillary arch overdenture, a Hader bar was used with the distal attachment on the Hader bar to retain the speech aid prosthesis. Functional impression was made at the appropriate height of the torus tuberosus and evaluated by cephalometric radiographs. On the mandible, the removable partial denture was retained by Locator® abutments. All the implants' stabilities were confirmed using a resonance frequency analysis instrument (Osstell™ Mentor, Göteborg, Sweden).

**Results:** Retention of the speech aid prosthesis was improved with the implant location covering the anterior posterior spread of the maxillary arch to permit the cantilevered speech bulb function at the desired position. The speech was intelligible and acceptable to the patient. Mastication was vastly improved as well by the mandibular implant supported removable partial denture.

**Conclusion:** Osseointegrated implants are another means of providing better retention for large cantilevered prostheses such as speech aid prostheses that have extensions restoring the velum area. Mastication also was enhanced by both maxillary and mandibular implant-supported overdentures.

## 70

Table 30

### **Corrective Rehabilitation In Improper Position Of The Implants On Segmental Mandibular Arch And Total Glossectomy In Edentulous Patient**

**Hovichitr W\*, Srithavaj T\*\*, Chotpasert N\*\*, Siripan J\*, Boupha K\***  
**Mahidol University Faculty Of Dentistry**  
**Maxillofacial Prosthetics And Rehabilitation, \* Resident In Maxillofacial Prosthetics  
International Program \*\* Instructor**  
**Bangkok, Thailand**

**Purpose:** The attachment on osseointegrated implant can enhanced dramatically retention, stability and support in completely edentulous arch patient and especially in mandibular defect such as mandibulectomy patient. However, for

some circumstance, the improper implant position can cause the treatment to be complicated with an unpredictable outcome. This case report presented a management of such case to obtain a maximum function for patient.

**Methods & Materials:** Patient was a 50 years old Thai male with a history of carcinoma on the floor of mouth. Surgical therapy was performed with a segmental mandibulectomy, total glossectomy and radiation therapy. Surgical reconstructed by using fibular free flap, vestibuloplasty with split thickness skin graft on the surgical site on a mandibular arch. Two osseointegrated dental implants (MKIII Branemark, Nobel Biocare) were placed in the anterior region of the mandible. First, the treatment plan was using two locator abutments, however the position of the implants was placed extended far labially. Alternatively, the treatment was change to gold bar with 2 clips instead to compensate the position. The palatal drop and tongue prostheses was also fabricated.

**Results:** The prosthesis has been restored the functions of patient properly. However, the esthetic outcome still compromise due to the position of the implants and laxity of the lower lip.

**Conclusion:** This case presentation showed the flexibility and how to utilize the implant system that may solve the complication in this situation.

## 71

Table 31

### Evaluation Of Conventional, Immediate Implant-Overdentures And Metal Base Dentures Fabricated At 3-Month After Implantation

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**Purpose:** The objective of this study is to see the difference on patients' satisfaction with existing conventional denture (EC), existing denture placed immediately after implant installation (IP) and metal base (M) denture connected to conus telescope type attachments.

**Methods & Materials:** Eleven patients (age: 51 to 75) wearing mandibular complete denture who had complains of existing conventional denture were included in the study. After obtaining informed consent, 4-implants were placed in between foramen mentale and non-splint type conus telescope type attachments (4 °taper) (Ankylos R SynCone Abutments System, DENTSPLY-Sankin) to anchor the implants. One-stage surgery and immediate adaptation of SynCone abutments were carried out. Then SynCone caps were fixed to existing denture with self-curing resin. Three months later, the new metal base dentures were fabricated. The patients evaluated both the old conventional denture and newly fabricated dentures on general satisfaction (primary outcome), speaking ability, comfort, esthetics, stability, retention, capacity to masticate and ease of cleaning with 100mm VAS. Friedman's test and Student-Newman-Keuls test were carried out to compare EC, IP and M matched pairs of observations.

**Results:** There were significant differences between patients' general satisfaction ratings among the three dentures (Mean values, EC:30.3, IP:58.5, M86.1, P<0.01).

**Conclusion:** As significant differences were observed among the prostheses, M showed strong tendency of favor. This result suggest that the SynCone attachment system with metal base denture is the most effective on edentulous patients subjective ratings.

## The Fabrication Of Palatal Ramp In Conventional Complete Denture For Mandibulectomy Patient

**Intaranongphai,Y. And Limrachtamorn,S.**

**Khon Kean University**

**Prosthodontics**

**Muang , Khon Kean , Thailand**

**Purpose:** The purpose of this article is to present the role of prosthodontists in the advanced rehabilitation of edentulous impairment left over from maxillectomy and mandibulectomy procedures.

**Methods & Materials:** A 52-year-old female was undergone the squamous cell carcinoma surgery and radiotherapy. Thereafter she developed osteoradionecrosis of the mandible. The majority of her mandible and condyle needed to be removed causing mandibular discontinuity. The delayed reconstruction led the imbalance of the lower face and decreased mandibular deviation of the residual segment toward the surgical site. These results caused the patient lost occlusal stability because of the mandible shifting. The palatal ramp was added on the lingual aspect next to the conventional maxillary occlusion rim to obtain proper occlusal contacts in centric position. The stable maxillomandibular relationship was accomplished and later processed into heat-cured acrylic resin denture base.

**Results:** The treatment outcome provides patient's comfort, acceptable chewing function, esthetic improvement and better quality of life.

**Conclusion:** Many advanced surgical procedures of mandibulectomy frequently left the discontinuity of mandibles which were usually difficult to restore to the normal function. The combination with maxillectomy and discontinued mandibles from acquired defects become extremely complicated in every step of treatments. Maxillomandibular records and denture stability are also the common problems and seem to be hardly to achieved.

## Duplicating An Existing Implant Supported Bar To Fabricate An Auricular Prosthesis

**Jacob,P.C., Padmanabhan,T.V.Ora-Care, Orofacial And Dental Clinic 101, Maria Plaza, 81 Coles Rd Frazer Town, Bangalore-560033, India**

**Purpose:** Ears may be congenitally missing or may be lost due to trauma, cancer resection or failed surgical reconstruction. The most successful method of rehabilitating these patients is using an implant supported silicone prosthesis.

**Methods & Materials:** Silicon auricular prostheses need to be replaced periodically as they get damaged, fade or deteriorate. Fabrication of a new prosthesis involves returning the retentive bar to the mold, which can damage the bar. Most importantly patients have to be without their original prosthesis.

**Results:** Our paper discusses a technique which involves the accurate duplication of the bar using burn out copings and self cure acrylic, which are placed in the original impression. Over this type 4 stone is poured to make a cast, on which the auricular prosthesis is fabricated.

**Conclusion:** The mold can then be stored for use in the future, thus expediting the process of fabricating a new prosthesis. It can also be used to fabricate additional prostheses without inconveniencing the patient

## 74

Table 34

### **Anatomical Undercut To Retained The Large Orbital Prosthesis**

**Jangrod N\*, Srithavaj T\*\*, Thaworanunta S\*\*, Wjitworawong A\*\***

**Mahidol University Faculty Of Dentistry**

**Maxillofacial Prosthetics And Rehabilitation, \*Resident, Msd In Maxillofacial Prosthetics (International Program), \*\* Instructors, Maxillofacial Prosthetics (International Program)**

**Bangkok, Thailand**

**Purpose:** This clinical report describes the rehabilitation of a large orbital defect by using anatomic undercut in the defect area as well as using adhesive to retain orbital prosthesis.

**Methods & Materials:** The orbital prosthesis can gain the retention by using undercut supra orbital rim area and remaining medial and inferior bony areas. The bony undercut can be used to gain extra retention for an orbital prosthesis; however, a bud joint margin of superior part of the prosthesis is needed to achieve a proper adaptation of the orbital prosthesis. The adequate anatomic undercut should be at least 7.0 mm in depth and path of insertion is rotated from superior part to inferior part. The prosthesis should have a lighter weight to prevent the gravitational pull. Description of the procedure will be further explained in this report.

**Results:** Retention of the orbital prosthesis was improved by using anatomical undercut in conjunction with adhesive retained prosthesis. The path of insertion must have rotational placement to provide an excellent support and minimize the use for facial adhesive as well as allowing the patient to place the prosthesis more accurately.

**Conclusion:** Large facial deformities is challenging to restore by the adhesive retained prosthesis because of weight of the prosthesis may compromised the facial adhesive. The mobility of soft tissue bed has to closely evaluate for a proper design of the orbital prosthesis. Anatomical undercut can be use to retain the large orbital prosthesis. However, adhesive is necessary to increase the retention with the appropriate anatomical area.

## 75

Table 35

### **Fabrication Of An Orbital Prosthesis For Limited Depth Of Orbital Defect: A Case Report**

**Jangrod N\*, Srithavaj T\*\*, Kethireddy S\*, Kharel A\*, Kethireddy K\* (\*Resident, Msd In Maxillofacial Prosthetics (International Program) \*\*Instructor, Maxillofacial Prosthetics (International Program))**

**Mahidol University Faculty Of Dentistry**

**Maxillofacial Prosthetics And Rehabilitation**

**Bangkok, Thailand**

**Purpose:** This clinical report describes the orbital prosthetic rehabilitation for a patient who underwent multiple surgical reconstruction of the eye with limited depth to fabricate a conventional orbital prosthesis.

**Methods & Materials:** A 25 year old Thai male patient with history of multiple reconstructive surgery of the left eye presented with limited space to fabricate a conventional orbital prosthesis. There was insufficient depth for sculpting the prosthesis of sufficient thickness. A very thin orbital prosthesis was fabricated and processed using MDX 4-4210 medical grade silicone. The orbital prosthesis was retained using water based facial adhesive.

**Results:** Even though the orbital defect was rehabilitated by fabricating an orbital prosthesis, the limited depth affected the overall outcome of the prosthesis. The limited depth of the orbital defect and insufficient thickness of the prosthesis may affect the longevity of the prosthesis.

**Conclusion:** Multiple surgical reconstruction of the eye may not provide the desired esthetic result. Such cases can be rehabilitated by prosthesis as an alternative treatment option to provide esthetic and psychological benefit to the patient.

## 76

Table 36

### **New Cad/Cam System Was Developed To Fabricate A Mimic Prosthesis**

**Jiao, T.**

**Shanghai Jiaotong University, School Of Stomatology**

**Department Of Prosthodontics**

**Shanghai, China**

**Purpose:** To introduce the developing status of maxillofacial prosthetics in Shanghai.

**Methods & Materials:** For the maxillectomy patients, immediate surgical obturator (ISO) was fabricated before the surgery and immediately inserted in the defect 7 to 10 days after surgery. After 3-6 months, definite obturator was applied to the patient. Biological mechanism was done for the patient with semi-maxillectomy defect. Phonetics was evaluated after the patient wearing the prosthesis. For the mandibulectomy defect, removable partial denture was normally used to reconstruct the defect. A new Ti plate was designed to simulate the defect. FEA was used to evaluate the design. As to the facial defect, usually, silicon prostheses were fabricated after impression, detailed sculpting and processing. In addition, a new CAD/CAM system was developed to fabricate a mimic prosthesis. A standard ear date base was generated by spiral CT and UG.

**Results:** Results: ISO can immediately improve patients' phonetics and swallow function after surgery. The metal framework with attachment on the incisor could be one of the options. Patients' phonetics significantly improved one month later after delivery, especially on vowel/o/,/e/,/i/,/v/.RPD can basically satisfy the necessity of the patients with mandible defect. The developed CAD/CAM system can provide an easy way to fabricate a facial prosthesis. The TI plate with 4-6mm hollow-out design might be suitable to replace the mandible defect.

**Conclusion:** Conclusion: Closer collaboration should be established between surgeons and maxillofacial prosthodontists. More detailed design should be completed on the CAD/CAM system and new Ti plate design. More maxillofacial prosthetists should get further training.

## 77

Table 37

### **Comparison Of Food Mixing Ability Among Mandibulectomy Patients**

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**Tokyo Medical And Dental University**

**Department Of Maxillofacial Prosthetics And Department Of Removable Partial Denture Prosthodontics, Graduate School**

**Tokyo, Japan**

**Purpose:** Many papers have been published on surgical mandibulectomy and reconstruction. However, only a few reports refer to masticatory function after prosthodontic treatment in mandibulectomy patients. The aim of this study was to investigate the masticatory function of mandibulectomy patients.

**Methods & Materials:** Twenty-three subjects participated in this study. The subjects were divided into three groups: marginal mandibulectomy group, segmental mandibulectomy group and hemi mandibulectomy group. Mixing Ability Index (MAI) was used to measure masticatory function on the nondefect side and on the defect side with prosthesis. Comparisons were carried out among the marginal, segmental and hemimandibular groups and between the nondefect side and the defect side.

**Results:** On the nondefect side, a significant difference was found between the marginal and the segmental groups, and between the marginal and the hemimandibular groups. In the marginal and the segmental groups, a significant difference was found between the nondefect and the defect sides.

**Conclusion:** Our study suggests that MAI is a suitable method to study the masticatory function in mandibulectomy patients, and that surgical intervention affects the masticatory function on not only the defect side but also the nondefect side in mandibulectomy patients.

## 78

Table 38

### Application Of A Split-Type Obturator For Extensive Maxillary Defect

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Dentistry, \*\*Department Of Prosthodontics

Yokohama, Japan. \*\*Chennai, India

**Purpose:** Since maxillary defect occurring after tumor excision is most often extensive, prosthetic appliance that are used to cover these dento-maxillary defects becomes extremely difficult. The reasons being that the retention of these dento-maxillary prostheses may not be readily achieved, and the placement and removal these of large-sized obturators are difficult. In order to solve these problems, in this study a split-type obturator was applied to a dento-maxillary prosthesis in a patient with an extensive maxillary defect, and a favorable treatment result was obtained.

**Methods & Materials:** Case: The patient was a 76-year-old male who complained of difficulty in mastication due to denture mobility. The patient underwent surgical excision for a carcinoma of the maxillary sinus at another hospital in 1988. The maxilla was completely edentulous, and no missing teeth were noted in the mandible. Impressions for a denture and an obturator were taken separately, and, after inter-occlusal recording and wax denture try-in, a dento-maxillary prosthesis was completed. The border of the denture and obturator was set near the denture basal surface, and four magnetic attachments were used as a retention for the appliance.

**Results:** The dento-maxillary prosthesis inserted in the patient showed sufficient retentive force, relieving denture dislodgement during eating, which was the patient's chief complain. Further more, mastication and speech improved, along with achieving satisfactory esthetics. The patient could easily split, attach, and detach the dento-maxillary prosthesis, and denture cleaning could be completely performed. The new denture also showed marked functional improvement in comparison with the old one.

**Conclusion:** The cleanability of the internal side of the obturator, which is usually poor in dento-maxillary prostheses, showed marked improvement, since the patient himself could split it to clean, and its morphology was also simple. Furthermore, since a channel to achieve close adhesion was set along the entire circumference of the junction between the obturator and denture, the seepage of water into the internal side of the obturator was successfully prevented. Further evaluation of this split type obturators with regard to, the position of splitting and the degree of the retentive force of magnets are considered necessary.

## **Mandibular Guidance Therapy For Lateral Mandibular Defects: An Indian Experience**

**Kar,A.K.\*, Jain,V.\*\* & Parkash,H.\*\*\***

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**\*\*Associate Prof, Division Of Prosthodontics, Centre For Dental Education & Research, All India Institute Of Medical Sciences, New-Delhi, India \*\*\* Director General,Its Centre For Dental Studies & Research, Ghaziabad, India**

**Department Of Prosthodontics**

**Delhi,New-Delhi, India**

**Purpose:** The most common cause for partial mandibular defect is the surgical removal of malignant neoplasm. The main complication after mandibular resection is deviation of mandible towards the surgical side, due to loss of attachment of muscles of mastication. The severity of deviation depends upon tightness of wound closure, scar contraction and radiation therapy.

**Methods & Materials:** Radiation therapy results in more severely scarred and unyielding tissues that adversely affect the prosthodontic treatment. The presence and condition of the remaining teeth also influence the outcome of the rehabilitation of these patients. The suggested treatment modalities to reduce or eliminate mandibular deviation are consisted of inter maxillary fixation (IMF) immediately after surgery for 5-7 weeks or an early exercise program according to the condition of patients.

**Results:** Mandibular guidance therapy is used to correct the mandibular deviation after complete healing of wound. The successful rehabilitation of such patients requires multidisciplinary approach to enable the individual to lead a normal life by restoring the esthetics, functions of mastication and deglutition and by providing psychological support.

**Conclusion:** Thus this poster will discuss the role of mandibular guidance therapy in successful rehabilitation of ten unfortunate patients who reported to our Centres during last five years.

## **The Ocular Defect And Prosthetic Outcome: An Mufd Experience**

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**Mahidol University Faculty Of Dentistry**

**Maxillofacial Prosthetics And Rehabilitation**

**Bangkok, Thailand**

**Purpose:** Ocular prosthesis is a modality that aims to repair total or partial ocular bulb losses or deformities. The main goals are to restore facial esthetics, prevent eyelid collapse deformity, and preserve muscular tonus to avoid anti-symmetrical alterations that might gradually put in. Combinations of available techniques and materials for reconstruction have a role in dictating the prosthetic outcome. The Purpose of this retrospective survey investigated the etiology of ocular defect and the surgical reconstruction on the prosthetic outcome, at Maxillofacial Prosthetic Service, Faculty of Dentistry, Mahidol University, Bangkok, Thailand.

**Methods & Materials:** A total of 600 patients during June 2007 – May 2008 who underwent prosthetic rehabilitation due to ocular globe atrophy or loss were enrolled in this survey. The prosthetic rehabilitation was completed 3 months prior to this survey at Maxillofacial Prosthetic Service, Faculty of Dentistry, Mahidol University, Bangkok, Thailand. Information regarding general identification, gender, age, etiology of the atrophy/loss, affected side and type ophthalmologic surgery and reconstruction, type and outcome of prosthetic rehabilitation performed were collected from their clinical files.

**Results:** This survey had some common outcomes as in the literature. The greatest incidence of ocular globe loss was due to traumatic etiology, followed by pathogenic and congenital etiologies ( $p < 0.01$ ). Comparing the genders, a predominance of male patients was observed ( $p < 0.01$ ). For all types of etiologies investigated in this study, enucleation was the most commonly used surgical procedure for removal of the ocular globe ( $p < 0.01$ ). No statistically significant difference was found between sides ( $p > 0.01$ ). The prosthetic outcome has a greater association for the least invasive surgical procedure.

**Conclusion:** Ocular trauma is a leading cause of severe anatomic and functional impairment of the visual system. The issues discussed in this retrospective survey emphasized the high incidence and frequent severity of eye injuries in young adults causing ocular bulb loss. Prevention should be the primary goal. However, for successful prosthetic rehabilitation it is important to know the etiology of the ocular globe loss in order to render the most suitable therapeutic and surgical approach.

## 81

Table 41

### Relationship Between The Tongue Pressure During Swallowing And Post-Operative Dysphagia In Glossectomy Patients

Kondo, J. \*, Hori, K., Tamine, K., Hamanaka, S., Shiroshita, N., Yamamoto, M., Ono, T., Maeda, Y.

Osaka University Graduate School Of Dentistry

Department Of Prosthodontics And Oral Rehabilitation

Osaka, Japan

**Purpose:** In the glossectomy patients, decline of the tongue pressure against the hard palate during swallowing might be one of the critical factors for post-operative dysphagia. We developed pressure sensor sheet for evaluating tongue-palate contact during natural chewing and swallowing. The purpose of present study was to investigate the relationship between the post-surgical swallowing ability and the state of tongue pressure production in the glossectomy patients.

**Methods & Materials:** Nine patients who were undergone glossectomy participated in this study. Tongue pressure of maximal voluntary tongue thrust against the hard palate was recorded by using our original sensor sheet system. The sensor sheet with five measuring points (Chs.1-5) was attached on the hard palate directly with denture adhesive. For evaluating swallowing ability, the time needed for swallowing 30cc of water was measured, and questionnaire about choking during the meal was administered in each subject. Subjects were divided into two groups (swallow test:  $> 5$ sec or  $< 5$ sec, choking: yes or no). For comparison of tongue pressure magnitude between two groups, Welch's t-test was used.

**Results:** In the results, subjects who took five seconds or more to swallow 30cc water showed lower pressure magnitude at Ch.1 (anterior-median part of the palate). And subjects with choking during the meal had larger pressure difference of tongue pressure magnitude between Chs.4 and 5 (right and left side of the postero-circumferential part of the palate).

**Conclusion:** These results suggested that the decline of the tongue pressure at the anterior-median part and laterality of the tongue pressure in the circumferential part of the palate were related with post-operative dysphagia in glossectomy patients, and that our sensor sheet system is useful tool in the rehabilitation of such patients.

## 82

Table 42

### **Multidisciplinary Approaches For Reconstruction An Acquired Partial Mandibulectomy Patient: A Case Report**

**Kosonittikul R.\*, Kitsahawong S., Limmonthon S. And Juntavee N.**

**Khon Kaen University**

**Department Of Prosthodontics, Department Of Orthodontics And Department Of Oral And Maxillofacial Surgery**

**Khon Kaen, Thailand**

**Purpose:** One of the most consistently frustrating areas of maxillofacial rehabilitation is the treatment of patients who have had cancer surgery of the mandible, a partial or complete mandibulectomy. Recently there has been evidence that occlusal instability of the resected mandible toward the opposing tooth is occurred in higher tendency for such patient combined with upper arch collapse which causes a functional impairment and esthetic unpleasing results. The goal of this case report is to present the prosthodontic therapy combined with orthodontic therapy to reconstruct the patient who has had a partial mandibular resected.

**Methods & Materials:** A 32 years old female with two years after removal of an ameloblastoma in the middle mandibular sextant and this part of the mandible was not reconstructed was referred for wearing prosthesis. A lower removable partial denture was fabricated with double Adam's clasps on left and right lower molars for improving retention with 30 degree teeth was inserted for this patient. Orthodontic treatment using Fan shape palatal expansion device was designed to expand the collapsed upper arch and rearrange the upper tooth discrepancy. The lower partial denture was change every five months interval due to upper arch change from orthodontic treatment. An occlusal registration was done prior to the new prosthesis fabrication on every appointment due to occlusal change from the orthodontic outcome.

**Results:** The patient has worn the 3 series of lower removable prosthesis for 1.5 years without loss of any brackets. The upper anterior teeth were rearranged in the new proper position with 3.5 mm. upper arch expanded with patient's satisfactory appearance. The patient can eat comfortably without any limitations. In addition, masticatory function in this patient was evaluated on tooth contact, masticatory efficiency and rhythm of mastication.

**Conclusion:** Prosthodontic therapy combined with orthodontic therapy may be beneficial for recovering and minimizing the patient with undergone partial mandibular resection who had impaired occlusion with severe tooth tilted. We will continue to observe this case in long term.

## 83

Table 43

### **Evaluation Of Auricular Prosthesis Made Of Adhesive Silicon**

**Koyama, S., Mikami, M.\*, Sasaki, K. \*\*, Sato, N., Hanawa, S. \*\*, Yoda, N. \*\***

**Tohoku University Hospital, Tohoku University Graduate School Of Dentistry**

**Maxillofacial Prosthetics Clinic, \*Dental Laboratory, \*\*Division Of Advanced Prosthetics Dentistry, Sendai, Miyagi, Japan**

**Purpose:** A facial prosthesis may have various problems with regard to retention. The use of osseointegrated implants improves retention, however, their application is limited in Japan. Hence, we proposed the use of a new silicone material with adhesive characteristics for making a facial prosthesis. This study evaluates the properties of adhesive silicon and shows the clinical application of auricular prostheses made of adhesive silicon.

**Methods & Materials:** The adhesiveness of silicon material was given by making the proportion of base silicone and catalyst change to 60:1 from 10:1 (FactorII, Inc. A-2186F). First, the properties of adhesive silicones were investigated by the patch test, the rolling ball tag test, and the tensile test. Then a 50-year-old man, who after burning had defects in the both sides of auricular region, was treated. His defects were reconstructed with auricular prostheses made of adhesive silicone.

**Results:** The adhesive silicon did not induce any skin reaction in the patch test, and it had sufficient adhesiveness in the rolling ball tag test. The adhesiveness of adhesive silicon species differed with the ratio of an adhesion layer to a normal layer in the tensile test. Auricular prostheses were fabricated with the combination of normal silicon for outer-surface and adhesive silicon for skin side. This type of auricular prostheses was successful in terms of retention and patient satisfaction.

**Conclusion:** The study was concluded that: 1) The adhesiveness of auricular prosthesis made of adhesive silicon would be dependent on the ratio of an adhesive silicon layer to a normal silicon layer. 2) The adhesiveness of auricular prostheses made of adhesive silicon was almost equivalent to that made of normal silicon using a medical adhesive agent. It is suggested that the auricular prostheses made of adhesive silicone could be applied in patients with auricular defects.

## 84

Table 44

### **Fabrication Of Dento-Maxillary Prosthesis After Maxillary Antrostomy**

**Kubo,Y., Bando,E., Ichikawa,T.\***

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**Dept. Of Fixed Prosthodontics, Dept. Of Oral And Maxillofacial Prosthodontics And Implantology\***

**Tokushima, Tokushima Pref., Japan**

**Purpose:** The aim of this study was to restore the oral function, especially speech and swallowing with a prosthesis after maxillary antrostomy in 72-year-old male.

**Methods & Materials:** The patient was a 72-year-old male who had had a maxillary antrostomy, and a defect in the maxillae remained without any prosthetic treatment for two years. He had complaints about the leakage of food from the nostril while eating. First an obturator prosthesis was fabricated. Then after removing the fixed prosthesis in the defective side, a dento-maxillary prosthesis was fabricated.

**Results:** A tampon prosthesis used temporarily was very useful for the patient to prevent the leakage of liquefied food from the nostril. The obturator prosthesis was fabricated and evaluated with VF and an acoustic computerized analysis. After removing the fixed prosthesis in the defective bone side upper molar region and extracting abutment teeth, a temporary dento-maxillary prosthesis was fabricated. Rhinorrhea of saliva disturbed the patient while eating, because the prosthesis covered the parotid duct orifice which had moved upward due to the operation. To solve this problem, a funnel-shape was carved on the obturator and a channel was carved on the buccal surface of the dento-maxillary prosthesis. These led the patient to satisfy the prosthesis functionally.

**Conclusion:**

1. A tampon prosthesis applied temporarily was very useful for the patient.
2. A definitive dento-maxillary prosthesis with a funnel-shaped obturator and a channel on the buccal surface of the prosthesis was fabricated.
3. The patient was satisfied with this dento-maxillary prosthesis functionally.

## 85

Table 45

### **Ectodermal Dysplasia: Early Aggressive Intervention?**

**Kurtz, K.S.**

**Director, Maxillofacial Prosthetics-Graduate Prosthodontics New York Hospital-Queens, Director, Prosthodontic Research-Graduate Prosthodontics, Montefiore Medical Center/ Albert Einstein College Of Medicine Associate Director, Advanced Education Program In Prosthodontics, Assistant Director, Advanced Program In Prosthodontics For International Dentists, New York University College Of Dentistry New York, New York, United States Of America**

**Purpose:** Consider treatment alternatives for patients with hypodontia.

**Methods & Materials:** Prosthetic treatment rationale including conventional vs. implant supported prostheses will be outlined.

**Results:** Selected treatment outcomes will be presented with associated positive and negative prognosticators.

**Conclusion:** The question of when and how to restore the dentition in syndromic children with hypodontia is somewhat controversial. Parameters of suggested care will be detailed, with particular attention to the construct of multidisciplinary craniofacial teams and the requisite parental and patient genetic counseling. Rationale for prescriptive surgical interventions will be detailed, with long-term follow-up.

## 86

Table 46

### **Development And Evaluation Of An Oral Health Related-Quality Of Life Questionnaire For Thai Oral Cancer Patients**

**Kuysakorn P\*, Bhalang K, Pibulrattanakit P, Pimkhaokham A, Krisadapong S Chulalongkorn University Oral Medicine Bangkok, Thailand**

**Purpose:** To develop an oral health related quality of life questionnaire for Thai oral cancer patients and evaluate the ability of the index in capturing oral cancer impact on oral and other related organs functioning.

**Methods & Materials:** A modified University of Washington Quality of Life Questionnaire (University of Washington, USA) that had been translated into Thai language and evaluated by a panel of experts was used to question 30 oral cancer patients cross-sectionally. The questionnaire consists of 2 parts. The first part is for evaluating the impact of oral cancer. The questions included inquiry about pain, appearance, daily activity, recreation, swallowing, chewing, speaking, shoulder function, taste perception, saliva quantity, emotion and anxiety. The second part of the questionnaire consists of general questions dealing with global health related quality of life measure. Internal reliability of the questionnaire was analyzed using SPSS 11.5 for Windows.

**Results:** Of 30 patients, 19 were men and 11 were women. The age range was 26 to 79 year old with an average age of 60.33. Main risk factors for oral cancer for these patients were alcohol drinking (76.7) and smoking (60%). The most frequent locations for oral cancer were the tongue (43.3%). Most of the patients had squamous cell carcinoma (96.7%). The internal validity of the questionnaire was quite high at 0.77. Most patients had mild to severe pain and felt that their physical appearance had changed after treatment (86.6%). Most patients cannot swallow (70%). Most patients cannot chew certain foods or cannot chew at all (80%). Most patients have difficulty saying certain words or cannot be understood at all (63.3%). For other questions, it was found that the positive and negative aspects of the answers were equally chosen. For global health related quality of life, the results revealed that most patients (96.6%) had fair to good overall quality of life.

**Conclusion:** The Thai modified version of University of Washington Quality of Life Questionnaire is valid and reliable to be used for Thai oral cancer patients.

## Restoration Of A Lateral Facial Defect With Prosthesis

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**Purpose:** Advanced tumors of the lateral facial region require extensive surgical removal and most patients receive radiation therapy. The lateral facial defects may involve loss of extraoral and intraoral structures including huge parts of maxilla with teeth, associated tissues, significant portion of the cheek, and orbital contents. Most cheek defects are best reconstructed surgically by radial forearm free flaps; maxillectomy and orbital defects are restored with a prosthesis. Radiation therapy, age, health condition, financial status, level of self-motivation can preclude the possibility of surgical reconstruction. Aim of the study. The aim of this case report was to show the possibilities and limitations of restoring lateral facial defects with a prosthesis.

**Methods & Materials:** A 58 year old male patient, with a large left orbital – cheek and maxillectomy defect was formed as a result of multiple surgeries of advanced tumor in the lateral facial region. An interim obturator prosthesis and temporary acrylic resin facial prosthesis were delivered 8 days after surgery. Six months after radiation therapy, a definitive one-piece acrylic resin facial prosthesis and a maxillary obturator prosthesis were fabricated. Impression of the facial defect was made with a thin layer of light body polyvinyl - siloxane (a-silicone) material with a adequate viscosity and flow, in order to avoid compression and distortion of the tissues. Next, a plaster is applied in few layers at a time for a support of the silicon material. After removing, the impression was poured with dental stone (type IV). A wax sculpture is developed on the master cast with restoration of presurgical contours and symmetry. Surface texture was added more prominent than compared to the adjacent skin. Cast is prepared in large dental flask to permit processing under pressure. Heat polymerizing methyl methacrilate material is used to provide intrinsic and extrinsic coloration. After processing, the orbital - cheek prosthesis is delivered by attaching it to the eyeglasses. To prevent the displacement of the inferior third of the prosthesis during mandibular movement, the patient was asked to use skin adhesives.

**Results:** An acceptable esthetic result was achieved, as well as the function of speech and swallow are restored. A problem occurred during mandibular movements resulting from saliva leakage from the inferior portion of the defect. The finished prosthesis is large, rigid, and extends onto mobile tissue.

**Conclusion:** The acrylic resin prosthesis can be used successfully in restoration of facial defects in which minor movement occurs in the tissue bed during function. However, an excellent cosmetic results can be achieved with this material, resulting in a positive psychological impact on the patient and his family. The best results are obtained when the cheek is reconstructed with a free flap and the residual orbital defect is restored with a facial prosthesis.

## Denture Acrylic Incorporated With Silver Nano-Particles: Its Antifungal Effect And Physical Characteristics

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**Purpose:** To assess the antifungal properties of denture acrylic incorporated with Ag nano-particles(Ag<sup>0</sup>?) against C. albicans and to estimate the physical properties of modified denture acrylic.

**Methods & Materials:** Aqueous silver sol was prepared with 10.0 mM of analytical grade AgNO<sub>3</sub> in distilled water. Colloidal Ag<sup>0</sup> with the concentration of 0 (control), 1.08(×10<sup>4</sup>), 10.8(×10<sup>5</sup>), 21.6(×10<sup>5</sup>), 43.4(×10<sup>5</sup>) and 86.4(×10<sup>5</sup>) ?/L were preliminarily combined into the powder of heat-polymerized denture acrylic (Lucitone 199®, Dentsply, USA). After drying at room temperature, Ag<sup>0</sup> -powder was secondly mixed with monomer and processed according to the manufacturer's instruction. Specimens (20 ? × 3.0 ? disc) were fabricated with a custom-mold and resin discs (N=5) were inoculated with 100? inoculums of diluted *C. albicans* (ATCC 66027) then incubated for 24 and 72 hours on 37 ?(Sabouraud broth). Fungal growth was verified and recorded as the mean of colony forming unit (CFU) numerations. Measuring Ag<sup>+</sup> elution from the specimens with AAS (Atomic Absorption Spectrophotometer) and evaluation of physical properties (flexural strength, thermal stability and color change ) were also performed.

**Results:** Ag<sup>0</sup>-denture acrylic did not reveal fungicidal effect rather displayed significant inhibitory properties. At 24-hour incubation, 64.6% fungal reduction rate at 86.4(×10<sup>5</sup>) ?/L when compared with control (0 ?/L Ag) (P<0.01). At 72 hour-incubation, fungal reduction rates were 73.3% at 86.4(×10<sup>5</sup>) ?/L, 46.7% at 43.4(× 10<sup>4</sup>) ?/L respectively when compared with control (P<0.01). Ag<sup>+</sup> elution from the Ag<sup>0</sup>-denture acrylic was extremely low quantities(0.263~1.829 ?/L) as compared with initial amount of Ag incorporation. The physical characteristics of Ag<sup>0</sup>-denture acrylic were reliable in flexural strength and thermal stability but there was shown poor clinical acceptability in color stability.

**Conclusion:** Ag<sup>0</sup>-denture acrylic in this study might act like very low-releasing antimicrobial device and latent antimicrobial material itself with acceptable physical properties therefore it could be clinically meaningful for the prevention of fungal biofilm formation though that is not bactericidal. Further evaluation of long-term stability, toxicity and tolerance studies are still required including improvement of color instability.

## 89

Table 49

### Modification Of The Conventional Removable Partial Denture For An Optimal Seal Between Nasal And Oral Cavity In Maxillectomy Patient

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Khonkane University

Department Of Prosthodontics

Khonkane

**Purpose:** Effective obturation of the maxillectomy defect becomes significantly important in order to prevent fluid leakage through nasal cavity and to decrease the hypernasal voice. Functional impression technique may be used to achieve adequate retention and improve seal of the obturator. This clinical report described a technique of modifying conventional removable partial denture (RPD) by engaging the additional retention to the framework.

**Methods & Materials:** A 33-year-old female, with a history of recurrent hemangioma, presented with a palatal defect (class VI of Aramany's classification). The conventional RPD was designed and fabricated as a definitive obturator after the complete wound healing. However, after insertion for 2 weeks, patient returned with the problem of fluid leakage. With the limitation of mouth opening and sensitive mucosa from radiation, making the new impression was difficult. The conventional RPD was then modified by welding the wrought wire loops to the intaglio of the metal framework, to act as a core for thermoplastic compound during functional impression of the defect. Finally, these wrought wire loops were used to retain the acrylic bulb extended into the defect.

**Results:** The treatment outcomes were satisfactory as the drinking problem was diminished and the speech was also improved.

**Conclusion:** This method provides a simple and comfortable technique for the fabrication of the definitive obturator in a group of patients that difficult to take impression.

## 90

Table 50

### **A Multidisciplinary Approach to The Management of Amelogenesis Imperfecta**

**Lum, M.G.**

**University Of California Los Angeles**

**Maxillofacial Prosthodontics**

**Los Angeles, CA, USA**

**Purpose:** This presentation highlights treatment considerations from a multidisciplinary perspective when approaching amelogenesis imperfecta cases. Amelogenesis Imperfecta is a genetic disorder that affects patients to various degrees. Because the complexity of care often involves multiple specialists, a successful treatment requires good coordination and systematic organization.

**Methods & Materials:** The management of two clinical reports with different severities will be addressed. One patient presents with the milder form, hypoplastic amelogenesis imperfecta and another with the more severe form, hypocalcified amelogenesis imperfecta. Different approaches to treatment will be acknowledged.

**Results:** Successful treatment of amelogenesis imperfecta requires early intervention and multidisciplinary considerations. However, depending on the severity, the hypoplastic form will require a conservative approach, while the more severe hypocalcification form will require a more aggressive treatment. Other considerations such as: age, sequencing of treatment, compatibility of restorative material and cost play a role in determining the treatment outcome.

**Conclusion:** The initial step in addressing amelogenesis imperfecta is to identify the classification. Although the type of treatment is dictated by the degree of the disorder, the overall objectives are similar: maintain primary dentition and occlusal vertical dimension, reduce wear and sensitivity, facilitate transition into permanent restorations and improve esthetics. Once these goals are clear, treatment sequencing must be followed according to appropriate age. Other issues such as compatibility of restorative material, continual eruption and cost are also important factors to consider.

## 91

Table 51

### **Innovative Retentive Designs Of Surgical, Interim, And Definitive Obturators After Removal Of Extensive Scca**

**Mei,S.,Dds; Silken,D.,Dds,MsD; Sturman,I.,Dds; Kurtz,K.,Dds**

**New York Hospital Queens**

**Department Of Postgraduate Prosthodontics**

**Fresh Meadows, NY, USA**

**Purpose:** To restore function, esthetics, and quality of life via new and innovative retentive mechanisms where conventional obturators would not function.

**Methods & Materials:** A sixty-year-old male patient presented with stage IV squamous cell carcinoma involving the left maxillary sinus, left palate and soft tissue external perforation of the left cheek mucosa. Complete excision of the growing mass included a total left and partial right maxillectomy, left external ethmoidectomy, and left sphenoidectomy with flap reconstruction. Obturation of the massive defect was accomplished via a palatal prosthesis with an arch bar that was ligated to fixation screws placed in the zygoma. After initial healing, the surgical obturator was converted to an interim obturator that was suspended and retained with elastics from the ligating wires. Following a course of radiation and hyperbaric oxygen therapy, the definitive prosthesis was fabricated using three separate cylindrical substructures, rigidly connected with a cast mesostructure, to which a superstructure was fabricated with retentive attachments.

**Results:** Proper function, occlusion, phonetics and esthetics were established by the prosthetic reconstruction of this patient. A unique retentive element was designed to aid in transitioning the patient from a state of immense disease, through multiple stages of surgery and healing, and ultimately to health.

**Conclusion:** The patient was successfully restored with a fully functional prosthesis that is both stable and retentive.

## 92

Table 52

### **Evaluation Of Occlusal Reconstruction For Masticatory Function For Mandibulectomy Patients**

**Miyamae, S.\*, Ozawa, S., Tanaka, Y., Amano, Y., Yoshioka F., Asami K.**  
**Aichi-Gakuin University, School Of Dentistry**  
**Department Of Removable Prosthodontics**  
**Nagoya, Japan**

**Purpose:** Application of the maxillofacial prostheses to the mandibulectomy patients is generally effective choice in their oral functional rehabilitation. There are many factors such as clinical conditions of the remained of bone and soft tissue and interocclusal relations that might affect oral function. However, to date there are no distinct guideline of oral functional rehabilitation. The purpose of this study is to access contribution factors of occlusion by evaluation of masticatory performance for the mandibulectomy patients with maxillofacial prostheses.

**Methods & Materials:** Fifteen mandibulectomy patients who had treated in our clinic were participated in this study. The prostheses were well fitted and the patients are all satisfied with those. Two kinds of masticatory efficiency were measured by using the gummy jelly and paraffin cube as test foods. The occlusal force was measured by using Dental Prescale (FUJIFILM, Japan). The masticatory score was evaluated by applying our original questionnaire for the subjective evaluation. Then, correlations of each factor were investigated.

**Results:** It showed the positive correlation between the masticatory score and factors of occlusion (maximum bite force, number of contact points, contact area). Although a positive correlation was confirmed between the masticatory score and two kinds of test foods, it was trifling interrelation. Moreover, distinct correlations between the amount of surface area of comminuted gummy jelly and every factors of occlusion were demonstrated, the strongest one was that of the amount of surface and the contact area.

**Conclusion:** These results suggested that it is necessary to consider increasing occlusal contact area and points on the prostheses in order to achieve the satisfactorily masticatory performance for the mandibulectomy patients. The objective parameters of masticatory functions could be useful for the establishment of guideline for the functional rehabilitation with maxillofacial prostheses.

## 93

Table 53

### **The Evaluation Of Voice Production In Mandibulectomy Patients Using Nhr And Grbas**

**Murase, M., Sumita, Y.I., Mibu, M., Taniguchi,H.**  
**Tokyo Medical And Dental Univ**  
**Department Of Maxillofacial Prosthetics, Maxillofacial Reconstruction And Function**  
**Division Of Maxillofacial/Neck Reconstruction**  
**Tokyo,Japan**

**Purpose:** It was known about mandibulectomy patients have impairments of their speech production, however little is known about the characteristics of the voice production. The purpose of this study was to investigate the difference of the voce production in mandibulectomy patients between the patients accompanied with/without neck dissections and the patients accompanied with/without radiotherapy, using objective and subjective evaluations.

**Methods & Materials:** Nineteen mandibulectomy patients with neck dissection and six mandibulectomy patients without neck dissection are participated in this study. Among them, 11 patients are with radiation therapy and 14 patients are without radiation therapy. All voices were analyzed using a Computerized Speech Lab system model 4400 (Kay PENTAX, Lincoln Park, NJ, USA) and Multi Dimensional Voice Program (MDVP). As a subjective method, NHR was applied and as an objective method, GRBAS was applied for this study.

**Results:** The NHR values were significantly different between the mandibulectomy patients with and without neck dissections ( $p = 0.0304$ ). There was no significant difference of the NHR between the mandibulectomy patients with and without radiation therapy. The GRBAS scale of Grade (G) was significantly different between the mandibulectomy patients with and without neck dissections ( $p = 0.0282$ ). There was no significant difference of the GRBAS scale between the mandibulectomy patients with and without radiation therapy.

**Conclusion:** The same result was obtained from the objective evaluation of NHR and also from the subjective evaluation of GRBAS scale. This research suggested that voice disorders are caused by the neck dissection rather than the radiation therapy in mandibulectomy patients. Therefore we need to focus on the characteristics of voice production in various operation procedures.

## 94

Table 54

### A Clinical Report Of Prosthodontic Treatment After Total Glossectomy

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**Purpose:** In glossectomy cases, due to post-surgical tissue loss at the floor of the mouth, changes to facial appearance occur more frequently than functional impairment of feeding, swallowing and articulation. Although patients experience psychological concern over prosthodontic treatment, they are more concerned about the esthetic changes. Our subject underwent total glossectomy and immediate reconstructive surgery, and was fitted with a dento-maxillary prosthesis.

**Methods & Materials:** A 49-year-old female diagnosed with sublingual cancer at the otorhinolaryngology department of a local general hospital, who underwent submandibular gland extraction and left neck dissection. Subsequently, she developed an enlarged left cervical region and subaural pain, but was diagnosed with no abnormalities at the same hospital. However, concerned over the lack of symptom improvement, she consulted the otorhinolaryngology department of Iwate University Hospital, and upon close examination was diagnosed with floor of the mouth cancer. The otorhinolaryngology and plastic surgery departments performed total glossectomy, mandibular segmentectomy, bilateral neck dissection, and immediate reconstructive surgery using a rectus abdominis myocutaneous flap. Subsequently, she attended the Maxillofacial Prosthesis Clinic at our Orthodontic Center for functional and esthetic rehabilitation, and a dento-maxillary prosthesis was made and fitted. After favorable progress, a fibular transplant was used for mandibular reconstruction. The prosthesis was reconstructed and fitted based on postoperative oral cavity changes.

**Results:** She complained of exposure of a maxillary anterior tooth due to a lower lip depression. Because of a planned lip-support restoration, she was fitted with a dento-maxillary prosthesis keeping her teeth intact. Subsequent jaw stability improved feeding, swallowing and articulatory functions, and esthetics.

**Conclusion:** Due to concern over the patient's psychological health regarding oral cavity changes accompanying total glossectomy and maxilla reconstructive surgery, functional restoration was performed by fitting a dento-maxillary prosthesis. Since support from the prosthesis and accompanying stability were important for maintaining the existing teeth, it was necessary to observe her progress to maintain occlusal position.

## 95

### Table 55

#### **Rehabilitation Of Partial Maxillectomy Patient With Hollow Bulb Obturator After Traumatic Injury**

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**Khon Kaen University**

**Prosthodontics, Faculty Of Dentistry**

**Muang, Khon Kaen, Thailand**

**Purpose:** Management of acquired maxillary defects warrants all facets of patient care from diagnosis and treatment planning to rehabilitation. The common etiologies for acquired defect of the maxillofacial region are resection of tumors and traumatic injuries. Most injuries result in localized defects, avulsed teeth, alveolar fractures and loss of alveolar bone. However, severe oro-facial injuries can cause continuity defects of mandible, create large avulsive defects of the maxilla with extensive loss of adjacent soft tissue. The prosthodontist is most likely to participate in the care of patient. This article presents the rehabilitation of maxillary defect in a case of traumatic injured patient from a motor vehicle with hollow bulb on removable partial denture.

**Methods & Materials:** A 57-year-old Thai male presented a history of traumatic injuries from a motor vehicle accidents to the upper anterior region, with loss of multiple teeth and alveolar bone and subsequent invasive fungal infection of the hard palate. The near total maxillectomy was performed in this patient and leaving only a small portion of alveolar process and the dentition arranged in a linear configuration. Cast full veneer restorations were planned to provide parallel guide planes and to create in occlusal scheme in attempt to reduce lateral occlusal forces on the remaining teeth. The definitive obturator prosthesis with hollow bulb was fabricated to replace the missing maxillary structures.

**Results:** The definitive obturator was fabricated, inserted and checked for fluid leakage, speech and esthetics. The patient reported satisfaction with his swallowing, ability to masticate and speech improvement.

**Conclusion:** Satisfactory functional and esthetic results can be achieved in patients with extensive maxillary defects by means of proper planning and fabrication of an obturator prosthesis.

## 96

### Table 56

#### **Force Control on Occlusal Reconstruction of Prosthetics for Defected Jaw**

**Nishiyama Y., Ohnuki M., Suzuki K., Kikuchi S. And Kaneda K.**

**Tsurumi University School Of Dental Medicine**

**Department Of Removable Prosthodontics**

**Yokohama, Japan**

**Purpose:** Severe absorption of alveolar ridge, partially edentulous dentition without vertical stop, single denture, loss of space for prosthesis, prosthetics for defected jaw, and parafunction are typical difficult cases on controlling the force. This study examined the force control which is perceived conceptually from both sides form, and function. We ranked the typical cases and examined the characteristics of prosthetics for defected jaw.

**Methods & Materials:** From form side, we examined the loss of symmetry and prosthesis space, and recovering the balance between these factors and gaining the space. We report example cases in which a occlusion retainer denture was applied for bite rising and gained the denture space, and another case of dento-maxillary prosthesis, which an occlusal table was applied after heimandibulectomy. From function side, we drew the image of correlation with the size, direction, and balance.

**Results:** Bite pressure impression and FGP technique with FBI tray or occlusal table, in other words, reconstructing an occlusion by recording factors of forms is typical methods for balancing in an occlusal reconstruction of dento-maxillary prosthesis. By applying a retainer shaped metal structure denture or a retainer shaped denture using resin-

ous plate, the patient's occlusion can be obtained in cases with dento-maxillary prosthesis, partially edentulous dentition without vertical stop, single denture, and loss of prosthesis space.

**Conclusion:** In this study, we experimented with ranking the typical cases by drawing images of six components (form and function) focusing on the force control which is perceived conceptually. Six components interact deeply, but dental prosthesis is the only factor we can participate, and controlling the force is left to the patients.

## 97

### Table 57

## Regulation Of Denture Strength In Occlusal Reconstruction Of Maxillary Prosthesis

**Nishiyama Y., Ohnuki M., Suzuki K. And Kikuchi S.**  
**Tsurumi University School Of Dental Medicine**  
**Department Of Removable Prosthodontics**  
**Yokohama, Japan**

**Purpose:** Regulating the strength of a defective prosthesis is difficult in cases such as high levels of ridge resorption, uneven occlusion, single dentures, clearance loss, maxillary prosthesis and parafunction. Here, we focus on the concept of strength in clinical prosthodontics, and discuss our findings in light of morphology and function. The above cases were evaluated, and we performed an investigation regarding the uniqueness of maxillary prostheses from the perspective of strength regulation.

**Methods & Materials:** Morphologically, symmetry, loss of clearance, recovering balance and securing space in maxillary prostheses were examined. Functionally, images were mapped to correlate strength magnitude, direction, and balance. One case reported an occlusal reconstruction for loss of clearance, performed using a resin retainer denture to raise the bite and secure denture space. In another case, an occlusal table was attached, stabilizing the bite in a dento-maxillary prosthesis in response to excision of one side of the lower jaw.

**Results:** In cases which require denture strength such as dento-maxillary prostheses, uneven bite, single dentures and other morphological asymmetries, or in the case of loss of clearance, a metal denture retainer is used. If metal dentures are not practical due to the patient's preference, metal allergies or financial reasons, a resin retainer denture may be used. A resin retainer denture is shock absorbent, and thus will help secure the occlusion short- and mid-term.

**Conclusion:** We focused on "strength" as a central topic in clinical prosthodontics, and performed image mapping on six compository elements of morphology and function, and attempted to evaluate the above cases. In any case, all six elements affected each other significantly, but the only element that can be directly manipulated is the prosthetic device. Thus, the regulation of the strength of the prosthesis must be left up to the patient.

## 98

### Table 58

## Processing A Hollow Obturator: The Ucsf Technique

**Obuhoff, M., Sharma, A.B., Finzen, F.**  
**University Of California San Francisco**  
**Prosthodontics**  
**San Francisco, Ca, Usa**

**Purpose:** This poster will describe and demonstrate the technique developed at UCSF to process a hollow obturator

**Methods & Materials:** Using a patient example demonstrate the entire process

**Conclusion:** A new method to simplify processing a hollow obturator

Table 59

### **A New Method Of Facial Prosthesis Using Ct Data And 3D-Rapid Prototyping**

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**1: The University Of Tokyo, Health Service Center, Tokyo, Japan,**

**2: Aichi-Gakuin University, The Department Of Removable Prosthodontics, School Of Dentistry, Nagoya, Japan,**

**3: The University Of Tokyo, Department Of Oral And Maxillofacial Surgery, Graduate School Of Medicine, Tokyo, Japan**

**Purpose:** Fabricating facial prostheses to restore mid-facial defects, especially including eye ball, involves many challenges because of functional, psychological, and esthetic problems. Before and after surgery, the patients are taken routinely some computed tomography to examine the regions closely. The purpose of this study is to develop the new method to fabricate facial prostheses using computerized tomography images and 3D-rapid prototyping method.

**Methods & Materials:** CT data and photographs of a patient with maxillary defect were used. Because of recurrence, the surgery of tumor including her eye ball was planed. She hoped pre-surgically simulation for facial prosthesis. From CT data, facial defect was made on the computer with Mimics software (Materiarise). The 3D-data of facial defect model and facial prosthesis pattern were made using mirror imaging and photo-mapping method. The facial model and wax pattern were fabricated using 3D-rapid prototyping.

**Results:** Using pre-surgical CT data, the defect with undercut parts was simulated on the computer, and facial prosthesis was designed including 3D position of eye ball by comparing healthy side using 3D simulating software Mimics. The facial model and wax pattern of this simulated case were easily obtained using rapid prototyping method without facial impression technique.

**Conclusion:** We develop the new method to fabricate facial prosthesis using CT data and 3D-rapid prototyping technique. The facial model and wax pattern were easily obtained and could make the following steps of fabricating facial prosthesis easier. This method could reduce the patients' physical and psychological stress usually presented by conventional methods of modeling using facial impression technique.

Table 60

### **A Retrospective Study Of 275 Patients Of Prosthodontic Rehabilitation Following Maxillectomy**

**H. Parkash\* & V. Jain\*\***

**\* Director General I.T.S, Centre For Dental Studies & Research, Delhi Meerut Road, Muradnagar, Ghaziabad 261001 (Up), India**

**\*\* Associate Professor, Department Of Prosthodontics, Center For Dental Education & Research, All India Institute Of Medical Sciences, New Delhi -110029, India.**

**Purpose:** Oral cancers are the major problem of the society in the Indian subcontinent. These patients are commonly treated by excision of the affected maxilla or mandible followed by radiotherapy.

**Methods & Materials:** Maxilla is involved more frequently as compared to mandible. Obturators are the treatment of choice for the rehabilitation of such patients for improving the quality of life. These obturators are classified as surgical, intermediate and definitive obturators according to time of their placement postoperatively. A retrospective study of 275 maxillectomy patients treated with 601 obturators at Tertiary Care Centre in India, from the year 2001 to 2007, was carried out.

**Results:** According to Armany's classification for maxillary defects, Class I and Class II were the commonest defects in partially edentulous patients. Successful rehabilitation of such patients require counseling, education, most important and essential is an integrated team approach.

**Conclusion:** Thus this presentation would like to share the experiences gained from the rehabilitation of these patients with the International Community.

# 101

Table 61

## **Odontosil Silicone Bond to Heat Polymerizing Acrylic Resin by Using Four Primers**

**Pengmanivong D, Kanchanasita W, Srithavaj T, Chotprasert N**

**Mahidol University Faculty Of Dentistry**

**Maxillofacial Prosthetics And Rehabilitation**

**Bangkok, Thailand**

**Purpose:** Obturator is a dental device used to close the oroantral communication. There are various obturator designs using different materials; one comprises of the joint between heat polymerizing acrylic resin and silicone. Primers have been used to increase the bond strength with acrylic resin and silicone. There are many primers available in the market that enhance the bond strength between acrylic resin and silicone. The purpose of this study was to evaluate the tensile bond strength of acrylic resin (Heat polymerizing acrylic resin) and ODONTOSIL silicone by using four primers.

**Methods & Materials:** The primers used in this study were A304, A306, A330G, and SOFRELINER TOUGH. Forty specimens were divided into four groups, each group consisting ten specimens, according to combination of acrylic resin, ODOTOSIL silicone and four primers. All specimens were loaded in tension mode in the Universal Testing Machine with a crosshead speed 20 mm/min until the bonding failure occurred.

**Results:** The results showed a significant difference in the interaction between acrylic resin and four primers on tensile bond strength to ODONTOSIL silicone ( $p < 0.001$ ). The SOFRELINER TOUGH showed the highest tensile bond strength and significantly higher than other primers followed by A330G, A304, and A306 respectively, A330G and A304 had no significant difference in tensile bond strength, but significant higher than A306. The lowest tensile bond strength was found with A306 and significant lower than other primer.

**Conclusion:** These findings showed that the best primer that used to bond ODONTOSIL silicone and heat polymerizing acrylic resin is SOFRELINER TOUGH.

# 102

Table 62

## **Management Of Percutaneous Soft Tissue Around Extraoral Implant And Its Outcome**

**Phoprom J\*, Srithavaj T\*\*, Thaworanunta S\*\*, Kharel A\*\*, Chanthamaly P\*\*\***

**(\*Nurse, \*\*Instructor,\*\*\*Resident)**

**Mahidol University Faculty Of Dentistry**

**Maxillofacial Prosthetics And Rehabilitation**

**Bangkok, Thailand**

**Purpose:** Craniofacial implant auricular prosthesis is an alternative rehabilitation and providing a good retention and fitness of a prosthesis to the skin. Problem of inflammation of subcutaneous tissues around the implant abutment should be carefully evaluate and treat with proper management. There are multiple techniques to clean the area to prevent inflammation of subcutaneous tissues. The purpose of this article is to compare the effectiveness to reduce inflammation using super soft tooth brush in combination with Thai fruit extract (Tannin from Mangosteen fruit) and saline solution.

**Methods & Materials:** Twenty Patients with auricular defect or orbital defect and were rehabilitated with implant retained auricular prosthesis were selected to be in this study. These patients exhibited inflammation of subcutaneous tissues. The instruction was given to patient to use the super soft tooth brush to clean around the abutment of extraoral implant. The patients were divided into two groups, 10 patients in each group. Group A: patients were asked to use Tannin extract with the extra soft tooth brush two times per day. Group B: patients were asked to use Saline solution with the extra soft tooth brush two times per day. The inflammation site was then evaluated weekly for four week.

**Results:** The percutaneous inflammation was reduced by 80% in Group A. However, in group B the percutaneous inflammation was reduced by 40% in Group B.

**Conclusion:** It revealed that the brushing technique regularly perform and Tannin extract has somewhat assist in reducing inflammation. However, the further study should be conducted for its effective use of this Thai fruit extract.

## 103

Table 63

### **Biocompatibility Of Silicone Elastomer Used In Chulalongkorn University**

**Prayadsab,P.**

**Chulalongkorn University**

**Maxillofacial Rehabilitation**

**Bangkok, Thailand**

**Purpose:** This study was aim to evaluate and compare the biocompatibility of Chulalongkorn silicone elastomer with medical grade silicone elastomer by using human gingival fibroblast cell and immortalized human keratinocyte epithelial cell (HaCaT)

**Methods & Materials:** Four groups of silicone elastomer ( Silastic adhesive silicone, Slilastic adhesive silicone coated with polyurethane, Chulalongkorn silicone elastomer, Chulalongkorn silicone elastomer coated with polyurethane) were packed into cylinder disc. The specimen were co-cultured wiith HaCaT and human gingival fibroblast cell to evaluate the biocompatibility test by MTT assay and cell adhesion by SEM.

**Results:** All silicone elastomers show no toxic effect on both human gingival fibroblast cell and HaCaT cells. And both of cell showed well adhesion and spreading on all surface of tested materials.

**Conclusion:** Silicone elastomer used in Maxillofacial prosthetic clinic, Faculty of Dentistry, Chulalongkorn University did not affected on cell viability . So this silicone elastomer can be used as maxillofacial prostheses in Thailand safely for economic reason.

## 104

Table 64

### **Radiographic Analysis Of Facial Structure In Orbital Deformed Patients**

**Putongkum P\*, Chearskul P\*\*, Srithavaj T\*\*, Verayangkura P\***

**Mahidol University Faculty Of Dentistry**

**\*Department Of Orthodontics, \*\*Maxillofacial Prosthetics And Rehabilitation**

**Bangkok, Thailand**

**Purpose:** Retinoblastoma, the most common neoplasm of the eye in children, represents approximately 3% of all childhood malignancies. Radiation therapy and chemotherapy are treatments of choice. Patients who receive radiation treatment to facial bones and developing dental structures may experience altered craniofacial morphology and tooth development. This study was performing to analyze the facial structure in a group of eye-enucleated patients.

**Methods & Materials:** Lateral and posterior-anterior cephalometric radiographs and orthopantomographs of ten orbital deformed patients were obtained from patients in Maxillofacial Prosthetic Service, Mahidol University, Faculty of Dentistry. The x-ray films were analyzed cephalometrically using Mahidol norms and Grummon analysis.

**Results:** All patients demonstrated a flattening of the nose and midface depression with the deviation of the lower part of the face. The lateral cephalometric analysis showed that two of ten patients had skeletal type III relationship with maxillary deficiency. Most of the patients, the affected side of eye enucleation showed the hypoplasia of zygomatic and orbital bones. The posteroanterior cephalometric analysis in revealed showed horizontal plane asymmetry with collapsing to the deformed side, canting in occlusal plane as a result of maxilla and zygomatic bone underdevelopment. The maxillary and mandibular morphology showed difference degree of asymmetry in every patient. The dental midline showed deviation to the defected side. The effects on dental development found in this study are short tapered root, root agenesis, incomplete crown formation and agenesis of tooth formation.

**Conclusion:** The adverse effects of radiation therapy may have severe permanent result on facial and dental development. The degree of deformity depends on amount and location of radiation on orbits and the age at the time of therapy. Lateral and antero-posterior cephalometric analysis can be used tools to evaluate the facial profile and asymmetry in this group of patients in order to provide a proper plan treatment for the improvement of patient oral function.

## 105

Table 65

### **Implant Retained Speech Aid Prosthesis In Edentulous Cleft Lip And Palate Involving Soft Palate Defect: A Case Report**

**Puttipisitchet O, Srithavaj T, Chotprasert N, Klongnoi B**

**Mahidol University Faculty Of Dentistry**

**Maxillofacial Prosthetics And Rehabilitation**

**Bangkok, Thailand**

**Purpose:** To restore a soft palate defect resulting from congenital cleft lip and palate by using osseointegrated implant retained speech aid prosthesis in an edentulous patient as well as restore mastication of a patient.

**Methods & Materials:** A patient with completely edentulous maxilla and mandible with cleft lip and palate was rehabilitated by using six osseointegrated implants, four of which were placed in the maxilla and two in the mandible (Nobel Biocare™, Goteborg, Sweden). A functional impression for the speech bulb was made at the level of torus tubarius and evaluated by means of cephalometric radiographs. A LOCATOR attachment was used to retain the speech aid prosthesis and the mandibular overdenture. A conventional method was used to fabricate the implant retained speech aid prosthesis and the mandibular overdenture to achieve the optimal masticatory function.

**Results:** The problem of posterior palatal seal and peripheral seal due to cleft lip and soft palate defect along with lack of retention in a conventional prosthesis can be solved using osseointegrated implants with LOCATOR attachment. The weight of the prosthesis, especially in a high palatal vault as well as an extension of the bulb exhibited the problem to retain the retention of the prosthesis. Four dental implants in the maxilla were place with positioning for a maximum anterior-posterior spread to minimize the cantilever effect of the bulb. The LOCATOR attachment enhanced retention in the form alignment allowing the patient to easily seat the prosthesis. The improvement of a speech intelligibility was a crucial factor and required the speech therapist to train the patient for the optimal speech requirement. Mastication and deglutition can be also achieved with mandibular overdenture on the edentulous arch.

**Conclusion:** The rehabilitation of an edentulous cleft lip and soft palate defect can be achieved using osseointegrated implants with LOCATOR attachment to improve speech, mastication and swallowing functions. The team approach both speech therapist and maxillofacial prosthodontist can improve the speech intelligibility of this type of deformity. Quality of life issue needs to be stressed and further study should be performed for the best quality care.

## 106

Table 66

### **Used Of Auricular Prosthesis With Retention Magnet**

**Punya-Ngarm V. Wongwattanasilp A.**

**Chulalongkorn University**

**Bangkok**

**Purpose:** This report describe an effective method of positioning retention magnet on patient with two craniofacial implants in temporal bone on defect side.

**Methods & Materials:** A 58 years old thai male patient lost his left ear pinna due to car accident with result in removal of ear pinna except tragus. Two craniofacial implants were placed in temporal bone. Auricular prosthesis

was retained by magnets attached to craniofacial implants. Conventional silicone elastomer prosthesis was made accordingly resemblance with other side. External stain technique was used to create life like appearance.

**Results:** The used of auricular prosthesis with retention magnet shows acceptable retention and esthetic result. The prosthesis with magnetic retention improved patient's appearance and quality of life.

**Conclusion:** The problem of misposition and dislodge of auricular prosthesis can be resolve by implant retained prosthesis which is one of the most effective ways to locate and retain prosthesis. By this technique, Patient's confidence and quality of life can be improved dramatically.

## 107

Table 67

### **A New Protocol For The Treatment Of Mucositis In Course Of Radiotherapy For Head And Neck Cancer: A Clinical Study**

**Rizzatti A., Bosso L., Bosi F., Rampino M., Notaro V., Gassino G., Carossa S.**  
**University Of Turin Department Of Biomedical Sciences And Human Oncology Italy**  
**Department Of Radiotherapy**  
**Department Of Biomedical Sciences And Human Oncology**  
**Department Of Radiotherapy**  
**Turin, Italy**

**Purpose:** Purpose: to evaluate the effectiveness of a new multi-symptomatic therapy aimed at the control and prevention of mucositis in course of radiotherapy for the treatment of head and neck cancer.

**Methods & Materials:** Materials and Methods: fifteen patients took part to this study. They were all waiting to undergo radiotherapy for a head and neck cancer. The combined use of chemotherapy was not considered to be a factor of exclusion from the study. All involved subjects were visited with the following timing:

- T0 prior to radiotherapy
- T1 7 days after radiotherapy was started
- T2 14 days after radiotherapy was started
- T3 21 days after radiotherapy was started
- T4 28 days after radiotherapy was started
- T5 35 days after radiotherapy was started
- T6 42 days after radiotherapy was started
- T7 49 days after radiotherapy was started
- T8 56 days after radiotherapy was started

Patients visited prior to this study (control) were treated without a predetermined protocol, and any mucositis was controlled symptomatically by using anti-inflammatory drugs and mouthwash. All degrees of mucositis were registered according to the WHO model (1979). After a clinical visit and radiological evaluation, both of which were necessary for the evaluation of preoperative needs, patients who took part to this pilot study underwent scaling, evaluation of the salivary flow and salivary pH and measurement of maximal oral opening (at T0). The following tests were performed in the remaining appointments:

- Evaluation of the patient's oral compliance
- Questionnaire for the subjective evaluation of mucositis
- Questionnaire for the objective evaluation of mucositis (WHO)
- Evaluation of salivary flow and pH
- Evaluation of maximal oral opening

**Conclusion:** Conclusions: preliminary data for this pilot study confirm that a strict cooperation between dental hygienist, maxillofacial prosthodontist and radiotherapist lead to a reduction of the subjective symptomatology of patients in course of radiotherapy.

## 108

### Table 68

#### **Two-Piece Obturator With Silicone Bulb Extension To Nasal Cavity In Total Maxillectomy Patient**

**Sakaeo S\*, Wjitworawong A\*, Taeng-On S\*, Wansook P\*, Chotprasert N\*\*, Srithavaj T\*\* (\*Technician, \*\*Instructor)**

**Mahidol University Faculty Of Dentistry  
Maxillofacial Prosthetics And Rehabilitation  
Bangkok, Thailand**

**Purpose:** In a total left and right maxillectomy patient, it is difficult to fabricate an obturator to retain within the defect area. Especially when the nasal septum and inferior turbinate were not removed, the undercut in the nasal cavity could not be used to retain obturator. The purpose of this report reveals the method to fabricate an obturator and laboratory procedure involved.

**Methods & Materials:** A 50 year old Thai male was diagnosed of ameloblastoma of maxillary arch. The patient underwent left and right total maxillectomy. There was no undercut on the nasal cavity and the soft palate remained fully intact. Fabrication of an obturator was done in two separate pieces, the nasal part and oral part. The nasal part of an obturator made of medical grade silicone (Obturasil). The use of magnet was used to retain with an oral part obturator. The oral part was a conventional complete denture, hollowed out the polymethylmethacrylate resin to reduce the weight of the prosthesis. The extension of the prosthesis to soft palate was made to maintain the obturator retention. Scar band around the defect was used to prevent the vertical dislodgement of the prosthesis.

**Results:** The patient could swallow as well as has intelligible speech but mastication was compromised. Patient satisfied with the prosthesis and used the prosthesis with certain limitation.

**Conclusion:** Mastication in left and right total maxillectomy cases cannot be obtained easily. Most of the time patient with this type of defect has persistent problem to retain the prosthesis. Practitioner has to design an obturator using the remaining structures as well as to obtain the maximum retention and prevent the prosthesis from vertical dislodgement.

## 109

### Table 69

#### **Implant Retained Orbital Prosthesis Using Console Abutment: A Case Report**

**Sanohkan S, Chotprasert N, Srithavaj T, Visuttiwattanakorn S**

**Mahidol University Faculty Of Dentistry  
Maxillofacial Prosthetics And Rehabilitation, Bangkok, Thailand**

**Purpose:** Fabrication of orbital prosthesis is challenging for a practitioner to create a natural look due to the location of the facial defect, which can make it noticeable. Implant retained orbital prostheses offer more retention and ease of use for the patient resulting in better quality of life. However, craniofacial implants requiring bone anchorage and their positions may not be adequately ideal for the path of insertion of an orbital prosthesis. Thus, limitation of the implant positions when exhibiting different angulations may cause difficulty in fabrication.

**Methods & Materials:** Using console abutment can correct the position of the implant in the orbital areas to have a correct path of insertion. Description of the usage is available for the market.

**Conclusion:** This case report reveals the use of console abutments providing restorative management options.

**KEY WORDS:** orbital defect, facial prosthesis, extraoral implant, console abutment

## Immediate Loading Of Dental Implants With Prefabricated Restoration Placed With Flap-Less Computer Guided Surgery In The Anterior Maxilla Reconstructed With Autogenous Calvarial Bone Block Grafts. A Case Report

Schioli, G., Spinelli, G., Acocella, A.

Private Practice

Genoa, Italy

**Purpose:** The aim of this contribution is to describe the implement of the Image-guided implantology in a resolution of a complex case for rehabilitation of the anterior maxilla. Injury to the teeth and alveolar process of the maxillary anterior region may cause severe bone deficiency resulting in ridge atrophy and maxillary retrognathism with loss of upper lip support and adverse changes of interarch space, occlusal plane, arch relationship. In the case reported, after bone augmentation with autogenous bone blocks harvested from the skull, an immediate load of endosseous implants with a prefabricated splinted bridge was performed via a flap-less approach and the guided surgery performance. The image guided surgery gives an optimal achieving to reach the correct implant position and a safe flapless surgery. In addition a prefabricated prosthesis according to the Nobel Guide™ protocol has been placed at the time of surgery to perform immediate loading and splinting of implants inserted in previously grafted site, making this procedure reliable and predictable. Finally after a conventional healing period zirconia abutments were placed on each implant body and a metal-free single tooth restorations were cemented to gain optimal aesthetic resolution.

**Methods & Materials:** A 23-year-old woman was referred because affected by traumatic loss of anterior maxillary teeth and alveolar process after a motorcycle injury . The clinical examination revealed severe bone loss of alveolar ridge of the maxillary anterior region, an absence of labial sulcus and loss of upper lip support . For tri-dimensionally reconstruct the maxillary anterior alveolar defect we decided to choose bone blocks harvested from calvarium since they show a great volume stability . After 3 months the double CT scanning according to the Nobel Guide™ protocol was taken and using Nobel Procera® software the insertion of four Nobel Speedy™ Tapered implants (Nobel Biocare AB, Gothenburg, Sweden) were planned and a customized surgical template was developed by using a stereolithographic technology . The surgical template contained all the necessary information for making the stone model, on which a temporary screw-retained prosthesis was fabricated prior to surgery. On the day of surgery under local anesthesia the surgical template was seated into the patient mouth and fixed using the anchor pins verifying its correct position with the opposite arch. Finally implants were placed with 35 Ncm torque . The pre-fabricated temporary prosthesis was screwed on the implants and a X-ray control was performed to assess the correct position of the implants beneath the bone and the correct adaptation of the prosthesis on the implants . Post-operative pain, bleeding and oedema were minimal due to flap-less surgery. After 3 months a panoramic and a clinical control after removal of the temporary prosthesis were performed. After six months the definitive restoration was performed with zirconia abutment and zirconia-ceramic single crowns . There were no signs or symptoms of pain or peri-implant infection during any of the clinical or radiological examinations .

**Results:** The clinical result reported here has shown that immediate loading can be applied even in previously grafted anterior maxillary site, thus shortening the treatment time in compromised cases. The crater-type peri-implant resorption pattern that frequently develops after the first few months of occlusal loading was not observed Patient was satisfied of her aesthetic, phonetic and function .

**Conclusion:** The implant treatment in the aesthetic area after an injury or a tumor resection represent both functional and aesthetic challenge and all scientific , biological and technological tools are required from the diagnosis to the final therapy . An accurate cT scan evaluation comparing the bone tissue availability and the final dental position using a modern software diagnosis is an appropriate approach to decide tridimensionally , vertically and horizontally , the quantity of bone necessary for a correct implant planning and the final prosthetic result . In order to perform the correct position of the implant body and prosthetical platforms respecting the adjacent anatomical structures and to gain the correct angulation for the optimal emergence profile of the final restorations , a computer driven approach seems to be a “gold standard “ of implant placement . In addition this clinical approach give the opportunity to perform a flap-less surgery respecting a safe treatment in terms of accuracy and final results. The use of a cortical multilayered split calvarial bone grafts, which show a very low resorption rate and high dense structure, high primary stability and rigid connection of the implants and an accurate computer-guided planning and implant insertion are the keys of success of the reported technique. More study and randomized clinical trials are needed to assess the predictability of the presented procedure.

Key words: calvarial bone block grafts, immediate loading, computer-aided implantology

## Immediate Loading Of Zygoma Implants With Prefabricated Restoration Placed With Flap-Less Computer Guided Surgery . A Case Report

Schirotoli, G., Gazzerri, C.

Private Practice

Genoa, Italy

**Purpose:** The aim of this contribution is to describe the implement of the Image-guided implantology in a resolution of a complex case for rehabilitation of advanced resorbed maxilla. Periodontal disease and sinus anatomy may cause severe bone deficiency resulting in ridge atrophy and maxillary deficiency with loss of upper lip support and adverse changes of interarch space, occlusal plane, arch relationship. The sinus bone augmentation procedures in terms of floor elevation need often the extraoral bone harvesting related to the dimension of receptor sites and due to the bone available above the sinus the implant placement may be performed in the second stage 4\6 months after the augmentation procedures. The healing period of additional 6 months are required traditionally according to the data literature before implant restoration. The zygoma implants represent a smart option due to the anchorage in the zygoma dense bone and the opportunity to perform an immediate load splinted to other implants placed in the premaxilla. A flapless approach perform using a computer driven impalntology may change drastically the efficiency of this complex surgery give both the surgeon and the patient the shortened treatment option and a miniinvasive surgery treatment.

**Methods & Materials:** A 49 -year-old woman was referred relating to the edentulism in the upper arch. The double CT scanning according to the Nobel Guide TM protocol was taken and using Nobel Procera® software all implants have been planned and a customized surgical template was developed by using a stereolytographic technology. The surgical template contained all the necessary information for making the stone model, on which a temporary screw-retained prosthesis was fabricated prior to surgery. On the day of surgery under general anesthesia the surgical template was seated into the patient mouth and fixed using the anchor pins verifying its correct position with the opposite arch. Four Nobel Speedy TM Tapered implants (Nobel Biocare AB, Gothenburg, Sweden) were placed in the premaxilla prior to the zygoma to rich a more accuracy of stent stabilization. Finally drilling thorough the surgical template the zygoma implants (Nobel Biocare AB, Gothenburg, Sweden) were inserted using a custom mount device ( zygo-in ). The pre-fabricated temporary prosthesis was screwed on the implants and a X-ray control was performed to assess the correct position of the implants beneath the bone and the correct adaptation of the prosthesis on the implants. Post-operative pain, bleeding and oedema were minimal due to flap-less surgery. After 3 months a cT and a clinical control after removal of the temporary prosthesis were performed. After 3 months the definitive dentition was performed with a procera implant bridge and metacrylate aesthetic restorations.

**Results:** The clinical result reported has shown that zygoma implants and immediate loading can be perform using a flapless approach due to the image guided implantology thus shortening the treatment time in compromised cases. Patient was satisfied of her aesthetic, phonetic and function.

**Conclusion:** The lack of contact between the provisional prosthesis and the surgical sites postoperatively reduces postoperative morbidity and the patient can benefit from a comfortable immediate rehabilitation. Post-operative pain, bleeding and oedema were minimal due to flap-less surgery. In addition this clinical approach give the opportunity to perform a flap-less surgery respecting a safe treatment in terms of accuracy and final results. High primary stability and rigid connection of the implants and an accurate computer-guided planning are the keys of success of the reported technique. More study and randomized clinical trials are needed to asses the predictability of the presented procedure.

Key words: zygoma implant, immediate loading, computer-aided implantology

## 112

### Table 72

#### **Long Term Follow Up Of Implants Placed In Grafted Alveolar Clefts**

**Sharma,A.B., Romanowski,R., Vargervik,K., Curtis,D.A.**

**University Of California San Francisco**

**Prosthodontics**

**San Francisco, Ca, Usa**

**Purpose:** This poster will present long term follow up results of implants placed in grafted alveolar clefts. The study was started at UCSF in 1992 and has been previously reported at the ISMR meeting in 1996 and 2000.

**Methods & Materials:** Twenty four patients who were restored with 30 implants were recalled to evaluate the implants. Six patients could not be contacted. The implants were evaluated for integration

**Results:** The poster will present the results.

**Conclusion:** Implants are an option that should be considered for replacing the missing lateral incisor in patients with alveolar clefts

## 113

### Table 73

#### **Relining of Mahidol University Stock Ocular Prosthesis For A Fast Fabrication**

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**Mahidol University Faculty Of Dentistry \*Resident, Msd In Maxillofacial Prosthetics**

**(International Program) \*\*Instructors, Maxillofacial Prosthetics (International Program)**

**Maxillofacial Prosthetics And Rehabilitation**

**Bangkok, Thailand**

**Purpose:** This clinical report describes the method by which an improved fit of MUFD stock ocular prosthesis can be obtained by relining techniques during rehabilitation of ocular defects.

**Methods & Materials:** Ocular defects can be restored with stock ocular prosthesis. However with stock ocular prosthesis, a close adaptation between the tissue bed and the prosthesis cannot be attained in all clinical situations. The presence of voids decreases the potential of the prosthesis movement and can accumulate debris and mucous increasing the risk of infections. These problems can be eliminated by relining the stock ocular prosthesis with materials such as polyvinyl siloxane and processing into heat-cure acrylic. In this report the description of the relining technique will be further explained.

**Results:** Along with increased accuracy in positioning, the adaptation of the stock ocular prosthesis with the tissue bed also improved with this relining method as well as requiring waiting period and chairside time.

**Conclusion:** Relining of a stock ocular prosthesis increases the accuracy of positioning and the adaptation of the prosthesis with the tissue bed. This is an effective method of restoring ocular defects when time is of a constraint and can serve as a transient prosthesis until a definite customized ocular prosthesis is fabricated. However, a large inventory of stock ocular prosthesis with different sclera and iris shade is required to obtain an optimal aesthetic outcome.

## 114

### Table 74

#### **New Design Implant, Free Flap And Radiotherapy**

**Smart,S\*, Chatel,C, Kolb,F, Margainaud,J.P.**

**Institut Gustave Roussy-Cancer Center**

**Head And Neck Surgery**

**Villejuif-Paris-France**

**Purpose:** Very often patients who underwent big resection for a malignant tumor reconstructed by free flap, and receiving radiotherapy can not have the benefit of classic implants because of the small size of the graft and osteoradionecrosis risk.

**Methods & Materials:** The patient, male, 58, underwent maxillectomy for a big carcinoma invading all the maxilla. The surgery has been followed by radiotherapy treatment (70 grays). The defect is reconstructed by a fibula free flap. The rehabilitation challenge was in one hand: how to place implants in a such small and thin bone, and in a second how to avoid osteoradionecrosis doing surgery in irradiated tissues. For all these reasons we used a new generation of implants: mini implants (Imtec\*), which are among the thinnest and the shortest in the market.

**Results:** We placed 5 implants in one surgical procedure, drilling the bone through the tissues without flap. The implants were immediately loaded by a prosthetic denture allowing the patient to recover aesthetic and functions as well as chewing, speaking, and swallowing.

**Conclusion:** This kind of implants allow us to restore patients who previously couldn't have the benefit of maxillofacial rehabilitation. This technic is carried out in one step surgical procedure, without a flap avoiding to expose the bone graft, as result reducing osteoradionecrosis risk. Also the implants can be loaded immediately giving a quick response to the patients expectations.

## 115

### Table 75

#### **Options For A Fixed Implant Restoration Following Mandibular Reconstruction**

**Simon, J.P., Sharma, A.B., Finzen, F.**

**University Of California San Francisco**

**Prosthodontics**

**San Francisco, CA, USA**

**Purpose:** This poster will describe and demonstrate options for implant supported restorations for patients who have undergone a mandibular reconstruction following tumor resection.

**Methods & Materials:** Using clinical examples demonstrate the selection criteria for implant supported restorations.

**Conclusion:** Treatment options for implant supported restoration of mandibular reconstructions

## 116

Table 76

### **An Evaluation Of Microorganism Adherence To Different Surfaces Of Facial Prosthetic Silicone : An In Vitro Study**

**Sitthikhunkitt, P.\*, Arirachakaran, P., Serichetaphongse, P.**

**Chulalongkorn University**

**Maxillofacial Prosthetics Department**

**Pathumwan, Bangkok, Thailand**

**Purpose:** Statement of problem: Microorganism adherence on facial prosthetic silicone plays a major role on skin inflammatory reaction. This could result in skin infection and durability of facial prostheses. The roughness surface of facial prostheses might favor bonding of the prostheses to the skin with adhesive. However surface roughness facilitates mechanical attachment of microorganism. Both bacteria and fungi were founded on facial prostheses. Studying adherence of microorganisms to different surfaces of silicone will be useful for selecting the materials that could minimize microbial colonization on facial prostheses.

This study aimed to determine adherence of five microorganisms on four different surfaces of facial prosthetic silicone.

**Methods & Materials:** Silicone discs of four different surfaces of facial prosthetic silicone (smooth silicone: SS, scrubbed silicone: ScS, smooth silicone coated with polyurethane: SSP and scrubbed silicone coated with polyurethane: ScSP) were fabricated and embedded into five inoculated broths (*S. aureus*, *S. epidermidis*, *C. albicans*, *C. tropicalis* and *S. pyogenes*). Colony forming units of each microorganism on each surface were counted and calculated. Adherence characteristics of different microorganisms were investigated by scanning electron microscopy.

**Results:** Smooth silicone coated with polyurethane showed the least of each microorganism attachment. *S. aureus* adhere to SSP disc:  $6.4 \times 10^3$  cell/cm<sup>2</sup> (total cell count). *S. epidermidis* adhere to SSP disc:  $5.1 \times 10^3$  cell/cm<sup>2</sup>. *C. albicans* adhere to SSP disc: 128 cell/cm<sup>2</sup>. *C. tropicalis* adhere to SSP disc: 93 cell/cm<sup>2</sup>. *S. pyogenes* adhere to SSP disc:  $4.3 \times 10^4$  cell/cm<sup>2</sup>.

**Conclusion:** Surface characteristics of facial prosthetic silicone such as pore size, rough surface texture from scrubbing enhance the microbial colonization. Using silicone coated with polyurethane will minimize the microorganism attachment.

## 117

Table 77

### **Multidisciplinary Treatment Planning for the Ectodermal Dysplasia Patient**

**Smith, A.L.**

**UCLA**

**Maxillofacial Prosthetics**

**Los Angeles, CA, USA**

**Purpose:** Treatment planning for the ectodermal dysplasia (ED) patient presents a challenge because they often require multidisciplinary treatment. A collaboration between prosthodontist, orthodontist, and oral surgeon is needed with a clear treatment plan based on the planned restorative outcome. In addition to other features, ED patients often present with hypodontia, resulting in hypoplastic alveolar ridges. Non-ideal ridge relationships, atypical tooth form, and minimal bone volume present problems for prosthesis fabrication and implant placement. In addition age and craniofacial growth are primary considerations if implants are to be placed. When planning treatment for an ectodermal dysplasia patient, there are several factors to examine to properly plan for a successful outcome.

**Methods & Materials:** Patient examples will illustrate some of the factors important in determining the ideal tooth position and treatment outcome, as well as prosthetic tools used to evaluate them and achieve the planned goals.

**Conclusion:** A combination of surgical, orthodontic and prosthodontic treatment are used to create the anatomy and skeletal relationships required to achieve the desired restoration for our patients.

## 118

Table 78

### **Mandibular Guided Prosthesis For Mandibular Discontinuity Defect With Muscle Reprogramming Course**

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**Purpose:** The purpose of this report is to reveal how to fabricate the swing-lock mandibular guided prosthesis for mandibular discontinuity defect patient as well as using the muscle training program to achieve the maximum proper occlusion and mastication.

**Methods & Materials:** Two patients presented with the mandibular discontinuity defect and the muscle training program was offered to reprogram the muscle to achieve the intermaxillary-mandibular relationship. The mandibular guided prosthesis was fabricated to assist in cooperation with a muscle training program.

**Results:** Even though the patient has mandibular discontinuity defect, the exercise program appeared to assist to obtain the optimal occlusion and the intermaxillary-mandibular relationship. After the patient experienced the reprogram muscle course, a conventional removable partial denture can be fabricated. In the Case I, a swing-lock removable partial denture was designed and a mandibular guided prosthesis was no longer used.

**Conclusion:** From our experience, the case of a mandibular discontinuity defect should be immediately referred to our service to obtain an instruction of muscle reprogramming course. The mandibular guided prosthesis can be used to improve and assist with the muscle reprogramming course. Once the patient achieves the optimal occlusion and the intermaxillary-mandibular relationship, the conventional removable partial denture can be definitive prosthesis for the patient. However, patient selection is an important issue to enroll in this method offered.

## 119

Table 79

### **Neutral Zone Technique For Denture Fabrication In Partial Mandibulectomy Patient**

**Somsopon, R. Sae-Lee, D.**

**Khon Kaen University**

**Prosthodontics, Faculty Of Dentistry**

**Muang, Khon Kaen, Thailand**

**Purpose:** In a mandibulectomy patient, chewing and speech problem can become significant due to the lost of lower natural teeth and alveolar bone. The purpose of this clinical report described about methods to fabricate dental prosthesis with optimal stability and retention, the proper arrangement of artificial teeth and the external contour of the denture in neutral zone.

**Methods & Materials:** A 45-year-old Thai male utilizing a neutral zone concept to construct a lower complete denture. This patient had history of ameloblastoma at left mandible and underwent a partial mandibulectomy with iliac crest bone graft, that resulted in severely inadequate ridges. A lower complete denture was fabricated by the use of neutral zone technique to regain oral function and appearance for the patient. An acrylic resin tray was constructed with the retentive component attached to the area of mandibular ridge. Border molding was performed with Type I impression compound (Green compound, Kerr®) to ensure a proper border length and to assist in

retention of the mandibular tray. A compound was placed to the retentive component to act as a core of occlusal rim and the occlusal portion of the compound occlusal rim was adjusted to correct the vertical dimension. Soft liner was subsequently applied on buccal and lingual aspects of the compound. The patient was instructed to follow a regimen of swallowing, sucking and pronouncing “ah, oh, oo, ee” sounds. This procedure was repeated until the soft liner was completely set. An interocclusal record was made between maxillary teeth and the mandibular compound/soft liner occlusal rim. An impression of the tissue surface was finally made with silicone using a close mouth technique. The similar fashion for fabricating conventional complete denture was followed.

**Results:** The treatment outcome was satisfactory as chewing function was improved.

**Conclusion:** The neutral zone impression technique could provide an optimal stability and retention of the prosthesis.

## 120

Table 80

### **Designing And Fabrication Of Silicone Auricular Prostheses With Supportive Retention**

**Soujoudi,M. Mirfazaelian,M. Bahramizadeh,M. Mardani,M.A.Vahab Kashani,R.**  
**University Of Social Welfare And Rehabilitation**  
**Orthotics And Prosthetics**  
**Tehran , Iran**

**Purpose:** The purpose of this study was to design and fabrication of silicone auricular prosthesis for a patient who has lost ear partially.

**Methods & Materials:** this auricular prostheses fabricated for patient who has an accident two month ago and he has lost upper portion of his ear . In present discovery study; the silicone auricular prosthesis has been designed and fabricated with RTV silicone. During making the wax model on the plaster cast, it was refined by extending the posterior wing onto the posterior surface and angles of the stump. Once hardend the silicone prosthesis that was sculpted on the wax model, the extended and thin layer of silicone wing can fitted the prosthesis to the patient's ear without adhesive by snapping it onto his eyeglass earpiece or special adhesives.

**Results:** Improvement in ease of use and supportive retention appear to increase prostheses use when compared an adhesive or eyeglass-retained prostheses .

**Conclusion:** Manufacture of the cosmetic silicone auricular prosthesis with supportive retention is useful only for the patients who has lost ear partially.

## 121

Table 81

### **Effects Of A Denture Adhesive In Edentulous Maxillectomy Patients**

**Sumita, Y.I., Otomaru, T. And Taniguchi, H.**  
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**Department Of Maxillofacial Prosthetics**  
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**Purpose:** Maxillectomy patients are suffering from the functional impairment. It is true that the implant is useful. However some of them can not receive the operation because of their treatment history including radio therapy. For them, denture adhesive (DA) is the final item. However little is known about the usefulness of the DA especially for the maxillectomy patients. The objective of this study is to evaluate the usefulness of the DA in edentulous maxillectomy patients.

**Methods & Materials:** The subject investigated in the present study was an edentulous maxillectomy patient. The patient who participated in this study, reject or can not receive the implant operation with any reason. After delivery

the dento-maxillary prosthesis, their speech and masticatory functions were investigated objectively using a speech intelligibility test (SI-test) and mixing ability test (MAI), respectively. New Polygrip cream type (Glaxo Smith Kline, UK) was used as the DA on the remaining residual ridge.

**Results:** The result of SI-score without prosthesis is about 20%. After deliver the prosthesis, the score increased 44.6%. And after using DA it increased again 6.24%. In the mixing ability test, nobody can bite the wax cube without prosthesis. Thus the data was calculated as follows; MAI with DA – MAI without DA. The mean value is 0.069.

**Conclusion:** Use of the denture adhesive can lead an improvement of the Speech Intelligibility and the masticatory function. However, some patients' data showed DA can not help the patient's masticatory function. It is necessary to gather more number of data and categorize the defect size and location for each patient and need to reveal the effect of DA in edentulous maxillectomy patients.

## 122

### Table 82

#### The Efficacy Of Palatal Lift Prosthesis: A Case Report

**Suppapaibul P, Boontham O, Serichetaphongse P**

**Chulalongkorn University**

**Department Of Prosthodontics**

**Bangkok, Thailand**

**Purpose:** Patients with palatal defect from post surgical consequences struggle with their speech, regurgitation and others. Most of the patients were adult and natural adaptation will be unrealistic. In such circumstance, they require aiding device to regain these functions. Post surgical palatal defect patients mostly loss control of structures such as muscle and tissue of soft palate. Palatal lift prostheses design to substitute the lost palate, closing oro-nasal communication, lifting the remaining tissue and rehabilitate pronunciation. This report suggests the techniques and evaluation of treatment outcomes.

**Methods & Materials:** A 44 years old woman presented with post surgical defect at soft palate from tumor resection of adenoid cystic carcinoma stage II. She had previously received radiotherapy at 6,000 cGy. A thorough radiographic study of all remaining teeth shows normal status. Immediate obturator was applied during healing phase. The palatal tissue was perforated and constricted which induce insufficient and incompetent of soft palate leading to hypernasal sound and regurgitation of liquid. Treatment was planned in two phases, the interim acrylic obturator and definite obturator with acrylic extension reaching velopharyngeal space. The model was taken by irreversible hydrocolloid reaching the soft palate and velopharyngeal space. Palatal extension was constructed with altered cast techniques by molding with modeling compound and thermoplastic wax at velopharyngeal space while patient swallowing and changing the head posture. Test for breathing, swallowing and phonation to ensure the sufficient efficacy of the extension.

**Results:** Patient was able to adapt with the device well with high efficiency of phonations. The articulating sound at velopharyngeal space was clearly notice and also achievement in breathing, chewing, swallowing and speech.

**Conclusion:** The palatal lift prosthesis improve he function for patient with palatal defect effectively. Techniques and applications are the key factors in constructing the device with knowledge based on anatomical and functional contribution.

## 123

Table 83

### **Association Between Morphological Factors Of Condyles And Mandibular Alveolar Ridge Shape In Complete Denture Wearers**

**Suzuki K., Ohnuki M., Nishiyama Y., Shiina N., Hosoi T., Kobayashi K.\*, Kaneda K.**  
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**Department Of Removable Prosthodontics, \*Department Of Oral Radiology**  
**Yokohama, Japan**

**Purpose:** We have been investigating factors that influence morphological changes in the Condyle. We previously reported that considerable lateral deviation during protrusive mandibular movements occurred at a high ratio in patients with certain morphological factors affecting the condyles. This study investigated the relationship between morphological factors of the condyles and the mandibular alveolar ridge shape in complete denture wearers.

**Methods & Materials:** The subjects consisted of 76 edentulous patients (34 males, 42 females: mean age, 68.9±8.2 years). The shape and bone changes in the condyles were examined by panoramic radiography. Using occlusion rims, the width and height of the mandibular alveolar ridge corresponding to the canine areas (C), first premolar areas (P1), second premolar areas (P2), and first molar areas (M1) were measured bilaterally, and the relationship to morphological factors of condyles was evaluated.

**Results:** Eighty-four condyles (55.3%) demonstrated round condylar shapes. Bone changes in the condyle were found in 28 joints (18.4%). The mean width of the alveolar ridge was C:9.9 mm, P1:10.5 mm, P2:11.6 mm, M1:13.1 mm. The mean height of the alveolar ridge was C:4.3 mm, P1:4.5 mm, P2:4.9 mm, M1:5.3 mm. The height of the mandibular alveolar ridge was significantly higher in patients with bone changes in the condyles than in patients without such bone changes.

**Conclusion:** These results suggest that bone changes in the condyles were associated with mandibular alveolar ridge height in complete denture wearers.

## 124

Table 84

### **Restorations Of Large Facial Defect To Attached With Maxillary Obturator In Total Maxillectomy Patient**

**Taeng-On S\*, Wijitworawong A\*, Wansook P\*, Srithavaj T\*\*, Chotprasert N\*\***  
**(\*Technician, \*\*Instructor)**  
**Mahidol University Faculty Of Dentistry**  
**Maxillofacial Prosthetics And Rehabilitation**  
**Bangkok, Thailand**

**Purpose:** The large deformity of the facial structure and intraorally deformed of maxillary in a total maxillectomy case is very difficult to restore. The remaining tissue bed may not be adequate in using as adhesive retained to obtain maximum retention. Oral function also is compromised. This case presentation reveals the process of restoration both intraorally and extraorally for this type of patient.

**Methods & Materials:** A 54 year old Thai female was diagnosis with mucoepidermoid carcinoma of a right maxillary sinus. Surgical procedure was performed to remove the right orbit, the nose and the right side of the face included the sinus areas as well as removal of the total left and right maxilla. The remaining structure intraorally was the soft palate. The acrylic facial prosthesis was fabricated as temporary prosthesis. The magnet was used to retain the obturator and the large facial structure together. The definitive silicone facial prosthesis was fabricated in connection with the obturator. The patient used both prostheses but maximum function could not be obtained. The procedures of fabrication were described in detail in this report.

**Results:** Patient was capable to function in swallowing, speaking but lack of adequate mastication. The prostheses lasted for 6 years with adequate esthetics and function.

**Conclusion:** Quality of life of this patient was enhanced by both prostheses. However, the weight of the prosthesis caused the dislodgement especially when patient had to performed mastication. The service for the patient was attempted to gain the best possible living status of the patient even though could not achieve all the patient oral function requirement.

## 125

### Table 85

#### **Computer-Guided Implant Placement: 3D Planning Software, Fixed Intraoral Reference Points And Cad/Cam Technology To Restore Edentulous Patients: In Vitro And Clinical Trial**

**Tahmaseb, A.\* , Wismeijer, D.**

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**Amsterdam, The Netherlands**

**Purpose:** The primary purpose of this study is to investigate the accuracy of digital processing of CT-images to 3-D models which will be used to design and fabricate the drilling guide and the final suprastructure based on usage of diagnostic (mini-) implants and the reaction and the survival of the implants due to so called immediate loading protocol. Moreover the investigators tried to measure the misfit-induced strain on implant-supported suprastructures , fabricated according to this protocol, and compare it with the suprastructures which are fabricated in dental labs according to more traditional impression technique protocol. This is a new concept in implant surgery based on elaborating of the Ct-scan images and computer processing in order to create a digital 3D model using mini implants as references to transfer the information from the computer to the patient with a high precision. This 3d creation in addition to diagnostic transfer (mini-)implants will lead to possibility to digitally plan a case, design and fabricate a surgical guide and eventually the final suprastructure which will be in placed at the time of the surgery.

**Methods & Materials:** A master cast of edentulous mandible was fabricated with barium sulphate contained resin. After placement the mini-implants , specially designed and fabricated together with Straumann company, a digital cone-beam CT-scan was executed. After segmentation , the images were imported into ,for this reason developed, planning software and 6 modified Straumann Standard implants were planned in the test model. The planning data were imported on their turn into the CAD/CAM designing software where the surgical guide and suprastructure were designed and then fabricated by simultaneous 5 axes milling machinery. The implants were inserted using the fabricated surgical template which was connected on the 3 mini-implants. The fabricated suprastructure was placed immediately after the implant insertion. The strain measurement were done using strain gauge devices and were recorded using computer software. Clinical trial: 35 patient with edentulous mandible or and edentulous maxilla were treated according the same protocol.

**Results:** The strain induced by misfit due to computer-assisted preoperative implant planning and CAM-designing and fabricating of the suprastructures is at least comparable and in the most of cases less than the strain measurements in more traditional impression protocols. The implant failure in these immediate loading cases does not seem to be different than the delayed loading data

**Conclusion:** Usage of reference implants to transfer the information from computer to the patient seems to increase the data the precision of the data transfer considerably. Due to this level of precision we can reliably produce the final restoration prior to the actual implant insertion . This study indicates that the small suprastructures misfit does not per se lead to biological failure of immediately loaded implants. The (real time) immediate loaded implants seem to topographically adapt the prosthesis, thereby minimizing the existing misfit.

## 126

Table 86

### Effects Of Ionizing Radiation On In Vitro Differentiation Of Osteoblasts

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**Purpose:** Radiotherapy influences bone formation at the surfaces of endosseous implants used for maxillofacial prosthetic rehabilitation in patients with oral tumors. We hypothesize that ionizing irradiation affects the differentiation and cellular physiology of osteoblasts, and thereby impairs bone matrix formation and mineralization in the bone wound healing that occurs during the process of osseointegration. The aim of this study was to investigate how the dosage of ionizing radiation affects differentiation of osteoblasts in vitro.

**Methods & Materials:** Osteoblasts were isolated from the bone marrow of Wistar rats. They were exposed to 0, 40, 400, or 4000 mGy of gamma-radiation (using cobalt-60) and cultured for 5, 7, 10, or 14 days. Assays were performed for cell adhesion and alkaline phosphatase activity. Electron probe microanalysis was used to monitor bone matrix mineralization. The reverse transcription-polymerase chain reaction was used to determine mRNA expression for alkaline phosphatase, bone sialoprotein, collagen ?, osteocalcin, heat shock protein 47, and b-actin.

**Results:** Irradiation of less than 400 mGy induced no significant changes in cell adhesion, alkaline phosphatase activity, or osteoblastic gene expression, compared to controls. Electron probe microanalysis indicated that Ca and P signals were more evident throughout the culture period at doses of up to 400 mGy than at 4000 mGy. Bone matrix mineralization was reduced at 4000 mGy.

**Conclusion:** These results suggest that the phenotypic and molecular changes induced in osteoblasts by higher doses of ionizing radiation interfere with differentiation and delay the mineralization of bone matrix.

This work was supported, in part, by the High-Tech Research Project (2005-2009), from the Ministry of Education, Culture, Sports, Science and Technology of Japan.

## 127

Table 87

### An Interim Obturator For Partial Maxillectomy ; A Case Report

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Khon Kaen University

Prosthodontics, Faculty Of Dentistry

Muang, Khon Kaen, Thailand

**Purpose:** Effective oral rehabilitation following the surgical resection of oral and oropharyngeal cancer is needed to maintain the patient's quality of life. However, a definite prosthesis are unable to construct during the wound healing period. Thus the interim obturator should be given to the patient for maintaining esthetic and masticatory function.

**Methods & Materials:** This clinical report described the prosthodontic treatment for a 35-year-old male with acquired maxillary defect using an interim obturator prosthesis. A patient was presented with squamous cell carcinoma on the right maxilla. After the right partial maxillectomy, the surgical obturator was provided to separate the oral and nasal cavity. When a radiation therapy was completed, an acrylic partial denture was constructed as an interim obturator.

**Results:** The patient was satisfied with the treatment due to the improvement in speech, chewing ability and swallowing.

**Conclusion:** The acrylic partial denture can use as interim prosthesis in this patient for function and esthetic. After completed healing of surgical defect, a definitive obturator will be planned to provide an optimal form, function and esthetic.

## 128

Table 88

### **Patient Satisfaction With Ocular Prosthesis – A Quality Of Life Survey**

**Teoh Kh \*, Cheng Jf, Seah Ll, Fong Ks**

**National Dental Centre/Singapore National Eye Centre**

**Department Of Restorative Dentistry**

**Singapore**

**Purpose:** The loss of an eye can cause significant physical and emotional stress to patients. They may have difficulty in adjusting to the functional disability caused by the eye loss, and to societal reactions to the facial impairment. Replacement of the lost eye with a customized ocular prosthesis is necessary to promote physical and psychological healing for the patients. Many QOL studies have reported on patient satisfaction with ocular surgeries such as cataract surgery, corneal transplantation and LASIKS, but only a few that evaluated patient satisfaction with ocular prosthesis. The aims of this study were to evaluate patients' perceptions of treatment with ocular prosthesis and to ascertain variables that may affect their perceptions.

**Methods & Materials:** In this study, a total of 36 patients who had been treated at the Oculoprosthetic clinic at the Singapore National Eye Centre with at least 3 months of wearing were included. The protocol was approved by the center's Institutional Review Board. Informed consent was obtained from all subjects who had agreed to participate in the study. A 23-item questionnaire was administered for evaluation of patients' satisfaction, perceptions of comfort, appearance, ease of use and level of self-consciousness. At the same review visit, patients' demographic data and clinical parameters were obtained.

**Results:** Of the 36 patients surveyed, twenty-two were males and fourteen were females with a M:F ratio of 3:2. The mean age was 47.8 (range 13 to 93 years) and the mean duration of prosthesis wear was 21.1 months (range 4.5 to 42 months). Ten patients (27.8%) had phthisical globe, 21 patients (58.3%) had enucleation or evisceration with implant placement and the remaining five (13.9%) had enucleation or evisceration without implant placement. Sixty-nine percent of patients (n= 25) were very satisfied and 31% (n=11) were satisfied with the outcome of the ocular prosthesis. In terms of ease of use, 31 patients (86.1%) found it easy to insert and remove the prosthesis. Twenty patients (63.9%) were very comfortable with the prosthesis. Thirty-four patients (94.4%) felt more confident in public and 26 patients (72.2%) felt that the prosthesis treatment was worthwhile. However, 22.2% (n=8) of patients felt that the motility of their prostheses was poor. When comparing the overall satisfaction with the demographic and clinical variables, none was significant due to the small sample size.

**Conclusion:** Patient satisfaction with ocular prosthesis was relatively high (69%) and comparable to other study (71.8%) (Song JS et al 2005). The ease of use, comfort and appearance of the ocular prosthesis seem to have an impact on patients' satisfaction, social and psychological wellbeing.

## 129

Table 89

### **Oral Colonization Of Candida Species In Patients Receiving Radiotherapy In Head And Neck Area**

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**\*Microbiology, \*\*Maxillofacial Prosthetics And Rehabilitation**

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**Purpose:** To investigate oral Candida strain diversity in patient receiving radiation therapy to Head and Neck cancer compared to controles by conventional procedures including cultivation of imprint samples on chromogenic medium and subsequent identification using Analytical Profile Index testing

**Methods & Materials:** Twenty-two irradiated patients age 18 to 55 years were recruited from the Maxillofacial Prosthetics Service, Mahidol University. Concomitantly, 22 healthy individuals whose age and sex matched that of the patient group were selected for a control group.

**Results:** All patients studied were Candida carriers and were predominantly infected with *Candida albicans* (86.36%). Besides *C. albicans*, other yeasts colonizing the oral cavity of these patients were *C. glabrata*, *C. krusei*, and *C. tropicalis*. Candida carriage was found relatively less frequently (45.45%) in control subjects. However, *C. albicans* was still the predominant species detected. No *C. dubiliniensis* was found in either group.

**Conclusion:** Head and neck cancer patients who had received radiotherapy had a high prevalence of Candida colonization in the oral cavity. Consequently, prophylaxis to reduce Candida infection in these patient is required. This may improve the quality of life for patients who receive irradiation treatment for malignant cancer.

## 130

Table 90

### **Color Degradation Of Facial Silicones: Comparative Study Between Medical Grade And Food Grade Facial Silicones**

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**Maxillofacial Prosthetics Rehabilitation**  
**Bangkok, Thailand**

**Purpose:** The purpose of this study was to compare color degradation of medical grade and food grade silicones when exposed to environmental effects for different times to get information in selecting proper facial silicones.

**Methods & Materials:** Eight groups of MDX 4-4210 and VST-50 elastomers were prepared and mixed with yellow silicone fluid colorant. The specimens were exposed to 4 conditions: control, heat, humidity and UV-light for a period of 0, 240, 720, 1440, and 3528 hours. CIE L\*a\*b\* values were measured by spectrophotometer. The color differences ( $\Delta E^*$ ) of both facial silicones were subjected to three-factor ANOVA with repeated measures. Mean values were compared with Game-Howell intervals calculated at the 0.05 significance level.

**Results:** The result of this study revealed environmental effects and exposure times influenced the change of color ( $\Delta E^*$ ) of both facial silicone at a level of statistical significance ( $P < 0.05$ ). UV light and moisture had the most effect on the change of color in both silicones. VST-50 changed color faster than MDX4-4210.

**Conclusion:** The food grade silicone has the UV light effect in changing its color in a faster rate than the medical grade type. The suitable medical grade silicone can somewhat prolong the life of the prosthesis, however, Food grade silicone can be an alternative material in fabricating a facial prosthesis.

## 131

Table 91

### **Restoration Of A Complicated Intraoral And Extraoral Defect Case Using Osseointegrated Implant**

**Thaworanunta S\*, Srithavaj T\*, Wijitworawong A\*, Visuttiwattanakorn S\*\***  
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**\*Department Of Maxillofacial Prosthetics And Rehabilitation, \*\*Department Of Oral And Maxillofacial Surgery**  
**Bangkok, Thailand**

**Purpose:** To rehabilitate the midface and intraoral deformed patient in limited amount of bone availability.

**Methods & Materials:** This presentation will reveal a step by step how to manage intraoral and extraoral defects using implant tool to achieve both eathetic and function for patient. Dental implants were placed and used to support

extraoral prosthesis and zygomatic implants were used to retain maxillary obturator. Complication of soft tissue reaction due to hygiene maintenance case. Limitation of using implant to retain prosthesis in this acquired defect can help us to learn about our experience in this deformity.

**Results:** Patients can gain not only facial esthetic but also the increases in mastication as well as speech. However, the intraoral prosthesis must be reconstructed prior the extraoral one to obtain the correct position of lip and facial contour.

**Conclusion:** Even though, the bone and soft tissue availability is limited. The zygomatic implant can assist in gaining the adequate retention for the support of implant retained prosthesis, however, the case selection is crucial for such case.

## 132

### Table 92

#### **Treatment Denture Assisted For Maxillary Undeveloped Arch In Irradiated Orbital Prosthesis**

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**\*Maxillofacial Prosthetics And Rehabilitation, \*\*Dental Service**

**Bangkok, Thailand**

**Purpose:** An enucleation of orbital content to eliminate retinoblastic tumor may exhibit a slight deformity of the remaining space of a normal eye. However, a subsequential procedure of radiation dosage to rid of residual cancer in a defected orbital area exhibited multiple problems such as shrinkage of the eye lids, haunting bone growth, and resulting facial asymmetry. Retinoblastoma normally occurs in children from the first year of life up to three year of age. A proper prosthesis can restore patient's function for a better mastication.

**Methods & Materials:** The effect of radiation therapy and surgical procedure may cause under developed growth of a facial structure for this group of patients. Structures involved are facial bone and maxilla regions which later caused the deformity both intra- and extraorally. An acrylic partial denture such as overlay denture can gain occlusion and mastication for the patient.

**Results:** Patient can function with an overlay acrylic partial denture when the implant cannot be placed in an underdeveloped arch.

**Conclusion:** Selected case and interdisciplinary approach to correct such deformity is highly recommended to achieve an optimal functional result to improve a quality of life of a patient. The treatment denture can be used in combination with orthodontic therapy or in such cases that too complicated for surgical and orthodontic treatment. This article reveals procedure and method in fabrication of treatment denture to improve masticatory function of a patient.

Keywords: retinoblastoma, orbital defect, radiotherapy effects, maxillary deficiency, treatment denture.

## 133

### Table 93

#### **A Silicone Feeding Obturator: A Laboratory Procedure**

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**Maxillofacial Prosthetics And Rehabilitation**

**Bangkok, Thailand**

**Purpose:** Cleft lip and palate is one of the most common congenital anomalies. When a child is born with a cleft defect, the first problem will be feeding difficulty; the feeding obturator is a prosthetic aid that is designed to obturate the communication between the oral and nasal cavities. The material used for traditional obturators is polymethyl methacrylate acrylic resin that is hard and easily irritates the intraoral soft tissue. Moreover, an acrylic

feeding obturator can be trimmed at the border in order to allow the maxillary growth. Silicone-based material has flexibility and is suitable to be used as an obturator. For these reasons, silicone-based feeding obturators are being used at our clinic for cleft lip and palate infants.

**Methods & Materials:** This article describes a laboratory procedure for the fabrication of a silicone feeding obturator (Obturasil 40®) for infants with cleft lip and palate in the Maxillofacial Prosthetic Service, Faculty of Dentistry, Mahidol University.

**Conclusion:** It also discusses about the indications for the use of feeding prosthetic aid.

## 134

### Table 94

#### **The Comparison Between Two Types Of Feeding Obturator For Cleft Lip And Palate Patient**

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**Maxillofacial Prosthetics And Rehabilitation**  
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**Purpose:** Cleft lip and palate is one of the most common congenital malformations in Thailand. This retrospective study reports the statistical data of our patient population including types of defect, treatment selection, and clinical outcomes.

**Methods & Materials:** Since 1992, the Maxillofacial Prosthetic Service, Faculty of Dentistry, Mahidol University has been accepting multiple cases of cleft, and the infant cleft cases. Most infant cleft patients were referred to obtain feeding obturator. Data was collected including age, gender, and birth weight, types of defects, treatment selection and chief complaint. The feeding obturator, both acrylic and silicone types, were then evaluated for a proper treatment and indication of its use.

**Results:** Forty-two subjects, 26 male and 16 female, were evaluated in this study. Twenty-three patients, 18 male and 5 female, had unilateral cleft lip and palate. Seven patients, 5 male and two female, had bilateral cleft lip and palate. Twelve patients, 3 male and 9 female, had only cleft palate. The age of infants ranged at the first visit was from 1 day to 5 month, mean of 39.5 days. Mean birth weight was 2,701.06 gm which was less than thai norm of 3,170 gm. Treatment options for patients were special feeding bottle, acrylic feeding obturator and silicone feeding obturator. When comparing between the use of acrylic plate and silicone one, patient preferred to use silicone feeding obturator. However, both types of feeding obturator assisted all patients to gain weight. With additional benefit for the use of silicone feeding obturator was its capability for an infant to eat more semi-solid food.

**Conclusion:** Both silicone and acrylic feeding obturators can be used as temporary prosthesis as a feeding tool for infant. In some cases it also assisted in preventing aspiration but the selection of appliance depends on the clinical evaluation and the patient compliance.

## 135

### Table 95

#### **A 23-Year-Following Of A Patient With Post-Radiotherapy Prosthetic Treatment: A Case Report**

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**Purpose:** Radiotherapy is one of the important and useful treatment methods for malignant tumors. However there is a possibility that it leads repercussions such as salivary gland disorders, reducing of blood supply, and deficient

bone remodeling. Thus, some of patients who had treated with radiotherapy encounter osteoradionecrosis. In this case, the number of remaining teeth and prosthetic treatment were investigated for about 23 years. Through the report, we would like to consider the prosthetic treatment without osteoradionecrosis.

**Methods & Materials:** The patient, a 52-year-old female, was pathologically diagnosed with squamous cell carcinoma in 1984. The patient received radical irradiation using a carrier which the maxillofacial prosthodontist had made with radiotherapist's request. After that, the radiotherapist added extraoral irradiation. The prosthodontist eliminated sequestrum which appeared immediately after the radiotherapy and made some removable partial dentures, following has been done for about 23 years.

**Results:** The number of remaining teeth was changed from 11 to 0 during 183 months. First 25 months and last 23 months, teeth fell down rapidly. Throughout prosthodontic treatment, osteoradionecrosis was not found. The prosthetic treatment after radiotherapy has done successfully.

**Conclusion:** In this case, the maxillofacial prosthodontist participating in radiotherapy with the radiotherapist in the design, fabrication, and application of the radiotherapy prosthesis can obtain detailed information on radiotherapy and apply it to prosthetic treatments. The prosthodontist made some removable partial dentures with enough relief for irradiation range, well designing, TBI, and explaining of using denture to the patient. Therefore we can prevent appearing osteoradionecrosis.

## 136

### Table 96

## **A Large Facial Defect Resulting From A Surgical Malformation Utilizing A Two – Piece Facial Prosthesis**

**Tri Dm, Chotprasert N, Puttipisitchet O, Srithavaj T**  
**Mahidol University Faculty Of Dentistry**  
**Maxillofacial Prosthetics And Rehabilitation**  
**Bangkok, Thailand**

**Purpose:** Large facial deformities can result from trauma, congenital anomalies, and surgical treatment of tumors. These defects when involving the oral cavity, it becomes more difficult to restore prosthetically. The lack of anatomical structures, limited means of retention, mobility of marginal tissue and excessive prosthesis weight may have to an esthetic outcome after restoration. The use of adhesive retained facial prosthesis may interfere with persistent moisture and saliva of the defective area. The implant-retained facial prosthesis to ensure proper retention may also be an alternative choice of restoration. However, conditions systemic diseases may contraindicate surgery and thus consequently poor healing ability.

**Methods & Materials:** This report presents the process of restoration with intraoral and extraoral prostheses in a diabetic patient with a large defect resulting from surgical treatment of a secondary infection. The design was fabricated as a two-pieces silicone facial prosthesis to restore the deformity.

**Conclusion:** In this case an adhesive prosthesis can be the alternative selection for the maxillofacial prosthetic rehabilitation to restore patient's function and appearance.

## 137

### Table 97

#### **Effect Primer On Bond Strength Of Silicone To Autopolymerizing Resin**

**Tri Dm\*, Srithavaj T, Kanchanawasita W, Urapepon S**

**Mahidol.University Faculty Of Dentistry \*University Of Pharmacology And Medicine,  
Hochi Minh City**

**Faculty Of Odonto-Stomatology**

**Hochi Minh City, Viet Nam**

**Purpose:** It is common knowledge that silicone is difficult to bond to acrylic resins. To make a proper primer selection, one has to identify the kind of acrylic resin and silicone. Each primer is made to match a certain type of substrate resin or silicone.

**Objectives:** The purpose of this study was to evaluate the effects of different primers on bond strength between two types of facial silicone and autopolymerizing acrylic resin and to find the silicone/primer combination giving the highest bond strength necessary for maxillofacial prostheses.

**Methods & Materials:** Five primers were used in this study. All specimens were loaded in tension mode in a Universal Testing Machine with a crosshead speed of 50 mm/min until the failure of bonding occurred.

**Results:** The statistical analysis of results showed that the bond strength was affected by type of silicone, primer, and interaction between silicone and primer when using primers to adhere silicone and acrylic resin. The highest bond strength was found with combination Episil-E / Epicon when bonded to Ortho-Jet acrylic resin. Of the five primers used to bond MDX4-4210 silicone and Ortho- Jet acrylic resin, the highest bond strength was found in A330-G, followed by Epicon, Sofreline Tough, A304, and A306. Of the five primers used to bond Episil-E and Ortho-Jet acrylic resin, Epicon had the highest tensile bond strength, A304, A306, Sofreline Tough showed the lowest, and A330-G had intermediate tensile bond strength.

**Conclusion:** These findings show that the best silicone/primer combination generating the highest bond strength is Episil/ Epicon.

## 138

### Table 98

#### **Co-Culture Effect Of Peripheral Blood Mononuclear Cells On Osteoblasts**

**Tsukimura,N 1,2),Ishigami,T 2),Ogawa T 1)**

**1) University Of California Los Angeles School Of Dentistry 2) Nihon University School Of Dentistry**

**1) The Weintraub Center For Reconstructive Biotechnology 2) Department Of Partial Denture Prosthodontics**

**1) Los Angeles.California/USA 2) Tokyo/Japan**

**Purpose:** In the healing process of pre-prosthetic regenerative therapies, the interaction of osteogenic cells with immune cells reacting to the foreign graft materials is an indispensable biological event; however, effects of immune cells on the function of osteogenic cells have rarely been investigated. This study examines the osteogenic response of human mesenchymal stem cells and osteoblastic cells when co-cultured with the peripheral blood mononuclear cells (PBMCs) with or without the interleukin 2 activation.

**Methods & Materials:** Human bone marrow-derived mesenchymal stem cells (BMSCs) were expanded and seeded into the culture media with or without dexamethasone. At day 3 of culture, IL-2-activated or non-activated PBMCs were added into the mesenchymal cell culture, and co-cultured up to day14. Cell proliferation was evaluated by cell number measured and the osteoblastic differentiation was assessed by RT-PCR and alkaline-phosphatase (ALP) stain at days 6 and 9.The mineralizing nodule was assessed by Von Kossa stain at day14.

**Results:** The number of the cells was up to 5 times greater with the PBMCs than without the PBMCs at day 6. The ALP positive area in the day 6 osteoblastic culture was significantly increased 4 and 7 times by adding of the

non-activated PBMCs, and BMSCs with the activated PBMCs. The Von Kossa positive area of the osteoblastic culture was increased culturing with the PBMCs, particularly when cultured with activated PBMCs. ( $p < 0.001$ , one-way ANOVA)

**Conclusion:** An addition of the PBMCs promoted the proliferation and differentiation of the human mesenchymal cells in the osteogenic media. Also, PBMCs induced the osteoblastic differentiation of the human mesenchymal stem cells under the dexamethasone-free condition. These effects seemed to be enhanced when the PBMCs were activated by IL-2.

## 139

### Table 99

#### **Alternate Design Of Implant Retained Auricular Prosthesis Using Locator Attachment: Case Report**

**Uy Mg, Puttipisitchet O, Srithavaj T, Chotprasert N**  
**Mahidol University Faculty Of Dentistry**  
**Maxillofacial Prosthetics And Rehabilitation**  
**Bangkok, Thailand**

**Purpose:** Rehabilitation of congenital auricular defect using a new attachment design in implant-retained auricular prosthesis.

**Methods & Materials:** Two osseointegrated implants were used to restore a congenital left auricular defect (Entific, Goteborg, Sweden). Two gold cylinders (Nobel Biocare, Gotenborg, Sweden) and plastic hader bar (Sterngold, Cookson Com, Switzelard) was utilized to splint the two implants together. The female part of the locator (Zest Anchor Co., USA) was attached on the inferior aspect of the bar. A plastic housing with the clip and male part of locator was fabricated and this was incorporated in the silicone auricular prosthesis.

**Results:** The dual retentive mechanism of the locator provide better retention and promotes patient's confidence and security by consistent retention and positioning of the prosthesis and preservation of the marginal integrity.

**Conclusion:** Locator attachment in combination with the hader bar and clip is another means of gaining better retention of the prosthesis

.

## 140

### Table 100

#### **Comparison Of Mandibular Implant- Supported Over Denture Retained With Ball, Bar And Magnetic Attachments**

**Dr.Manju.V**  
**Amrita School Of Dentistry, Amrita Institute Of Medical Sciences**  
**Prosthodontics**  
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**Purpose:** Implant-supported over denture is a useful treatment modality for edentulous patients and in hemimandibulectomy patients reconstructed with free vascularised flaps. In an implant supported over denture, the optimal stress distribution to minimize forces on the implants and least displacement of denture is desirable. The present in vitro study compared the load transfer characteristics to the implant and the movement of implant supported over denture among three different types of attachments- ball & ring, bar & clip and magnetic attachments.

**Methods & Materials:** Two endosseous root form implants were anchored in an acrylic resin mandibular model, which was covered with a layer of impression material to simulate oral mucosa. Mandibular over denture was fabricated in the conventional manner. Stress on the implant surface was measured using a strain gauge technique and denture displacement by dial gauge technique.

**Results:** Bar/clip attachment created immediate stress patterns of greater magnitude and concentration on both implants. The ball/ring attachment transferred the least stress to both implants and produced less bending moment than the bar/clip. Magnetic attachment induced least bending moment, but resulted in greater denture movement. Duncan's post hoc analysis for total denture displacement revealed that ball & ring and bar & clip do not show any statistically significant difference whereas the values obtained for magnetic attachment is highly significant.

**Conclusion:** The present in vitro study suggested that ball/o-ring attachment may provide an adequate attachment system with respect to reducing the stress on the implant body and promoting denture stability.

## 141

### Table 101

#### **Multidimensional Function Assessment In Advanced Head And Neck Cancer**

**Molen, L. Van Der\*, Hilgers, F.J.M.**

**Netherlands Cancer Institute**

**Department Of Head And Neck Oncology And Surgery**

**Amsterdam, The Netherlands**

**Purpose:** Patients with advanced head and neck cancer may have numerous functional problems and limitations prior to their treatment. Therefore, the aim of this study is to multidimensionally assess pretreatment organ function before chemoradiation, in order to analyze the relation between and the importance of the different assessment tools.

**Methods & Materials:** Fifty-five patients with stage III-IV cancer of the oral cavity, oropharynx, hypopharynx, larynx or nasopharynx were assessed by means of a structured, multidimensional protocol before onset of chemoradiation treatment. The elements of the protocol were: videofluoroscopy, using the penetration and aspiration scale (PAS) and determination of presence of contrast residue; measurements of the pretreatment weight changes, Body Mass Index (BMI); maximum interincisor mouth opening; and structured questionnaires, using the functional oral intake scale (FOIS), a study specific questionnaire, and a visual analogue scale (VAS) for pain assessment.

**Results:** All assessments and measurements contributed to the identification of pretreatment functional problems. Videofluoroscopy identified aspiration and laryngeal penetration in 18% of the patients, where questionnaires were not indicating a problem, half of the patients had a BMI <25, and objective and subjective trismus existed in 9% and 13% of the patients, respectively. A discrepancy between objective and subjective results was found. All patients showed at least 1 problem, with 45 patients (81%) showing 3 or more problems or abnormalities.

**Conclusion:** This structured, multidimensional assessment protocol shows considerable pretreatment functional problems and abnormalities and all elements were necessary for understanding the pretreatment sequels of advanced head and neck cancer.

## 142

### Table 102

#### **Procedure For Matching Caucasian Skin Into Facial Prosthesis; -Colour, Translucency, Colour Variation And Texture-**

**P.C.F. Borsboom, W.D. Noorda\*), H. Reintsema\*), A.Korfage), L. Blokland, R. P. Van Oort\*)**

**Presenter: R.P. Van Oort** Pbsensortechnology & Consultancy Bv, Westeremden Nl; \*) Oral Maxillofacial Surgery, Maxillofacial Prosthetics, Umcg, University Of Groningen Oral Maxillofacial Surgery And Maxillofacial Prosthetics, University Medical Center, University Groningen. Groningen, The Netherlands

**Purpose:** To achieve a proper colour match of a facial prosthesis; the colour of patient's skin, the aspect of skin translucency, the natural colour variation across the face and the skin texture has to be considered. The optical limitations of the prosthesis material (relative to the skin) at one hand and the demands regarding prosthesis construction and life span at the other, determine the outcome. The feasibility of mimicking facial skin is tested at a Caucasian skin

**Methods & Materials:** Within a certifiable procedure a dedicated skin colour meter CTM was applied(ref 1) CTM measures colour, translucency of skin. Data were transferred to a reproducible pigment dispenser system (EFD, ref 2). The spectral information of both the skin and a series of pigments; white, red, yellow and blue with Silastic elastomer (Factor II, ref 3), are used for colour and translucency matching. In order to mimic colour variation due to surface blood vessels, a premix of red coloured nylon fibres and Silastic elastomer is included. A matching recipe for a Caucasian skin was calculated.

**Results:** A spectral match using 4 pigments only (white, red, yellow and blue) seems feasible. Translucency can be matched by initial adaptation of the white pigment concentration. Translucency of a certain prosthesis colour can be varied without much impact on the colour. By varying the amount of added red coloured nylon fibres the colour variation can be mimicked. A melanin like colour, based on a combination of red, blue and yellow pigments is also feasible.

**Conclusion:** To reproduce Caucasian skin colours in a silicon elastomer, addition of 4 pigments and red coloured nylon fibres seems sufficient. Translucency of skin can be matched and varied without much effort. By adding a melanin like colour, a larger group of non Caucasian skins can be mimicked. Ref 1, CTM, Colour & Translucency Meter, a development of: Avantes, Eerbeek NL & PBSensortechnology & Consultancy bv, Westeremden NL Ref 2, Performus II, EFD Inc. East Providence USA Ref 3, Factor II Inc. Lakeside USA

## 143

### Table 103

#### “Screw Hole-Positioning Guide”: A Method To Assist Mandibular Reconstruction

Wang T.M.\*, Chang H.H., Lin L.D.

National Taiwan University

School Of Dentistry

Taipei / Taiwan, R.O.C.

**Purpose:** Reconstruction plates have been used to bridge discontinuity defects after resection of mandibular tumors for many years. However, shaping and adapting the titanium plate during surgery is time consuming and technique sensitive especially where the resection area is large and involves the symphysis or ramus. In this case report, we report a method to assist surgeons in developing presurgically adapted reconstruction plates. With this method the surgical outcome is improved and the operation time decreases.

**Methods & Materials:** A 44-year-old female patient suffered from a discontinuity defect following a left marginal mandibulectomy to remove an osteosarcoma in lower molar area. The patient did not receive radiation therapy post surgery. For reconstruction of the mandible, a free osteocutaneous fibular graft was used. Prior to surgery, a stereolithographic (STL) model including maxilla and mandible was created according to the patient’s CT data. The two fragments of the mandible model were repositioned as appropriate to form a symmetric arch and harmonized occlusion. Paraffin wax was used to fill the gap between two fragments and to contour the ideal shape of mandible. Then a titanium reconstruction plate (Mondeal BMR system, GmbH, Germany) was bent and adapted to the buccal surface of restored mandible. The screw holes of the reconstruction plate were marked on the model. For securing the pre-adapted reconstruction plate as planned, “screw hole-positioning guides” were used. These guides could be made by one of two methods: One method is to make the clear acrylic resin block adapted to the STL model surface in the symphyseal area that is also adapted to the lower border of reconstruction plate as positioned. Thus during the operation, the surgeon places the acrylic resin block and reconstruction plate together on the symphysis area allowing the screw hole to be drilled as the same position on the STL model through the reconstruction plate. The other method is to cut a new reconstruction plate into pieces. The pieces are placed on the marking areas of STL model and connected with each other with clear acrylic resin. This acrylic resin block with the pieces of reconstruction plate embedded is adapted on the mandibular bone surface and screw holes are drilled through this guide. Because the positions of screw holes are as same as the STL model, the pre-adapted reconstruction plate can be fixed on the mandibular segments and re-establish mandible continuity as we planned. After this procedure, the free fibular graft is fixed to the reconstruction plate to restore the bony defect.

**Results:** Based on the CT performed post surgery, a symmetric arch was formed with improved intermaxillary jaw relationships. Nine months after the reconstruction surgery, four dental implants (Brånemark TiUnite, NobelBiocare AB, Sweden) were inserted into the bone graft. A hybrid partial denture was then fabricated to restore the edentulous area. The panoramic radiograph demonstrates that no obvious bone resorption occurred either in peri-implant area or at the junction of bone graft and native mandible after nine months of follow up.

**Conclusion:** Using STL model to analyze and plan the mandibular reconstruction surgery is helpful. Using the screw hole-positioning guides will assist surgeons to place the pre-adapted reconstruction plate in the planned position.

## 144

Table 104

### **Laboratory Technique In Modifying Immediate Surgical Obturator Bulb During Radiation Therapy**

**Wansook P\*, Promyu S\*, Srithavaj T\*\*, Kharel A\*\*, Yannasarn V\*\*\*, \* Dental Technician, \*\*Instructor, \*\*\* Resident  
Mahidol University Faculty Of Dentistry  
Maxillofacial Prosthetics And Rehabilitation  
Bangkok, Thailand**

**Purpose:** The purpose of this laboratory technique is to explain the procedure of changing existing immediate surgical plate for a transitional bulb during radiation therapy.

**Methods & Materials:** After the maxillectomy, the wound healing takes place and formed a scar contraction at the surgical site, especially on the defect site of a lateral wall. This causes the dislodgement of the prosthesis. As the patient undergoes radiation therapy, the formation of the scar tissue and inflammation occurs. The ill fitting of the immediate-transitional obturator may cause an uncomfortable feeling for the patient. The patient with completely edentulous on the maxillary arch with the defect has this problem more frequently form the mentioned statements during radiation therapy. The existing immediate obturator plate was cut in the bulb area and checking for adaptation of the plate to the maxillary mucosa. Base plate wax was used in molding and impressed with Coe comfort. The formation of a cast was made and silicone block out was made for adding a hollow bulb with 2.0 mm thickness

**Results:** A quick procedure to adapt the plate and modified the bulb can be done in such case. With less than 40 minutes, patient can obtained the more proper fitting prosthesis. Patient can be observed weekly during the course of radiation therapy.

**Conclusion:** A simplified technique can provide good service and improve the quality of life of a patient during the course of radiation especially in edentulous patient with maxillary deformed.

## 145

Table 105

### **Refabrication Of Implant Retained Auricular Prosthesis Using Attachment Pick-Up System**

**Wijitworawong A\*, Wansook P\*, Teang-On S\*, Sakaew S\*, Srithavaj T\*\*  
Mahidol University Faculty Of Dentistry  
Maxillofacial Prosthetic And Rehabilitation Service  
\* Dental Technician, \*\*Instructor  
Bangkok, Thailand**

**Purpose:** To fabricate additional auricular prosthesis for the extraoral implant supported without taking impression from the implant.

**Methods & Materials:** Two ERA attachments and a HADER Bar clip were attached with pattern resin and pick-up impression was done to obtain the relationship between the attachments and the metal structure. Impression was poured-up and cast of the final was obtained. The housing was fabricated and the conventional auricular fabrication was done. The final auricular prosthesis was inserted and checked for the extrinsic coloration.

**Results:** The result revealed the appropriate fitting of the attachment to the metal framework. The acrylic housing was easily made as well as a good adaptation of the auricular prosthesis to the patient face. It appeared to be reducing in time and cost of fabrication.

**Conclusion:** Patient satisfied with the new prosthesis obtained. There was no need of impression making from the implant. It also provided less time and cost for processing. Patient also did not need to have the metal framework to be removed or using adhesive retained auricular prosthesis for this technique.

## 146

Table 106

### **Maxillary Obturator Prosthesis Rehabilitation Following Partial Maxillectomy For Polymorphous Low-Grade Adenocarcinoma**

**Wongseedakaew, W. And Juntavee, N.**  
**Khon Kaen University**  
**Prosthodontics , Faculty Of Dentistry**  
**Muang, Khon Kaen, Thailand**

**Purpose:** Polymorphous low-grade adenocarcinoma (PLGA) is a malignant neoplasm that almost always arises in the minor salivary glands. It generally involves the palate, but it has also been reported in the base of the tongue, upper lip, buccal mucosa, tonsil, and retromolar pad. Rehabilitation of maxillary defects has been a long-standing challenge to the prosthodontists. This clinical report presents the rehabilitation following partial maxillectomy for polymorphous low-grade adenocarcinoma with maxillary obturator prosthesis

**Methods & Materials:** In this case report, a 42-year-old Thai male patient who had wide excision of his right maxilla for Polymorphic low-grade adenocarcinoma. Following a partial maxillectomy in a patient, the oral and nasal cavities remain open, providing a passageway for transmission and fluids between the two cavities. After complete primary healing of the surgical site, an interim obturator was fabricated with teeth that maintain patient comfort and function. A definitive prosthesis was fabricated with cast full veneer restoration due to uncomplicated crown fracture and unfavorable undercut and follow by definitive obturator with a hollow bulb.

**Results:** The patient was satisfied because his chewing ability, swallowing and speech were improvement.

**Conclusion:** The proper treatment planning and fabrication of a definitive prosthesis will provide all the anatomical structural support, function, and esthetics missing to improve quality of life of the patient.

## 147

Table 107

### **Oculopalpebral Prosthesis For Rehabilitating A Patient With Orbital Defect,A Case Report**

**Polla A.,Wongwattanasilp A.**  
**Chulalongkorn University**  
**Prosthetic**  
**Bangkok , Thailand**

**Purpose:** the purpose of this report is to describe the method using oculopalpebral prosthesis with medical adhesive for rehabilitating a patient with orbital defect.

**Methods & Materials:** A 67 years old Thai male patient with right eye excenteration due to endophthalmitis present with orbital defect after surgical treatment. The oculopalpebral prosthesis was made to restore esthetic apperance of this patient. The prosthesis was designed as the combination of the eye ball made from acrylic resin and the eye lid made from silicone using the loss-wax technique.The prosthesis was secured onto the defect using a medical adhesive.

**Results:** The method using oculopalpebral prosthesis shows acceptable retention and esthetic result.

**Conclusion:** With this prosthesis,the patient can maintain acceptable quality of life with reasonable treatment cost.

## **Fabrication Of Partial Ear Prosthesis With Suction Suspension After Silicon Test. Case Report**

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**Iran Medical Science University**

**Rehabilitation Faculty,Prosthetic Department**

**Iran-Tehran**

**Purpose:** : “swimmer’s ear’ is an infection of outer portion of ear canal that may results in a large defect of skin and cartilage demanding a staged flap procedure for reconstruction. An alternative to surgical reconstruction are silicone partial auricular prostheses, these prostheses provide a cost-effective and cosmetically acceptable method, to patients who are candidate for surgery . In this article the process of creating a partial silicone auricular prosthesis for a patient with sensitive skin is discussed. The aim of this study was fabrication of partial silicon prosthesis to prevent reoccurrence of infection in middle ear in addition and to improve cosmetic appearance without using adhesive materials..

**Methods & Materials:** A 45-year-old female patient who lost her right antihelix,antihelical fold and middle area of the external ear was referred to clinic, included in this study. This patient had a sever infection in her middle ear during childhood due to “swimmer,s ear” and in surgery she lost a part of her external ear as We could see an external big canal from acoustic meatus to tympanic membrane . The deficient side had healed but some infection was created repetitively. The main complications of the patient were dust, little thing and water entrance in her ear when bathing and walking, repetitive infection and cosmetic problem. To test patient allergy to silicon, we put silicon gel on the small scratches were made on the skin of the upper and lower back of patient for about 48 hours.

After casting of effected and unaffected ear of this patient, a 2-piece dental mold was poured around the wax model to create the final mold of the prosthesis. The mold was filed by Painted medical grade silicone. We make 2 prostheses for patient, with and without hole, after complete polymerization of the material, 2 parts of mold were separated. The final prostheses were hold in place with gentle pressure; a properly located partial prosthesis is an important parameter to obtain final acceptable results. This prosthesis had clinically acceptable results with the patient’s satisfaction; the patient was able to take part in most physical activities without having the prosthesis fall off and can even swim with second prosthes. The silicon prosthesis had a bout 1.3mm distance with tympanic membrane

**Results:** Base on acquired data, after 1year follow up this patient had not any infection or pain in her ear. She could use of thease prosthesis without any adhesive and with little pressure. The prosthesis increase cosmetic appearance of patient without any allergy in middle canal and without any limitation in hearing

**Conclusion:** Base on acquired data, after 1year follow up this patient had not any infection or pain in her ear. She could use of thease prosthesis without any adhesive and with little pressure. The prosthesis increase cosmetic appearance of patient without any allergy in middle canal and without any limitation in hearing

## 149

Table 109

### **Treatment Of Radiation Induced Mucositis By Using Thai Herbal**

**Yannasan V\*, Srithavaj T\*\*, Kharel A\*\*, Hovichitr W\* \* Resident, \*\*Instructor  
Mahidol University Faculty Of Dentistry  
Maxillofacial Prosthetics And Rehabilitation  
Bangkok, Thailand**

**Purpose:** Oral mucositis can be induced by radiation therapy and is considered one of the complications by cancer conjunctive therapy. Thai herbal, locally known as Phrayayor (*Clinacanthus nutans*) glycerine base, can be used to reduce radiation induced mucositis.

**Methods & Materials:** Five patients, diagnosed with squamous cell carcinoma of the hard and soft palate, were included in this study. All of patients had partial maxillectomy and were planned for radiation therapy. The average dosage of total radiation was 6,500 cGy of the Head and Neck area. At the third week of radiation therapy, all patients were asked to use 2.0 ml of Phrayayor (*Clinacanthus nutans*) glycerin base six times per day for one week.

**Results:** The healing of mucositis was observed and the patients reported of swallowing and eating food during radiation therapy. Phrayayor (*Clinacanthus nutans*) glycerine base appeared to have an effect in reducing inflammation and the effected area had a good healing effect in all the patients.

**Conclusion:** Phrayayor (*Clinacanthus nutans*) glycerine base is highly recommended for its anti-inflammation effect, especially in this radiation induced mucositis patient. Further study should be evaluated on the purity of this glycerin base.

## 150

Table 110

### **Antimicrobial Activity Of Thai Medical Herbal Extracts Against Mutans Streptococci And Candida Albicans In Vitro Study**

**Yoshimura G, Srithavaj T, Thaweboon S, Choonharuangdej S  
Mahidol University Faculty Of Dentistry  
Maxillofacial Prosthetics And Rehabilitation  
Bangkok, Thailand**

**Purpose:** Head and neck cancer is a potentially life-threatening disease and maxillofacial prosthodontists have important roles in rehabilitation of the patients who were suffered from this cancer. Candida infection is one of the most common and potentially serious complication in patients who are exposed to chemotherapeutic agents and/or radiation. The effect of these conjunctive cancer therapies causes a reduction in saliva flow, and increases in the amount of dental caries and fungal infection which are major complications in this group of patients. Local herbal products in Thailand contains some substances that may have potential benefit in antimicrobial activities. This study focused on antimicrobial activity of herbal essential oils from plants such as plai, mint, guava, hairy basil, clove and lemongrass and the combination of these herbal essential oils against Mutans streptococci and Candida albicans.

**Methods & Materials:** Six individuals and seven combinations of essential oils were prepared and evaluated for the antimicrobial activity of essential oils by using disk diffusion test and agar dilution test to determine Minimum Inhibitory Concentration (MIC) and Minimum Bactericidal Concentration (MBC).

**Results:** Each individual and combination showed various activities against test microorganisms. Candida albicans exhibited a higher response than Mutans streptococci to each individual oil and combination of essential oils. For MIC and MBC determinations, Clove as single usage and Plai + Mint + Clove + Hairy basil in combination showed the highest antimicrobial activities in tested solutions. Combinations of herbal essential oil showed promising result for antimicrobial activity against Mutans streptococci and Candida albicans.

**Conclusion:** Further study should be conducted in purifying extracts and evaluating an exact amount of concentration in each extract that can inhibit the growth of oral microorganism.

## 151

Table 111

### **Digit Prosthesis: A Clinical Report**

**Yoshimura G, Srithavaj T, Hovijitra Rs**  
**Mahidol University Faculty Of Dentistry**  
**Maxillofacial Prosthetics And Rehabilitation**  
**Bangkok, Thailand**

**Purpose:** Fabrication of Finger Prosthesis was made and the process was described.

**Methods & Materials:** This report describes the fabrication of a digit prosthesis for a patient with an amputated digit. The digit amputee was provided with a silicone prosthesis for his left index finger.

**Conclusion:** Although worn without discomfort, the prosthesis was slightly thick at the distal interphalangeal joint area. The silicone digit prosthesis was esthetically acceptable and provided patient's satisfaction.

## 152

Table 112

### **Fabrication Of Facial Prosthesis Following Preprosthetic Consultation With 3D Modeling Technique**

**Yoshioka F.\*, Ozawa S., Miyamae S., Amano Y., Okazaki S., Shigemori T., Hirai H.,  
Tanaka Y.**  
**Aichi-Gakuin University**  
**Department Of Removable Prosthodontics, School Of Dentistry,**  
**Nagoya, Japan**

**Purpose:** A patient who needs facial prosthesis should be given the guidance and information about the treatment plan and consent to it prior to the treatment. Visualizing final image of facial prosthesis is often difficult especially for patients who have never worn that before. The purposes of this study are to establish a simple preprosthetic simulating system of facial prostheses for patients through the computer and simplify following fabrication of facial prosthesis using the data.

**Methods & Materials:** Preprosthetic consultation contains digital image acquisition and simulation system. A digital image is obtained with the non-contact 3D digitizer (Vivid910, KonicaMinolta). Virtual facial prosthesis is designed with CAD software (Mimics, Materialize). The patient's photograph was mapped onto the digital image simultaneously. This system was applied to a 66 year old patient who had been resected right orbit due to cancer abrasion and was referred for prosthetic treatment. Virtual facial prosthesis was designed and discussed final image with the patient.

**Results:** It took 0.7s to obtain the digital image using the Vivid and took approximately 40 minutes to design the prosthesis using Mimics. The virtual image of facial prosthesis was finalized with some modifications after the discussion with the patient. The final prosthesis was fabricated through the rapid prototyping technique using obtained data. The fabrication and delivery of the final prosthesis were completed and the prosthetic rehabilitation met the patient's expectation.

**Conclusion:** In this study, we described how to visualize the final image of facial prosthesis using the non-contact 3D digitizer. A digital image of the patient was easily obtained prior to the treatment without taking CT or any other complicated impression. This system increases patient's involvement in the treatment process and his adaptation after delivery of final prosthesis. This simulating system would also be effective for the reconstructive surgical planning or craniofacial implant placement.

## Reconstruction of Total Maxillectomy Using Zygoma Implants with Bar Retained Obturator: A Case Report

**Atiphan Pimkaokum**  
**Pravej Serichetaphongse**  
**Faculty of Dentistry**  
**Chulalongkorn University**

**Purpose:** Rehabilitation of total maxilla defect is a challenging procedure. Osseointegrated implants provided additional support and retention to conventional obturator. This report described reconstruction of total maxilla defect with zygoma implants support bar retained obturator.

**Materials and Methods:** 71 year old patient suffered from squamous cell carcinoma at paranasal sinus 7 years ago. Maxillary defect was wide with remaining soft palate and he recently loss all of abutment teeth due to periodontal disease. Zygoma implants were planned for this patient to create support and retention for obturator. Two 4X30 zygoma implants were placed in zygomatic arch of the patient with two conventional 3.75 X 10 Brannemark implants were placed at nasal bone. Final impression was taken in operating room to create bar. 2 days later, bar was fabricated and delivered to patient and obturator was relined and attached to bar.

**Result:** Patient can function well with bar retained obturator. Retention and stability were achieved with normal deglutition and speech.

**Conclusion:** Zygoma implants can be used to created retention and stability in patient with total maxillectomy defects. Further study about long term success rate of this implant is recommended.

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## NOTES

## NOTES

## NOTES

## NOTES

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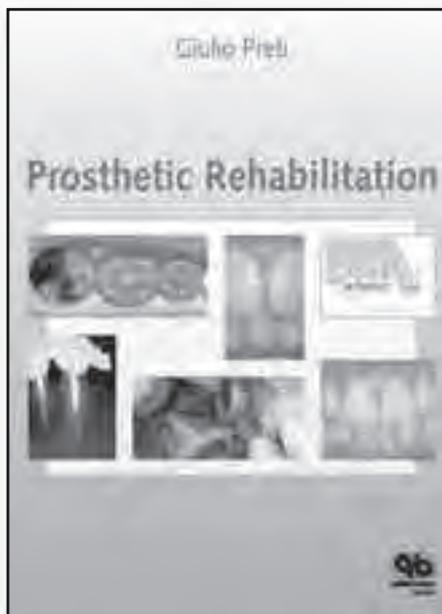
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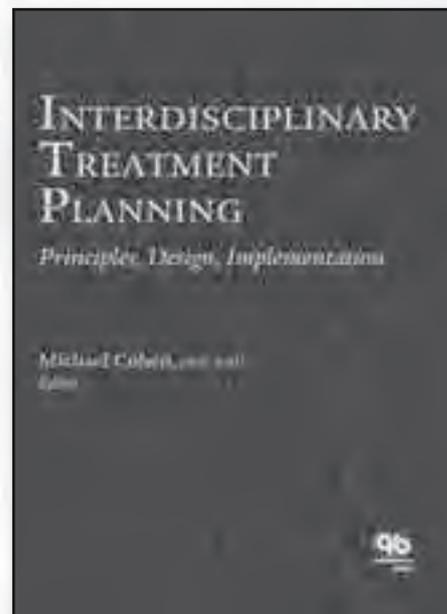
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