Joint meeting of the
60th Annual Meeting of the
American Academy of
Maxillofacial Prosthetics
and the
10th Biennial Meeting of the
International Society for
Maxillofacial Rehabilitation

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This continuing education activity has been planned and implemented in accordance with the standards of the ADA Continuing Education Recognition Program (ADA CERP) through joint efforts between the American Academy of Maxillofacial Prosthetics and the International Society for Maxillofacial Rehabilitation.

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DEDICATION of the ISMR/AAMP 2012 Joint Congress
In Memory of Luis Richard Guerra

Luis "Lou" Richard Guerra, DDS, M.S., New Orleans area Maxillofacial Prosthodontist and leader in the dental community, passed away on Wednesday, August 31, 2011. He was 77. He is survived by his wife of 29 years, Elizabeth "Liz" Guerra. His surviving siblings include four brothers: Cipriano and Xavier Guerra of San Antonio, TX; Joseph Guerra of Corpus Christi, TX; Oscar Guerra, DDS, of Hartsburg, MO; and one sister, Lita Guerra of Austin, TX. He was preceded in death by his brothers, Humberto "Bert" Guerra, DDS, of New Orleans, LA and Gerard Guerra and his parents, Cipriano F. Guerra and Bertha Pena Guerra of Mission TX. Lou will also be missed by a multitude of nieces, nephews, patients, colleagues, and friends.

Lou enjoyed fishing and hunting. He and his wife Liz also enjoyed spending time at home with their beloved dogs. Lou was born in Texas where he graduated Valedictorian from St. Joseph's Academy High School in Laredo in 1952. He received his undergraduate and Doctor of Dental Surgery Degrees from Loyola University in New Orleans, then continued his professional training at the University of Texas where he received his certification in the area of Prosthodontics and Maxillofacial Prosthetics. He also earned a Masters Degree in Biological Sciences. In addition to his forty years of private practice, Lou had a distinguished academic career. He served as a dental professor at several dental and medical schools. Lou's professional expertise included many specialties, including his work with LSU Dental School's Department of Prosthodontics, and LSU Medical School's Department of Otolaryngology. Lou also served as the Head of the Dental Implant Team at LSU Dental School, and most notably, he acted as Chief of the Department of Dentistry at Charity Hospital for over thirty years. Lou was a pioneer in dental and medical research with many major projects. He worked with many prominent physicians and dental specialists to advance the knowledge in various areas including: plastic surgery, oral surgery, dental implant prosthetics, maxillofacial prosthetics, and reconstructive facial surgery/reconstruction. He wrote and/or co-authored over 50 publications including professional articles and textbooks. Lou was active and held many leadership positions in several professional organizations. His efforts earned him multiple honors and awards including the prestigious Ackerman Award from the American Academy of Maxillofacial Prosthetics.

Lou was passionate about improving the quality of life for all patients who, because of accidents, birth defects or illness suffered with facial disfiguration. Through his efforts in his private practice, he was able to help many of his patients directly; however, his research, leadership, and teachings paved the way to enhance the lives of future patients everywhere.
In Memory of Arie Shifman

Arie Shifman was born in Jerusalem, Israel on the 25th February 1938, ten year before the establishment of the state of Israel, and passed away on the 24th September 2012, two days before Yom Kippur, the day to which he was most connected. Arie Shifman leaves a long and distinguished contribution to dentistry, prosthodontics and maxillofacial prosthodontics. Arie Shifman was a member of both the AAMP and ISMR and his always gentlemanly and dignified presence at the meetings of both organizations will be missed. Arie Shifman worked most of his life in Israel and is survived by his wife and six children.

Arie Shifman completed his dental studies at the Faculty of Dental Medicine, Hebrew University, Jerusalem in one of its first graduating classes and was awarded the degree of D.M.D. in 1962. In 1979, the Ministry of Health, Israel awarded Arie Shifman the Specialization Certificate in Prosthodontic Rehabilitation. In 2006, the same ministry awarded him a Specialization Certificate in Maxillofacial Prosthetics.

Arie Shifman held a number of academic posts and served on the staff of the Department of Oral Rehabilitation, School of Dental Medicine, Tel Aviv University, Tel Aviv, Israel. He also had connection to the Hebrew University Hadassah Medical Center, Jerusalem, Israel. Arie Shifman served in the military and retired with the rank of Lt. Colonel. In this role, he served as Chief, Department of Prosthodontics and Maxillofacial Prosthetics, Israel Defence Forces Center of Oral and Dental Medicine. Arie Shifman served on numerous committees including Israel Dental Association committees where he had direct influence of prosthodontic and maxillofacial prosthodontic programs and their accreditation. In 2005, his contribution was recognized when he was awarded honorary membership by the Israel Society of Oral Rehabilitation and in 2006 he was awarded the highest award of the Israel Dental Association for academic achievements. During his career, Arie Shifman guided and mentored many young dentists.

Arie Shifman was a long standing member of the American Academy of Maxillofacial Prosthetics, having joined in 1978 and in which he held Affiliate Life Membership. In 1998 he joined the International Society of Maxillofacial Rehabilitation. Arie Shifman held broad interest in his chosen profession and held membership in numerous societies.

Arie Shifman was always committed to his professional work and no more was this in evidence than the words provided by his family: “Although with pains and under great weakness he was active academically and professionally until his last hours. He finalized the text for his last paper a couple of weeks ago and instructed his colleagues how to continue the treatment of his last patients when his condition was rapidly deteriorating a few hours before he passed away.”

The AAMP and ISMR will miss Arie Shifman’s constant presence at conferences. We shall miss our friend and colleague for his always enjoyed presence and his gentle sense of humour. Israel has lost one of its finest dentists.

Memorium composed by Shifman family & Dr. John Wolfaardt
ISMR 2012 President:
John Wolfaardt
Welcome Message

Welcome to the joint meeting of the AAMP and ISMR. The conference in Baltimore represents an important landmark as it is the 60th annual meeting of the AAMP and the 10th biennial international conference of the ISMR. We thank you for being in Baltimore to celebrate these important landmarks. Today, partnership is essential to success and moving forward. The joint meeting in Baltimore is an example of partnering to succeed. The conference theme focuses on Interdisciplinary Rehabilitation Care for Head and Neck Patients. An interdisciplinary approach is essential given the complexity of head and neck care. While multidisciplinary care remains a reality, the drive towards clinical disciplines developing an interdependence is at the heart of the value of interdisciplinary care. Fostering an understanding of this interdependence amongst disciplines is the foundation stone of the ISMR. With this in mind, it was a ready step to join forces with the AAMP in developing the scientific program for 2012. The conference program provides a breadth of interdisciplinary opportunity for participants in Baltimore and has been designed to include both acquired and congenital conditions. Added value is provided by the workshops and special interest groups. Please attend the special interest groups as these will bring particular value to focussed areas in the care spectrum. Our thanks to the Oral Rehabilitation Outcomes Network (ORONET) and the Dysphagia Research Society for contributing special interest group presentations.

Remarkable is how many colleagues, who are not members of either the AAMP or ISMR, are attending the conference. To these colleagues, we hope you will consider joining the organizations and continuing with us in the exciting programs that both organizations have planned for the future.

The cooperation between the AAMP and ISMR has been wonderful and we all have a debt of gratitude to the conference organizing committee. We hope you will find time to enjoy the waterfront setting of the conference, to gain professionally and find pleasure in meeting with colleagues.

John Wolfaardt
Dr. Wolfaardt's Biography

BDS, MDent (Prosthodontics), PhD

Professor, Division of Otolaryngology-Head and Neck Surgery, Department of Surgery, Faculty of Medicine and Dentistry, University of Alberta / Director of Clinics and International Relations, Institute for Reconstructive Sciences in Medicine, University of Alberta/Covenant Health/Alberta Health Services, Edmonton, Alberta, Canada

Dr Wolfaardt is Director of Clinics and International Relations, the Institute for Reconstructive Sciences in Medicine (iRSM) and a Full Professor, Division of Otolaryngology-Head and Neck Surgery, Department of Surgery, Faculty of Medicine and Dentistry, University of Alberta, Canada. His clinical and research interests are in the area of Maxillofacial Prosthodontics 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 iRSM. 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 initiative that enabled iRSM to register an ISO9000 quality system for the clinical aspects of osseointegration care at iRSM. Dr Wolfaardt has published over 90 papers in refereed journals and contributed to a variety of texts. He has lectured both nationally and internationally on Maxillofacial Prosthodontics, osseointegration and functional outcomes in head and neck reconstruction, challenges of introduction of advanced digital technology, team work and quality management.

Dr Wolfaardt has served on Boards of the American Academy of Maxillofacial Prosthetics, the International Society for Maxillofacial Rehabilitation, Advanced Digital Technology (on Head and Neck Reconstruction) Foundation (ADT Foundation) and the International College of Prosthodontists. Dr Wolfaardt is presently President of the ADT Foundation as well as President of the International Society for Maxillofacial Rehabilitation. Dr Wolfaardt was made an Honorary Member of the Chilean Academy of Osseointegration. Dr Wolfaardt was awarded Honorary Membership by the Canadian Dental Association in 2011.
Welcome and thank you for joining us for the 60th Annual Meeting of the American Academy of Maxillofacial Prosthetics. This is a very special meeting as it marks our second joint meeting with the International Society for Maxillofacial Rehabilitation. The theme for this meeting is *The Interdisciplinary Rehabilitation Care for the Head and Neck Patient*. Our Program Co-Chairs, Betsy Davis representing the AAMP and Harry Reintsema representing the ISMR have assembled a program of leading speakers from throughout the world in maxillofacial prosthetics and prosthodontics, oral and maxillofacial surgery, head and neck surgery, craniofacial surgery, plastic reconstructive surgery, radiation oncology, oncology, speech and swallowing research and supportive care. The format of the program this year will be a little different than the AAMP is used to. It will consist of plenary sessions in the mornings, and concurrent abstracts, workshops and panels in the afternoons.

Please plan on attending any of our workshops; *Craniofacial Reconstruction: Scan, Plan and Manufacture* presented by 3dMD / Sensable, *Silicone & Magnetic Retention: “2012”* presented by Factor II, *Advancements in Bone Anchored Facial Prosthetic Solutions* presented by Cochlear Vistafix Systems, and *Maxillofacial Insurance Reimbursements* presented jointly by the AAMP and the ISMR.

Also, please take some time to relax and enjoy the beautiful surroundings of historic Baltimore and join us for the planned social events. We look forward to your active participation in this year’s activities!

Steven P. Haug
Dr. Haug's Biography

Dr. Haug received his DDS from SUNY at Stony Brook in 1984, graduating with honors. He completed a general practice residency at University Hospital, Stony Brook, the following year. In 1987, he completed a combined prosthodontic residency at the Medical College of Georgia, followed by a fellowship in maxillofacial prosthetics at the University of Missouri at Kansas City. Dr. Haug was board certified in prosthodontics in 1990, and earned a Master of Science in Dentistry from Indiana University in 1997, majoring in dental materials.

Dr. Haug is presently a Professor of Prosthodontics at Indiana University. He directs the undergraduate complete denture curriculum, and serves as director for several modules and courses at the pre-doctoral and post-doctoral level. He is involved in the post-doctoral prosthodontic program providing didactic and clinical instruction, with emphasis in maxillofacial prosthetics. He has received several university level awards for his teaching.

Dr. Haug is very involved in organized dentistry. He serves as President of the American Academy of Maxillofacial Prosthetics and has served as member and chair of several committees in that organization, as well as for the American Dental Association. He is a Past President of the Indiana Section of the American College of Prosthodontics. Dr. Haug maintains a referral based prosthodontic and maxillofacial prosthetics practice in Indianapolis.

Dr. Haug has lectured locally, nationally, and internationally on the subjects of prosthodontics and maxillofacial prosthetics. His research emphasis in complete denture materials and maxillofacial prosthetic materials has resulted in several grants, leading to articles published on these topics as well as others in prosthodontics. He has served as editor of both the removable prosthodontics section and fixed prosthodontics section of Clark’s Clinical Dentistry and has written two chapters in that text, as well as two chapters in Taylor’s Maxillofacial Prosthetics textbook. He has also served as a reviewer for prosthodontic journals.
ISMR HISTORY

The ISMR Mission:

ISMR ADVANCES INTERDISCIPLINARY MAXILLOFACIAL REHABILITATION THROUGHOUT THE WORLD.

“EDUCATION, PATIENT CARE, OUTREACH AND RESEARCH”

In the late 1980’s John Beumer, Director of Maxillofacial Prosthetics UCLA, Los Angeles, California, Ian Zlotolow, Director of Dental Service, Department of Surgery, Memorial Sloan-Kettering Cancer Center, New York, New York and Sal Esposito, Director of Maxillofacial Prosthetics at the Cleveland Clinic, Cleveland, Ohio met and decided to conduct an international symposium devoted to the art and science of maxillofacial prosthetics. Seed money for this initial meeting was provided by their respective institutions and by the Borchard Foundation. More than 400 individuals from more than 30 countries attended this initial conference. The funds contributed by the Borchard Foundation were used to support the travel and lodging expenses of 30 professionals from underdeveloped countries.

The meeting was so successful and well attended that Beumer, Zlotolow and Esposito formed an international organization devoted to maxillofacial rehabilitation. They decided to conduct the meetings every two years and to rotate them between North America, Europe and Asia. The International Congress of Maxillofacial Prosthetics was then established and incorporated in October of 1996.

As the organization developed, it was understood that professional groups other than prosthodontists contributing to head and neck related care wished to participate in the organization. In recognizing this and the need to create an international organization that brought a diversity of professional groups together, the organization was renamed the International Society for Maxillofacial Rehabilitation (ISMR) on January 7th, 2002. In 2008 it was decided that the ISMR needed to be completely restructured to reflect and embrace the interdisciplinary nature of head and neck related care. The restructuring also needed to address development of a future-oriented organization that actively
engaged involvement of the best young minds for the future. The decision was also made that, as a fundamental principle, these best young minds needed to be actively engaged in the operation of the ISMR.

The ISMR interest is in maxillofacial reconstruction and rehabilitation. This interest is not restrictive and relates, in broad fashion, to head and neck education, patient care, outreach and research. The ISMR membership is drawn from the international clinical and research community that has an interest in head and neck related care. The mission of the ISMR is to *advance interdisciplinary maxillofacial rehabilitation throughout the world*. The fundamental purpose of this mission is to improve reconstructive and rehabilitative maxillofacial care with the aim of improving quality of life of individuals needing care. The ISMR delivers this mission through bringing support to professionals involved in care, teaching and research. The ISMR is structured to be a fully interdisciplinary organization that recognizes the importance of diverse clinical and research disciplines embracing interdependency in their respective roles. The ISMR is an inclusive organization that places particular value on mutual respect of diverse disciplines in delivering excellence in education, patient care, outreach and research.

[www.ismr-org.com](http://www.ismr-org.com)
The American Academy of Maxillofacial Prosthetics was founded in 1953 by Drs. Aelred C. Fonder, Joseph E. Schaefer, and John R. Thompson. The Academy was originally founded as "The National Association for Somato Prosthetics and Rehabilitation" in Chicago by these three leaders. The Academy was officially incorporated in Cook County (Illinois) and received its charter on January 29, 1953. The corporation consisted of a general association of dentists engaged in a common field of rehabilitation whose purpose was for educational, research, and charitable reasons rather than for pecuniary ones.

The actual founding of the Academy was preceded by many organizational meetings during 1951 and 1952. The "founding group" of 25 dentists met in the "Windy City" and established a constitution, ratified by-laws with set standards, and requirements for active membership. Since then, the Constitution and By-laws have been revised as needed.

The "founding fathers" elected the Academy's first officers on February 24, 1953. They were: Dr. Aelred Fonder, President; Dr. R. E. Stenford, Vice President; Dr. Henry Carney, Secretary; and Dr. A. J. Ackerman, Treasurer. The name of the organization was officially changed to The American Academy of Maxillofacial Prosthetics at its annual meeting in 1954.

From its inception in 1953 until 1959, the annual meetings were held in Chicago during the mid-winter meeting of the Chicago Dental Society and the meeting of the American Prosthetic Society in the Pick Congress Hotel. In 1959, it was decided to follow the American Dental Association's annual meeting location and time and in 1960, the first meeting of the Academy was held in conjunction with the ADA meeting in Los Angeles. After experiencing difficulties with the ADA Housing Bureau, the Board of Directors decided to coordinate the Annual Meeting with the American College of Prosthodontists which gave the advantage to our Fellows to attend both meetings. Our first meeting with the College was in October of 1973 in San Antonio, Texas.

The first banquet of the Academy was held at the Pick Congress Hotel on February 1, 1957. Since then, our annual President's banquet has been on the
second day of our Scientific Program. The Journal of Prosthetic Dentistry was approved as the official publication of the Academy in 1959. Since then, one of the Academy Fellows has represented the Academy on the Editorial Board as an Associate Editor. The Academy’s seal or emblem was presented and approved in 1959. Certificates of membership bearing the seal have been issued to all members since then. In 1973, the "Membership" certificates were changed to "Fellowship" certificates.

Education and training of maxillofacial prosthodontics to dentists was a major concern. From 1958 to 1977, two-year teaching programs were offered. From 1977 to 1984, three-year programs were offered and these were accredited by the ADA Commission on Dental Education. On October 19, 1975, the first continuing education course of the Academy was held at the Playboy Club in Lake Geneva, Wisconsin. The title of the course was "Management of the Maxillectomy Patient with Orbital Extension". The 22nd course is scheduled for November 5th (1997) in Orlando.

The Academy had firmly established for itself a leadership role in dentistry and its leaders have demonstrated the ability and the willingness to meet new challenges as they develop.

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- MD Anderson Cancer Center • University of Illinois at Chicago
- UMC St Radboud Nijmegen, NL • Westmead Hospital Sydney, AU
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Dr. Dale Howes
Dr. Tomohiko Ishigami
Dr. Bonnie Martin-Harris
Dr. Dennis Rohner
Dr. Hadi Seikaly
Dr. Arun Sharma
### ISMR Past Presidents

<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
<th>Year</th>
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<tr>
<td>Kwang Nam Kim, D.D.S, PhD</td>
<td></td>
<td>1996</td>
<td>Seoul, KR</td>
</tr>
<tr>
<td>Giulio Preti, D.D.S, M.D, PhD</td>
<td></td>
<td>1998</td>
<td>Torino, IT</td>
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<tr>
<td>Salvatore Esposito, D.M.D</td>
<td></td>
<td>2000</td>
<td>Kauai, HI</td>
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<tr>
<td>Ian Zlotolow, D.M.D</td>
<td></td>
<td>2002</td>
<td>Okinawa, JP</td>
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<tr>
<td>Takashi Ohyama, D.D.S, PhD</td>
<td></td>
<td>2002</td>
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<td>Robert van Oort, D.D.S, PhD</td>
<td></td>
<td>2004</td>
<td>Maastricht, NL</td>
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<td>David J. Reisberg, D.D.S</td>
<td></td>
<td>2008</td>
<td>Chicago, IL</td>
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<td></td>
<td>2010</td>
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### ISMR Committees

Please visit: [http://www.ismr-org.com/ISMR_dynamic/Committees.aspx](http://www.ismr-org.com/ISMR_dynamic/Committees.aspx) to view all current 2012 committee members
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President Elect
Dr. Lawrence E. Brecht

Vice-President
Dr. Betsy K. Davis

Vice-President Elect
Dr. Mark S. Chambers

Recording Secretary
Dr. Thomas Salinas

Executive Secretary/Treasurer
Dr. Jeffery C. Markt

Immediate Past President
Dr. Robert M. Taft

AAMP Board of Directors
Dr. Arun B. Sharma
Dr. Joseph M. Huryn
Dr. Peter J. Gerngross
Dr. Craig A. Van Dongen
Dr. Alvin G. Wee
Dr. Gerald T. Grant
<table>
<thead>
<tr>
<th>Name</th>
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<tr>
<td>Aeldred C. Fonder, D.D.S.</td>
<td>1953 Chicago, IL</td>
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<tr>
<td>Robert E. Stewart, D.D.S.</td>
<td>1954 Chicago, IL</td>
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<td>Thomas E. Knox, D.D.S.</td>
<td>1955 Chicago, IL</td>
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<td>Arthur H. Bulbulian, D.D.S.</td>
<td>1956 Chicago, IL</td>
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<td>Arthur H. Bulbulian, D.D.S.</td>
<td>1957 Chicago, IL</td>
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<td>Mervin C. Cleaver, D.D.S.</td>
<td>1958 Dallas, TX</td>
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<td>Joseph B. Barron, D.D.S.</td>
<td>1959 Chicago, IL</td>
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<tr>
<td>Joseph B. Barron, D.D.S.</td>
<td>1960 Los Angeles, CA</td>
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<tr>
<td>Edward J. Fredrickson, D.D.S.</td>
<td>1962 Miami Beach, FL</td>
<td></td>
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<tr>
<td>Kenneth I. Adisman, D.D.S.</td>
<td>1963 Atlantic City, NJ</td>
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<tr>
<td>Joe B. Drane, D.D.S.</td>
<td>1964 San Francisco, CA</td>
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<tr>
<td>Louis J. Boucher, D.D.S.</td>
<td>1965 Las Vegas, NV</td>
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<td>Victor J. Niiranen, D.D.S.</td>
<td>1966 Dallas, TX</td>
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<td>Herbert H. Metz, D.D.S.</td>
<td>1968 Miami, FL</td>
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<td>Thomas A. Curtis, D.D.S.</td>
<td>1971 Cherry Hill, NJ</td>
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<td>Sebastian A. Bruno, D.D.S.</td>
<td>1972 Las Vegas, NV</td>
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<td>William R. Laney, D.M.D.</td>
<td>1973 San Antonio, TX</td>
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<td>Augustus J. Valauri, D.D.S.</td>
<td>1976 San Diego, CA</td>
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<tr>
<td>Arthur O. Rahn, D.D.S.</td>
<td>1977 Orlando, FL</td>
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<td>Dorsey J. Moore, D.D.S.</td>
<td>1978 Las Vegas, NV</td>
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<td>James S. Brudvik, D.D.S.</td>
<td>1979 New Orleans, LA</td>
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<tr>
<td>Seymour Birnbach, D.D.S.</td>
<td>1980 San Antonio, TX</td>
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<td>James W. Schweiger, D.D.S.</td>
<td>1981 St. Louis, MO</td>
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<td>Norman G. Schaaf, D.D.S.</td>
<td>1982 Monterey, CA</td>
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<td>Verdi F. Carsten, D.D.S.</td>
<td>1983 San Diego, CA</td>
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<td>David N. Firtell, D.D.S.</td>
<td>1984 Nashville, TN</td>
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<td>Ronald P. Desjardins, D.M.D.</td>
<td>1985 Seattle, WA</td>
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<td>Mohammad Mazaheri, D.D.S.</td>
<td>1986 Williamsburg, VA</td>
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<td>Richard J. Grisius, D.D.S.</td>
<td>1987 San Diego, CA</td>
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<td>Donald L. Mitchell, D.D.S.</td>
<td>1990 Charleston, SC</td>
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<td>Clifford W. Van Blarcom, D.D.S.</td>
<td>1992 Tampa, FL</td>
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<td>Gordon E. King, D.D.S.</td>
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<td>Salvatore J. Esposito, D.M.D.</td>
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<td>Timothy R. Saunders, D.D.S.</td>
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<td>Alan J. Hickey, D.M.D.</td>
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<td>Robert E. Gillis Jr., D.M.D, M.S.D.</td>
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<td>Mark T. Marunic, D.D.S, M.S...</td>
<td>2004</td>
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<td>Thomas J. Vergo Jr., D.D.S..</td>
<td>2005</td>
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<td>Rhonda F. Jacob., D.D.S., M.S...</td>
<td>2006</td>
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<td>Jeffrey E. Rubenstein, D.M.D, MS</td>
<td>2007</td>
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<td>Terry M. Kelly, D.M.D.</td>
<td>2008</td>
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<td>Glenn E. Turner, D.M.D., M.S.D...</td>
<td>2009</td>
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<tr>
<td>Steven E. Eckert, D.D.S., M.S....</td>
<td>2010</td>
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*Denotes Deceased*

We thank all past AAMP Presidents for their dedication and service

AAMP Committees

Please visit: [http://www.maxillofacialprosth.org/AboutUS/Committees.html](http://www.maxillofacialprosth.org/AboutUS/Committees.html) to view all current 2012 committee members
### Recipients of the Ackerman Award

<table>
<thead>
<tr>
<th>Name</th>
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<tbody>
<tr>
<td>Andrew J. Ackerman, D.D.S.</td>
<td>1961</td>
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<td>Mervin C. Cleaver, D.D.S.</td>
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<td>Totten S. Malson, D.D.S.</td>
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<td>William R. Laney, D.M.D.</td>
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<td>I. Kenneth Adisman, D.D.S.</td>
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<td>Joseph B. Barron, D.M.D.</td>
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<td>Herbert Metz, D.D.S.</td>
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<td>Varoujan A. Chalian, D.D.S.</td>
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<td>Thomas A. Curtis, D.D.S.</td>
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<td>Richard J. Grisius, D.D.S.</td>
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<td>Luis R. Guerra, D.D.S.</td>
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<td>Dorsey J. Moore, D.D.S.</td>
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<td>Stephen M. Parel, D.D.S.</td>
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<td>James P. Lepley, D.D.S.</td>
<td>2001</td>
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<td>Cliff W. Van Blarcom, D.D.S.</td>
<td>2002</td>
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<td>John Beumer III, D.D.S., M.S.</td>
<td>2005</td>
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<td>Salvatore J. Esposito, D.M.D.</td>
<td>2007</td>
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Social Events & Guest Activities

Saturday, October 27th
7:00-10:00  Hospitality Breakfast (daily for registered guests)
            Located in Suite 321
13:00-16:30 Group Tour at the US Naval Academy in Annapolis
             (Elective) Meet in hotel lobby
17:30 - 20:00 AAMP / ISMR Poster Session & Exhibit Reception
              Located in Constellation AB & Hallway

Sunday, October 28th
07:00 - 08:00 Daily Breakfast - Exhibit Review
            Located in Constellation Ballroom AB
09:00 - 12:30 Star Spangled City Tour
            (Elective Activity for guests)
            Meet in hotel lobby
12:00-13:30 AAMP Luncheon and Business Meeting
             AAMP Members only- Must RSVP
             Located in Harborview Room
18:30 - 21:30 AAMP/ISMR Social Outing
             Fells Point Tour and Waterfront Dinner
             (Elective) Meet in hotel lobby

Monday, October 29th
07:00 - 08:00 Daily Breakfast - Exhibit Review
            Located in Constellation Ballroom AB
11:15 – 14:45 Baltimore Food and Walking Tour
            (Elective Activity for guests)
            Meet in hotel lobby
12:00 - 13:30 ISMR Luncheon and Business Meeting
             ISMR Members only- Must RSVP
             Located in Harborview Room
19:00-22:00 AAMP / ISMR Presidential Reception & Banquet
             (Elective)
             Located in Constellation Ballroom

Tuesday, October 30th
07:00 - 08:00 Daily Breakfast - Exhibit Review
            Located in Constellation Ballroom AB

Wednesday, October 31st
09:00 Wed- Post-Conference Elective
     8:00 Fri  Washington, DC- City Tour and Food Tasting
Welcome from
Baltimore, Maryland

Silent Auction
2012
2012 Scientific Program Overview

**Friday, October 26th**

8:00-16:00  ISMR Board Meeting - Council Members only
17:00-20:00 AAMP Executive Meeting - Executive Board Members only

**Saturday, October 27th**

7:00-17:00  AAMP Board Meeting - Council Members only
10:30  Exhibit Room - available for Exhibit booth set-up
13:00-16:30 Elective Tour: US Naval Academy at Annapolis
16:00  Poster Set-up
17:30-20:00 Poster Session & Exhibit Reception

    *Posters remain displayed throughout the meeting*

**Sunday, October 28th**

7:00  Continental Breakfast - Exhibit Review
7:45  Opening Remarks
8:00-9:45  **Plenary Session** - Head & Neck Cancer Rehabilitation

    **Located in Constellation Ballroom CDEF**

    Moderator: Dr. Dennis Rohner

8:00  1- David L. Hirsch  **Jaw in a Day**

8:20  2- Hadi Seikaly  **Preoperative Virtual Planning for Maxillary Free Flap Reconstruction to Optimize Functional Implant Supported Prosthetic Rehabilitation**

8:40  3- Max Witjes  **Virtual Planning and Digital Rapid Prototyping of Surgical and Prosthetic Aids and Parts in the Reconstruction of Complex Mandibular and Maxillary Defects**

9:00  **Panel Discussion**  **Cutting Edge Approach of Digital Surgical Design for Prefabricated Flaps with Immediate Loading in Microvascular Reconstruction of the Jaws**

    Panel Members:
    Lawrence Brecht, David L. Hirsch, Harry Reintsema, Hadi Seikaly, Max Witjes and Johan Wolfaardt

9:45  AM Coffee Break-  **Exhibit Review**
10:15-12:00  **Plenary Session - Head & Neck Cancer Rehabilitation**  
*Located in Constellation Ballroom CDEF*  
Moderator: Dr. Thomas Salinas

10:15  **4- Robert Foote**  
*Advances in Radiation Delivery for Head & Neck Cancers*

10:45  **5- Arjan Vissink**  
*Clinical Management of Salivary Gland Hypofunction and Xerostomia in Head-and-Neck Cancer Patients*

11:15  **6- Jan Lewin**  
*Functional Outcomes in Patients with Head and Neck Cancer: Current Knowledge and Collaborative Initiatives*

11:45  **Discussion**  
*Meeting Dedication*

12:00-13:30  **AAMP Business Lunch**  
*Members only*

13:30-15:00  **Selected Abstracts**

<table>
<thead>
<tr>
<th>Concurrent Session A</th>
<th>Concurrent Session B</th>
<th>Concurrent Panel</th>
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| Located in Constellation Ballroom EF  
Moderators:  
Dr. Neal Garrett  
Dr. Alvin Wee | Located in Constellation Ballroom CD  
Moderators:  
Dr. Jim Kelly  
Dr. Robert Taft | **Discussion Group**  
**Dysphagia Research Society**  
**13:30-14:45**  
**Mapping Dysphagia Phenotypes:**  
**Standardized Physiologic Approach to Oropharyngeal Swallowing Assessment**  
Bonnie Martin-Harris  
Bronwyn Jones |
| **13:30**  
**7- Tomohiko Ishigami**  
*The Useful Japanese Magnetic Attachments for Maxillofacial Prosthetics* | **8- Yuka Sumita**  
*Clinical System in Tokyo Medical and Dental University for Brachytherapy* |  
**Concurrent Panel**  
Located in Frederick/Columbia |
| **14:00**  
**9- Cumming Leith**  
*A More Accurate Finite Element Model and its Use in Developing Rehabilitation Protocols* | **10- David Reisberg**  
*The Craniofacial Team: Welcome to Tomorrow* |  
**Discussion Group**  
**Dysphagia Research Society**  
**13:30-14:45**  
**Mapping Dysphagia Phenotypes:**  
**Standardized Physiologic Approach to Oropharyngeal Swallowing Assessment**  
Bonnie Martin-Harris  
Bronwyn Jones |
<table>
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<tr>
<td>14:15</td>
<td>Chiquit Van Linden Van Den Heuvel - Fly on the Wall - Participating</td>
<td>Mark Richards - Secondary Reconstruction of a Complex Facial Injury from Afghanistan</td>
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<td></td>
<td>Observations During Treatment Decision Sessions in Head and Neck Oncology</td>
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<td>14:45</td>
<td>Caroline Speksnijder - Mastication and Tongue Function in Patients Treated for Malignancies in Tongue and/or Floor of Mouth; A 1-Year Prospective Study</td>
<td>Avinash Bidra - Are Classification Systems Appropriate for Describing Maxillectomy Defects?</td>
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<tr>
<td>15:00</td>
<td>PM Coffee Break - Exhibit Review</td>
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<tr>
<td>15:30</td>
<td>Azadeh Afshari - Fabrication of a Tissue Equivalent Prosthesis for Radiation Therapy: A Case Report</td>
<td>Omaid Ahmad - Computed Guided Implant Surgery: Diagnosis and Treatment Planning</td>
<td>Special Interest Group 15:30-17:00 Special Interest Group for Oral Hygiene in Maxillofacial Rehabilitation Patients</td>
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<td>Richelle Beesley Hester Groenewegen Sabine Harck</td>
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</table>
15:45 19- Emi Murano-
Tongue Muscle
Adaptation Measured
with 4D Dynamic
MRI – Glossectomy with
Flap vs. No-Flap

16:00 20- Louis R. Marion-
Rehabilitating
Extensive Acquired
Mandibular Defects
with Screw-Retained
Implant-Supported
Prostheses

16:15 21- Richard Cardoso-
A Retrospective Review of
Radiation-Induced
Trismus in Head and Neck
Cancer: An M.D.
Anderson Experience

16:15 22- Arzu Atay-
Assessment of Health
Related Quality of
Life in a Group
Turkish Patients with
Facial Prostheses

16:15 23- Samuel
Zwetchkenbaum-
Nursing Homes: An
Orientation

16:30 24- Ho Beom Kwon-
Three-Dimensional
Finite Element
Analysis of Obturator
Prostheses for
Acquired Palatal
Defects

16:30 25- Anat Sharon-
The Antibacterial
Properties of Obturator
Lining Materials,
Incorporated with
Quaternary-Ammonium
Polyethylenimine
Nanoparticles

16:30 26- Balendra Pratap
Singh-
Assessment of the
Quality of Life in
Maxillofacial
Prosthesis
Rehabilitated
Patients-
Patients View

16:30 27- Brittany Barber-
Free Flap Elevation Times
Using the Harmonic
Scalpel (Tm)

16:30 28- Qing Lin-
The Correlation
Between Mental
Condition and Quality
of Life of Patients
with Maxillary
Defects

17:00 29- Carol Spence-
The Impact of Digital
Technologies on
Craniofacial
Rehabilitation –
The South African
Experience

17:00 30- Paola Ceruti-
The Rehabilitation
with Obturator
of the
Maxillectomized
Patient: The
Application of a
Novel Method

Located in
Baltimore/Annapolis

Special Interest Group
17:00-18:00
Behavioral Special
Interest Group Session

Chiquit Van Linden Van
Den Heuvel
Max Witjes
Monday, October 29th

7:00    Continental Breakfast - Exhibit Review
7:00-7:45  Special Interest Group- ISMR Information Session & Discussion on Facial Prosthetics
          Located in Frederick/Columbia
7:45    Opening Remarks
8:00-9:45  Plenary Session - Congenital / Craniofacial Rehabilitation
          Located in Constellation Ballroom CDEF
          Moderator: Dr. Lawrence Brecht
     8:00  32- Kathleen A. Kapp-Simon  Quality of Life for Patients with Congenital or Acquired Craniofacial Conditions
8:30  33- John F. Caccamese  Reconstruction of Congenital / Facial Anomalies; Craniofacial Reconstruction
9:00  34- Ann W. Kummer  Jaws (They’re Not just an Eating Machine): How Jaw Anomalies Affect Speech and Resonance
9:30    Discussion
9:45    AM Coffee Break- Exhibit Review
10:15-12:00  Plenary Session - Congenital / Craniofacial Rehabilitation
          Located in Constellation Ballroom CDEF
          Moderator: Dr. David Reisberg
     10:15  35- Barry Grayson  Craniofacial Orthodontics
10:45  36- Gorman Louie  Advanced Digital Technologies in Craniofacial Reconstruction
11:15  37- Jerald Moon  The ACPA and Its Role in Advancing Cleft Care Globally
11:45    Discussion
### ISMR Business Lunch
*Members only*

### Selected Abstracts, Workshops and Panels

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<th>Concurrent Session B</th>
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<tr>
<td>12:00-13:30</td>
<td>ISMR Business Lunch</td>
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<tr>
<td>13:30-15:00</td>
<td>Selected Abstracts, Workshops and Panels</td>
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**Concurrent Session A**

**Located in Constellation Ballroom EF**

- **Moderators:**
  - Dr. Peter Gerngross
  - Dr. Anke Korfage

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<tr>
<th>Time</th>
<th>Speaker (and Title)</th>
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<tbody>
<tr>
<td>13:30</td>
<td>38- Anke Korfage- Rehabilitation of Oral Cancer Patients with Mandibular Implants placed per Ablationem: Up to 14 Years Follow-Up</td>
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<tr>
<td>13:45</td>
<td>40- Stephen Wagner- Prefabricated Impression Trays for use with Patients Presenting with Maxillofacial Defects</td>
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<tr>
<td>14:00</td>
<td>42- Didier Maurice- Contribution to the Integration of Removable Prostheses by Speech Study</td>
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<tr>
<td>14:15</td>
<td>44- Heath Balch- Method for Structural Reinforcement of Mandibular Complete Denture and Implant Supported Overdenture</td>
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<tr>
<td>14:30</td>
<td>46- Julie Bemer- Prosthetic Approach After Total Glossectomy: A Case Report</td>
</tr>
<tr>
<td>14:45</td>
<td>48- Suhasini Nagda- Developing the Model for Minimum Standard of Care for Maxillofacial Rehabilitation in India- Need of the Hour</td>
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</table>

**Concurrent Session B**

**Located in Constellation Ballroom CD**

- **Moderators:**
  - Dr. Richard Cardoso
  - Dr. Arun Sharma

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<tr>
<th>Time</th>
<th>Speaker (and Title)</th>
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<tr>
<td>13:30</td>
<td>39- Heather Sisk- Considering the Clinician/Patient Relationship: Supporting the Clinician for a Healthy Career</td>
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<tr>
<td>13:45</td>
<td>41- Diana Acevedo- Technological Advances in Treating Speech and Language Deficits in Patients with Congenital or Acquired Craniofacial Anomalies</td>
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<tr>
<td>14:00</td>
<td>43- Alvin Wee- Influence of Physical Activity on Patients with Head and Neck Cancer Therapy</td>
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<tr>
<td>14:15</td>
<td>45- Khim Hean Teoh- Effect of Radiotherapy and Chemotherapy on the Quality of Life in Nasopharyngeal Carcinoma Patients— A Pilot Study</td>
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<tr>
<td>14:30</td>
<td>47- Christina Sim- Xerostomia and Salivary Flow Rates Following Intensity-Modulated Irradiation of Nasopharyngeal Carcinoma: An Initial Report</td>
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<tr>
<td>14:45</td>
<td>49- Arnulf Baumann- Reconstruction of the Orbit</td>
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15:00  PM Coffee Break - Exhibit Review

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<tr>
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<td><strong>Located in Constellation Ballroom CD</strong></td>
</tr>
<tr>
<td>Moderators: Dr. Peter Gerngross Dr. Anke Korfage</td>
<td>Moderators: Dr. Richard Cardoso Dr. Arun Sharma</td>
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</table>

15:30  50- Susan Habakuk- Osseointegrated Implants and the Rehabilitation of the Micotia Patient

15:45  51- Shizhu Bai- A Bridge Between Prosthodontics and Surgical Reconstruction—The Experience on Preoperative Virtual Planning of Fmmu

15:45  52- Hongbo Wei- Increased Fibroblast Functionality on Cnn2-Loaded Titania Nanotubes


16:00  54- Bo Wen- The Osseointegration of a Novel Alloyed Titanium Implant in Simulated Osteoporotic Conditions

16:00  55- Sebastian B.M. Patzelt- 3D Face Scans in Dentistry

16:15  56- Vitomir Konstantinovic- The Use of Basally Oseointegrated Implants (Boi) in Maxillofacial Prosthodontics

16:15  57- Graham Blackbeard- Custom Made Arthroplastics and Prosthetics in Maxillo-Facial Rehabilitation

16:30  58- Jonathan Shaul- The Potential of Tissue Engineering in Maxillofacial Reconstruction following Oral Cancer Treatment

16:30  59- Casper Coppen- Oromandibular Reconstruction Using 3D Planned Triple Template Method

16:45  60- Zhihong Feng- Virtual Transplantation in Designing a Facial Prosthesis for Extensive, Crossing-Facial-Midline Maxillofacial Defects with Computer-Assisted Technology

16:45  61- Alejandro Arango- Development of a Protocol for the Treatment of Mandibular Defects with Custom Made Implants

17:00  Session Adjourns

19:00-22:00  Conference Reception, Silent Auction & Banquet

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### Concurrent Workshops and Panels

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<th>Workshops 1A. Located in Baltimore/Annapolis</th>
<th>Workshop 4. Located in Frederick/Columbia</th>
<th>Panel Located in Chesapeake AB</th>
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<tbody>
<tr>
<td><strong>3dMD/Geomagic</strong> 13:30-15:00</td>
<td><strong>Factor II</strong> 13:30-17:00</td>
<td><strong>Discussion Group</strong></td>
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<tr>
<td>Craniocerebral Reconstruction: Scan, Plan &amp; Manufacture</td>
<td>Silicone &amp; Magnetic Retention: &quot;2012&quot;</td>
<td>ORONET 13:30-15:00</td>
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<tr>
<td><strong>15:00 PM Coffee Break-Exhibit Review</strong></td>
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<td>Johan Wolfaardt Tom Salinas Martin Osswald</td>
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**ORONET** is an international institutional consortium dedicated to development of outcomes measures for oral rehabilitation. ORONET is based on the OMERACT system of outcomes development as used by rheumatology. OMERACT is a WHO and Cochrane Collaboration accepted methodology. ORONET has, to date, focussed on implant outcomes. An introduction to ORONET will be provided as well as the findings of the work on outcomes measures for osseointegrated implants.

### Concurrent Workshops

<table>
<thead>
<tr>
<th>Workshop 1B. (repeat of 1A) Located in Baltimore/Annapolis</th>
<th>Workshop 4. Located in Frederick/Columbia</th>
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<tbody>
<tr>
<td><strong>3dMD / Geomagic</strong> 15:30-17:00</td>
<td><strong>Factor II (continued)</strong> 13:30-17:00</td>
</tr>
<tr>
<td>Craniocerebral Reconstruction: Scan, Plan &amp; Manufacture</td>
<td>Silicone &amp; Magnetic Retention: “2012”</td>
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**17:00 Session Adjourns**

**19:00-22:00 Conference Reception & Banquet**
Tuesday, October 30th

7:00  Continental Breakfast - Exhibit Review
7:45  Opening Remarks
8:00-9:45  Plenary Session - Trauma

*Located in Constellation Ballroom CDEF*
Moderator: Dr. Gerald Grant

8:00  **62- W. P. Andrew Lee**  Facial Transplant
8:30  **63- Jonathan Wiens**  Prosthodontic Rehabilitation of the Trauma Patient
9:00  **64- George Coppit**  Reconstruction of Trauma Wounds

9:30  *Discussion*
9:45  AM Coffee Break - Exhibit Review
10:15-12:00  Plenary Session - Closing Remarks

*Located in Constellation Ballroom CDEF*
Moderator: Dr. Mark Chambers

10:15  **65- Maureen Stone**  Instrumental Assessment of Tongue Function
10:45  **66- Jeff Harris**  Global Picture of Required Competencies in H&N Services
11:15  **67- Jeffrey N. Myers**  The Role of the H&N Team in the Era of Personalized Cancer Care

11:45  *Discussion - Preview of AAMP 2013 & ISMR 2014*
12:00  Conference Adjourns - Exhibit Breakdown
12:30-13:45  ISMR ACOM Lunch Meeting
14:00-15:30  ISMR Board Meeting  *Council members only*
13:30-17:00  Concurrent Workshops

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<thead>
<tr>
<th>Workshop 2.</th>
<th>Workshop 3.</th>
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<td>Located in Constellation Ballroom CD</td>
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<tr>
<td>AAMP-ISMR</td>
<td>Cochlear Vistafix System</td>
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<tr>
<td>13:30-17:00</td>
<td>13:30-17:00</td>
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<tr>
<td>Maxillofacial Insurance Reimbursements</td>
<td>Advancements in Bone Anchored Facial Prosthetic Solutions</td>
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Wednesday, October 31st

9:00  Elective Post Conference Tour

2 nights/3 days
Washington DC City Tour and Food Tasting
Resort & Meeting Room Map
2012 Scientific Program
In order of appearance

Session I.
Head & Neck Cancer Rehabilitation
Sunday, October 28, 2012
Jaw in a Day

Hirsch, David L.* DDS, MD
Oral and Maxillofacial Surgery
New York University
Clinical Assistant Professor of Plastic Surgery
NYU School of Medicine
New York, NY USA

The microvascular free fibula flap is widely used to reconstruct complex craniomaxillofacial defects following ablative surgery. Since its popularization for mandibular bony reconstruction in 1989, many permutations of the fibula flap have been applied to composite head and neck defects.

Several authors describe endosseous implantation of the fibula post operatively or at the time of surgery to aid in dental reconstruction, but this can leave a patient partially edentulous for up to 1 year after initial surgery. Psychologically, this can be devastating to a patient and may contribute to suboptimal nutritional status, poor cosmetic outcomes, and decreased patient satisfaction. We will discuss how these problems can be circumvented by single stage surgery that incorporates ablation, free flap placement, dental implants and a prosthesis to allow for complete jaw reconstruction. In our experience, computer assisted design and virtual planning is essential in achieving the above described results while maintaining appropriate operative times.
Functional maxillary rehabilitation after ablative surgery or trauma is one of the last frontiers of reconstructive surgery. The loss of the mid face structures result in a significant functional and cosmetic deficit that devastates all aspects of the patient’s life. Functional rehabilitation of these patients has posed a substantial challenge to surgeons because of the complexity of the defects and the reconstructive requirements. Effective functional reconstructions need to separate the oral and nasal cavities, maintain nasal patency, preserve orbital function, preserve lacrimal function, restore facial contour and allow for dental rehabilitation.

Historically these patients were rehabilitated with obturation but advances in free tissue transfer and osteointegration have greatly increased the reconstructive capabilities and enhanced our ability to achieve the ideal reconstruction. An array of flaps have been described in the reconstruction of simple maxillary defects, but the management of complex mid facial loss usually requires a multidisciplinary team approach as no one technique is sufficient to reconstruct all of the patients deficits.

The use of bone containing free flap transfer techniques has significantly improved maxillary reconstruction but full dental rehabilitation continues to be a challenge in this patient population. One of the main obstacles to complete dental rehabilitation through osteointegrated implants is achieving accurate osteotomies and placement of the bone flaps. Our institution has attempted to resolve this challenge through preoperative virtual and digital planning of all our bone containing reconstruction with some success. The presentation will share with the audience our experience with this technique in over fifty reconstructions.
Virtual Planning and Digital Rapid Prototyping of Surgical and Prosthetic Aids and Parts in the Reconstruction of Complex Mandibular and Maxillary Defects

Witjes, Max * MD, DDS, PhD
Center for Special Dental Care and Maxillofacial Prosthetics
Department for Oral and Maxillofacial Surgery
University Medical Center Groningen
Groningen, NL

The paradigm of reconstructive surgery of craniofacial defects has moved from straightforward closure of defects to striving for restoring function and good esthetic outcome. The implant based prosthesis is a major pillar of these reconstructions. For primary and secondary reconstruction the aim is to plan backward from the occlusion. Prefabrication of the free vascularised bone graft in cases of secondary reconstruction, developed by Dennis Rohner, allows planning of implant insertion in the fibula before harvesting the fibula. Here the technique is described of fully 3D digitally planned implant placement and immediate prosthetic reconstruction of craniofacial defects using free vascularised fibulas and scapula in a two step surgical approach. Since 3D planning allows the printing of surgical aids and parts the emphasis will be placed on which parts are essentially useful in planning and surgery.

Basically the 3D reconstruction of defects with prefabricated fibula/scapula bone comprises 3 stages: Pre operative 3D planning, the first surgical step and the intermediate planning followed by the second surgical procedure.

Pre operative data acquisition should consist of CT scan of the bone graft and the craniofacial defect. The pre-existing dentition and new dental prostheses should be separately digitally scanned and imported into the software in an anatomical position, allowing backward planning of the reconstruction. Drilling guides can be printed from the software to fit on the bone graft. During the first surgical step, the position of the dental implants can be digitized by using an optical scanner. The optical data with the exact location of
the implants are imported in the software. A suprastructure can be 3D designed and milled from the virtual data. A cutting guide for the bone graft can be 3D printed. To transfer the digital planning during the real surgical procedure, templates of the planned reconstructed and cutting guides to prepare the acceptor site are printed as well from the 3D data.

After reconstruction, the actual placement of implants and bone graft can be compared to the virtual planning by pre and post op CBCT. Usually accuracy of implant and fibula placement is within 3mm of the virtual planning.

4
Invited Speaker
Head & Neck Cancer Rehabilitation

Advances in Radiation Delivery for Head and Neck Cancers

Foote, Robert L.* MD, FACP, ASTRO
Professor and Chair
Department of Radiation Oncology
Mayo Clinic
Rochester, MN USA

X-rays have been used to treat cancer since 1896. Much has been learned and many advances have been made over the past 116 years aided by the development of computers, advances in computer hardware and software technology, and advances in imaging technology.

In general, the higher the dose of radiation therapy to the tumor, the greater the probability of long term tumor control and prolonged survival. Similarly, the higher the dose of radiation therapy to a normal organ at risk, the greater the probability and severity of acute toxicity and late complications. Late complications have a significant negative impact on function and quality of life. The goal of the radiation oncologist is to give a high enough dose of radiation therapy to maximize the probability of tumor control and survival while at the same time minimizing the dose of radiation therapy to normal organs to reducing the risk of severe late complications.
A number of steps are involved in the process of radiation therapy treatment delivery including: 1) positioning and immobilization of the patient and target volume, 2) image-based radiation therapy treatment simulation, 3) image-based tumor and normal organ localization for radiation therapy treatment planning utilizing CT, PET and MR images, 4) physician contouring of tumor target treatment volumes and organs at risk for radiation injury on the treatment planning images, 5) physician dose prescription, 6) computerized dose calculations by a certified medical dosimetrist, 7) phantom-based quality assurance by a medical physicist, 8) intensity-modulated treatment delivery, 9) image-based treatment delivery verification, and 10) image-based adaptive radiation therapy treatment delivery.

During this presentation each of the above steps will be briefly reviewed noting current standards and recent advances in radiation delivery for head and neck cancers.

5
Invited Speaker
Head & Neck Cancer Rehabilitation

Clinical Management of Salivary Gland Hypofunction and Xerostomia in Head and Neck Cancer Patients

Vissink, Arjan* DDS, MD, PhD
Department of Oral and Maxillofacial Surgery
Maxillofacial Prosthetics
University Hospital
Groningen, NL

Despite the beneficial effects of radiotherapy regarding loco-regional tumor control, damage inflicted to normal tissues surrounding the tumor may cause severe complications. Tissues at risk include the salivary glands, which are generally co-irradiated during treatment. Exposure of the salivary glands to radiation results in a progressive loss of gland function (hyposalivation) beginning within the first weeks of radiotherapy. Hyposalivation causes xerostomia and subsequent side effects such as alterations in speech and taste, and results in difficulties with mastication and deglutition. Oral mucosal dryness predisposes tissues to fissures and ulcerations and to changes in the composition of the oral flora. The reduced oral clearance in combination with the altered oral flora may
lead to severe dental caries and other oral infections, e.g., candidiasis. A reduction in salivary flow also contributes to the risk of osteoradionecrosis of the mandible and to esophageal injury. All these adverse effects severely hamper the quality of life (QoL) of affected patients.

This paper focuses on the pathophysiology and clinical management of radiation-induced salivary gland injury, as the resulting hyposalivation and xerostomia are the most frequently occurring long-term side effects of radiotherapy in the head and neck region. Specifically, the consequences of such radiation injury and important issues underlying the successes and barriers in the clinical management of salivary gland hypofunction and xerostomia will be addressed. These latter include ways to (1) prevent or minimize radiation injury of salivary gland tissue and (2) manage radiation-induced hyposalivation and xerostomia after it has occurred.

6
Invited Speaker
Head & Neck Cancer Rehabilitation

Functional Outcomes in Patients with Head and Neck Cancer: Current Knowledge and Collaborative Initiatives

Lewin, Jan S. * Ph.D., Professor
Department of Head & Neck Surgery
Section Chief, Speech Pathology and Audiology
The University of Texas
M. D. Anderson Cancer Center
Houston, TX USA

Although the last 2 decades have seen important advances in the management of head and neck cancer (HNC), the disease and its treatment continue to represent significant causes of morbidity and functional loss in patients with tumors of the aerodigestive tract. Combined modality treatment has replaced highly morbid operations for the treatment of patients with advanced disease. New treatments including transoral laser and robotic surgeries, and agents such as IMRT, have been offered as part of a new treatment armamentarium that have been predicated on the assumption that normal tissue preservation equates to functional preservation most notably for swallowing function.
Unfortunately, organ preservation does not always parallel functional preservation. Despite the often remarkable therapeutic gains, these new treatment regimens have often been accompanied by significant early and late toxicities, including dysphagia and chronic aspiration. Data from laryngeal preservation trials that aggregate functional outcomes from multiple sites of HNC, show aspiration rates up to 40% in unselected cohorts, and in up to 80% of symptomatic patients when laryngopharyngeal function is impaired. Furthermore, data show high rates of aspiration that are undetected by patient report because of a lack of sensory awareness. Hence, silent aspiration has been reported in excess of 50% in patients who aspirate. Thus, for some patients with larynx cancer in particular, experience has shown that complete surgical resection produces better functional outcomes and superior quality of life than those that spare but cripple the organ.

When treatment includes the oral cavity, debilitating speech changes can occur that prevent intelligible communication and return to normal social and daily routines including work. According to recent estimates, approximately 2/3 of HNC patients report speech impairment. At MD Anderson Cancer Center, collaborative efforts between speech pathologists, oral surgeons, and maxillofacial prosthodontists to design palatal obturating and augmenting prostheses, tracheostomal attachments for laryngectomized patients, prosthetic “plugs” that prevent aspiration from an enlarged tracheoesophageal puncture, and exercise protocols to prevent trismus, are critical and effective in mitigating the acute and late effects of cancer treatment. Our data and experience corroborate the need for prospective multi-disciplinary collaboration to ensure optimal oncologic and functional outcomes.
The Useful Japanese Magnetic Attachments for Maxillofacial Prosthetics

Ishigami, Tomohiko*
Nihon University School of Dentistry, Partial Denture Prosthodontics
Tokyo, JP

In maxillofacial prosthetics the magnetic attachment has been applied as a useful tool, however, some magnetic attachments have been unsatisfied to use for dentists, because of the typical problems which were inappropriate size and insufficient retentive force. Furthermore, resistance to corrosion, which is a crucial point in clinical situation, has not improved so far. This presentation is to demonstrate the applicable potential of Japanese magnetic attachments for maxillofacial prosthetics. This attachment was evaluated by the standardized evaluation methods for the magnetic attachment which should be filed in ISO (International Organization for Standardization). The results revealed that increased attractive force and resistance to corrosion. Therefore, clinical application of the magnetic attachment for maxillofacial treatment has been succeeded and long term observation cases will be presented. Moreover, it is necessary to attempt a large number of the magnetic applications prospectively and to follow up these cases for a longer period. Japanese magnetic attachments should be contributing for various kinds of maxillofacial treatment.
Clinical System in Tokyo Medical and Dental University for Radiotherapy

Sumita, Yuka*
Tokyo Medical And Dental University
Maxillofacial Prosthetics
Tokyo, JP

Purpose: Radiotherapy for oral tumors with radiotherapy prostheses From the standpoint of preserving function, radiotherapy has a major role to play in the treatment of malignant tumors in the orofacial region. In this presentation, I would like to introduce the clinical system in Tokyo Medical and Dental University for radiotherapy.

Methods & Materials: The most important point concerning radiotherapy is to ensure that the lesion is sufficiently irradiated while simultaneously protecting the surrounding normal tissue. In radiotherapy for malignant tumors of the orofacial region, the use of radiotherapy prostheses can help to improve treatment for malignant tumors as well as reduce complications in the surrounding normal tissue. For these concerning, radio therapy prosthese are useful. However, in order to carry out, tight relationship between prosthodontist and the radiologist is necessary.

Results: There is a long history of radiotherapy prostheses. Early examples from the 1920s and 1930s are radium needle carriers using such materials as unvulcanized rubber, wax, and modeling compounds, while Turrel in 1947 and Golberg in 1959 reported the use of precursors to modern radiotherapy prostheses that utilize materials such as acrylic resin and lead plates. In Japan, Since Tanaka introduced a radiotherapy prosthesis in the Journal of Maxillofacial Prosthetics, we have managed to fabricate radiotherapy prostheses and tried to improve the treatment outcome. In Tokyo Medical and Dental University, radiologist does the patient referral for consultation to our department prior to start the radiotherapy. We take the impression with alginate and take bite relation and do the try in within a week and deliver the radiotherapy prosthesis to the radio therapy treatment room.
Conclusion: In this presentation, I would like to introduce the clinical system in Tokyo Medical and Dental University for radiotherapy, and describe the present status of patients who have undergone radiotherapy using a radiotherapy prosthesis for head and neck cancer.

9
Head & Neck Cancer Rehabilitation

A More Accurate Finite Element Model and its Use in Developing Rehabilitation Protocols

Leith, Cumming*; Blackbeard, Graham
Southern Implants (Pty)Ltd, Engineering
Pretoria, Gauteng, ZA

Purpose: To more accurately predict and understand the consequences of different treatment protocols, by more accurate finite element modelling.

Methods and Materials: Most published finite element modelling has been performed with major assumptions about the isotropy and geometry of the bone. This has generally used two physical properties (Young Modulus and Poissons Ratio), one for cortical bone and one for cancellous bone. This gross over-simplification has lead to an incorrect understanding of load dissapation. This in turn may have lead to sub-optimal placement of implants in complex maxillo-facial restorations. A far more complex, but accurate method of modelling, using CATscan data, is used to examine two treatment protocols for severely resorbed maxillae.

Results: Most published finite element modelling has been performed with major assumptions about the isotropy and geometry of the bone. This has generally used two physical properties (Young Modulus and Poissons Ratio), one for cortical bone and one for cancellous bone. This gross over-simplification has lead to an incorrect understanding of load dissapation. This in turn may have lead to sub-optimal placement of implants in complex maxillo-facial restorations. A far more complex, but accurate method of modelling, using CATscan data, is used to examine two treatment protocols for severely resorbed maxillae.
Conclusion: This new method of modelling gives us a greater ability to understand skeletal loading and will help avoid the use of inappropriate treatment protocols.

10
Head & Neck Cancer Rehabilitation

The Craniofacial Team: Welcome to Tomorrow

Reisberg, David*
The Craniofacial Center, The University of Illinois Hospital and Health Sciences System, Surgery
Chicago, IL USA

Purpose: Craniofacial rehabilitation should be provided within a team environment. Advances in technology have changed the way the "modern" team may evaluate, plan, and treat those with craniofacial conditions. The purpose of this presentation is to provide an overview of these advances and how they may be integrated into protocols for patient care.

Methods and Materials: Patient care protocols at The Craniofacial Center, The University of Illinois Hospital are reviewed. These include those used for management of both congenital and acquired conditions. Conventional techniques as well as digital applications such as 3d imaging, virtual surgery, and image guided surgery will be discussed. The membership and activities of the craniofacial team will be discussed within this context.

Results: Patient care protocols at The Craniofacial Center, The University of Illinois Hospital are reviewed. These include those used for management of both congenital and acquired conditions. Conventional techniques as well as digital applications such as 3d imaging, virtual surgery, and image guided surgery will be discussed. The membership and activities of the craniofacial team will be discussed within this context.

Conclusion: A team approach is the most effective way to provide comprehensive craniofacial care. Advances in technology have changed/improved the way this team care is provided.
Head & Neck Cancer Rehabilitation

Fly on the Wall – Participating Observations During Treatment Decision Sessions in Head and Neck Oncology

Van Linden Van Den Heuvell, Chiquit*; Van Der Laan, Geert; Roodenburg, Jan; Witjes, Max; Schepman, Kees Pieter; Korfage, Anke; Reintsema, Harry
University Medical Center Groningen
Oral & Maxillofacial Surgery and Special Dental Care Groningen, NL

Purpose: Since many years the overall five-year survival in head and neck oncology patients is about 50%. For some patients, for instance those with T4 cancer, the treatment plan contains invasive surgical procedures with mutilating outcomes. Decisions concerning treatment plans are made on a variety of levels to such an extent that it seems impossible to be aware of all the decisions. As a result, some decisions can be contradictory to others and transparency of the decision making process is lacking. Most patients seem to continue treatment without much hesitation. On which grounds did they choose for the proposed treatment? On which grounds did some other patients choose for an alternative treatment that seemed to be less mutilating but with a poorer prognosis? And what information did the treatment team provide to enable these patients coming to a decision? These questions deserve to be answered with the purpose of ameliorating the balance between information for – and protection of severe HNO patients in their decision making process.

Methods and Materials: In a recently started qualitative observational research four patients will be observed during their outpatient contacts – from their first visit until the start of treatment - with nurse practitioners, maxillofacial surgeons, dentist, dental hygienist and social worker of the HNO treatment team. The observer is meant to be “a fly on the wall”: someone who is, after informed consent, present with an announced but invisible camera, without any interference of the consultation hour. Six and twelve months after treatment patients will be contacted for a semi structured interview by the same observer, to reflect on the treatment decisions they made, against the background of the outcome of the treatment so far.
Results: In a recently started qualitative observational research four patients will be observed during their outpatient contacts – from their first visit until the start of treatment - with nurse practitioners, maxillofacial surgeons, dentist, dental hygienist and social worker of the HNO treatment team. The observer is meant to be “a fly on the wall”: someone who is, after informed consent, present with an announced but invisible camera, without any interference of the consultation hour. Six and twelve months after treatment patients will be contacted for a semi structured interview by the same observer, to reflect on the treatment decisions they made, against the background of the outcome of the treatment so far.

Conclusion: It is very intriguing what will appear to be the miscellaneous motives of severe HNO patients to choose for a specific treatment or to abstain from it. Qualitative research is the best way to start investigating these motives. The qualitative study may form a grounded base for a more quantitative sequel.

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Secondary Reconstruction of a Complex Facial Injury from Afghanistan

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Purpose: UK military personnel sustaining injuries in Afghanistan are treated and stabilized in Camp Bastion prior to medical evacuation to the Royal Centre for Defence Medicine (RCDM), Birmingham, UK. Complex traumatic head and neck injuries present special challenges to the reconstructive team The altered functions of speech, swallowing, vision and aesthetic defects that occur, make rehabilitation of these patients difficult. We describe a multi--disciplinary team approach for on going secondary rehabilitation of a serviceman who sustained a high energy gunshot wound to the face, which entered the right body of the mandible and exited beyond the chin point on the left hand side, with
extensive soft tissue damage, and severe fragmentation and comminution of the mandible.

**Methods and Materials:** The reconstruction was facilitated by the use of preoperative 3D CT scanning and the utilization of stereolithographic analogue models, to plan treatment, design and fabricate templates, as an accurate surgical guide for vascularised free fibula bone grafting of the mandible, with 2 free antelateral thigh flaps for tissue cover and lining

**Results:** The reconstruction was facilitated by the use of preoperative 3D CT scanning and the utilization of stereolithographic analogue models, to plan treatment, design and fabricate templates, as an accurate surgical guide for vascularised free fibula bone grafting of the mandible, with 2 free antelateral thigh flaps for tissue cover and lining

**Conclusion:** War has long been recognised as a stimulus for advancing surgical techniques and promoting associated technology. Higher survivability rates mean maxillofacial injuries requiring complex rehabilitation sustained by military personnel from Afghanistan and other theatres of conflict has and will increase.

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**Head and Neck Cancer - Protocols for the Oral Hygienist as Part of the Cranio-Facial Team**

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**Purpose:** Treating head and neck cancer patients effectively is challenging, particularly in patients treated with radiation &/ chemo radiation. Patients are often met with debilitating complications, including mucositis, trismus, osteoradionecrosis and infection, thereby decreasing patient comfort and quality of life. Patients also often present with increased levels of plaque due to oral pain and xerostomia, increasing the risk of radiation caries. These sequelae should be managed by the dental team. Although the importance of oral hygiene is mentioned in the literature, there is little reference to hygiene protocols and the vital contribution an oral hygienist can make. With the
expanded functions of an oral hygienist and the nature of the oral complications, patients spend significant time with the hygienist during the various phases of head and neck cancer treatment. This gives an important, unhurried opportunity to interface with the patients to monitor progress and the impact of the disease and its treatment on the quality of their lives.

Methods and Materials: 33 Patients (Males 20; Females 13)treated over a 6 year period who presented for regular Oral Hygiene maintenance were selected. Data including treatment modality, oral complications and morbidities were collected.

Results: 33 Patients (Males 20; Females 13)treated over a 6 year period who presented for regular Oral Hygiene maintenance were selected. Data including treatment modality, oral complications and morbidities were collected.

Conclusion: Oral hygienists are indispensible and form an integral part of our multi-disciplinary team, collaborating with all clinicians, from dieticians and physiotherapists to oncologists and surgeons. Our objective is to present protocols to define the role of the oral hygienist in the cranio-facial team. These functions should include pre-treatment preparation, continuing education, promotion of oral and general health, early detection of primary and secondary disease, intra-operative maintenance during all treatment phases as well as providing palliative care and managing support groups.

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Oromandibular Dystonia: A Multidisciplinary Treatment Entity

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Purpose: Oromandibular dystonia (OMD) consists of prolonged spasms of contraction of the muscles of the mouth and mandible and involves the
muscles of mastication, facial expression, tongue and eye lids. A multidisciplinary treatment approach will be presented that will include fabrication of a dental prosthesis to reduce/eliminate the symptoms of OMD. Etiology and treatment issues will be discussed emphasizing the importance of an interdisciplinary treatment approach.

**Methods and Materials:** A 60 year old female was referred from her Otolaryngologist for a dental prosthesis to treat her oromandibular dystonia. Her history was significant for previous treatment of abnormal speech and lisping that she had noticed about two years previous. At that time she was diagnosed with hyperkinetic dysarthria and her swallowing function was judged to be adequate for a regular diet. The symptoms worsened with time to include involuntary movement of her mandible, lips and tongue, which interfered with her speech. She did receive Botox injections at another institution that caused dysphagia so the injections were not continued. Due to her difficulty in swallowing she did experience weight loss. She follows a general diet with precautions to help prevent aspiration. A removable acrylic resin prosthesis was fabricated at an increase vertical dimension of occlusion. Upon closing on the prosthesis the patient was extremely pleased and able to maintain a comfortable facial position and her speech was very intelligible. She was given the routine instructions on insertion/removal and oral hygiene. She was instructed to leave the prosthesis out at night. A series of recall appointments were made. The patient and her husband were very pleased with the results.

**Results:** A 60 year old female was referred from her Otolaryngologist for a dental prosthesis to treat her oromandibular dystonia. Her history was significant for previous treatment of abnormal speech and lisping that she had noticed about two years previous. At that time she was diagnosed with hyperkinetic dysarthria and her swallowing function was judged to be adequate for a regular diet. The symptoms worsened with time to include involuntary movement of her mandible, lips and tongue, which interfered with her speech. She did receive Botox injections at another institution that caused dysphagia so the injections were not continued. Due to her difficulty in swallowing she did experience weight loss. She follows a general diet with precautions to help prevent aspiration. A removable acrylic resin prosthesis was fabricated at an increase vertical dimension of occlusion. Upon closing on the prosthesis the patient was extremely pleased and able to maintain a comfortable facial position and her speech was very intelligible. She was given the routine instructions on insertion/removal and oral hygiene. She was instructed to leave the prosthesis out at night. A series of recall appointments were made. The patient and her husband were very pleased with the results.
Conclusion: OMD treatment with a dental prosthesis can result in significant resolution in the patients symptoms with much less trauma/side affects than repeated injection of Botox or other medications and is less costly and relatively easily tolerated by most patients.

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Mastication and Tongue Function in Patients Treated for Malignancies in Tongue and/or Floor of Mouth; A 1-Year Prospective Study

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Purpose: People confronted with oral cancer run a high risk of deteriorated oral function. Reduced tongue function may affect mastication, deglutition, and speech. Reduced masticatory function may affect quality of life and food choice. An altered food choice may result in lower intakes for key nutrients and weight loss. In this study oral functions were examined in patients treated for oral cancer and compared with healthy controls at different moments within a one-year period.

Methods and Materials: Dental state, bite force, masticatory performance, tongue sensation, tongue mobility, and maximum force of the tongue were determined in a group of 45 patients with a squamous cell carcinoma of tongue and/or floor of mouth and 60 healthy persons matched on age. Twenty-three patients had surgery and 22 had surgery and radiotherapy. Patients were measured maximal 4 weeks before surgery, shortly (4-6 weeks) after surgery, shortly (4-6 weeks) after radiotherapy, 6 and 12 months after surgery. Healthy persons were measured once.

Results: Dental state, bite force, masticatory performance, tongue sensation, tongue mobility, and maximum force of the tongue were determined in a
group of 45 patients with a squamous cell carcinoma of tongue and/or floor of mouth and 60 healthy persons matched on age. Twenty-three patients had surgery and 22 had surgery and radiotherapy. Patients were measured maximal 4 weeks before surgery, shortly (4-6 weeks) after surgery, shortly (4-6 weeks) after radiotherapy, 6 and 12 months after surgery. Healthy persons were measured once.

**Conclusion:** Objective determination of oral function one year after surgery showed that treatment of malignancies in tongue and/or floor of mouth had a significant impact on mastication and tongue function in all patients.

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**Are Classification Systems Appropriate for Describing Maxillectomy Defects?**

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**Purpose:** Current maxillectomy defect classifications are incomplete and tedious to remember and use for clinical practice or to compare treatment outcomes. The purpose of this paper is to critically evaluate maxillectomy defect classification systems and identify the criteria necessary for a universal description of maxillectomy and midfacial defects.

**Methods and Materials:** An electronic search of the English language literature between the periods of 1974 and June 2011 was performed by using PubMed, Scopus, and Cochrane databases with predetermined inclusion criteria. Key terms included in the search were maxillectomy classification, maxillary resection classification, maxillary removal classification, maxillary reconstruction classification, midfacial defect classification, and midfacial reconstruction classification. This was supplemented by a manual search of selected journals. After application of predetermined exclusion criteria, the final list of articles was reviewed in depth to provide a critical appraisal and identify criteria for a universal description of a maxillectomy defect.
Results: An electronic search of the English language literature between the periods of 1974 and June 2011 was performed by using PubMed, Scopus, and Cochrane databases with predetermined inclusion criteria. Key terms included in the search were maxillectomy classification, maxillary resection classification, maxillary removal classification, maxillary reconstruction classification, midfacial defect classification, and midfacial reconstruction classification. This was supplemented by a manual search of selected journals. After application of predetermined exclusion criteria, the final list of articles was reviewed in depth to provide a critical appraisal and identify criteria for a universal description of a maxillectomy defect.

Conclusion: No classification system has accurately described the maxillectomy defect, based on criteria that satisfy both surgical and prostodontic needs. The 6 criteria identified in this systematic review for a universal description of a maxillectomy defect (acronymous as DOC-SAM) are: 1) Dental status; 2) Oroantral/nasal communication status; 3) Contiguous structure involvement such as soft palate, cheek, orbit etc; 4) Superior-inferior extent; 5) Anterior-posterior extent; and 6) Medial-lateral extent of the defect. A criteria-based description appears more objective and amenable for universal use than a classification-based description. Such a systematic method of describing the maxillectomy defect is paramount in diagnosis, treatment planning, communication and the prospective comparison of treatment outcomes.

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Fabrication of a Tissue Equivalent Prosthesis for Radiation Therapy: A Case Report

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Purpose: Surgical removal of head and neck tumors results in multiple challenges, one being the irregular tissue contours of the surgical site. When post-operative radiation therapy is delivered, the resultant borders create an uneven dose distribution to the volume of tissue treated. Air has a much lower electron density than that of body tissue, hence this difference permits a radiation beam to penetrate deeper beyond the enucleated site, resulting in a
greater dose of radiation beyond the air cavity while the surface of the irregular borders receives a much lower dose. Fabrication of a tissue equivalent prosthesis provides a bolus of material in the resultant void, allowing for a homogenous distribution of radiation therapy in the tumor-ablated site. The purpose of this case report is to describe the fabrication of a two-piece acrylic tissue equivalent prosthesis for external beam radiation therapy.

**Methods and Materials:** The tissue equivalent prosthesis was first constructed chair-side with Triad material and baseplate wax, adapting to the underlying modified anatomical structure. This wax pattern was used for the radiation simulation. The prosthesis was fabricated in two pieces for ease of insertion and removal as well as engaging the undercuts of the defect. Following the simulation procedure, the wax template was transformed to acrylic resin.

**Results:** The tissue equivalent prosthesis was first constructed chair-side with Triad material and baseplate wax, adapting to the underlying modified anatomical structure. This wax pattern was used for the radiation simulation. The prosthesis was fabricated in two pieces for ease of insertion and removal as well as engaging the undercuts of the defect. Following the simulation procedure, the wax template was transformed to acrylic resin.

**Conclusion:** A tissue equivalent prosthesis can attenuate radiation beam in areas of irregular tissue topography and permit uniform dose delivery to the intended sites of treatment. A well-adapted prosthesis will allow a more homogenous dose distribution to the tissues resulting in less co-morbidities during treatment.
Computed Guided Implant Surgery: Diagnosis and Treatment Planning

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Purpose: The recent technological developments in the field of implant dentistry and digital imaging have remarkably changed the dimension of maxillofacial rehabilitation. The advent of Cone Beam Computed Tomography and sophisticated computer softwares used for diagnostic and treatment planning of Implants, has enabled better and less time consuming approach towards implant planning and placement. It enhances a stronger multi-disciplinary approach which is more accurate, precise and predictable. In the world of Prosthodontics driven implant dentistry, the virtual planning for extensive full mouth complex and semi complex cases allows perception of implant placement and treatment planning and Prosthetic outcomes ahead of the surgical intervention in a much better way, for both surgeons and restorative dentist. The advanced softwares allow planning and execution of a case in a quicker and more comfortable way for the patients leading to a better outcome. The purpose of this presentation is to discuss the use of different implant treatment planning softwares and their role in maxillofacial rehabilitation.
Tongue Muscle Adaptation Measured with 4D Dynamic MRI – Glossectomy with Flap vs. No-Flap

Murano, Emi *; Xing, Fangxu 1; Evitts, Paul 2; Woo, Jonghye 1,3; Lee, Junghoon 1; Zhuo, Jiachen 3; Gullapalli, Rao 3; Stone, Maureen 3; Ord, Robert 3; Prince, Jerry 1.

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3 University of Maryland Baltimore
Baltimore, MD USA

Purpose: Measure the muscle adaptation strategy in glossectomy patients.

Methods and Materials: Two T2N0M0 oral tongue SCC glossectomy patients, a primary closure and a forearm free-flap, and four controls consented to participate in this study. Speech intelligibility and Fisher-Logemann Test of Articulatory Competence were rated by four experienced speech language pathologists. Spectral analysis for /T/, /D/, /S/ and /SH/ and sentence duration measures were also obtained. A 4D dynamic cine-MRI to determine tongue surface deformation and a tagged-MRI to measure the internal muscular tissue displacement points were acquired at the rate of 26 frames/sec (48ms interval) while patients spoke /asouk/. Three dimensional motion was estimated using the tagged MRI and an in-house algorithm.

Results: Two T2N0M0 oral tongue SCC glossectomy patients, a primary closure and a forearm free-flap, and four controls consented to participate in this study. Speech intelligibility and Fisher-Logemann Test of Articulatory Competence were rated by four experienced speech language pathologists. Spectral analysis for /T/, /D/, /S/ and /SH/ and sentence duration measures were also obtained. A 4D dynamic cine-MRI to determine tongue surface deformation and a tagged-MRI to measure the internal muscular tissue displacement points were acquired at the rate of 26 frames/sec (48ms interval) while patients spoke /asouk/. Three dimensional motion was estimated using the tagged MRI and an in-house algorithm.

Conclusion: This is the first 4D-MR image study to measure the surface and internal tissue deformation of the tongue during speech in glossectomy.
patients. When good adaptation occurs, the patient coordinates its residual muscles with a more complex muscle activation pattern resulting in a surface shape similar to that seen in controls. (Grant support: NIDCD - K99/R00-DC009279)

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Rehabilitating Extensive Acquired Mandibular Defects with Screw-Retained Implant-Supported Prostheses

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Purpose: Extensive resections of the mandible often cause the major anatomic changes and altered physiology that render a patient a poor candidate for removable prosthodontics. One of the major reasons for this is that the soft tissue covering the defect is either fibrous scar tissue, non-keratinized tissue from the buccal mucosa, or a myocutaneous flap from another body site used to close the wound. These types of tissue provide poor support for denture bases. Osseointegrated implants with screw-retained abutments and over-structures can eliminate the problems that removable prosthesis bring as well as avoid the dangers of cement impaction that cementable fixed prostheses present. This paper reviews the protocols and procedures in successful mandibular rehabilitation. Each will consider the difficulties of altered anatomies, irradiated tissues, as well as functional requirements such as occlusion, esthetics, and speech. It will show the phases of treatment by reviewing 5 recent patient cases surgically treated at the Thomas Jefferson University Hospital Department of Maxillofacial Surgery and restored by a prosthodontist.

Methods and Materials: 5 patients were followed closely. Each was treated surgically for various head and neck cancers that affected and required partial resection of the mandible. Through a phased treatment plan approach, each
patient was first placed in an acrylic screw-retained provisional prosthesis. Implants that were used were first load with titanium screw-retained abutments. Screw-retained provisional prostheses were used and could be modified for soft-tissue, functional, and esthetic demands. Following stabilization of the patient with the provisional prosthesis, procedures were used to fabricate a definitive prosthesis.

**Results:** 5 patients were followed closely. Each was treated surgically for various head and neck cancers that affected and required partial resection of the mandible. Through a phased treatment plan approach, each patient was first placed in an acrylic screw-retained provisional prosthesis. Implants that were used were first load with titanium screw-retained abutments. Screw-retained provisional prostheses were used and could be modified for soft-tissue, functional, and esthetic demands. Following stabilization of the patient with the provisional prosthesis, procedures were used to fabricate a definitive prosthesis.

**Conclusion:** Osseointegrated implants with screw-retained abutments and over-structures can eliminate the problems that removable prosthesis bring as well as avoid the dangers of cement impaction that cementable fixed prostheses present. This paper documents not only the successes of the patients, but it reviews the difficulties with implants in various acquired defects that have non-keratinized tissues as well as other soft-tissue challenges.
A Retrospective Review of Radiation-Induced Trismus in Head and Neck Cancer: An M.D. Anderson Experience

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Purpose: The purpose of this retrospective data review was to establish an incidence of radiation-induced trismus in oropharynx cancer patients who received definitive radiation therapy for cancer treatment; hence, this study analyzed demographic data, disease parameters, treatment modality, and outcomes of treatment modalities of patients with oropharynx cancer treated for trismus at M.D. Anderson Cancer Center (MDACC) during a 5 year period.

Methods and Materials: A retrospective data analysis was conducted on patients with a diagnosis of oropharynx cancer at MDACC and treated with radiation (+/- chemotherapy). Population characteristics included social habits, tumor pathology, location, and treatment modalities. All patients whose clinical documentation referenced an oral “opening” either positive or negative for trismus, was measured subjectively (visual inspection) or objectively (inter-incisal measurements) and included in this study.

Results: A retrospective data analysis was conducted on patients with a diagnosis of oropharynx cancer at MDACC and treated with radiation (+/- chemotherapy). Population characteristics included social habits, tumor pathology, location, and treatment modalities. All patients whose clinical documentation referenced an oral “opening” either positive or negative for trismus, was measured subjectively (visual inspection) or objectively (inter-incisal measurements) and included in this study.

Conclusion: Variables such as tumor size, location within the oropharynx, non-use of radiation stent, and treatment with concomitant chemoradiation appear to increase the incidence of trismus. Oral physiotherapy is a viable to increase oral opening when patient is compliant with regimen.
Assessment of Health Related Quality of Life in a Group Turkish Patients with Facial Prostheses

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Purpose: Facial prosthetics, an alternative to surgery offers an alternative to rehabilitation provides satisfactory conditions in aesthetics and quality of life and reinstates patients in family situation and social life. The purpose of this study was to evaluate the perception of quality of life patients with different types of facial prostheses.

Methods and Materials: The study included 96 participants, with 24 in each patient group (orbital, auricular, nasal) and 24 healthy control individuals. Clinical and socio-demographic data were gathered from the medical chart. Participants completed the Turkish version of the World Health Organization Quality of Life Instrument, Short Form (WHOQOL-BREF). Analysis of variance and Pearson's chi-square tests were used to compare the four groups studied on socio-demographic and clinical characteristics. An analysis of covariance with age as the covariate, compared groups for the overall quality of life and domain scores.

Results: The study included 96 participants, with 24 in each patient group (orbital, auricular, nasal) and 24 healthy control individuals. Clinical and socio-demographic data were gathered from the medical chart. Participants completed the Turkish version of the World Health Organization Quality of Life Instrument, Short Form (WHOQOL-BREF). Analysis of variance and Pearson's chi-square tests were used to compare the four groups studied on socio-demographic and clinical characteristics. An analysis of covariance with age as the covariate, compared groups for the overall quality of life and domain scores.
Conclusion: In conclusion, patients who conceal their defects are at risk for depression and tend to have more antisocial personality traits and poorer quality of life. In this study; 1. Patients with facial prostheses show a significant impairment in the quality of their life than healthy individuals, 2. There are significant differences in QL scores between patients with different types of facial prostheses, 3. Patients with nasal prostheses have the greatest impairment in all domains of QOL.

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Nursing Homes: An Orientation

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Purpose: Surgical patients lacking adequate home support may require time in a nursing home for rehabilitation. Staffing abilities vary greatly, and it is common for staff to have no familiarity with maxillofacial prostheses and how to care for the post-surgical patient. This presentation will provide an orientation to the nursing home, including staffing, levels of care, and how care is funded. Opportunities for dentists and maxillofacial prosthodontists to provide in-service training will be explored, including best practices in training.
Three-Dimensional Finite Element Analysis of Obturator Prostheses for Acquired Palatal Defects

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Purpose: The purposes of this study were to analyze the biomechanical behavior of obturator prostheses and the evaluation of prosthodontic designs of obturators in acquired palatal defects using a finite element analysis.

Methods and Materials: Three-dimensional finite element models of obturators for the maxillectomy patients with unilateral palatal defects and removable partial dentures for partially edentulous patients were constructed based on a maxillectomy patient’s and a normal subject’s CT images. The comparison between obturator model and removable partial denture model in terms of mechanical behavior was performed when vertical forces of 300 N on the natural teeth and 150 N on artificial teeth were simulated. In addition the effect of lateral scar band and the obturator framework designs including the position of retentive clasps were evaluated. Von Mises stresses and displacements of prostheses and supporting structures were measured and analyzed.

Results: Three-dimensional finite element models of obturators for the maxillectomy patients with unilateral palatal defects and removable partial dentures for partially edentulous patients were constructed based on a maxillectomy patient’s and a normal subject’s CT images. The comparison between obturator model and removable partial denture model in terms of mechanical behavior was performed when vertical forces of 300 N on the natural teeth and 150 N on artificial teeth were simulated. In addition the effect of lateral scar band and the obturator framework designs including the position of retentive clasps were evaluated. Von Mises stresses and
displacements of prostheses and supporting structures were measured and analyzed.

**Conclusion:** It was observed in the simulation using finite element analysis that the preservation of abutments, the existence of scar bands, and the consideration of applying appropriate prosthodontics design principles could be important in enhancing the performance of the obturator prosthesis.

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**The Antibacterial Properties of Obturator Lining Materials, Incorporated with Quaternary-Ammonium Polyethyleneimine Nanoparticles**

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Maxillofacial Rehabilitation

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**Purpose:** Obturator soft lining materials might be heavily infected by various oral microorganisms, and can result in surgery site infection. Such contamination can be life threatening in immune compromised patients. Mechanical cleansing of the soft lining materials of the obturator, or use of disinfectants might result in increasing the porosity of the material, therefore worsen the infected area. Soft lining materials that posses an antibacterial properties are preferred in use of the obturator. The aim of the present study was to evaluate the antibacterial activity of cross linked quaternary ammonium polyethyleneimine (PEI) nanoparticles, incorporated at 1-2% w/w in soft liner materials (lining obturators) compared to the non-modified soft liners.

**Methods and Materials:** The antibacterial activity was tested against: Enterococcus faecalis, Streptococcus mutans, Staphylococcus aureus, Pseudomonas aeruginosa, Staphylococcus epidermidis and Candida albicans using: 1. the direct contact test (DCT); 2. the agar diffusion test (ADT); 3. and bacterial growth in the materials’ elute. Additionally, flexural modulus and
Flexural strength of the soft liner materials were also tested using a loading machine.

**Results:** The antibacterial activity was tested against: Enterococcus faecalis, Streptococcus mutans, Staphylococcus aureus, Pseudomonas aeruginosa, Staphylococcus epidermidis and Candida albicans using: 1. the direct contact test (DCT); 2. the agar diffusion test (ADT); 3. and bacterial growth in the materials’ elute. Additionally, flexural modulus and flexural strength of the soft liner materials were also tested using a loading machine.

**Conclusion:** Quaternary ammonium PEI nanoparticles incorporated in soft liner materials have a potent antibacterial activity against Enterococcus faecalis, Streptococcus mutans, Staphylococcus aureus, Pseudomonas aeruginosa, Staphylococcus epidermidis and Candida albicans without leaching-out and with minimal compromise in mechanical properties. An in vivo study that conduct in our department, showes similar clinical results.

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**Assessment of the Quality of Life in Maxillofacial Prosthesis Rehabilitated Patients- Patients View**

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**Purpose:** To investigate how patients with maxillofacial defects assess their quality of life after maxillectomy and prosthodontic therapy with obturator prosthesis. Assessment was also done to co-relate difference in masticatory performance from controlled group and natural dentition.

**Methods and Materials:** Subjects were enrolled in the span of 16 months and five were not able to come in follow-up so counted as drop out. Subjects with maxillary defects, irrespective of the cause, planned for definite obturator prosthesis, were recruited. A longitudinal study was planned to assess quality of life using WHO Quality of Life (for general health) and University of Washington Quality of Life questionnaire (for disease specific) were before
surgical intervention and one month after definitive obturator. Measurement of masticatory performance was done using reversible hydrocolloid. The data were processed with statistical package for social science (SPSS) version 15.0 for windows statistical software (SPSS Inc., Chicago,IL ,USA). For all statistical analyses, probability levels of p<0.05 were considered statistically significant.

Results: Subjects were enrolled in the span of 16 months and five were not able to come in follow-up so counted as drop out. Subjects with maxillary defects, irrespective of the cause, planned for definite obturator prosthesis, were recruited. A longitudinal study was planned to assess quality of life using WHO Quality of Life (for general health) and University of Washington Quality of Life questionnaire (for disease specific) were before surgical intervention and one month after definitive obturator. Measurement of masticatory performance was done using reversible hydrocolloid. The data were processed with statistical package for social science (SPSS) version 15.0 for windows statistical software (SPSS Inc., Chicago,IL ,USA). For all statistical analyses, probability levels of p<0.05 were considered statistically significant.

Conclusion: Orofacial rehabilitation of patients with maxillofacial defects using obturator prosthesis is an appropriate treatment modality as assessed by the patient.

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Free Flap Elevation Times Using the Harmonic Scalpel (Tm)

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Purpose: The Harmonic Scalpel ™ has been utilized in a multitude of surgeries in the past decade. More recently, it has been used in free flap elevation in head and neck reconstruction for its decreased risk of heat transmission into surrounding delicate tissues and perceived expedition of elevation time when compared to conventional electrocautery. Our objective was to compare mean operative times for elevation of different microvascular free flaps using the
Harmonic Scalpel with the conventional diathermy method. Secondarily, to compare complication rates and donor site morbidity with both methods.

**Methods and Materials:** Patients were prospectively enrolled to undergo free flap elevation using the Harmonic Scalpel. Operative time, intraoperative complications, postoperative complications, primary and secondary ischemia time, and length of hospital stay were evaluated. Prospective data was compared in a case-controlled manner to retrospective data using the conventional diathermy method.

**Results:** Patients were prospectively enrolled to undergo free flap elevation using the Harmonic Scalpel. Operative time, intraoperative complications, postoperative complications, primary and secondary ischemia time, and length of hospital stay were evaluated. Prospective data was compared in a case-controlled manner to retrospective data using the conventional diathermy method.

**Conclusion:** Use of the Harmonic Scalpel allows for decreased free flap elevation time and decreased primary ischemic time for the RFFF, FFF, and ALT harvests.

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**The Correlation Between Mental Condition and Quality of Life of Patients with Maxillary Defects**

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**Purpose:** In our clinical work as prosthodontists, there are potential psychological problems found in patients with maxillary defects, which may negatively influence the quality of life. On the other hand, it is supposed that the improvement of quality of life after maxillectomy would help the recovery of mental health. This study aimed to evaluate the correlation between mental condition and quality of life of patients with maxillary defects.
**Methods and Materials:** Patients with maxillary defects who took part in our study were given three questionnaires to complete after maxillectomy. The three questionnaires we used are as followed: symptom checklist 90 (SCL-90), hospital anxiety and depression scale (HADS), University of Washington quality of life questionnaire (UW-QOL). And their data were collected and analysed by SPSS, as well as the basic sociodemographic and medical information of patients.

**Results:** Patients with maxillary defects who took part in our study were given three questionnaires to complete after maxillectomy. The three questionnaires we used are as followed: symptom checklist 90 (SCL-90), hospital anxiety and depression scale (HADS), University of Washington quality of life questionnaire (UW-QOL). And their data were collected and analysed by SPSS, as well as the basic sociodemographic and medical information of patients.

**Conclusion:** Although the patients group hadn’t shown any severe psychotic symptoms except somatization, individual high scores in other psychological items couldn’t be ignored in parts of the patients. There was interrelationship between mental condition and quality of life in patients with maxillary defects. Proper psychological care will help to accelerate the overall recovery of quality of life in patients with maxillary defects, and closely multidisciplinary cooperation is desiderated in the field of maxillary rehabilitation.

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Head & Neck Cancer Rehabilitation

**The Impact of Digital Technologies on Craniofacial Rehabilitation – The South African Experience**

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**Purpose:** The use of digital technologies in craniofacial rehabilitation has grown significantly over many years in the surgical, restorative, technical and commercial fields. This study is aimed to evaluate the objective and subjective influences of digital technology in these spheres.
Methods and Materials: A questionnaire was devised to evaluate the subjective experience of private (10) and public (10) surgical and restorative specialists who have sought adjunctive digital technology in their fields within craniofacial rehabilitation. The evaluation was based on a visual analogue scale testing the impact on time, surgical and restorative procedures, cosmetics, symmetry and overall satisfaction. I addition 10 patients were divided into 2 groups: Group A (N=5): A sample of ‘Planned’ cases where mandibular reconstruction is done by way of virtual surgical planning and compared to the CT scan taken routinely within 3 months post operatively to assist in bone augmentation or the start of prosthetic rehabilitation. Group B (N=5): A group of 5 ‘Unplanned’ cases where the plates were bent intra operatively and later had to undergo revision surgery using virtual surgical planning to correct gross misalignment of the mandible to make prosthetic rehabilitation possible.

Results: A questionnaire was devised to evaluate the subjective experience of private (10) and public (10) surgical and restorative specialists who have sought adjunctive digital technology in their fields within craniofacial rehabilitation. The evaluation was based on a visual analogue scale testing the impact on time, surgical and restorative procedures, cosmetics, symmetry and overall satisfaction. I addition 10 patients were divided into 2 groups: Group A (N=5): A sample of ‘Planned’ cases where mandibular reconstruction is done by way of virtual surgical planning and compared to the CT scan taken routinely within 3 months post operatively to assist in bone augmentation or the start of prosthetic rehabilitation. Group B (N=5): A group of 5 ‘Unplanned’ cases where the plates were bent intra operatively and later had to undergo revision surgery using virtual surgical planning to correct gross misalignment of the mandible to make prosthetic rehabilitation possible.

Conclusion: There was consensus that preoperative digital planning was advantageous, although a wide range of opinion exists between surgeons, their surgical experience and the restorative specialists. Much of the advantages of this concept was 3D visualization of the surgical defects. Objective measurement shows greater accuracy is achieved with preoperative planning, rapid prototyped surgical guides and pre-bent reconstruction plates.
The Rehabilitation with Obturator of the Maxillectomized Patient: The Application of a Novel Method

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Purpose: This case report aims to present a novel method for the rehabilitation of the edentulous maxillectomized patient.

Methods and Materials: Technical difficulties in the construction of obturators derive often from the instability of the bases during maxillo-mandibular relationships recordings. The method proposed was thought originally for the treatment of the edentulous patient (SET: Simplified Edentulous Treatment). It is based on the use of brand new devices for the realization of the first and definitive impression, the occlusion rim and for the selection and arrangement of the anterior teeth. The obturator can be delivered at the second /third session.

Results: Technical difficulties in the construction of obturators derive often from the instability of the bases during maxillo-mandibular relationships recordings. The method proposed was thought originally for the treatment of the edentulous patient (SET: Simplified Edentulous Treatment). It is based on the use of brand new devices for the realization of the first and definitive impression, the occlusion rim and for the selection and arrangement of the anterior teeth. The obturator can be delivered at the second /third session.

Conclusion: The technique is innovative, simple, user friendly, time saving. It allows for stable and precise record bases and an early delivery of the prosthesis.
Prosthodontic Rehabilitation for Total Glossectomy with an Implant Assisted Tongue Prosthesis: A Clinical Report

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Purpose: To demonstrate an approach to design and fabricate an implant assisted tongue prosthesis for total glossectomy.

Methods and Materials: A middle aged male patient has received a radical resection of the tongue, the floor of the mouth and the posterior mandibular alveolar ridge, he simultaneously presented with edentulous maxilla. Two implants were postoperatively placed into the residual anterior mandibular alveolar ridge and ball attachments were employed to provide sufficient retention for the tongue prosthesis. First, an altered maxillary complete denture with backward extended denture plate was processed, the extended portion was used to facilitate swallowing. Second, an altered mandibular complete denture was fabricated to allow the support of the lower lip and prevent its maceration. The tongue area was covered resin plate (tongue plate), which was perforated by some small holes. Appropriate spaces were preserved between the tongue plate and maxillary denture base plate, between the tongue plate and the residual floor of the mouth. The two spaces were filled with soft, tongue-colored silicone. With the maxillary and mandibular prostheses, the vertical occlusal dimension was restored to near but short than the normal level.
Results: A middle aged male patient has received a radical resection of the tongue, the floor of the mouth and the posterior mandibular alveolar ridge, he simultaneously presented with edentulous maxilla. Two implants were postoperatively placed into the residual anterior mandibular alveolar ridge and ball attachments were employed to provide sufficient retention for the tongue prosthesis. First, an altered maxillary complete denture with backward extended denture plate was processed, the extended portion was used to facilitate swallowing. Second, an altered mandibular complete denture was fabricated to allow the support of the lower lip and prevent its maceration. The tongue area was covered resin plate (tongue plate), which was perforated by some small holes. Appropriate spaces were preserved between the tongue plate and maxillary denture base plate, between the tongue plate and the residual floor of the mouth. The two spaces were filled with soft, tongue-colored silicone. With the maxillary and mandibular prostheses, the vertical occlusal dimension was restored to near but short than the normal level.

Conclusion: Total glossectomy can result in significant functional impairments in mastication, swallowing, and speech. Oral rehabilitation through implant assisted prosthetic management can aid in alleviating these problems. Designs of the prosthesis should vary according to patient needs. In addition to these functional problems, severe psychological problems followed complete loss of the tongue may be significantly improved.
Session II.
Congenital/Craniofacial Rehabilitation
Monday, October 29, 2012
Quality of Life for Patients with Congenital or Acquired Craniofacial Conditions

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Health related Quality of Life (QoL) is a broad concept that is defined both by the absence of disease and, equally important, by the presence of factors that enhance physical, mental and social well-being. Both congenital and acquired craniofacial conditions are associated with a number of potentially critical physical findings including issues related to speech, hearing, vision, mastication and breathing that have an impact on an individual’s QoL. Craniofacial conditions are also associated with deviance in appearance that can have significant emotional and social consequences. This presentation will review the impact of the physical conditions, appearance issues, and emotional factors on QoL for children and adults with craniofacial conditions. Similarities and differences in experience for individuals with congenital versus acquired conditions will be discussed. Data from recent studies using object measures of QoL will be reviewed and factors associated with improved QoL will be highlighted. Emphasis will be placed on the practical implications of the QoL literature for practitioners treating individuals with craniofacial conditions.
Invited Speaker
Congenital/Craniofacial Rehabilitation

Reconstruction of Congenital / Facial Anomalies; Craniofacial Reconstruction

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Program Director /Medical Director
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The reconstruction of children and adults with congenital malformations is challenging. There are numerous types of congenital craniofacial anomalies, the most common of which is cleft lip and/or cleft palate. In the U.S., this birth defect affects approximately one in 700 newborns each year. Additionally, other craniofacial malformations such as craniosynostosis, the craniofacial dysostoses, hemifacial microsomia and mandibulofacial dysostosis occur less frequently, but in aggregate, have a substantial impact on society. The health and well-being of all of these patients is dependent upon the clinical expertise of those who serve them.

Several fundamental principles underlie the optimal care of patients with craniofacial anomalies, regardless of the specific type of disorder. First and foremost is the notion that the management of patients with craniofacial anomalies is best provided by an interdisciplinary team of specialists who see sufficient numbers of patients to maintain clinical expertise in the diagnosis and treatment of these disorders. Treatment plans should be developed and implemented on the basis of team recommendations and care should be coordinated by the team but should be provided at the local level whenever possible due to the cumulative burden of care. Evaluation of treatment outcomes must take into account the satisfaction and psychosocial well-being of the patient as well as effects on growth, function, and appearance.
It is well-recognized that the size and relative position of the jaws to each other has a significant effect on facial profile and therefore, on facial aesthetics. It is also accepted that malocclusion of the jaws can interfere with effective mastication. What may be less apparent is that the size of the jaws, the relative position of the mandible to the maxilla, and the occlusion of the dental arches can also have a significant impact on the individual’s speech.

For normal speech production, the lingual tip should rest at the area of the alveolar ridge. At the same time, the lips should close easily and without effort. Because the tongue always rests in the mandible, an abnormal position of the mandible relative to the maxilla can negatively impact lingual-alveolar articulation and can also impair bilabial competence for speech. Even when the skeletal relationship is normal, malpositioned teeth can affect the movement of the tongue tip for speech and disrupt the anterior flow of intraoral air during consonant production. In addition, the size and position of the jaws can determine the size and shape of the oral and pharyngeal cavities, which affects resonance for speech. Finally, surgical procedures that change the position of the jaws and other oropharyngeal structures can affect speech in a positive, yet sometimes negative, way.

In this lecture, the presenter will discuss the various effects of abnormal jaws and other related structures—from lips to pharynx—on speech and resonance. The speech and resonance disorders caused by abnormal structure will be described and demonstrated. Concepts will be enhanced through the use of a “science experiment” approach. Finally, the positive (and sometimes negative) effects of intervention (including orthodontics, prosthodontics, and surgery) will be presented.
Craniofacial Orthodontics

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Institute of Reconstructive Plastic Surgery
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Standards for Fellowship training in Craniofacial Orthodontics were announced by the ADA Commission of Dental Accreditation in 2009. The Institute of Reconstructive Plastic Surgery of NYU Langone Medical Center has the first such Fellowship that earned full approval by the Commission.

The range of CFO practice includes 3D morphometric analysis, diagnosis and treatment planning, distraction osteogenesis, nasoalveolar molding, 3D virtual surgical planning, orthodontic treatment of patients with clefts and craniofacial anomalies and research.

The scope of Craniofacial Orthodontic practice will be presented.
Invited Speaker
Congenital/Craniofacial Rehabilitation

Advanced Digital Technologies in Craniofacial Reconstruction

Louie, Gorman* MD, FRCSC
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Reconstruction of defects in the craniofacial region remains a challenge even for the experienced craniofacial surgeon. Autogenous tissue reconstruction utilizing bone grafts for skeletal reconstruction is considered the gold standard. However, these approaches have not been without their limitations, including unpredictable resorption of bone grafts. Alloplastic reconstruction has long been considered to be an option of last resort due to concerns with implant exposure, extrusion, and infection in buried implants. Finally, there has frequently been surgeon bias in choosing the alloplastic route - Why use a prosthesis when a “real” surgeon can correct the deformity with autogenous tissue.

The introduction of emerging digital technologies to craniofacial surgery has added another option to the surgical armamentarium for reconstruction of these complex defects. These techniques allow for surgical simulation and planning in the virtual environment as well as fabrication of custom patient specific implants for hard tissue replacement. The workflow of computer assisted surgery in craniofacial reconstruction will be outlined. Applications of advanced digital technologies as they apply to reconstruction of composite craniofacial defects will be introduced through representative patient case studies.

Learning objectives:
• Introduction to principles of advanced digital technology and its’ application to craniofacial reconstruction.
• Understand the workflow of computer assisted surgery in craniofacial reconstruction.
• Explore the uses of custom patient specific implants in craniofacial reconstruction.
The ACPA and Its Role in Advancing Cleft Care Globally

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Iowa City, IA USA

The American Cleft Palate-Craniofacial Association (ACPA) is an international non-profit medical society of over 2500 health care professionals representing more than 30 disciplines in 60 countries who treat and/or perform research on birth defects of the head and face. For the past 69 years, the mission of the ACPA has been to optimize interdisciplinary care of persons affected by cleft lip, cleft palate and other craniofacial anomalies. This presentation will review the history and evolution of the ACPA and its efforts to advance multidisciplinary team care of affected individuals worldwide.
Rehabilitation of Oral Cancer Patients with Mandibular Implants Placed Per Ablationem: Up to 14 Years Follow-Up

Korfage, Anke*; Vissink, Arjan; Roodenburg, Jan; Raghoebar, Gerry; Reintsema, Harry
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Department of Oral and Maxillofacial Surgery and Maxillofacial Prosthetics
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Purpose: The objective of this study was to evaluate the treatment outcomes (condition of peri-implant tissues, implant survival, denture satisfaction, subjective chewing ability and quality of life) of oral cancer patients with implant-retained mandibular overdentures, in whom the implants were installed during ablative tumor surgery, up to 14 years after placement of the implants.

Methods and Materials: Edentulous oral cancer patients with the need for surgery and in whom prosthetic problems were expected after oncological treatment, were offered implant-based treatment in the mandibula. All implants were installed during ablative tumor surgery in native bone in the interforaminal area. The patients and implants were evaluated by clinical assessments and standardized questionnaires.

Results: Edentulous oral cancer patients with the need for surgery and in whom prosthetic problems were expected after oncological treatment, were offered implant-based treatment in the mandibula. All implants were installed during ablative tumor surgery in native bone in the interforaminal area. The patients and implants were evaluated by clinical assessments and standardized questionnaires.

Conclusion: Oral cancer patients can benefit from implants installed during ablative surgery, with a high survival rate of the implants, a high percentage of rehabilitated patients and short time between surgery and prosthetic rehabilitation.
Considering the Clinician/Patient Relationship: Supporting the Clinician for a Healthy Career

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Purpose: This article addresses the psychosocial considerations of facial prosthetics treatment from the clinician’s perspective. It is written from a professional development standpoint and describes an educational process aimed to support the prosthetic trainee in developing healthy career coping mechanisms.

Methods and Materials: A description of an implemented once a month support group is provided. Common themes that arose for trainees included maintaining boundaries, objectivity, and development of communication skills. Case examples of patient interaction are presented to examine how trainees process and manage issues such as confidence, stress, resistance, and building resilience in the face of pain and tragedy. Other cited articles point to compassion fatigue, “burn out” in medical trainees, the importance of learning to manage the emotional impact of patient care, as well as the link between physician well being and the quality of patient care.

Results: A description of an implemented once a month support group is provided. Common themes that arose for trainees included maintaining boundaries, objectivity, and development of communication skills. Case examples of patient interaction are presented to examine how trainees process and manage issues such as confidence, stress, resistance, and building resilience in the face of pain and tragedy. Other cited articles point to compassion fatigue, “burn out” in medical trainees, the importance of learning to manage the emotional impact of patient care, as well as the link between physician well being and the quality of patient care.

Conclusion: This article supports developing an educational model in the field of facial prosthetics that fosters well-being for clinicians through enhanced training, and individual or group psychosocial support.
Prefabricated Impression Trays for use with Patients Presenting with Maxillofacial Defects

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San Francisco, CA USA

Purpose: This presentation demonstrates a new family of prefabricated impression trays designed to help the clinician produce a well-extended final impression in one clinical visit. In addition to their use with traditional and implant-based removable dentures, the trays facilitate impression making with patients requiring the services of a maxillofacial prosthodontist.

Methods and Materials: The impression tray system consists of a single maxillary and single mandibular tray. The tray is made of a thermoplastic material that softens in hot water. The warmed tray is shaped in the patient's mouth. The tray is customized by removing material with scissors, adding material, perforating the tray body if required and smoothing the customized tray with your gloved fingers. The tray is border molded and a final impression is made.

Results: The impression tray system consists of a single maxillary and single mandibular tray. The tray is made of a thermoplastic material that softens in hot water. The warmed tray is shaped in the patient's mouth. The tray is customized by removing material with scissors, adding material, perforating the tray body if required and smoothing the customized tray with your gloved fingers. The tray is border molded and a final impression is made.

Conclusion: It is now possible to shorten the fabrication time of a definitive edentulous obturator by one appointment by using this impression technique.
Technological Advances in Treating Speech and Language Deficits in Patients with Congenital or Acquired Craniofacial Anomalies

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The Craniofacial Center
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Purpose: Technology has enhanced many disciplines including that of speech language pathology. Technology has facilitated access to services on a global scale as well as complimented speech therapy session by providing abundance of interactive materials. The iPad is now one the most useful tools speech therapists have available for therapy. Most patients are more engaged and motivated to participate in session when using this tool.

Methods and Materials: The iPad and other technological devices should be incorporated into therapy session in a specific, well thought-out plan. Technology should not disrupt or distract from the services and intervention plan for treating each patient. The walker’s rubric was developed to assist clinician/ speech language pathologist in evaluating the efficacy of available apps. This is a helpful system that should be used when selecting what materials should be implemented in the treatment plan.

Results: The iPad and other technological devices should be incorporated into therapy session in a specific, well thought-out plan. Technology should not disrupt or distract from the services and intervention plan for treating each patient. The walker’s rubric was developed to assist clinician/ speech language pathologist in evaluating the efficacy of available apps. This is a helpful system that should be used when selecting what materials should be implemented in the treatment plan.

Conclusion: When incorporating new technology into our service model we need to continue maintaining our professional integrity and using evidence-based practices and use the technology to increase efficiencies, heighten patient’s motivation, and ultimately improve outcomes of services.
Contributions to the Integration of Removable Prostheses by Speech Study

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Orl, Laboratory of Voice, European Hospital Georges Pompidou
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Purpose: Oral cavity volume changes have an impact on the intelligibility of speech. Prosthetic rehabilitations changes the volume of the oral cavity. To make a removable prosthesis, we use the phonetics. Also, it is important for practitioners to know and to understand what kind of changes appear and how people adapt to this new volume of the oral cavity. The purpose of this study is to compare the phonetics of a dent subject without prosthetic constraint with the same topic after establishment of a prosthetic constraint.

Methods and Materials: In this study each topic is compared to itself. To do this, each subject was recorded without constraint then the following recordings made with establishment of a constraint (palatine plate to the maxilla and mandible) and a time of adaptation of 30 minutes. Another record is carried out after adding a new constraint (contribution of resin on the palate plate). Records are analyzed by an acoustic study of four consonants and a vowel and a jury of listening on the consonants.

Results: In this study each topic is compared to itself. To do this, each subject was recorded without constraint then the following recordings made with establishment of a constraint (palatine plate to the maxilla and mandible) and a time of adaptation of 30 minutes. Another record is carried out after adding a new constraint (contribution of resin on the palate plate). Records are analyzed by an acoustic study of four consonants and a vowel and a jury of listening on the consonants.

Conclusion: These results should enable us to better inform our patients on disturbances that they will live in implementing prostheses and strategies put in place to integrate the best and soon this new environment.
Influence of Physical Activity on Patients with Head and Neck Cancer Therapy

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Purpose: Treatment for head and neck squamous cell cancer (HNSCC) involves individual or a combination of treatment modalities that are both demanding and debilitating to the patient. Necessary cancer treatment has been shown to decrease quality of life, exacerbate fatigue, and increase the development of depression following the treatment. The general hypothesis for this presentation is that increasing and sustaining physical activity of HNSCC patients who have undergone treatment for cancer improves their general health related quality of life, lowers depression and lowers fatigue. The purpose of this presentation will be to explore the current evidence of physical activity on patients recovering from head and neck cancer therapy.

Methods and Materials: A literature review was carried out to examine the relationship between physical activity and cancer patients, especially for patients undergoing treatment with HNSCC.

Results: A literature review was carried out to examine the relationship between physical activity and cancer patients, especially for patients undergoing treatment with HNSCC.

Conclusion: There is reason to believe that physical activity, such as walking, can lead to desirable outcomes for HNSCC patients.
Method for Structural Reinforcement of Mandibular Complete Denture and Implant Supported Overdenture

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Purpose: Metal framework reinforcement is used in complete dentures to improve fracture resistance, dimensional stability, accuracy, weight, and retention. The internally suspended metal framework, as described here, is indicated for mandibular complete denture reinforcement when adequate restorative space is available to permit 1mm relief of the framework off of the master cast. The internally suspended framework is also indicated when edentulous ridge contours are irregular or significantly compromised, because all denture base adjustments remain in resin rather than metal.

Methods and Materials: Two metal reinforcing frameworks are reviewed from an historical perspective. A new technique to internally suspend a metal framework in a mandibular complete denture is described. Reinforcing framework for a mandibular implant overdenture with inadequate restorative space is also presented.

Results: Two metal reinforcing frameworks are reviewed from an historical perspective. A new technique to internally suspend a metal framework in a mandibular complete denture is described. Reinforcing framework for a mandibular implant overdenture with inadequate restorative space is also presented.

Conclusion: Internal metal reinforcement is beneficial when limited interarch restorative space exists and/or when complete dentures or implant supported overdentures are susceptible to fracture. A detailed step-by-step method to fabricate and internally suspend a metal framework in the denture base of a conventional mandibular completed denture and implant supported overdenture is described. Procedures for flasking and processing the definitive prosthesis are similar to non-reinforced complete dentures. Metal-resin bonding procedures are easily incorporated in the described technique if desired. Processes described here are readily adapted to natural tooth overdentures or obturator prostheses.
Effect of Radiotherapy and Chemotherapy on the Quality of Life in Nasopharyngeal Carcinoma Patients–A Pilot Study

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Purpose: The aim of this study was to determine the impact of radiotherapy alone and radiotherapy with chemotherapy on the quality of life (QOL) in nasopharyngeal carcinoma (NPC) patients.

Methods and Materials: Twenty-four nasopharyngeal carcinoma patients scheduled for intensity-modulated radiotherapy, who met the inclusion and exclusion criteria and gave informed consent were consecutively recruited. All patients were rendered dentally fit before undergoing radiotherapy. Study subjects were asked to fill up the University of Washington QOL questionnaire (UW-QOL v4) with the assistance of a trained interviewer at 2 time points: pre-radiotherapy and 2 weeks post-radiotherapy. Occurrence and timing of chemotherapy was recorded.

Results: Twenty-four nasopharyngeal carcinoma patients scheduled for intensity-modulated radiotherapy, who met the inclusion and exclusion criteria and gave informed consent were consecutively recruited. All patients were rendered dentally fit before undergoing radiotherapy. Study subjects were asked to fill up the University of Washington QOL questionnaire (UW-QOL v4) with the assistance of a trained interviewer at 2 time points: pre-radiotherapy and 2 weeks post-radiotherapy. Occurrence and timing of chemotherapy was recorded.

Conclusion: Radiotherapy significantly affects the QOL of NPC patients. No significant adverse effect was seen with chemotherapy and its timing. The 3 most important factors affecting the QOL of these patients 2 weeks after completion of radiotherapy are swallowing, taste and pain.
Prosthetic Approach After Total Glossectomy: A Case Report

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Purpose: The oral carcinoma often affects the tongue, floor of mouth and the base of the mandible. Tongue is one of the entities anatomico-physiological major performing essential functions such as swallowing, speech. Postoperatively, patients with a total glossectomy have difficulty or inability to control these functions and a prognosis sufficiently compromised. A surgical reconstruction associated with prosthetic rehabilitation and speech therapy approach, can reduce these functional problems, but remains a challenge.

Methods and Materials: The oral rehabilitation with implanted supported mandibular prosthesis of a total toothless 52-year-old woman, treated for squamous cell carcinoma of floor of mouth by surgery and radiotherapy/curietherapy, was exposed step by step.

Results: The oral rehabilitation with implanted supported mandibular prosthesis of a total toothless 52-year-old woman, treated for squamous cell carcinoma of floor of mouth by surgery and radiotherapy/curietherapy, was exposed step by step.

Conclusion: The prosthetic design after total glossectomy stays a very difficult aspect of the maxillofacial prosthesis. The combination of the prosthesis to the advancement of reconstructive surgery, providing improved swallowing and speech, oral feeding is facilitated, the tissues are protected. Finally, the quality of life of the patient improved, but needs to be evaluated more objectively.
Xerostomia and Salivary Flow Rates Following Intensity-Modulated Irradiation of Nasopharyngeal Carcinoma: An Initial Report

Sim, Christina*; Teoh, Khim-Hean 1; Wee, Joseph 2; Xu, Tina 3; Fong, Kam-Weng 2; Tan, Terence 2; Soong, Yoke-Lim 2; Cheah, Shie-Lee 2; Tan, Ching-Ching 1; Cheung, Yin-Bun 3.  
1. Restorative Dentistry, 2. Radiation Oncology, 3. Biostatistics  
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Purpose: The aim of this study was to determine the effect of intensity-modulated radiotherapy (IMRT) on xerostomia and salivary flow rates in nasopharyngeal carcinoma (NPC) patients of Chinese descent.

Methods and Materials: 24 NPC patients scheduled for IMRT were recruited. Radiation dose to the parotid, submandibular glands and oral cavity were measured. Resting and stimulated salivary flow rates were measured before radiotherapy, mid-radiotherapy, 2-weeks and 3-months after completion of radiotherapy. At the same time intervals, the clinician-rated RTOG/EORTC (Radiation Therapy Oncology Group/European Organization for Research and Treatment of Cancer) xerostomia score was recorded. Each patient was also asked to complete an 8-item self-reported xerostomia-specific questionnaire (XQ).

Results: 24 NPC patients scheduled for IMRT were recruited. Radiation dose to the parotid, submandibular glands and oral cavity were measured. Resting and stimulated salivary flow rates were measured before radiotherapy, mid-radiotherapy, 2-weeks and 3-months after completion of radiotherapy. At the same time intervals, the clinician-rated RTOG/EORTC (Radiation Therapy Oncology Group/European Organization for Research and Treatment of Cancer) xerostomia score was recorded. Each patient was also asked to complete an 8-item self-reported xerostomia-specific questionnaire (XQ).
Conclusion: Within the limits of this study, reduction in resting and stimulated saliva flow rates and increase in clinician-rated and patient-reported xerostomia scores were significant in the first 3 months after completion of IMRT. Factors associated with stimulated saliva flow rate and xerostomia scores were the submandibular gland and oral cavity radiation dose respectively.

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Congenital/Craniofacial Rehabilitation

Developing the Model for Minimum Standard of Care for Maxillofacial Rehabilitation in India- Need of the Hour

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Purpose: India is a country with diverse culture, language and socio-economic conditions. Oral and maxillofacial cancer is on a rise and the national cancer registry shows the increase in incidence of oral and maxillofacial cancer in both male and female population. Tobacco habits both smoke and smokeless varieties are used and basically abused on a wide scale and are major contributory factor for the pre-cancerous and cancerous lesions of the oral cavity. The conditions are reversible when detected early. However, many cases are detected in a later stage often requiring surgical intervention and need for prosthodontic rehabilitation. A comprehensive care model is needed urgently for the country. An interdisciplinary approach is to be adopted for successful rehabilitation. The purpose of this study is to develop minimum of standard of care is needed to be developed for prevention intervention and maxillofacial rehabilitation.

Methods and Materials: The questionaire based survey is conducted to be answered by the oncology team comprising of Prosthodontists, surgeons, radiologists, oral/general pathologists, prosthetist, dental technicians and general dental practioners in India. Specific questionaire are prepared for each group according to their contribution and area of expertise. Hundred questionaire sheets for each group is distributed.
Results: The questionnaire based survey is conducted to be answered by the oncology team comprising of Prosthodontists, surgeons, radiologists, oral/general pathologists, prosthodontist, dental technicians and general dental practitioners in India. Specific questionnaire are prepared for each group according to their contribution and area of expertise. Hundred questionnaire sheets for each group is distributed.

Conclusion: The Model for Minimum Standard of Care for Maxillofacial Rehabilitation will be presented for the future comprehensive patient care for India

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Congenital/Craniofacial Rehabilitation

Reconstruction of the Orbit

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Oral and Maxillofacial Surgery
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Purpose: The orbit region is an important aesthetic zone in the face. Therefore reconstruction procedures have to be consider functional and aesthetic aspects. In facial trauma the bony orbit has to be restored. For the reconstruction procedure is more often used computer planning. We used in a series of patients computer planning and used different types of implant materials.

Methods and Materials: 15 patients with complex orbital fractures were involved in this study. Preoperative CT-scans were analyzed and reconstruction was planned by the computer. For reconstruction were used conventional implants and PSI implants. All procedures were performed under computer assisted surgery. Ophthalmic parameters were evaluated pre and postoperative.

Results: 15 patients with complex orbital fractures were involved in this study. Preoperative CT-scans were analyzed and reconstruction was planned by the computer. For reconstruction were used conventional implants and PSI
implants. All procedures were performed under computer assisted surgery. Ophthalmic parameters were evaluated pre and postoperative.

**Conclusion:** Reconstruction of the orbit with PSI-implants make the reconstruction procedure quicker and more predictable. However there were still some soft tissue deficits in the orbit regions, which can be corrected secondarily. Therefore pre- and postoperative analysis of the CT-scans have to be done to get more information were overcorrection of the bony structure is necessary to improve the aesthetic result too.

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Congenital/Craniofacial Rehabilitation

**Osseointegrated Implants and the Rehabilitation of the Micotia Patient**

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**Department of Surgery**
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**Purpose:** Research on and clinical application of the osseointegrated implant over the past four decades have expanded the successful use of the tissue integrated concept to provide patients with craniofacial prostheses that restore their self image. The purpose of this presentation is to focus on the collaborative efforts of members of the maxillofacial rehabilitation team to rehabilitate the microtia patient through the combined use of the BAHA and bone anchored auricular prostheses.

**Methods and Materials:** Topics that will be presented include patient selection, pre-surgical planning, surgical procedures, impression taking, sculpting and coloring techniques, mold making and casting and follow up care. Emphasis will be placed on implant care and recent advances in implant technology.

**Results:** Topics that will be presented include patient selection, pre-surgical planning, surgical procedures, impression taking, sculpting and coloring techniques, mold making and casting and follow up care. Emphasis will be placed on implant care and recent advances in implant technology.
Conclusion: The use of osseointegrated implants using the team approach can be a successful treatment modality for the microtia patient.

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Congenital/Craniofacial Rehabilitation

A Bridge Between Prosthodontics and Surgical Reconstruction—The Experience on Preoperative Virtual Planning of Fmmu

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Department of Prosthodontics
Xi'an, CN

Purpose: Patients with maxillary or mandibular defects need surgical reconstruction and further prosthodontics rehabilitation for satisfactory aesthetic and functional outcome. There have always been some patients who had surgical bone reconstruction in improper position, and have troubles or even fail to complete prosthodontic rehabilitation. The prosthodontists have always wished to gain closer collaborations with surgeons and confront these complicated challenges together; if every reconstructed bone could achieve its ideal position from surgical reconstruction, every patient would satisfy with his final denture in cosmetic and function. But fantastic desire is difficult to gain.

Methods and Materials: Preoperative virtual planning, computer aided design, a bridge between prosthodontics and surgical reconstruction, makes it possible to overcome this thorny problem. Now we design and fabricate template prosthesis for the patient preoperatively, and integrate the data of the prosthesis to the patient’s 3D skull model by CT scanning. Discussion will be made with surgeons to determine the final treatment plan by the help of the software, according to the actual condition of the defect and the prosthesis. Then surgery guide templates will be designed and manufactured by rapid prototyping technique, and thus accurately convert the pre-surgery design into actual surgery procedure.
Results: Preoperative virtual planning, computer aided design, a bridge between prosthodontics and surgical reconstruction, makes it possible to overcome this thorny problem. Now we design and fabricate template prosthesis for the patient preoperatively, and integrate the data of the prosthesis to the patient’s 3D skull model by CT scanning. Discussion will be made with surgeons to determine the final treatment plan by the help of the software, according to the actual condition of the defect and the prosthesis. Then surgery guide templates will be designed and manufactured by rapid prototyping technique, and thus accurately convert the pre-surgery design into actual surgery procedure.

Conclusion: In this way patients could get shorter treatment cycle, more-reliable outcome, and better treatment quality. Meanwhile, with the help of the surgical templates, the operation procedure becomes easier, time shorter, and the trauma made to the patient can be greatly reduced. Through our dedicated efforts, this method is being improved and used more and more. Hopefully it will become one of the routine therapy techniques of our hospital.

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Increased Fibroblast Functionality on Cnn2-Loaded Titania Nanotubes

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Purpose: Infection and epithelial downgrowth are major problems associated with maxillofacial percutaneous implants. These complications are mainly due to the improper closure of the implant-skin interface. Therefore, designing a percutaneous implant that better promotes the formation of a stable soft-tissue biologic seal around percutaneous sites is highly desirable. And the fibroblast has been proven to play an important role in the formation of biologic seals. In this study, the purposes were to investigate whether the CNN2 can be incorporated into the nanotubes controllably and evaluate the
effect of CCN2-loaded titania nanotubes on the biological responses of fibroblasts.

**Methods and Materials:** The titania nanotubes were filled with 11.2 kDa C-terminal connective tissue growth factor (CTGF/CCN2) fragment, which could exert the full CCN2 activity to increase the biology functionality of fibroblasts. This drug delivery system was fabricated on a titanium (Ti) implant surface. CCN2 was loaded into anodized titania nanotubes using a simplified lyophilization method and the loading efficiency was examined. Then, the release kinetics of CCN2 from these nanotubes was investigated using CCN2 Elisa kit. Furthermore, the influence of CCN2-loaded titania nanotubes on fibroblast functionality was examined. Cell viability was assayed with a cell counting kit-8 after 1, 3, and 5 days of culture. Cell adhesion was assayed with a Live Cell Labeling Kit- carboxyfluorescein diacetate succinimyl ester at the indicated time points (0, 0.25, 0.5, 1, 2, 4 and 24 hours). And epifluorescence microscopy was used to compare the morphological alterations both in regard to the organization of the actin cytoskeleton and cellular shape. The distribution of actin was observed at 4 hours, 1 day, and 3 days of culture.

**Results:** The titania nanotubes were filled with 11.2 kDa C-terminal connective tissue growth factor (CTGF/CCN2) fragment, which could exert the full CCN2 activity to increase the biology functionality of fibroblasts. This drug delivery system was fabricated on a titanium (Ti) implant surface. CCN2 was loaded into anodized titania nanotubes using a simplified lyophilization method and the loading efficiency was examined. Then, the release kinetics of CCN2 from these nanotubes was investigated using CCN2 Elisa kit. Furthermore, the influence of CCN2-loaded titania nanotubes on fibroblast functionality was examined. Cell viability was assayed with a cell counting kit-8 after 1, 3, and 5 days of culture. Cell adhesion was assayed with a Live Cell Labeling Kit- carboxyfluorescein diacetate succinimyl ester at the indicated time points (0, 0.25, 0.5, 1, 2, 4 and 24 hours). And epifluorescence microscopy was used to compare the morphological alterations both in regard to the organization of the actin cytoskeleton and cellular shape. The distribution of actin was observed at 4 hours, 1 day, and 3 days of culture.

**Conclusion:** The results from this in vitro study demonstrate that CCN2-loaded titania nanotubes have the ability to increase fibroblast functionality and should be further studied as a method of promoting the formation of a stable soft tissue biologic seal around percutaneous sites.

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**Purpose:** Virtual surgical techniques have recently received increased attention by reconstructive surgeons, prosthodontists, anaplastologists, and others who participate in facial reconstruction. With the introduction of virtual surgical simulation and planning (VSP) software, three-dimensional imaging technology has surpassed requirements needed for diagnostic purposes. Integrating VSP software into a computer-assisted design/computer-assisted manufacture (CAD/CAM) system, in particular rapid prototyping, has enabled the fabrication of patient-specific surgical instrumentation for translating the virtual plan to the operating suite: the drill guide for dental implant placement, the splint for orthognathic surgery, and the osteotomy guide/cutting template for craniomaxillarofacial osteotomies. While there has been continuous improvement in VSP software certain fundamental questions remain: How accurate is the digital model and virtual surgical simulation? And in a practical sense, how is VSP technology applied?

**Methods and Materials:** In an effort to answer these questions we summarize our approach to virtual craniomaxillofacial surgery in five principles: problem identification, data acquisition, tissue segmentation, reference selection, and surgical simulation. We propose corresponding technical guidelines for each of these principles.

**Results:** In an effort to answer these questions we summarize our approach to virtual craniomaxillofacial surgery in five principles: problem identification, data
acquisition, tissue segmentation, reference selection, and surgical simulation. We propose corresponding technical guidelines for each of these principles.

**Conclusion:** These principles and guidelines will help the beginner in applying VSP technology, address VSP software development, and provide a foundation for further discussion on VSP technology.

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**The Osseointegration of a Novel Alloyed Titanium Implant in Simulated Osteoporotic Conditions**

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**Purpose:** In osteoporotic bones, resorption exceeds formation during the remodelling phase of bone turnover. As a consequence, decreased bone volume and bone contact result in the peri-implant region. This may subsequently lead to loss of fixation. In osteoporosis, this remodeling results in lower bone volume, bone mineral density and bone contact in the peri-implant region. As a result, the supporting ability of the implant is reduced and loosening of the implant may occur. Evidence in the literature suggests that women with low bone mass or osteoporosis may in fact, have compromised outcomes in response to dental implantation procedures. There are many different approaches to improve implant stability in osteoporotic patients. Pharmaceutical methods with the use of estrogen, calcitonin, parathyroid hormone or bisphosphonates administration are being investigated. Other groups are focusing on the features of implant surfaces (e.g., hydroxyapatite coated screws) or combining this with prostaglandin receptor agonists. A recently developed alloy composed of the two elements titanium and zirconium has a significantly higher mechanical stability compared to titanium with respect to elongation and fatigue strength. The aim of our study is to test the effects of TiZr comparatively to Ti implants on osseointegration in
ovariectomized (ovx) rabbits. The hypothesis in the current study is that the combination of TiZr will facilitate an increase in bone formation around dental implants. To explore this hypothesis, we investigate whether TiZr implant could result in increased periimplant bone mass, bone-to-implant contact, and strength of the implant anchorage in an osteoporotic rabbit model.

**Methods and Materials:** Twelve ovariectomized (OVX) New Zealand rabbits submitted to a hypocalcic diet and 12 sham-aged rabbits were used. All animals were submitted to bone mineral density (BMD) measurements before ovariectomy, and also 3 months afterwards, using dual energy X-ray absorptiometry. After the bone mass loss induction period, two combination of TiZr with SLActive (TiZr) or combination of Ti with SLActive (Ti) implants were randomly installed in each tibia and femur, while the contra-lateral metaphysis received the other two implants. The total of 24 rabbits were divided in four groups (n=6): SHAM+Ti, OVX+Ti, SHAM+TiZr, OVX+TiZr. Half of the animals in each group were sacrificed 3 weeks and the rest of them 6 weeks after dental implant placement. Femur and tibia were harvested by bloc resection. 6 implants in each group at each time point were subjected to removal torque testing, and the remaining were prepared for histomorphometric analysis.

**Results:** Twelve ovariectomized (OVX) New Zealand rabbits submitted to a hypocalcic diet and 12 sham-aged rabbits were used. All animals were submitted to bone mineral density (BMD) measurements before ovariectomy, and also 3 months afterwards, using dual energy X-ray absorptiometry. After the bone mass loss induction period, two combination of TiZr with SLActive (TiZr) or combination of Ti with SLActive (Ti) implants were randomly installed in each tibia and femur, while the contra-lateral metaphysis received the other two implants. The total of 24 rabbits were divided in four groups (n=6): SHAM+Ti, OVX+Ti, SHAM+TiZr, OVX+TiZr. Half of the animals in each group were sacrificed 3 weeks and the rest of them 6 weeks after dental implant placement. Femur and tibia were harvested by bloc resection. 6 implants in each group at each time point were subjected to removal torque testing, and the remaining were prepared for histomorphometric analysis.

**Conclusion:** The study clearly demonstrated the advantage of TiZr in the removal torque data. This is in line with previous results in large healthy animals. The histology-histomorphometry confirmed a similar increase of the BIC and the BATA overtime for both the Ti and TiZr groups in non-ovariectomized rabbits. The trend appeared to be reversed in the case of OVX animals with a reduction of BIC and BATA at 6 weeks as compared to 3 weeks. The findings suggest that the excellent biomechanical properties of the TiZr
alloy enhance the bone-to-implant contact in healthy animals and increase the interfacial shear strength in both SHAM and OVX rabbits.

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3D Face Scans in Dentistry

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Purpose: Intra-oral digital 3D-scanners are among the digital technologies that are currently available in dentistry. However, there is less demand for extra-oral 3D-scanners. This presentation provides an overview of contemporary extra-oral face scanning systems and data of an ongoing investigation on correlations between extra-oral facial landmarks and intra-oral jaw relationship.

Methods and Materials: 40 subjects (Caucasian, 20 females, 20 males, mean age 23.07 ± 0.47 years) were included in this study. Impressions of the dentate maxillae and mandibles were taken and the casts were fabricated and digitized (Activity 101, smart optics Sensortechnik GmbH, Bochum, Germany). All subjects were scanned three times (neutral mien, smiling mien, with reference balls) with a 3D-face scanner (FaceScan3D, 3D Shape GmbH, Erlangen, Germany). These datasets were assembled with two software programs (Slim3D and 3DViewer, 3D Shape GmbH, Erlangen, Germany). Landmarks were defined by comparison of the different datasets and identification of constant areas on the faces. Measurements between these extra-oral landmarks (i.e. distance between the medial corners of the eyes) and intra-oral reference points (i.e. cuspids or gingival margins) were performed. Thus, it was possible to characterize potential correlations. Statistical analysis was performed: Descriptive analysis was performed using mean ± standard deviation. All statistical comparisons were conducted at a 0.05 level of significance. The null hypothesis was that there would be no correlation between extra-oral landmarks and intra-oral jaw relationship.
Results: 40 subjects (Caucasian, 20 females, 20 males, mean age 23.07 ± 0.47 years) were included in this study. Impressions of the dentate maxillae and mandibles were taken and the casts were fabricated and digitized (Activity 101, smart optics Sensortechnik GmbH, Bochum, Germany). All subjects were scanned three times (neutral mien, smiling mien, with reference balls) with a 3D-face scanner (FaceScan3D, 3D Shape GmbH, Erlangen, Germany). These datasets were assembled with two software programs (Slim3D and 3DViewer, 3D Shape GmbH, Erlangen, Germany). Landmarks were defined by comparison of the different datasets and identification of constant areas on the faces. Measurements between these extra-oral landmarks (i.e. distance between the medial corners of the eyes) and intra-oral reference points (i.e. cuspids or gingival margins) were performed. Thus, it was possible to characterize potential correlations. Statistical analysis was performed: Descriptive analysis was performed using mean ± standard deviation. All statistical comparisons were conducted at a 0.05 level of significance. The null hypothesis was that there would be no correlation between extra-oral landmarks and intra-oral jaw relationship.

Conclusion: In conclusion, this study presents a new possibility of merging datasets of dentulous jaws and faces. Furthermore, this study provides information for defining teeth positions, jaw positions, and jaw-to-jaw relationships.
The Use of Basally Osteointegrated Implants (BoI) in Maxillofacial Prosthodontics

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Clinic for Maxillofacial Surgery*,
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Purpose: In order to overcome retention problems in maxillofacial prosthodontic the introduction of osseointegrated implants revolutionary improves prosthesis stability and therefore the quality of the life of the patients. However, some specifics of maxillofacial implantology could tempt some problems in everyday practice. They are: close anatomical relation to the intracranial structures; less bone quality and quantity; mainly compact bone; irradiation therapy. All of that usually limits usage of conventional screw like implants. The goal of this lecture is to present our experiences with basally osseointegrated implants (BOI).

Methods and Materials: Two designs of BOI implants are used. Disk implants and bicortical screws (BCS). Specifity of this type of implants is bicortical or multicortical osseointegration in the basal, resorption free bone. Several patients with BOI implants will be presented. Survival rate for inserted implants were calculated.

Results: Two designs of BOI implants are used. Disk implants and bicortical screws (BCS). Specifity of this type of implants is bicortical or multicortical osseointegration in the basal, resorption free bone. Several patients with BOI implants will be presented. Survival rate for inserted implants were calculated.

Conclusion: Basally osseointegrated (BOI) implants present an excellent solution for maxillofacial prostheses anchorage, particularly in irradiated patients.
Custom Made Arthroplastics and Prosthetics in Maxillo-Facial Rehabilitation

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Southern Implants (Pty) Ltd.
Engineering
Pretoria, Gauteng, ZA

**Purpose:** A smaller number of cases, can not be treated with off-the-shelf Medical devices, due to unusual anatomical constraints or progression of disease. Hi-tech solutions are limited to a few wealthy countries or wealthy patients. The purpose of this presentation is to examine a "medium-tech" cost-effective approach more appropriate to the greater populations of the world.

**Methods and Materials:** Standard Engineering design software is used with stereo-lithography and 3D printing to bridge the gap between the various disciplines involved. The devices once designed, are machined from solid, known materials.

**Results:** Standard Engineering design software is used with stereo-lithography and 3D printing to bridge the gap between the various disciplines involved. The devices once designed, are machined from solid, known materials.

**Conclusion:** The majority of patients needing custom made arthroplastics and Maxillo-facial prosthetics, come from the poorer nations. Medium-technology can be used to give cost-effective solutions.
The Potential of Tissue Engineering in Maxillofacial Reconstruction following Oral Cancer Treatment

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Bioengineering 1a, Institute for Biological Interfaces of Engineering 1b, and Otolaryngology 2.
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Purpose: The purpose of this study was to evaluate the use of tissue engineering techniques in patients undergoing maxillofacial reconstruction following oral cancer therapies and to evaluate the potential for the selective incorporation of progenitor cells in tissue engineered implants. Specifically, the goal was to assess the effect of incorporating differing ratios of two progenitor cell types on a ceramic bone graft material.

Methods and Materials: Following an extensive review of maxillofacial reconstruction literature, the state of maxillofacial tissue engineering using mesenchymal stem cells was evaluated. Primary periosteal derived progenitor cells (PDPCs) were isolated from the maxilla of a Holstein cow obtained from Snow Creek Slaughterhouse (Seneca, SC) and expanded in vitro. D1 murine mesenchymal stem-like cells (ATCC, Manassas, VA, USA) and PDPCs were grown in Dulbecco’s Modified Eagle Medium supplemented with 10% fetal bovine serum, 1% antibiotic/antimycotic, and 0.2% fungizone. Co-cultures of D1 cells and PDPCs were grown on ChronOS granules (β-tricalcium phosphate) in osteogenic medium with 50µg/mL of L-ascorbic acid 2-phosphate, 10mM β-glycerophosphate, and 0.1µM dexamethasone (DEX) to evaluate osteogenic potential. The following co-culture ratios were evaluated: 100:0 (D1: PDPCs), 75:25, 50:50, 25:75, and 0:100. Samples of medium were collected during every media change for lactic acid/glucose every two or three days. Cells were lysed and stored in -20°C in TE buffer until alkaline phosphatase (ALP) and deoxyribonucleic acid (DNA) concentrations were analyzed.

Results: The results from this study suggest that all treatment groups maintained high levels of cell viability. Metabolic activity analysis demonstrated that cell ratios of 100:0, 75:25, 50:50 produced elevated levels of
Lactic acid (>3000 mg/L) by Day 7 with simultaneous decrease in glucose concentration in conditioned medium samples; whereas, levels associated with the 25:75 samples did not reach a peak value of lactic acid until Day 14. The 0:100 test ratio groups resulted in much lower metabolic activities than that of the other groups. Throughout the duration of the study, groups with ratios of 100:0, 75:25, and 50:50 resulted in increased ALP production to maximum activities of 5253±1014, 5374±1101, 5768±1523 ng of ALP/mL, respectively. ALP expression in the 25:75 ratio groups plateaued during Days 14-28 (2720±996 ng/mL). The groups with ratio of 0:100 reached a maximum ALP value on Day 21 (58±33 ng/mL).

**Conclusion:** Currently, surgical reconstruction techniques or prosthetic rehabilitation techniques need refinement. Future methodologies must restore the ability to masticate, speak, and swallow while minimizing donor site morbidity. Restoration of bodily functions of speaking, swallowing, and chewing is critical for the physical and psychological outcome of the patient. Maxillofacial tissue engineering requires unique insights to maximize clinical results. Traditional cancer treatments can include radiation therapy; thus, defect sites may be hypovascularized and exposed to a variety of environmental conditions. In this preliminary work, metabolic activity varied with cell ratio. For reconstruction in a hypovascular environment, careful tuning of cell metabolism can be highly desired for long term survival. Co-culture ratios of PDPCs and D1 cells demonstrated significant increases in ALP expression, while remaining viable throughout. Overall, the ratio of 25:75 demonstrated significant ALP expression, while minimizing early metabolic activity, suggesting a ratio more appropriate for a hypovascular environment. Further research is needed to customize maxillofacial tissue engineering options.
Oromandibular Reconstruction Using 3D Planned Triple Template Method

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Purpose: Reconstruction of an oromandibular defect remains one of the most formidable surgical challenges the reconstructive head and neck surgeon faces. The purpose of this study is to illustrate the added value of 3D imaging and preoperative computer design with stereolithographic modeling, combined with custommade cutting and guiding sleeves.

Methods and Materials: A 41 year old dentate male patient with a T2N0M0 osteosarcoma of the mandible required a segmental resection of the lateral mandible. In a virtual environment the bony resection and reconstruction were planned pre-operatively on the basis of computed tomography data of the head and neck and lower leg. Three custom made templates designed in a CAD-CAM software package and materialized by a selective laser sintering process, were used to transfer this planning in to the operating theater.

Results: A 41 year old dentate male patient with a T2N0M0 osteosarcoma of the mandible required a segmental resection of the lateral mandible. In a virtual environment the bony resection and reconstruction were planned pre-operatively on the basis of computed tomography data of the head and neck and lower leg. Three custom made templates designed in a CAD-CAM software package and materialized by a selective laser sintering process, were used to transfer this planning in to the operating theater.

Conclusion: Computer aided surgery and planning, using the triple template method, leads to an accurate and oncological safe reconstruction of the mandibular geometry by eliminating intra-operative decision making, reducing ischemic time of the fibular graft and reducing overall operative time.
Virtual Transplantation in Designing a Facial Prosthesis for Extensive, Crossing-Facial-Midline Maxillofacial Defects with Computer-Assisted Technology

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Purpose: To demonstrated a novel approach to design facial prosthesis with the help of transplantation concept using computer-assisted technology for extensive, large, crossing facial midline facial defects.

Methods and Materials: The 3-dimensional (3D) facial surface images of patient and his relative were reconstructed with data obtained through optical scanning. Based on the images, the corresponding portion of the relative was transplanted to patient’s defect, which could not be rehabilitated using mirror projection, to design the virtual facial prosthesis without eyeball. The 3D model of an artificial eyeball that closely mimic the patient’s remaining one was developed and transplanted and fitted onto the virtual prosthesis. A personalized retention structure for the artificial eyeball was designed together onto virtual facial prosthesis. The wax prosthesis was manufactured through rapid prototyping (RP) and finial silicone prosthesis was finished.

Results: The 3-dimensional (3D) facial surface images of patient and his relative were reconstructed with data obtained through optical scanning. Based on the images, the corresponding portion of the relative was transplanted to patient’s defect, which could not be rehabilitated using mirror projection, to design the virtual facial prosthesis without eyeball. The 3D model of an artificial eyeball that closely mimic the patient’s remaining one was developed and transplanted and fitted onto the virtual prosthesis. A personalized retention structure for the artificial eyeball was designed together onto virtual facial prosthesis. The wax prosthesis was manufactured through rapid prototyping (RP) and finial silicone prosthesis was finished.
Conclusion: The optical 3D imaging and computer-aided design/computer-assisted manufacturing system used in this study can design and fabricate facial prostheses more precisely than conventional manual sculpturing techniques. The discomfort generally associated with such conventional methods was decreased greatly. The virtual transplantation used to design the facial prosthesis for the maxillofacial defect, which crossed the facial midline, and the development of the retention structure for the eye were both feasible.

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Development of a Protocol for the Treatment of Mandibular Defects with Custom Made Implants

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Purpose: The treatment of mandibular tumors involves a great challenge for treatment teams, especially when it comes to restoring the patient's quality of life. These challenges are greater in developing countries, such as Colombia, where treatment options and resources are limited. In most patients the surgical procedures are made to save the patient's life. A mandibulectomy is performed by the treating surgeon and a titanium reconstruction plate is used to bridge the defect. The patient is often left with significant issues that affect quality of life, including impaired speech and lack of the ability to swallow solid food. In order to better address and rehabilitate patients with mandibular defects, taking sequelae to a minimum, the team developed a protocol which includes interdisciplinary treatment along with microvascularized bone flaps.

Methods and Materials: This protocol includes not only the medical and surgical aspects of the treatment, but the engineering and design of patient-specific instrumentation and implants. The protocol starts when the patient first comes to a visit to the surgeon’s office and is diagnosed and ends with an integral follow-up and rehabilitation. It is relies on the basis of a truly interdisciplinary treatment-team: Head and Neck Oncologic Surgeon, Oral and
Maxillofacial Surgeon, Plastic Microvascular surgeon, prosthetic dentist, anaplastologist and a team of engineers are in charge of delivering the treatment as well as designing and producing the necessary equipment for that goal.

**Results:** This protocol includes not only the medical and surgical aspects of the treatment, but the engineering and design of patient-specific instrumentation and implants. The protocol starts when the patient first comes to a visit to the surgeon’s office and is diagnosed and ends with an integral follow-up and rehabilitation. It is relies on the basis of a truly interdisciplinary treatment-team: Head and Neck Oncologic Surgeon, Oral and Maxillofacial Surgeon, Plastic Microvascular surgeon, prosthetic dentist, anaplastologist and a team of engineers are in charge of delivering the treatment as well as designing and producing the necessary equipment for that goal.

**Conclusion:** The protocol has provided surgeons with tools for better surgical planning and predictable outcomes. Several patients have shown encouraging results supporting this concept.
Session III.
Trauma
Tuesday, October 30, 2012
Facial Transplant

Lee, W. P. Andrew* MD
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No abstract available.

Prosthodontic Rehabilitation of the Trauma Patient

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The replacement of missing maxillofacial structures becomes more demanding for patients with traumatic injuries. The maxillofacial prosthodontist plays a pivotal role in the treatment planning and is a key leader on the trauma team. Successful treatment for trauma patients is enhanced by the placement of implants that will provide the needed support, stability and retention for fixed and removable prostheses for a successful rehabilitation. The participant will learn to diagnose and create a treatment plan that will improve the outcome for their patients with trauma.
Reconstruction of Trauma Wounds

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Chief- Otolaryngology/Head & Neck Surgery
Head & Neck Oncology / Microvascular Reconstruction
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Bethesda, MD USA

Traditionally, most penetrating wartime injuries were to the thoracoabdominal area. However, since 2001, we have seen a shift in the pattern of injuries to where the majority occur in the head and neck and extremities. Additionally, advances in individual body armor and battlefield medical care have resulted in a higher percentage of survivable injuries than ever before. The result has been a marked increase in the number of patients with significant craniofacial injuries requiring reconstruction. We will discuss the mechanisms of injury of modern battlefield weaponry, patterns of injury, reconstructive challenges, representative cases from our experiences treating wartime craniofacial injuries, and lessons learned.
Instrumental Assessment of Tongue Function

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The tongue is a fascinating anatomical structure that is of crucial importance for functions such as mastication, swallowing and speech. A good understanding of tongue function is essential to inform prosthodontic and maxillofacial rehabilitation as well as speech therapy interventions. The presentation will give an overview of several methods for assessing lingual function. The talk will focus primarily on imaging techniques, ultrasound and MRI, but also will include direct measurement technology, such as electropalatography and electromagnetic articulography. In the last 30 years imaging techniques have revolutionized the way we understand tongue motion. The tongue was historically treated as a rigid body, even when extracted from lateral X-rays. Ultrasound revealed cross-sectional and midsagittal deformation for the first time, clarifying the role of perpendicular muscle fibers. More recently, tagged MRI has captured tissue-point motion throughout the tongue. From these data are calculated changes in muscle length, and deformation patterns within the tongue that can link local and global motion to the effects of muscle activity. Measurements made from high resolution MRI, Diffusion Tensor MRI, and tagged MRI allow us to determine strategies of lingual motor adaptation, muscle mechanics, and the related speech acoustics that result from normal and compensatory tongue motions. Demonstrations will be given to show these instruments applied to the study of tongue motion during speech, swallowing, singing, musical instrument playing, unusual language productions, and speech motor adaptation after glossectomy surgery.
Global Picture of Required Competencies in H&N Services

Harris, Jeffrey* MD, FRCS(C)  
Site Chief, Otolaryngology – Head and Neck Surgery and Fellowship Director  
Advanced Head and Neck Oncology and Microvascular Reconstruction, University of Alberta  
Alberta, CA

At the conclusion of this session the participants will be able to:  
1) Understand the need for quality initiatives in Head and Neck Oncologic care.  
2) Review an approach to developing guidelines for the organization and delivery of care for head and neck cancer patients.  
3) Discuss the barriers and enablers to implementing quality guidelines.
The Role of the H&N Team in the Era of Personalized Cancer Care

Myers, Jeffrey N. * M.D., Ph.D., F.A.C.S.
Professor, Department of Head and Neck Surgery
Division of Surgery
The University of Texas
MD Anderson Cancer Center
Houston, TX USA

State of the art treatment of patients with head and neck cancer requires the careful coordination of a team of uniquely trained health care providers working coordinately to provide each patient with optimal oncologic, functional, and quality of life outcomes. Starting with the initial assessment of the patient and his or her tumor; treating surgical, medical, and radiation oncologists are guided by the input from Dental Oncologists, Maxillofacial Prosthodontists, Speech Pathologists, Dieticians, Plastic and Reconstructive Surgeons, Internal Medicine Specialists and other qualified personnel. In addition, to the patients’ goals and wishes, treatment decisions are guided by available data, treatment guidelines, and the experience and particular expertise of the treating team, and these decisions are largely made on the basis of the histologic diagnosis, clinical stage, and primary site of the tumor. Currently used staging systems (e.g. AJCC) and guidelines (e.g. NCCN) will be discussed, as will molecular markers which are being generated at an increasing rate, in order to put into proper context how these biomarkers of disease behavior are being incorporated into individualized treatment decisions for head and neck cancer patients. In particular, the role of high risk Human Papilloma Virus (HPV) types in the pathogenesis and treatment response of patients with oropharyngeal cancer patients will be described as an example of how molecular biomarkers can provide prognostic information that can drive decisions that impact not only survival but also quality of life and functional considerations for individual patients. Additional information on other emerging prognostic and predictive biomarkers and their potential for impacting decisions by the multi-disciplinary head and neck care team will also be highlighted.
Invited Speaker Biographies

In order of appearance on the Program

Sunday, October 28th

David L. Hirsch, DDS, MD
Oral and Maxillofacial Surgery
New York University
Clinical Assistant Professor
of Plastic Surgery
NYU School of Medicine
New York, NY USA

Dr. David Hirsch is a dual degree (M.D., D.D.S.), board certified Oral and Maxillofacial Surgeon. Dr. Hirsch graduated with honors from Cornell University where, in addition to his studies, he won the NCAA Division 1 Championship in Wrestling, was a two-time All-American and a three-time Eastern champion. After graduating from Cornell, Dr. Hirsch took one year and worked as a wrestling coach at his alma mater.

In 1999 Dr. Hirsch graduated with honors from New York University college of Dentistry. Following Dental School, Dr. Hirsch went on to complete medical school at the top of his class and a six-year Oral and Maxillofacial Surgery Residency at Bellevue/NYU. Dr. Hirsch also completed an internship in general surgery at NYU. Dr. Hirsch concluded his training with a Head and Neck Surgical Oncology Fellowship in Portland, Oregon. Here Dr. Hirsch was trained in Head and Neck Cancer and Cosmetic Surgery.

Dr. Hirsch has visited Mexico, India, and The Dominican Republic for both philanthropic and training purposes. In these countries Dr. Hirsch performed surgery ranging from congenital deformities to major head and neck reconstruction.

Dr. Hirsch is currently an Attending Physician in The Oral and Maxillofacial Surgery / General Surgery Department at NYU/ Tisch Hospital as well as Bellevue Hospital Center. Dr. Hirsch’s private practice, Manhattan Maxillofacial Surgery, has grown rapidly since opening. Dr. Hirsch is very passionate about
his work, has an excellent chair-side manner and truly cares about his patients.

Dr. Hirsch was recently interviewed by several major news networks regarding a pioneering jaw surgery in the United States. A team of surgeons at NYU Langone Medical Center headed by Dr. David L. Hirsch performed a cutting-edge jaw surgery on a patient with a fast growing tumor called ameloblastoma. After removing a large section of the patient’s jaw bone with the tumor, the surgeons then rebuilt the patient’s jaw using a section of the fibula bone. The fibula bone was then implanted with dental implants and teeth placed on the day of surgery. This was the first time the operation was ever performed in the United States. Doctors planned every step of the operation virtually on computer to get optimal results.

Dr. Seikaly graduated from the University of Toronto medical school and completed his residency training at the University of Alberta in Otolaryngology Head and Neck Surgery. He then obtained fellowship training at the University of Texas Medical Branch in advanced head and neck oncology, and microvascular reconstruction. Dr. Seikaly returned to the University of Alberta as an attending in the division of Otolaryngology Head and Neck Surgery, department of surgery in 1996.

Dr. Seikaly has a large practice dedicated to head, neck, and skull base oncology and reconstruction. His research interests include functional surgical and reconstructive outcomes, microvascular head and neck reconstruction, submandibular gland transfer medical modeling and digital surgical planning as it applies to the head and neck region. Dr. Seikaly is the Director of Head and Neck Surgery Functional Assessment Laboratory (HNSFAL) at the Institute of Reconstructive Sciences in Medicine and is the director of the Head and neck Research Network. He has been a PI or collaborator on numerous research grants
receiving funding from various agencies, including CIHR and Terry Fox Foundation. He has published over 100 peer reviewed papers and book chapters.

Dr. Seikaly is the recipient of the prestigious Top 10 teacher award in the department of surgery for the past 12 years. He is a member of numerous surgical societies, nationally/internationally and has been invited as a visiting professor to over 50 institutions lecturing on all aspects of Head and Neck Oncology and reconstruction. Dr. Seikaly is the Co-editor of the Journal of Otolaryngology Head and Neck Surgery.

Max Witjes, MD, DDS, PhD
Center for Special Dental Care and Maxillofacial Prosthetics Department for Oral and Maxillofacial Surgery University Medical Center Groningen Groningen, The Netherlands

Max JH Witjes has been a member of the Multidisciplinary Head & Neck Oncology team at the University Medical Center of Groningen since 2003. He completed his medical and dental training at the same university. During his studies he worked as a research assistant at the department of Biomaterials (Materia Technica) in Groningen as well as the department of Biomaterials, University of Alabama at Birmingham (USA).

Research Interests:
In 1997 he obtained his PhD on the subject of “Photodynamic therapy and fluorescence localisation of experimental oral dysplasia and squamous cell carcinoma”. He has been involved in further clinical and laboratory studies in optical diagnostics and therapy of head and neck (pre)malignancies and trained several PhD students on these subjects. He has implemented photodynamic therapy in the treatment of small primary oral cavity tumors and palliative care.

Clinical Interests:
After training as an OMF Surgeon he completed the fellowship in head & neck oncology. He has been a faculty member since 2003. Next to his daily practice in H&N oncology he has a specific interest in developing optimal functional
reconstruction of craniofacial defects using 3D virtual planning techniques. He has published on the advanced 3D planning of secondary reconstruction of craniofacial defects.

Robert L. Foote, MD, FACR, FASTRO
Professor and Chair
Department of Radiation Oncology
Mayo Clinic, Rochester, MN
Mayo Clinic, College of Medicine
Rochester, MN USA

Fellowship: Mayo Foundation Scholar, Head and Neck Cancer Fellowship, University of Florida

Residency: Radiation Oncology Residency program, Mayo School of Graduate Medical Education

Medical School: University of Utah School of Medicine

Co-chair, American Board of Radiology oral and written board examination for head, neck and skin cancer

Senior Editor for Head, Neck and Skin Cancer, International Journal of Radiation Oncology, Biology and Physics

Arjan Vissink, DDS, MD, PhD
Department of Oral and Maxillofacial Surgery
Maxillofacial Prosthetics
University Hospital
Groningen, The Netherlands
Arjan Vissink graduated as a dentist at the University of Groningen, the Netherlands. In 1985, he defended his PhD thesis entitled ‘Xerostomia. Development, properties and application of a mucin-containing saliva substitute’. Between 1987 and 1992 he was a fellow of the Dutch Royal Academy of Sciences. During this period he studied the mechanism and the prevention of irradiation-damage to salivary gland tissue. Thereafter, he became a resident in oral and maxillofacial surgery. Since 1996 he is employed as an oral and maxillofacial surgeon at the University Medical Center Groningen. In 1999 he graduated as a physician. In 2003 he was appointed as a professor in Oral Medicine at the University of Groningen. His research focuses on oral medicine, reconstructive preprosthetic surgery and implant dentistry. Arjan Vissink has (co)authored more than 320 peer-reviewed scientific publications and many books.

Jan S. Lewin, Ph.D., Professor
Department of Head & Neck Surgery
Section Chief, Speech Pathology and Audiology
The University of Texas
M. D. Anderson Cancer Center
Houston, TX USA

Jan S. Lewin, Ph.D. is a Professor in the Department of Head and Neck Surgery and Chief of the Section of Speech Pathology and Audiology at The University of Texas M.D. Anderson Cancer Center. Dr. Lewin received her undergraduate and graduate degrees from the University of Michigan and her Ph.D. from Michigan State University. She is well recognized for her academic and clinical contributions in alaryngeal speech restoration after total laryngectomy, swallowing rehabilitation of patients with head and neck cancer, and videoendoscopic and stroboscopic evaluation of laryngeal function. She is the principal investigator, co-chairman, or collaborator on numerous multidisciplinary research projects. She has written or co-authored over 50 peer-reviewed articles, 16 book chapters, and other publications on the topic of functional restoration of speech and swallowing. Under her direction, the Section of Speech Pathology and Audiology is recognized as the premier program for functional rehabilitation and restoration of oncology patients.
Monday, October 29th

Kathleen Kapp-Simon, Ph.D.
Associate Professor
Department of Surgery
Northwestern University and Pediatric Psychologist,
Shriners Hospital for Children
Chicago, IL USA

Kathleen A. Kapp-Simon, M.A., Ph.D. is a clinical pediatric psychologist who has been involved in clinical assessment and research related to cleft and craniofacial conditions since 1976. She is currently an Associate Professor at the Feinberg School of Medicine of Northwestern University and a pediatric psychologist at Shriners Hospitals for Children, Chicago. Prior to that, she was the pediatric psychologist at the Craniofacial Center of the University of Illinois at Chicago. Dr. Kapp-Simon has published on quality of life issues for individuals with facial differences and neurobehavior aspects of craniosynostosis and cleft lip and palate. Dr. Kapp-Simon has been an active member of the American Cleft Palate-Craniofacial Association, serving as president in 2008, as a section editor for the Cleft Palate-Craniofacial Journal as well as chair and member of numerous committees.

John F. Caccamese, DMD, MD, FACS
Associate Professor
Program Director /Medical Director
University of Maryland Medical System, University of Maryland Hospital for Children
Baltimore College of Dental Surgery, Dental School
Baltimore, MD USA

Dr. Caccamese is board certified in Oral and Maxillofacial Surgery as well as
fellowship trained in the care of pediatric patients. This includes the reconstruction of congenital facial differences, cleft lip and/or palate, pediatric facial injuries, pediatric pathology/jaw tumors, and orthognathic surgery. Apart from his appointments at the dental and medical schools, Dr. Caccamese also serves on the University of Maryland/Kernan Hospital and Greater Baltimore cleft teams. Dr. Caccamese is committed to teaching at the first professional and graduate residents at the University of Maryland, as well as at the local, national, and international levels. He Lives in Baltimore with his wife and children.

Professional and Academic Work Includes:

- Associate Professor, Baltimore College of Dental Surgery and University of Maryland School of Medicine
- D.M.D., University of Pittsburgh School of Dental Medicine
- M.D., University of Maryland School of Medicine
- General Surgery Internship and Oral and Maxillofacial Surgery Residency, University of Maryland Medical Center
- Fellowship, Cleft, Craniofacial, and Pediatric Maxillofacial Surgery, University of Pittsburgh Medical Center/Children's Hospital of Pittsburgh
- Obtained the Faculty Educator and Development Award as a recognition of excellence by the American Association of Oral and Maxillofacial Surgeons
- Dr. Caccamese was named to Baltimore Magazine's "Top Doctors" List for 2008 and 2011

Ann W. Kummer, PhD, CCC-SLP, ASHA Fellow
Senior Director
Division of Speech Pathology
Cincinnati Children's Hospital Medical Center
Professor of Clinical Pediatrics and Professor of Otolaryngology, Head & Neck Surgery University of Cincinnati Medical Center
Cincinnati, OH USA

Ann W. Kummer, PhD, CCC-SLP is the Senior Director of the Division of Speech-Language Pathology at Cincinnati Children’s Hospital Medical Center. She is also Professor of Clinical Pediatrics and Professor of Otolaryngology-Head and Neck Surgery at the University of Cincinnati.

Dr. Kummer does lectures and seminars on a national and international level in
the areas of cleft palate and craniofacial anomalies, resonance disorders, velopharyngeal dysfunction, and even on business practices in speech-language pathology. She has written numerous professional articles and 16 book chapters in speech pathology and medical texts. She is an author of the SNAP test of nasometry and an inventor of the patented Nasoscope. She is the author of the book entitled *Cleft Palate and Craniofacial Anomalies: The Effects on Speech and Resonance*, 2nd edition (Delmar Cengage Learning, 2008). Dr. Kummer has received numerous honors and was elected Fellow of the American Speech-Language-Hearing Association in 2002.

Barry H Grayson DDS
Director, Craniofacial Orthodontics
New York University Langone Medical Center
Institute of Reconstructive Plastic Surgery
New York, NY USA

Barry Grayson completed his undergraduate and dental training at New York University in 1971. Postgraduate training in Orthodontics was completed in 1974 at Columbia University. In that same year he joined the Faculty of the University of Puerto Rico College of Dentistry as an Assistant Professor of Orthodontics. From 1975 to 1978 he served as chairman of the department of orthodontics. During that time he chaired the Committee of Dental Research at the College of Dentistry. In 1978 he joined the faculty of Orthodontics at New York University College of Dentistry and the Faculty of The Institute of Reconstructive Plastic Surgery at New York University Medical Center and School of Medicine. Since that time he has served as a member of the Craniofacial Anomalies Team and the Cleft Palate Team at the Institute. His principle areas of clinical practice and research have been cleft palate, craniofacial anomalies and distraction osteogenesis. His is the director of the craniofacial orthodontic fellowship program at the IRPS, and President of the International Society of Craniofacial Orthodontists. Publications of research funded under grants by the National Institute of Dental Research have appeared in the Cleft Palate Journal, American Journal of Orthodontics, The American Journal of Plastic and Reconstructive Surgery and The Journal of Craniofacial Surgery.
I obtained my medical degree from the University of Alberta in Canada where I also completed my residency training in Plastic and Reconstructive Surgery. This was followed by fellowship training in Pediatric Craniofacial Surgery at the Hospital for Sick Children and Craniofacial Trauma at Sunnybrook Hospital both in Toronto. I am currently the President of the Educational Foundation of the Canadian Society of Plastic Surgeons, a member of the Specialty Board of Plastic Surgery for the Royal College of Physicians and Surgeons of Canada., and a member of the Specialty Council for AO CMF North America (AOCMF NAEC).

My current practice is at the Walter C. McKenzie Health Sciences Centre and Stollery Children’s Hospital at the University of Alberta in Edmonton, Alberta, Canada where I am an Associate Professor in the Division of Plastic Surgery, Department of Surgery. I am fortunate to be affiliated with The Institute of Reconstructive Sciences in Medicine. My practice consists of craniofacial trauma and reconstruction (75%) and pediatric craniofacial surgery (25%).
Jerry Moon, PhD is a Professor in the Department of Communication Sciences and Disorders at the University of Iowa, Iowa City, IA. He has published numerous articles and book chapters focusing on the anatomy and physiology of speech production, and in particular, the velopharyngeal mechanism in normal speakers and in speakers with repaired palatal clefts. He has been a member of the American Cleft Palate-Craniofacial Association since 1979. He was Editor of the Cleft Palate-Craniofacial Journal for 10 years, and served as the President of the ACPA in 2011. He is the Scientific Program Co-Chair for the upcoming 12th International Congress on Cleft Lip/Palate and Related Craniofacial Anomalies.

Tuesday, October 30th

W. P. Andrew Lee, MD
The Milton T. Edgerton Professor and Chairman
Department of Plastic and Reconstructive Surgery
Johns Hopkins University School of Medicine
Baltimore, MD USA

W. P. Andrew Lee, M.D. is the Milton T. Edgerton, MD, Professor and Chairman of Department of Plastic and Reconstructive Surgery at the Johns Hopkins University School of Medicine. A hand surgeon and basic science researcher, he conducts investigation on tolerance strategy for composite tissue allografts,
such as hand or face transplants, to ameliorate the need for long-term systemic immunosuppression.

Dr. Lee is currently serving as the Chair of the American Board of Plastic Surgery and the President of the American Society for Surgery of the Hand. In 2008 he helped to found the American Society for Reconstructive Transplantation. He was elected the Chairman of Plastic Surgery Research Council in 2002 and President of the Robert H. Ivy Society of Plastic Surgeons in 2010-11. Dr. Lee has received more than 70 awards and honors, including the Kappa Delta Award from the American Academy of Orthopaedic Surgeons, and Sumner Koch Award and Sterling Bunnell Traveling Fellowship from the American Society for Surgery of the Hand.

Dr. Lee has mentored about 70 researchers in over two decades, and has authored about 140 original publications in peer-reviewed journal and 40 textbook chapters on hand surgery and composite tissue transplant subjects. He served on the editorial boards of Transplantation and Journal of Surgical Research, and has been an invited speaker or visiting professor in more than 40 institutions around the world. The book co-edited by him, Transplantation of Composite Tissue Allografts, was published by Springer in 2008.

An honors graduate in physics from Harvard College, Dr. Lee received his medical degree from Johns Hopkins University School of Medicine, where he also completed his general surgery residency and microvascular research fellowship. He completed his plastic surgery fellowship at the Massachusetts General Hospital and his orthopedic hand fellowship at the Indiana Hand Center. In 1993 he joined the plastic surgery faculty at Massachusetts General Hospital, Harvard Medical School, and became director of the Plastic Surgery Research Laboratory and subsequently chief of hand service in Department of Surgery. In 2002 Dr. Lee was recruited to the University of Pittsburgh, where he served as Division Chief of Plastic Surgery until 2010.

Dr. Lee established a multi-disciplinary program for hand transplantation at University of Pittsburgh Medical Center using an immuno-modulatory protocol based partly upon findings in his laboratory. He led the surgical team that performed the first bilateral hand transplant (2009) and the first above-elbow transplant (2010) in the U.S. A salient feature of the protocol is single-agent immunosuppression (monotherapy) that minimizes the long-term risks of hand transplantation.
Jonathan P. Wiens received his DDS from the University of Detroit. His advanced prosthodontic training and MS degree in fixed and removable prosthodontics and maxillofacial prosthetics was received at the Mayo Graduate School of Medicine. He achieved Diplomate status of the American Board of Prosthodontics in 1982 and is currently the President-elect of the ABP. He is a Past President and Fellow of the American Academy of Maxillofacial Prosthetics, the Academy of Prosthodontics and the American College of Prosthodontists, a Fellow of the Greater New York Academy of Prosthodontics and a member of the Academy of Osseointegration and International College of Prosthodontists. He is a Clinical Professor at University of Detroit Mercy School of Dentistry. He also is the attending staff maxillofacial prosthodontist at St. John’s Providence Hospital and Beaumont Hospitals. He maintains a private practice limited to Prosthodontics in West Bloomfield, Michigan. Dr. Wiens is the 2009 recipient of the Andrew J. Ackerman Memorial Award for outstanding contributions to maxillofacial prosthetics.
George Coppit, MD, LTC(P), USA
Chief- Otolaryngology/Head & Neck Surgery
Head & Neck Oncology / Microvascular Reconstruction
Walter Reed National Military Medical Center
Bethesda, MD USA


Maureen Stone, PhD
Professor, Department of Neural & Pain Sciences
Clinical & Transitional Research
University of Maryland
School of Dentistry
Baltimore, MD USA

Dr. Maureen Stone is a Professor at the University of Maryland School of Dentistry, with a joint appointment in the Department of Neural and Pain Sciences and the Department of Orthodontics. She is also Director of the Vocal Tract Visualization Laboratory. Dr. Stone was one of the pioneers in developing the application of ultrasound imaging to measurements of tongue motion during speech. In the last decade she and her colleagues have similarly been developing tagged MRI and DTI to better understand tongue biomechanics and
motor control. She is currently studying the effects of glossectomy surgery on tongue motion using MRI, in collaboration with the Department of Oral and Maxillofacial Surgery. Dr. Stone has written numerous articles on multi-instrumental approaches to studying vocal tract function. She is a Fellow of the Acoustical Society of America.

Jeffrey Harris, MD, FRCS(C)
Site Chief, Otolaryngology – Head and Neck Surgery and Fellowship Director
Advanced Head and Neck Oncology and Microvascular Reconstruction
University of Alberta
Alberta, Canada

Dr. Harris attended medical school at the University of Alberta in Edmonton, Alberta, Canada. He was then accepted into the Otolaryngology – Head and Neck Surgery residency program at the University of Alberta where he developed his interest in Head and Neck Oncology. To further pursue this interest he moved to New York City where he undertook subspecialty fellowship training in Advanced Head and Neck Oncology and Microvascular Free Flap Reconstruction of the Head and Neck at The Mount Sinai Hospital. After completing his fellowship in New York, Dr. Harris returned to the University of Alberta where he entered a full-time academic practice. After over a decade in a practice, Dr. Harris returned to full-time studies at the University of British Columbia in the Masters of Health Administration Program.

Currently, Dr. Harris is a Professor of Surgery and holds the positions of Chief, Otolaryngology – Head and Neck Surgery and Fellowship Director, Advanced Head and Neck Oncology and Microvascular Reconstruction, at the University of Alberta, and is Co-Director of the Alberta Provincial Head and Neck Tumour Team. He is actively involved in research and has published extensively. He holds positions on local, provincial, national, and international committees and has been honored for his teaching contributions. He has an interest in quality initiatives and is currently leading the development of provincial evidence-based guidelines for the organization and delivery of care of care for head and neck cancer patients.
Dr. Jeffrey N. Myers received his medical (MD) and doctoral (PhD) degrees from the University of Pennsylvania School of Medicine, and he then completed his residency training in Otolaryngology-Head and Neck Surgery at the University of Pittsburgh. He subsequently completed fellowship training in Head and Neck Surgical Oncology at the University of Texas M.D. Anderson Cancer Center, where he has been on the faculty ever since. Dr. Myers leads a basic and translational research program and his primary research interests are in the role of p53 mutation in oral cancer progression, metastasis and response to treatment. Dr. Myers and his wife Lisa have enjoyed 22 years of marriage and are the proud parents of three boys, Keith 20, Brett 17 and Blake 11.
I was a resident of Dr. John Beumer at UCLA in 1988-1989. I studied the essence of Maxillofacial rehabilitation from great teachers. They are Dr. John Beumer, Dr. Ian Zlotolow and Dr. Yoshinobu Tanaka. My treatment for the Maxillofacial rehabilitation is using Japanese magnetic attachment very much. It is a very useful tool. Now, I am a president of the Japanese Academy of Maxillofacial Prosthetics and the Japanese Society of Magnetic Applications in Dentistry. This time, I want to introduce the useful Japanese Magnetic Attachments for Maxillofacial Prosthetics to my teachers with sincere gratitude. And, this presentation will enable you to carry on your service with the good quality of care, throughout the world.
I am a Junior Associate Professor of Maxillofacial prosthetics, Graduate School, Tokyo Medical and Dental University (TMDU) since 2005. I am a councilor of the Japanese Academy of Maxillofacial Prosthetics and Japan Prosthodontic Society. I am an affiliate member of American Academy of Maxillofacial Prosthetics.

I received D.D.S. from Nippon Dental University and my Ph.D. from TMDU, and my Ph.D. work involved establishing an evaluation method for speech, entitled: Digital Acoustic Analysis of Five Vowels in Maxillectomy Patients. (J Oral Rehabil 2002 29 ; 649-656)

I was awarded the second prize at the 6th International congress on Maxillofacial Rehabilitation in 2004 for my poster presentation in Maastricht.

Our research team is contributing to establish speech evaluation methods with various techniques. Format analysis, speech recognition, voice analysis and psychoacoustic analysis are our major research theme and currently we are trying to make a computed speech analyzing system using vocal tract 3D models and have been awarded at various congresses.

Regarding my clinical work, I am also a Vice Director of the Maxillofacial Prosthetic Clinic, Dental Hospital, Faculty of Dentistry, TMDU and manage treatment of our patients with oral surgeons, orthodontists, ENT doctors, plastic surgeons, speech therapists and others in team. We are working for our patients, and provide two kinds of prosthetic treatment. One is prosthetic treatment for defects like maxillectomy, glossectomy, cleft lip and palate. The other is to fabricate the treatment appliances such as radiotherapy and speech.
Poster Presentations
17:30-20:00
Saturday, October 27, 2012
# 2012 Poster Abstract Index

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The Effect of Implant-Supported Lower Denture versus Conventional Complete Denture on Speech

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Purpose: The aim of this study was to evaluate the effect of the lower implant-supported dentures on speech compared to the lower conventional complete dentures.

Methods & Materials: Two groups of patients were selected for this study (Test Group N=5; Control Group N=10). Test group was completely edentulous and control group retain all of their natural teeth. The speech assessment composed of two parts: subjective evaluation using Articulation Test (AT) and objective evaluation using Computerized Speech Lab (CSL). Speech evaluations for the test group was conducted when edentulous, with conventional dentures, one day and then two weeks after fitting of implant-supported dentures.

Results: Using Articulation Test (AT), three phonemes were tested /z/, /ð/(the) and /s/(sha) showed improvement in pronunciation. Pitch contour and energy contour extracted using CSL showed no statistical significant difference, for all selected phonemes for both parameters.

Conclusion: We can conclude that implant-supported dental prostheses may have a favorable positive effect on articulation compared to conventional dentures.
Poster 2

Use of a Removable Prosthesis Following Marsupialization of Boney Cysts

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Purpose: Cysts are one of the most common lesions in the oral cavity and can occur in either soft or hard tissues. There are many different types of cysts of the oral cavity, many of which can be locally aggressive, and if left untreated, can cause pain and local destruction of bone. Treatment of boney cysts of the oral cavity typically consists of either marsupialization or enucleation. When complete removal of the cyst is undesirable due to anatomic reasons, marsupialization is performed in order to establish continued drainage over an extended period of time. The goals of treatment are to alleviate pain, provide drainage, arrest bone destruction, and prevent recurrence.

Methods & Materials: There are various methods of maintaining continuous drainage after marsupialization of cysts. Two patients were treated at Memorial Sloan-Kettering Cancer Center by marsupialization of the cyst and immediate insertion of an obturator device which maintains the patency of the opening to allow drainage and bone regeneration. The fabrication methods of the device will be discussed as well as treatment outcomes.
Poster 3

A Congenital Malformation in a Patient Treated with a Transitional Cleft Palate Obturator- A Case Report

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Purpose: The purpose of this paper is to present a patient with cleft palate and the prosthetic treatment performed.

Methods & Materials: Between the most common congenital malformations are the orofacial clefts basically lip and palate, making them represent an oral health problem. They are defined as an elongated opening which is derived from a lack of fusion of certain parts during embryologic development. The etiology of cleft palate is multifactorial, and they can be divided into genetic and environmental factors. (1,2)

The incidence of this malformation varies according to the region, speaking specifically of the United States the incidence is 1-600 births while in Mexico is 1.2-1000 births. (5) The treatment of this patients require a multidisciplinary approach and the intervention of prosthetic may be needed in any state of the treatment.

Results: A 6 year old male patient was referred to the prosthodontics department in University of Baja California, he presented: cleft of soft and hard palate with unilateral cleft lip, he underwent lip surgery at his 4 months followed by a palatoplasty at 7 months age. Currently he suffers from disturbance in phonetic, as well as an impaired left nostril and trace of lip surgery. Making an intraoral examination shows the unilateral cleft, 2 dental root fragments, interproximal caries an absence of anterior teeth. We opted for the realization of an oronasal obturator in order to enable the individual to assume a more effective role in society because of demands that our cultures gives to beauty and oral communication.

Conclusion: By placing the obturator we achieved a better lip support, increase patient self-esteem, better phonetic, facilitate feeding and more, although the patient usually need the help of a speech therapist to see a real improvement
in phonetic, and also the help of an Orthodontics. Pediatrician, Psychology, Plastic surgery and Maxillofacial surgery to obtain a successful result of the treatment. (4,5)

Bibliography

Poster 4

Deformation Properties of Various Milled Titanium Implant Framework Configuration

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Purpose: To demonstrate differences in resistance to deformation of various milled titanium implant framework designs.

Methods & Materials: Phase I of this study tested standardized "L" shaped beams of palladium copper, commercially pure titanium aluminum vanadium (Grade 5) alloy. Phase II of this study tested mechanical characteristics of identical cast alloy implant frames and commercially pure titanium frames. Phase III of this study tested four different configurations of milled titanium alloy implant frameworks based on clinically common designs with static and dynamic fatigue. Failure characteristics were analyzed for each configuration.
Framework configurations at highest and earliest risk for failure were identified.

Results: In comparison of standardized beams of Pd Cu, CP Ti, and TiAl6V4, a superior result of dynamic and static fatigue was seen with TiAl6V4 alloy. With preferences in the use of Grade 5 alloy, cantilevering with specific cross sectional dimension may be prudent to resist permanent deformation. Evidence for appropriate dimensions of titanium frameworks with current manufacturing methods is presented.

Conclusion: Critical consideration of framework configuration parameter is necessary to reduce permanent deformation under load.

Poster 5

Magnetically Retained Two-Piece Maxillary Obturator Prosthesis in an Edentulous Patient with Cleft Palate Defect: A Case Report

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Purpose: Dislodgment of heavy obturators is the most encountered problem with conventional maxillary obturators. This problem stems from insufficient retention and stability especially with edentulous patients. Using magnets to retain prosthesis is one of the alternatives to improve retention and stability of the maxillary obturators for patients with low socioeconomic status. The aim of this report is to describe a simple method to position retention magnets in two-piece maxillary obturator in an upper edentulous arch patient with cleft palate defect.

Methods & Materials: A 52-year-old woman presented in maxillofacial prosthodontics clinic in Chulalongkorn University with cleft palate defect on an upper edentulous arch. Her chief complaints were inability to chew and the regurgitation of food and water into nasal cavity when masticating. Her existing prosthesis was made 5 years ago and lacked retention and stability. The two-
piece maxillary obturator, with magnets was fabricated to enhance retention and stability for the upper denture. First of all, upper and lower preliminary impressions with irreversible hydrocolloid were made with stock trays. Second, they were poured in ADA-type IV dental stone. Third, a custom tray was prepared for border molding, final impression poured in ADA-type IV dental stone and the master cast was mounted on a semi-adjustable articulator. Fourth, the hollow bulb’s obturator was processed in heat polymerizing acrylic resin. Afterwards, pairs of magnets were affixed with self-curing acrylic resin in the hollow bulb and complete denture portions. Finally, the final prosthesis was inserted into the patient’s mouth and checked for proper palatal contour and peripheral seal. In addition, the patient was educated about the maintenance of the prosthesis and recalled for regular post-insertion visits.

Results: During the periodic recalls after two-piece maxillary obturator delivery, the patient’s masticatory function was improved with no dislodgment of the obturator.

Conclusion: The patient’s speech, masticatory function and swallowing efficiency were dramatically improved after the two-piece obturator was inserted. She has an improved quality of life from ameliorated retention and stability. Magnetically retained two-pieces maxillary obturator can be one of the treatment modalities for edentulous patients with low income to enhance retention and stability of the obturator.

Poster 6

Use of Orbital Conformer to Improve Speech and Retention in Patients with Confluent Maxillary and Orbital Defects

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Purpose: A successful maxillofacial prosthesis must incorporate several objectives into its design in order to be successful: (1) obturation of the defect; (2) restoration of essential functions of the midface, such as deglutition and speech; (3) provision for adequate structural support to each of the midfacial
units; and (4) esthetic reproduction of the external features utilizing normal contralateral anatomy. In patients for whom both a maxillectomy and an orbital exenteration are performed, where there is a confluence of the defects, these objectives can be difficult to attain. This procedure sets out to provide a method to attain favorable results in a patient with a maxillectomy and ipsilateral orbital exenteration utilizing rigid connection via magnets. The magnets are imbedded within an orbital conformer which connects the obturator to the orbital prosthesis. This intermediary piece serves to help address the objectives listed above.

Poster 7

The Cosmetic Restoration of the Double Dentition Removable Denture for Adult Patients with Cleft Lip and Palate: A Case Report

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Purpose: Cleft lip and/or palate are common congenital defects among newborns. With a series of medical issues and potential complications, affected children need sequential treatments from the very beginning of their born, handled by a multidisciplinary cleft clinic that features a team of healthcare specialists, including plastic surgeons and dentists and so on. However, there are patients who discontinued the subsequent treatments for certain reasons after the primary plasty of lips and/or palates. This portion of patients faces severe facial and dental disfigurement problems and intensely asks for a better change.

Methods & Materials: Case report of an 18-year-old boy with severe cleft lip and palate, whose lip was fixed at his childhood, leaving the cleft alveolar untreated till now. The midface was hypogenetic and depressed, forming the crossbite of the maxillary anterior teeth. At the same time, the maxillary dentition was irregular aligned with congenital missing of 12 to 22. His poor economic condition prevented the application of complex advantageous surgeries and orthodontics, so a removable prosthodntics was designed to
improve his facial appearance. The denture was placed in the labial side of the patient’s maxillary dentition, with clasps retained on premolar abutments and major connectors placed on the labial side of anterior teeth.

Results: This kind of prosthodontics resulted in improvement of the labial contour and symmetry. The patient and his relatives were aesthetic satisfied and economically affordable.

Conclusion: The double dentition removable denture restorations are applicable in underdeveloped areas or indigent families, and can achieve good cosmetic results as reparative or interim prosthetics.

**TOPIC: Head and Neck Cancer Rehabilitation**

**Poster 8**

**The Use of Milled Bars in Maxillofacial Rehabilitations: A Case Report**

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Purpose: This case report is aimed to show the benefits of using a removable overlay prostheses with a CAD-CAM milled bar on five implants to restore function in a patient who has received a mandibulectomy reconstructed with a fibula osteocutaneous free flap.

Introduction: Patients who have undergone mandibular resection and fibula osteocutaneous free flap reconstruction may lack the support they need to effectively incise and masticate food when using a conventional removable dental prostheses. Prostheses that are retained and supported by osseointegrated implants in the resected area, along with the remaining teeth, enable most of these patients to masticate effectively considering if the patient maintains good tongue function. How do we optimally restore these implants with the following considerations: maximal support, adequate access for oral
hygiene and implant maintenance, proper lip support, function, and cost containment?

Clinical Report: An 81-year old gentleman presented status post mandibular resection with fibula osteocutaneous free flap followed by radiation therapy for squamous cell carcinoma of the right retromolar trigone in 2004. No involvement was noted with his tongue at this time. The fibula osteocutaneous free flap was debulked prior to initiating endosseous implant placement. Five Branemark regular diameter implants were placed in 2011. The patient received a tissue stent at second stage surgery for soft tissue contouring. After soft tissue maturation, the patient was restored with a removable overlay prosthesis.

Discussion: Through the use of implants placed in the fibula, a fully supported removable overlay prosthesis was fabricated. The three degree taper of the milled bar along with locator attachments allows for excellent retention and stability of the prosthesis. By using a two-piece supra-structure/infrastructure prosthesis, the patient is able to gain access for hygiene intraorally around the bar, reduce the risk of peri-implant inflammation, and allows ease of cleaning the suprastructure extraorally. This method allows the practitioner to easily deliver the prosthesis infrastructure with conventional implant drivers. When delivering fixed implant restorations in fibulas, the distance from the occlusal surface to the fixture level may present with restorative armamentarium complexities. This may cause the need to use alternative methods of retention such as lingual set-screws which may increase treatment cost to the patient. This treatment modality cost is further reduced when compared to fixed restorations by saving in the price of raw materials. The use of a titanium CAD-CAM milled bar is known to be more accurate and cost effective then gold castings. Finally the overlay prosthesis allows for the denture flange to be contoured to reposition and support the lower lip, and allows for future versatility as tissues change. All of these factors may support the removable overlay prosthesis as a preferred method in rehabilitating mandibular defects when the clinical presentation is appropriate.

Summary: This case report describes a patient who is status post mandibular resection and fibula osteocutaneous free flap reconstruction who was functionally restored with the use of a removable overlay prosthesis utilizing a CAD-CAM milled bar on five implants.
Fabrication of a Tissue Equivalent Prosthesis for Radiation Therapy: A Case Report

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Purpose: Surgical removal of head and neck tumors results in multiple challenges, one being the irregular tissue contours of the surgical site. When post-operative radiation therapy is delivered, the resultant borders create an uneven dose distribution to the volume of tissue treated. Air has a much lower electron density than that of body tissue, hence this difference permits a radiation beam to penetrate deeper beyond the enucleated site, resulting in a greater dose of radiation beyond the air cavity while the surface of the irregular borders receives a much lower dose. Fabrication of a tissue equivalent prosthesis provides a bolus of material in the resultant void, allowing for a homogenous distribution of radiation therapy in the tumor-ablated site. The purpose of this case report is to describe the fabrication of a two-piece acrylic tissue equivalent prosthesis for external beam radiation therapy.

Methods & Materials: The tissue equivalent prosthesis was first constructed chair-side with Triad material and baseplate wax, adapting to the underlying modified anatomical structure. This wax pattern was used for the radiation simulation. The prosthesis was fabricated in two pieces for ease of insertion and removal as well as engaging the undercuts of the defect. Following the simulation procedure, the wax template was transformed to acrylic resin.

Results: The procedure presented includes fabrication of a 2-piece prosthesis that is well adapted to the patient’s ablated tissue, and can be inserted and removed rapidly by the patient for a repeatable position during daily radiation treatment.

Conclusion: A tissue equivalent prosthesis can attenuate radiation beam in areas of irregular tissue topography and permit uniform dose delivery to the intended sites of treatment. A well-adapted prosthesis will allow a more
homogenous dose distribution to the tissues resulting in less co-morbidities during treatment.

**Poster 10**

**The Application of a Mechanical Jaw Opening Device in Patients at Early Stage After Maxillectomy**

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**Purpose:** Besides oral dysfunction and facial disfigurement, patients after maxillectomy often suffered from trismus, which could turn out to be permanent postoperative complication without proper interventions. In this study, a mechanical jaw opening device, called TheraBite Jaw Motion Rehabilitation System (TB), was introduced to help opening exercise of these patients by principle of voluntary at their early stage after operations. In China, it is the first time that the TB system was applied in patients as clinical trials. And positive effects would be beneficial to clinical popularization in China.

**Methods & Materials:** Patients were persuaded to take part in this study at their early stage after maxillectomy (3-5 days to 2 weeks), and signed the agreement contracts in advance. They were given the TB and told to exercise 3-5 times a day, 30-40 oscillations per time, with a 2-second stop in the end to the available maximum mouth opening (MMO). A special card was used to measure the MMO (distance between the upper and lower central incisors), and the data were required to be written down each time in tables offered by investigators. At the same time, the MMOs were recorded 2 weeks after maxillectomy as a control group, who hadn’t mouth opening exercises for some reasons.

**Results:** There was numerically scalariform increase in the MMO of the test group, which would finally reach 2.6-2.9cm, while in control group the number ranged from 1.3cm to 2.0cm. It proved significant difference (p<.05) between the two groups using the t test with SPSS (version 13).

**Conclusion:** The TB was efficacious when combined with continuous opening
exercise in the group of patients who had undergone maxillectomy. It would reduce the trismus after operation and help the maxillary rehabilitation and the recovery of quality of life.

Poster 11

Case Report for Palatal Lift Prosthesis

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Purpose: This case report illustrates the methods involved in the molding process of a palatal lift prosthesis for a patient who underwent radiation therapy for a primary tonsillar cancer interfacing with speech pathology.

Introduction: Velopharyngeal insufficiency is a deficit which occurs when the soft palate is of inadequate length to effect the velopharyngeal closure while the movement of the remaining tissues are within normal limits. Velopharyngeal incompetency is a deficit when the velopharyngeal tissues are present, but are not functioning properly. Such deficits may limit a patient’s quality of life in terms of the basic necessities of mastication, deglutition, and speech. Without proper velopharyngeal function, the patient will sound hypernasal due to the escape of nasal air during speech, and can have regurgitation of liquids and food. A palatal lift prosthesis can aid a patient displace the soft palate to the normal level enabling closure of the velopharyngeal complex for proper function.

Clinical Report: 66 year old edentulous woman received radiation for tonsillar cancer in 2001. Effects of scarring and fibrosis from radiation effected her speech and eating abilities. The patient sought care to ameliorate her quality of life as symptoms progressed since her treatment. The patient presented 12 years status post irradiation therapy with a clinically shortened soft palate with a deficit in velopharyngeal function.

Discussion: Utilizing objective measures with speech pathology through the utilization of videofluoroscopy, an endoscope, and a speech analyzer, the patient had marked improvement in deglutition and speech. Together with a
speech pathologist, the prosthesis was molded to allow for appropriate air flow and closure of the velopharyngeal complex. The patient stated that “food does not get stuck in [her] throat anymore, and voice is now able to project louder.” Objectively determining the space between the lateral pharyngeal walls at rest and during function when the prostheses was fabricated may improve outcomes for this patient.

Summary: In order to have a successful palatal lift prosthesis outcome, it is important that there is good retention of the prosthesis in the maxillary arch with good border seal as well as a displaceable soft palate. Without good retention, the extension onto the soft palate may dislodge the prosthesis. With patient cooperation and interfacing Maxillofacial Prosthetics with Speech Pathology, a palatal lift prosthesis can be successful in aiding patients improve their quality of life who are deficient in velopharyngeal function.

Poster 12

Virtual Transplantation in Designing a Facial Prosthesis for Extensive, Crossing-Facial-Midline Maxillofacial Defects with Computer-Assisted Technology

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Purpose: To demonstrated a novel approach to design facial prosthesis with the help of transplantation concept using computer-assisted technology for extensive, large, crossing facial midline facial defects.

Methods & Materials: The 3-dimensional (3D) facial surface images of patient and his relative were reconstructed with data obtained through optical scanning. Based on the images, the corresponding portion of the relative was transplanted to patient’s defect, which could not be rehabilitated using mirror projection, to design the virtual facial prosthesis without eyeball. The 3D model of an artificial eyeball that closely mimic the patient’s remaining one was developed and transplanted and fitted onto the virtual prosthesis. A personalized retention structure for the artificial eyeball was designed together
onto virtual facial prosthesis. The wax prosthesis was manufactured through rapid prototyping (RP) and finial silicone prosthesis was finished.

**Results**: The size, shape and cosmetic appearance of the prosthesis were very satisfactory and well matched the defect area. Patient’s facial appearance was perfectly recovered with the prosthesis by clinical evaluation.

**Conclusion**: The optical 3D imaging and CAD/CAM system used in this study can design and fabricate facial prosthesis more precise than conventional manual sculpture. The patient discomfort associated with conventional methods was decreased greatly. Virtual transplantation to design facial prosthesis for maxillofacial defect crossed facial midline, and the idea to develop the retention structure of eyeball were both very feasible.

**Poster 13**

**Rapid Manufacture of Ocular Prosthesis**

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**Purpose**: To research and develop methods of rapid manufacture of indwelling stock ocular prosthesis to aid the rehabilitation of patients suffering from head and neck cancer in developing nations.

**Methods & Materials**: A high resolution digital image of the eye was captured using commercially available photographic equipment. Specular reflections, imperfections and eyelashes were eliminated using an off-the-shelf software package. The completed prosthesis design is exported as a file suitable for manufacture using reverse prototyping methods. The printed device was infiltrated using industry standard varnish, placed into an eye form mould, processed in industry standard resin and finished to a high gloss. The processed prostheses have undergone impact testing and simulated weathering testing to examine durability. A risk assessment has also been undertaken to determine the recommended amount of clear adjustable periphery when fitting the eye to the patient.
Results: The rapid manufactured samples have delivered products that are acceptable to industry experts working in the field of ocular and maxillofacial prosthetics. The product can be manufactured at a fraction of the costs of a current ocular prostheses resulting in a cost saving for health care providers. Following in-house and external testing the project team are working towards regulatory approval for the product.

Conclusion: A limited number of researchers across the world have attempted to tackle the labour intensive design and production issues faced within maxillofacial prosthetics. Previous work has not provided a common clinical, technological and economic perspective on effectiveness; they have concentrated on either clinical aspects or the technology. In addition, little thought has been given to parts of the world where prosthesis provision is uncommon and less developed. The device we have developed requires no inherent painting skills, is simple to adjust if necessary and provides a cost effective alternative when compared with traditional methods.

Poster 14

A Comparative Photoelastic Study Between Two Types of Craniofacial Implants

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Purpose: The aim of this study was to compare stress distribution in two types of craniofacial implants: a existing model and a new model, with different shapes and characteristics, after compressive load application.

Methods & Materials: Two photoelastic blocks were made containing different implant design. In the field of a polariscope, these blocks received axial loads of 100N. Thus, it was possible to observe which design better distributed the stress to the implant-bone interface.

Results: Implants with tapered design showed stress concentration in the
apical third, while those with straight design distributed uniformly the stress to the middle and cervical thirds, in a more uniform way.

**Conclusion:** The authors concluded that the apical third was the main region of stress concentration for tapered implants. Implants with straight design showed concentration in the other regions. Even with these variations, further research is needed to determine the relation between the results of this study and thread design.

**Poster 15**

**Influence of Macro-Geometry in the Primary Stability of Craniofacial Implants - A Pilot Study**

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**Purpose:** The aim of the present pilot study was to evaluate the influence of the craniofacial implant geometry on primary stability.

**Methods & Materials:** It was used two types of craniofacial implants: one cylindrical and with an unique thread (currently used model) and a new model. Implants were placed by a same operator in bovine bone. The operator installed the implants. The parameters analyzed were: inserting torque, unscrewing torque and resonance frequency. This will be used for a digital torque wrench model BG1 (MARK-10, Copiague, NY, USA) and an apparatus Osstell (Osstel AB, Gothenburg, Sweden). The analysis of variance (ANOVA) test was chosen for comparison since these implants appeared as quantitative variables with normal distribution and homogeneous variances.

**Results:** The craniofacial implants with model currently used results showed values of insertion torque and removal torque and analysis of the resonance frequency values smaller than the new model.

**Conclusion:** The authors believe that due to the results obtained, further
studies should be conducted to compare the proposed new model of implant with the current, aiming at improvement of the quality of rehabilitation work facials.

Poster 16

The West of Scotland (WOS) Multidisciplinary Team Approach

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Purpose: To introduce improved policies as a result of national guidelines for the improved treatment and care of the head and neck cancer patient. These improvements result in major changes to the multidisciplinary team approach to treatment. This results in seamless patient treatment.

Methods & Materials: This study of national policy within the U.K. resulted in the establishment of a draft policy formulated by all members of the multidisciplinary team leading to significant improvement in head and neck cancer patient care.

Results: The implementation of the studies findings had a direct impact on patient treatment and care. The period of 62 days from initial consultation and diagnosis to commencement of treatment was reduced to 31 days. This resulted in a significant improvement to patient care reducing anxiety for both patient and career.

Conclusion: In a regional unit the weekly MDT provides a forum for all members to be involved in the formulation of appropriate "tailor made" treatment plans for individual patients. The improved understanding of each MDT members role provided a significant improvement to the service offered to the patient and their family. The reduction in treatment time is of obvious benefit.
Poster 17

Multidisciplinary Management of an Auricular Defect

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Purpose: To improve life quality of oncological patients, interdisciplinary rehabilitation plans and management are needed. Clinicians involved at interdisciplinary management are pathologists, radio-oncologists, psychologists, chemists, surgeons, neurobiologists, and maxillofacial prosthodontics. All clinicians prepare a treatment plan before any intervention. Organize an interdisciplinary rehabilitation plan and management for an oncological patient, who had had complete removal of his right ear.

Methods & Materials: A 65 year old patient was diagnosed by the pathologist with basal cell carcinoma on his right ear. After the diagnosis, patient was sent to the psychologists, surgeons, and maxillofacial prosthodontics at the head and neck service. Consulted with all clinicians and treatment was planed. The patient was treated by a total auriculectomy. One month later, a medical grade silicone ear prosthesis was elaborated. The ear prosthesis was put in place with chemical adhesives.

Results: Multidisciplinary management helped informed to the patient on details, what the treatment was about. Auricular surgery and prosthetic ear rehabilitation was made with excellent results, due to the communication between clinicians.

Conclusion: Treatment planning before any intervention improves quality of life for patients with cancer. Explaining the procedures to the patient gave him a better perspective of the prosthetic ear. Team work helped the patient to reincorporate effectively to the society.
Purpose: This case report presents a novel method for creating a facial prosthesis for a lateral facial defect. A 24 year old Hispanic male presented to the emergency department missing most of his lower lip and with extensive right arm trauma due to an accident with a wood chipper. Additionally, his right arm was amputated below the shoulder. It was determined that surgical reconstruction of the lower lip was not possible, thus prosthetic reconstruction was chosen. The retention of the lower lip prosthesis was a concern because conventional adhesives would not be adherent due to saliva bathing the area. Dental implants were not an option for this lateral facial defect. In order to retain the lower lip prosthesis the surfaces of the mandibular left second premolar and the canine were flattened, then using composite resin magnet keepers were bonded to the teeth. Laboratory magnets were placed and a two-part facial moulage was accomplished using PVS impression material for the teeth and magnets, then reversible hydrocolloid impression material backed with dental stone to complete the facial moulage. Laboratory analogs were placed on the magnets and a master cast was made. Resin housings were placed over the prosthetic magnets and a waxing of the proposed prosthesis completed. After the final wax try-on, the prosthesis was fabricated from medical grade silicone incorporating the magnets. The prosthesis was tried on the patient, external characterization accomplished and the prosthesis was finished and delivered to the patient. The patient was greatly satisfied with the esthetics and function of the prosthesis.
Poster 19

Brain Areas Involved in Self-Body Image Reconstruction when Experiencing for the First Time the Use of a New Prosthetic Eye

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Purpose: In order to identify brain areas involved in the reconstruction of the new self-body image, blood oxygenation-level dependent signal was obtained through functional magnetic resonance imaging.

Methods & Materials: Three individuals who had lost their left eye under different circumstances, and were experiencing for the first time the use of a new a prosthetic eye. Psychological interviews were also performed to obtain a verbal account of how these individuals felt using their new prosthetic eye and how the prosthesis has changed their self-body image.

Results: We found that the first impression of watching themselves with the new prosthetic eye resulted in activation of the brain areas calcarine and central sulcus. From psychological data it was also determined that wearing a prosthetic eye helps these type of patients to construct a new self-body image.

Conclusion: The brain areas calcarine and central sulcus participate in the initial steps of the reconstruction a new self-face/body image.
Transplantation of Autologous Submandibular Gland in Patient with Severe Keratoconjunctivitis Sicca

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Purpose: treatment of severe keratoconjunctivitis sicca (KCS) by microvascular transplantation of vascularized Autologous Submandibular gland at the university hospital of Peking, Beijing-China.

Methods and Materials: Xerophthalmia, sometimes referred to as keratoconjunctivitis sicca (KCS), is the clinical condition of severe dryness of the surface of the eye. It may occur in a variety of clinical settings, such as Steven-Johnson syndrome, drug allergic reactions, Vitamin A deficiency, Sjogren’s disease, trauma with scarring, chemical burns, radiation and idiopathic. According to the literature, the incidence of this condition is 2.7% of the population, which means there are roughly 30 million patients suffering from KCS in China alone. 35 years old lady presented to the department of oral and maxillofacial surgery, Peking University Hospital, Beijing-China, complaining of dry eyes, permanent feeling of foreign body inside the eyes, burning sensation, itchiness, blurred vision and pain in both eyes for the last 10 years. microvascular submandibular gland transfer with implantation of Wharton’s duct into the upper conjunctival fornix offers a surgical alternative for a permanent autologous substitution of tears using the basal secretion of a transplanted and revascularized submandibular gland.
**Results:** Xerophthalmia, sometimes referred to as keratoconjunctivitis sicca (KCS), is the clinical condition of severe dryness of the surface of the eye. It may occur in a variety of clinical settings, such as Steven-Johnson syndrome, drug allergic reactions, Vitamin A deficiency, Sjogren’s disease, trauma with scarring, chemical burns, radiation and idiopathic. According to the literature, the incidence of this condition is 2.7% of the population, which means there are roughly 30 million patients suffering from KCS in China alone. 35 years old lady presented to the department of oral and maxillofacial surgery, Peking University Hospital, Beijing-China, complaining of dry eyes, permanent feeling of foreign body inside the eyes, burning sensation, itchiness, blurred vision and pain in both eyes for the last 10 years. microvascular submandibular gland transfer with implantation of Wharton’s duct into the upper conjunctival fornix offers a surgical alternative for a permanent autologous substitution of tears using the basal secretion of a transplanted and revascularized submandibular gland.

**Conclusion:** This method demonstrates a good relief to the patients symptoms, but it requires high surgical skills and accurate patient selection. further long term fellow up and larger number of cases are required to significantly analyse the result.

**Poster 21**

**Advanced Technology gives a Better and Healthier Life to our Patients**

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Department of Prosthodontics  
Xi'an, CN

**Purpose:** An 18-year-old girl came to our hospital to seek treatment of her rare congenital distortion with a complete maxilla and partial zygoma defects accompanied by nose and mandible deformities.

**Methods and Materials:** After CT scan and reconstruction, the defects of maxilla and zygoma were revealed clearly. The entire skeletal structures of the middle face including hard palate and maxilla were defect, associated with severe dysplasia of bilateral zygoma and nasal bone. The treatment could not
get done only with our love. No matter, the critical area is the advanced technology. After intensive discussion, the overall treatment plan includes 4 steps was determined. The first step is craniofacial distraction osteogenesis. The coronal incision was chosen, and Lefort III osteotomy was performed. Distraction was achieved with a 15 mm length. The second step is a fibular flap grafting. Computer-aided design of bone grafting was simulated with Surgicase CMF to determine the total length of the flap, as well as the length of each segment. According to the pre-surgical simulation, the fibular flap was harvested with a skin paddle to reconstruct the maxilla. The third step is maxillary implantation and orthognathic surgery on the mandible since the mandible has a significant protrusion and deviation. But how to carry out this operation is a big problem since the optimal position of the definitive upper denture in 3D was hard to determine for satisfactory aesthetic and functional outcome. Three mini implants were inserted on her maxilla, and then impression was taken and cast was poured to make a maxillary template. Then the anterior upper teeth were arranged. The temporal denture was fabricated and its position was transferred into the 3D model after a CT scan. Based on the position of the temporal denture and the maxillary bone, the locations and the angulations of the implants, the reposition of the mandible body were determined. However, the implant guide template and the orthognathic template were also needed to design to transfer the simulation to the operation theater. Then the resin templates were obtained with a SLA machine. The operation was completed with the aid of the templates. The mandible was removed to its right position, and the implants were inserted. Finally, the implant retained denture was fabricated and applied to the patient.

Results: After CT scan and reconstruction, the defects of maxilla and zygoma were revealed clearly. The entire skeletal structures of the middle face including hard palate and maxilla were defect, associated with severe dysplasia of bilateral zygoma and nasal bone. The treatment could not get done only with our love. No matter, the critical area is the advanced technology. After intensive discussion, the overall treatment plan includes 4 steps was determined. The first step is craniofacial distraction osteogenesis. The coronal incision was chosen, and Lefort III osteotomy was performed. Distraction was achieved with a 15 mm length. The second step is a fibular flap grafting. Computer-aided design of bone grafting was simulated with Surgicase CMF to determine the total length of the flap, as well as the length of each segment. According to the pre-surgical simulation, the fibular flap was harvested with a skin paddle to reconstruct the maxilla. The third step is maxillary implantation and orthognathic surgery on the mandible since the mandible has a significant protrusion and deviation. But how to carry out this operation is a big problem since the optimal position of the definitive upper denture in 3D was hard to
determine for satisfactory aesthetic and functional outcome. Three mini implants were inserted on her maxilla, and then impression was taken and cast was poured to make a maxillary template. Then the anterior upper teeth were arranged. The temporal denture was fabricated and its position was transferred into the 3D model after a CT scan. Based on the position of the temporal denture and the maxillary bone, the locations and the angulations of the implants, the reposition of the mandible body were determined. However, the implant guide template and the orthognathic template were also needed to design to transfer the simulation to the operation theater. Then the resin templates were obtained with a SLA machine. The operation was completed with the aid of the templates. The mandible was removed to its right position, and the implants were inserted. Finally, the implant retained denture was fabricated and applied to the patient.

**Conclusion:** With the method mentioned above, close and effective pre-surgery communications and collaborations between prosthodontists and surgeons could be made to determine the optimal treatment plan, and thus achieve the prosthesis-guided surgical reconstruction. In this way, advanced technology is able to play a crucial role, as a bridge to connect prosthodontist and surgeon, to give a better and healthier life to our patients.

**Poster 22**

**Myoelectric Conduction Velocity Comparison of Masseter Muscle Between Patients Treated with Complete Dentures and Osteointegrated Implant Prostheses**

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**Purpose:** When adults lose all their teeth suffer muscular atrophy, muscular activity changes in their mandibular motor unit function and functional perception. It is likely that subjects improve their functional perception by using fixed dentures over osseointegrated implants and they produce
protection mechanisms and psychomotor skills, unusual for mucosal supported prostheses.

**Methods and Materials:** Using high-density electromyography it was possible to detect the activity of the neuromuscular junction of the masseter muscle and to calculate the muscle conduction velocity in the implementation of six different motor tasks, comparing subjects with fixed dentures over osseointegrated implants and mucosal supported removable. This study included 29 patients: 10 used complete removable prostheses, 9 of them had full denture over osseointegrated dental implants without residual natural teeth and 10 were healthy subjects. The sample comprised 10 men and 19 women and the age range was comprised between 25.1 and 73.3 years old.

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**Conclusion:** The motor conduction velocity in masseter muscle is greater in subjects rehabilitated with fixed prostheses on osseointegrated implants
Purpose: The usual treatment of otomandibular syndrome consists in distraction osteogenesis (DO) of the mandible, associated with otoplasty. 3D reconstruction might improve the planning of surgery and the accuracy of distraction vectors in these complex cases.

Methods and Materials: 10 patients presenting with mandibular hemiatrophy were treated. A preoperative CT scan was done and 3D reconstruction was performed using a 3D surface-rendering reconstruction software primarily dedicated to head and neck surgery. DO vectors and osteotomy lines were determined using the software and assessed by the surgeon. Postoperative follow up assessed surgical result and facial growth.

Results: 10 patients presenting with mandibular hemiatrophy were treated. A preoperative CT scan was done and 3D reconstruction was performed using a 3D surface-rendering reconstruction software primarily dedicated to head and neck surgery. DO vectors and osteotomy lines were determined using the software and assessed by the surgeon. Postoperative follow up assessed surgical result and facial growth.

Conclusion: With this software, the surgeon works on different planes: the surgical plane, based on three anatomic points, and the occlusal plane. The software calculates the components of the DO vector. It allows precise measurements (in both translation and rotation), which helps to choose the distractor and its appropriate orientation. Integration of the distractor on the 3D scene allows a simulation of the surgery and then gives precise indications for the positioning of the distractor, which decreases the morbidity of
osteotomies in terms of damage to bone and dental germs, but also to nerves. Each bone fragment can be separately manipulated. Nonetheless, some standard distractors are not adequate for the treatment of complex mandibular deformities and custom-made specific distractors should be designed using this software. Current research works on a precise transfer from virtual planning to the operative room. Segmentation of soft tissues will soon allow a vision of the aesthetic final result, even if the lack of knowledge of growth dimension and of the influence of muscular forces will always limit the applicability of the system.

**Poster 24**

**Clinical Research on Restoration of Bone Defect in Cleft Alveolar with ß-Tricalcium Phosphate**

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Cleft Palate Center  
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**Purpose:** To evaluate the feasibility of using ß-tricalcium phosphate (ß-TCP) to repair bone defects of patients with alveolar cleft. To search for ideal artificial material as a substitution of autogenous iliac cancellous bone to repair alveolar cleft.

**Methods and Materials:** Twenty-four patients with alveolar cleft were chosen from oral and maxillofacial department of Beijing stomatological hospital. They were divided into two groups: group A (10 cases) and group B (14 cases). In group A, autogenous iliac cancellous bone was transplanted to repair alveolar cleft, and in group B, ß-TCP was transplanted. Observe the coalesced condition of the both groups one week after the operation. Compare the formation of the new bone between the two groups through the images of cone beam computer tomography (CBCT) and three-dimensional reconstruction taking pre-operation and 4-6 months post-operation.

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autogenous iliac cancellous bone was transplanted to repair alveolar cleft, and in group B, ß-TCP was transplanted. Observe the coalesced condition of the both groups one week after the operation. Compare the formation of the new bone between the two groups through the images of cone beam computer tomography (CBCT) and three-dimensional reconstruction taking pre-operation and 4-6 months post-operation.

**Conclusion:** There is no significant difference between ß-TCP and autogenous iliac cancellous bone in the formation of the new bone. As an ideal artificial material, ß-TCP can be used to repair the bone defect of alveolar cleft.

**Poster 25**

**Establishment of the Three-Dimensional Nasal Morphological Database in Han Ethnicity**

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**Department of Prosthodontics**
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**Purpose:** Recently CAD/CAM technology has been an alternative to traditional methods for reconstruction of facial defects. However, for the design of nasal prosthesis, it is impossible to get virtual nasal model from the patient himself. The purpose of this study was to establish a database of 3D nasal models, to meet the need of CAD of nasal prosthesis.

**Methods and Materials:** 1.1 Data Acquisition. Computed tomography and 3DSS-?were used to acquire original nasal shape. The software MIMICS and Geomagic Studio were employed to reconstruct and modify the 3D nasal models. 1.2 Development of database software to organize nasal shape models. The software was based on Microsoft Office Access, and was written by Microsoft Visual C++. OpenGL was used to realize the visualization of 3D data. In order to contain most of the nasal shapes in the database, multiple classifications of nasal shape were integrated. 1.3 Import all the acquired nasal models into the database to establish physical layer of database.

**Results:** 1.1 Data Acquisition. Computed tomography and 3DSS-?were used to acquire original nasal shape. The software MIMICS and Geomagic Studio were
employed to reconstruct and modify the 3D nasal models. 1.2 Development of database software to organize nasal shape models. The software was based on Microsoft Office Access, and was written by Microsoft Visual C++. OpenGL was used to realize the visualization of 3D data. In order to contain most of the nasal shapes in the database, multiple classifications of nasal shape were integrated. 1.3 Import all the acquired nasal models into the database to establish physical layer of database.

**Conclusion:** This study established a large 3D nasal morphological database for the first time in the world. The database would be an efficient solution for lack of original 3D shape date in the process of CAD of nasal defect.

**Poster 26**

**Surgical and Prosthetic Rehabilitation of the Severe Atrophic Mandible**

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**Private Practice**  
**Medical University of Vienna**  
**Division of Conservative Dentistry and Periodontics**  
**Department of Omfs**  
**Vienna, AT**

**Purpose:** Reconstruction and prosthetic rehabilitation of atrophic mandibles is still a challenge. In most cases we have not only a bony but also a soft tissue deficit, especially lack of keratinized tissue. We will present our staged surgical and prosthodontic reconstruction procedure in these patients.

**Methods and Materials:** Up to now we rehabilitated 5 patients with atrophic mandibles by guided insertion of four interforaminal short implants. The bone height was less than 12mm. In all cases the optimal prosthetic implant position was determined by backward planning according to the bone height. After correction of the soft tissue the final prosthetic work, a removable prosthesis on a bar, was incorporated.
Results: Up to now we rehabilitated 5 patients with atrophic mandibles by guided insertion of four interforaminal short implants. The bone height was less than 12mm. In all cases the optimal prosthetic implant position was determined by backward planning according to the bone height. After correction of the soft tissue the final prosthetic work, a removable prosthesis on a bar, was incorporated.

Conclusion: In the severe atrophic mandible, prosthetic rehabilitation with guided short implants and soft tissue augmentation is an option to give these patients a good masticatory function, better aesthetics and allows a more efficient oral hygiene, which is important for long term stability of implants.

Poster 27

Biological Stability of the Bone Surrounding the Dental Implant

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Purpose: Osseointegration, a direct combination of bone and dental implant, is considered as the optimal bone-implant interface. Since osteocytes are the most abundant cells in maturing and matured bone, these cells in the surrounding bone of the implant should be a crucial component for successful implantation. The present study aimed to examine histological alternation of osteocytes around the titanium implant in rats.

Methods and Materials: We investigated histological alternation of osteocytes around the implant by means of silver impregnation for visualization of the
lacunae and canaliculi of osteocytes and immunostaining for matrix metalloproteinases (MMPs), dentin matrix protein 1 (DMP1), and sclerostin, all of which are associated with the bone mineralization and remodeling.

Results: We investigated histological alternation of osteocytes around the implant by means of silver impregnation for visualization of the lacunae and canaliculi of osteocytes and immunostaining for matrix metallo-proteinases (MMPs), dentin matrix protein 1 (DMP1), and sclerostin, all of which are associated with the bone mineralization and remodeling.

Conclusion: These findings indicate that osteocytes play a key role in the intact healing process of the surrounding bone around the implants as a local regulator of bone remodeling around implants, which influences the prognosis of the implant. In addition, the surrounding bone has ultimately achieved the biological stability when immature bone had been replaced with a mature profile after the establishment of osseointegration. It is essential to plan the implant therapy and maintenance with consideration of early condition for a favorable prognosis of dental implantation. This study was supported by Grants-in-Aid for Young Scientists (B) from JSPS (No. 23792298 to M. H.).

Poster 28

Detection of the Factors Related to the Rehabilitation of Masticatory Function for Maxillofacial Prosthetic Patients

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Department of Gerodontontology
Department of Removable Prosthodontics
Nagoya, Aichi, JP

Purpose: Patients who have undergone maxillectomy or mandibulectomy result in serious oral dysfunctions such as difficulty with mastication, impaired speech and inability to swallow. For oral functional rehabilitation, the use of
maxillofacial prostheses should be required. The purpose of this study is to assess the masticatory performance of the maxillofacial patients with prostheses and to detect the factors contributing to the improvement of their masticatory function.

**Methods and Materials:** Sixty patients who had been treated at our maxillofacial prosthetic clinic participated in this study. The masticatory performance was evaluated using gummy jelly, wax cubes and a special dietary questionnaire. The occlusal force was measured using a Dental Prescale. In addition the patient’s age, gender, remaining teeth, occlusal support, type of defects, interocclusal relation and reconstruction were investigated. The contributing factors and their correlations were statistically analyzed.

**Results:** Sixty patients who had been treated at our maxillofacial prosthetic clinic participated in this study. The masticatory performance was evaluated using gummy jelly, wax cubes and a special dietary questionnaire. The occlusal force was measured using a Dental Prescale. In addition the patient’s age, gender, remaining teeth, occlusal support, type of defects, interocclusal relation and reconstruction were investigated. The contributing factors and their correlations were statistically analyzed.

**Conclusion:** These results suggest that occlusal support, occlusal contact points, remaining teeth, age, gender and interocclusal relation were detected as contributing factors towards improving the masticatory function in patient with maxillofacial prostheses. Further study on other contributing factors with larger sample size should be done.
A Continuum of Prosthodontic Rehabilitation in a Patient with Hemi-Maxillectomy

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Purpose: To highlight that factors for choice of treatment for patients can change at any point in time. For example general health and socio-economic circumstances may change for the better or for the worse. This patient illustrates the fact that versatility in treatment planning will enable clinicians to take advantage of the changing circumstances of our patients.

Methods and Materials: This is a case report of a 71 year old male patient who had a right hemi-maxillectomy due to a resection for the treatment of mucomycosis of the palate. During this surgical procedure he lost teeth from the canine in the second quadrant to the last molar in the first quadrant, also leaving him with a defect in the right maxillary buccal vestibule. The patient also had asthma, hypertension, urinary problems and diabetes mellitus type 2. Due to his medical condition and socio-economic status at the time, non-invasive cost effective treatment options were carried out for him. A removable upper denture with acrylic obturation was constructed. Retention was not optimal, and over the next 5 years, 3 dentures/obturators had been constructed. During this time, though, the patient showed much improvement regarding his health, and funds were obtained to enable implant rehabilitation to be undertaken. Four implants were placed and he was rehabilitated with a bar-retained implant supported denture. After a year he complained about the retentiveness of this prosthesis. The bar-retained prosthesis was then converted to a fixed ISP with a removable obturator.

Results: This is a case report of a 71 year old male patient who had a right hemi-maxillectomy due to a resection for the treatment of mucomycosis of the palate. During this surgical procedure he lost teeth from the canine in the second quadrant to the last molar in the first quadrant, also leaving him with a defect in the right maxillary buccal vestibule. The patient also had asthma,
hypertension, urinary problems and diabetes mellitus type 2. Due to his medical condition and socio-economic status at the time, non-invasive cost effective treatment options were carried out for him. A removable upper denture with acrylic obturation was constructed. Retention was not optimal, and over the next 5 years, 3 dentures/obturators had been constructed. During this time, though, the patient showed much improvement regarding his health, and funds were obtained to enable implant rehabilitation to be undertaken. Four implants were placed and he was rehabilitated with a bar-retained implant supported denture. After a year he complained about the retentiveness of this prosthesis. The bar-retained prosthesis was then converted to a fixed ISP with a removable obturator.

**Conclusion:** In this patient his health and socio-economic status played a large role in his initial choice of treatment. Later with improvement in his health and assistance from the government with funds for his treatment, his treatment options could be taken to another level.
Evaluation of Age and Look with the Iphone®: A Pilot Study

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Freiburg, Baden-Württemberg, DE

Purpose: Esthetics plays a major role in society as well as in medicine. The face is usually the central part of a visual examination. Esthetical sensation is affected by cultural and personal experiences. However, it is very difficult to evaluate the esthetics of a person in an unbiased manner. In this study, two iPhone® (Version 4, Apple, Cupertino, USA) applications are tested regarding their use as an evaluation tool for age and look.

Methods and Materials: Ten subjects (Caucasian, 6 females, 4 males, mean age 42.13 ± 22.55 years; min. 13.50 years, max. 86.10 years) were randomly chosen and frontal portraits of each subject were taken. The apps PhotoAge™ and PhotoGenic™ (Version 1.5, ©2012, Percipo Inc., San Francisco, CA, USA) were applied to evaluate the age and look, respectively. For comparison, 100 randomly selected raters (60 females, 40 males, mean age 29.27 ± 1.31 years; min. 20, max. 60 years) were asked to evaluate the same subjects. Statistical analysis (linear mixed models with random intercepts; least square means, 95-percent confidence intervals) was implemented with a level of statistical significance of p<0.05.

Results: Ten subjects (Caucasian, 6 females, 4 males, mean age 42.13 ± 22.55 years; min. 13.50 years, max. 86.10 years) were randomly chosen and frontal portraits of each subject were taken. The apps PhotoAge™ and PhotoGenic™ (Version 1.5, ©2012, Percipo Inc., San Francisco, CA, USA) were applied to evaluate the age and look, respectively. For comparison, 100 randomly selected raters (60 females, 40 males, mean age 29.27 ± 1.31 years; min. 20, max. 60 years) were asked to evaluate the same subjects. Statistical analysis (linear mixed models with random intercepts; least square means, 95-
percent confidence intervals) was implemented with a level of statistical significance of p<0.05.

**Conclusion:** Within the limitations of this study the following conclusion can be drawn: The evaluation of age with PhotoAge™ seems to be a reliable procedure; however, with regard to the evaluation of look, there is a statistically significant difference. PhotoGenic™ rates the subject’s look with a higher score (more attractive) than the human raters. Female raters tend to slightly higher scores. In contrast, the subject’s sex and age seem to be irrelevant; however, the rater’s profession has an impact on the evaluation of look.

**Poster 31**

**Evaluation of Puros® Use in Post-Extractive Sites. Radiographic and Histological Analysis**

**Pera, Paolo*; Musante, Bruno; Menini, Maria; Romano, Filomena; Fulcheri, Ezio; Baldi, Domenico**

**Genoa University**

**Department of Surgical Sciences**

**Genoa, IT**

**Purpose:** The aim of this study is to investigate the in vivo efficacy of Puros® cancellous particulate allograft bone (Zimmer dental®) in the regeneration of post-extractive sites.

**Methods and Materials:** 12 molar or premolar sites (10 patients) with teeth to be extracted were selected. A minimally invasive extraction of the teeth was performed. The following day the patients underwent a TC Cone-Beam investigation at the level of post-extractive sites to evaluate height and thickness of alveolar sockets. 7 days after the extraction, Puros® cancellous particulate allografts were inserted into the elected sites together with a membrane (CopiOs® Zimmer Dental®). After 4 months, a TC Cone-Beam of the sites was performed to quantitatively assess actually gained bone thickness. After 5 months, samples of the regenerated sites were taken thanks to bone drills (Trephine Bur 2mm ID 3 mm ED, Biomet 3i®) and an implant was
contextually inserted in each regenerated site. The samples were histologically analyzed to qualitatively evaluate bone regeneration.

**Results:** 12 molar or premolar sites (10 patients) with teeth to be extracted were selected. A minimally invasive extraction of the teeth was performed. The following day the patients underwent a TC Cone-Beam investigation at the level of post-extractive sites to evaluate height and thickness of alveolar sockets. 7 days after the extraction, Puros® cancellous particulate allografts were inserted into the elected sites together with a membrane (CopiOs® Zimmer Dental®). After 4 months, a TC Cone-Beam of the sites was performed to quantitatively assess actually gained bone thickness. After 5 months, samples of the regenerated sites were taken thanks to bone drills (Trephine Bur 2mm ID 3 mm ED, Biomet 3i®) and an implant was contextually inserted in each regenerated site. The samples were histologically analyzed to qualitatively evaluate bone regeneration.

**Conclusion:** This study establish a scientifically reliable method to study bone regeneration in post extractive-sites. The radiographic and histological analyses underline an optimal bone regeneration, both in terms of quality and quantity using Puros®. Additional studies are needed, involving a greater number of patients and comparative graft materials to validate the use of this material.

**Poster 32**

**How Can You Help Your Gagging Patients?**

Van Linden Van Den Heuvell, Chiquit*
University Medical Center Groningen, The Netherlands
Oral and Maxillofacial Surgery and Special Dental Care Groningen, NL

**Purpose:** Implant retained dentures may be considered THE solution for patients suffering from dental gagging. But, on the other hand, the process of applying these devices may reveal gagging problems to such an extent that special approaches will be necessary. Unfortunately, a ‘treatment of choice’ seems to be lacking, since research on dental gagging is almost exclusively restricted to case studies. More basically, reliable and valid procedures for evaluating any treatment do not exist. So notwithstanding the prevalence and
inconveniences of dental gagging, knowledge about etiology, incidence and treatment is minimal.

**Methods and Materials:** Starting point in this presentation will be an overview of our knowledge up to this moment about dental gagging. Since 2004 the Center of Special Dental Care at the University Medical Center of Groningen has been working on the development of a diagnostic instrument. The work being still in progress, the Center's experience in treating patients with dental gagging has grown considerably.

**Results:** Starting point in this presentation will be an overview of our knowledge up to this moment about dental gagging. Since 2004 the Center of Special Dental Care at the University Medical Center of Groningen has been working on the development of a diagnostic instrument. The work being still in progress, the Center's experience in treating patients with dental gagging has grown considerably.

**Conclusion:** - Dental implants are not a solution for EVERY patient. - Removable dentures are preferable to dental implants, if possible. - Implantology trajectory should be preceded or accompanied by a training to enhance the patient’s control over the gag reflex. - Referral to a center of special dental care should be for alleviation of the problem, not for getting dental implants.

**Poster 33**

**Nasal Prosthetics and the Management of Nasal Defects**

Vest, Allison*
Medical Art Prosthetics
Anaplastology
Dallas, TX USA

**Purpose:** This poster will review the different retention types for nasal prostheses; adhesive, implant and anatomical retention.

**Methods and Materials:** An evaluation of the patient’s lifestyle, status of tissue and long terms goals must be evaluated in the treatment planning of a nasal
prosthesis. Various silicones and design elements will be displayed according to the individualized treatment plan of the displayed cases.

**Results:** An evaluation of the patient’s lifestyle, status of tissue and long terms goals must be evaluated in the treatment planning of a nasal prosthesis. Various silicones and design elements will be displayed according to the individualized treatment plan of the displayed cases.

**Conclusion:** If all the patient’s options are weighed then a successful prosthesis can be designed, fabricated and fitted to meet the patient’s needs.

**Poster 34**

**Intelligent Simulation and Rapid Manufacture for Facial Prostheses: Clinical Reports**

**Wu, Guofeng*, Yimin Zhao**  
**School of Stomatology, Fourth Military Medical University**  
**Department of Prosthodontics**  
**Xi’an, CN**

**Purpose:** The facial defects due to accident war injuries and tumor resections are challenges for physicians, and facial prostheses are considered as an ideal restoration approach. However, prostheses normally are generated by hands and need more than 7d for the treatment. This presentation introduces a digital solution for the intelligent simulation and rapid manufacture of facial prostheses, which was firstly achieved by FMMU, Xi’an, China and has proved its good effects and high efficiency.

**Methods and Materials:** This digital solution developed its own software system, which contains three major units: digital facial impression, individual simulation and of prostheses printing. For the unilateral facial defects (e.g., orbital defects), an optical scanner was invented to capture color digital models of patient’s facial contours within 3 seconds, which was copied and mirrored to generate the facial prosthesis contour data. For the bilateral facial defects (e.g. both ears loses) or the multi-organs facial defects, a 3D models database of Chinese facial organs (Ears and Noses) was built and offered the parentage data for the digital restoration. The system continued to adapt the prostheses data
to the edge areas of the facial defects and defined the real character of the definitive prostheses. The system finalized the “negative pattern” data according to the detailed information of the facial prostheses and exported it to the Rapid Prototyping (RP) machine. The machine eventually sliced the data and customized the negative pattern of facial prostheses. The technician flaked the negative pattern with silicone material and produces the definitive facial prosthesis directly.

**Results:** This digital solution developed its own software system, which contains three major units: digital facial impression, individual simulation and of prostheses printing. For the unilateral facial defects (e.g., orbital defects), an optical scanner was invented to capture color digital models of patient’s facial contours within 3 seconds, which was copied and mirrored to generate the facial prosthesis contour data. For the bilateral facial defects (e.g. both ears loses) or the multi-organs facial defects, a 3D models database of Chinese facial organs (Ears and Noses) was built and offered the parentage data for the digital restoration. The system continued to adapt the prostheses data to the edge areas of the facial defects and defined the real character of the definitive prostheses. The system finalized the “negative pattern” data according to the detailed information of the facial prostheses and exported it to the Rapid Prototyping (RP) machine. The machine eventually sliced the data and customized the negative pattern of facial prostheses. The technician flaked the negative pattern with silicone material and produces the definitive facial prosthesis directly.

**Conclusion:** The new approach may replace the traditional way of facial prostheses in the future and benefit the spread of facial prosthetics in clinic.

**Poster 35**

**The Fabrication Steps of an Open Hollow Maxillary Obturator with Metal Framework**

Zhang, Mengran*, Li, Jinghuan; Ren, Weihong; Zou, Shiquan
Beijing Stomatological Hospital
Department of Prosthodontics
Beijing, CN
**Purpose:** to introduce a lab method for fabrication of maxillary obturator

**Methods and Materials:** the fabrication steps of maxillary open hollow obturator with metal framework were divided into five parts and discussed. 1 Framework fabrication The net structure of the framework should be loose and cover as much as possible, but in this design, the bone defect area should be avoided. 2 Functional impression Temporary plate should be fabricated on the model after the insertion of the framework which had been tried in the patient’s oral cavity. Polyvinyl siloxane was then applied to obtain the functional impression. 3 Wax pattern forming of hollow obturator After trimming and undercut filling, the defect area was evenly covered with a layer of red wax, and then quartz sand and plaster were mixed according to the ratio of 1:1 and poured into the defect area on the wax to simulate the original soft and hard palate and alveolar ridge of the patient. 4 Arrangement of artificial teeth Basic principles are same as those of removable partial denture. After the arrangement, part of the wax covered the sand-plaster compound was removed and two holes were drilled to 8-10mm depth for the insertion and the cementation of the stainless steel wire into the compound. 5 Finishing of the obturator Mixed methods was applied that the framework and plaster model were embedded in the lower flask while the artificial teeth, wax plate and the stainless steel wire were exposed and embedded in the upper flask. After polymerization, the top of the obturator was removed along with the quartz sand-plaster compound and the stainless steel wire.

**Results:** the fabrication steps of maxillary open hollow obturator with metal framework were divided into five parts and discussed. 1 Framework fabrication The net structure of the framework should be loose and cover as much as possible, but in this design, the bone defect area should be avoided. 2 Functional impression Temporary plate should be fabricated on the model after the insertion of the framework which had been tried in the patient’s oral cavity. Polyvinyl siloxane was then applied to obtain the functional impression. 3 Wax pattern forming of hollow obturator After trimming and undercut filling, the defect area was evenly covered with a layer of red wax, and then quartz sand and plaster were mixed according to the ratio of 1:1 and poured into the defect area on the wax to simulate the original soft and hard palate and alveolar ridge of the patient. 4 Arrangement of artificial teeth Basic principles are same as those of removable partial denture. After the arrangement, part of the wax covered the sand-plaster compound was removed and two holes were drilled to 8-10mm depth for the insertion and the cementation of the stainless steel wire into the compound. 5 Finishing of the obturator Mixed methods was applied that the framework and plaster model were embedded in the lower flask while the artificial teeth, wax plate and the stainless steel wire were removed.
exposed and embedded in the upper flask. After polymerization, the top of the obturator was removed along with the quartz sand-plaster compound and the stainless steel wire.

**Conclusion:** Following above procedures an open hollow maxillary obturator can be effectively fabricated.

**Poster 36**

**The Restoration of a Nasal Defect Accompany with Missing Maxillary Anterior Teeth- Case Report**

Zou, Shiquan*, Ren, Weihong; Zhang, Mengran; Zhao, Yang

Beijing, CN

**Purpose:** To restore both the nasal defect and the missing teeth.

**Methods and Materials:** 1 first impression and study models 2 oral cavity preparation and impression 3 framework design and fabrication 4 framework try-in and anterior teeth arrangement 5 oral cavity part finishing 5 facial impression 6 nasal prostheses framework design and fabrication 7 nasal part finishing

**Results:** 1 first impression and study models 2 oral cavity preparation and impression 3 framework design and fabrication 4 framework try-in and anterior teeth arrangement 5 oral cavity part finishing 5 facial impression 6 nasal prostheses framework design and fabrication 7 nasal part finishing

**Conclusion:** Bar-clips and magnetic attachments can be very useful in facial defect restoration.
The Experience of an Interdisciplinary Team in the Treatment of Oncologic Patients with Craniomaxillofacial Defects

Zúñiga, Sergio*, Lopera, Juan Fernando; Monroy, Clara; Toro, Mauricio; Valencia, Natalia; Rios, Tatiana; Arango, Alejandro
Instituto de Cancerología Idc Las Americas
Medellin, CO

Purpose: Setting up an interdisciplinary team is crucial to correctly rehabilitate craniomaxillofacial oncologic patients. At the Instituto de Cancerología in Las Americas Hospital, Medellin, Colombia, we have developed a truly interdisciplinary team that includes surgeons, prosthodontist, anaplastologist and engineers that work together to develop integral rehabilitation solutions for oncologic patients with craniomaxillofacial defects.

Methods and Materials: This partnership has allowed the surgeons easy access to rapid prototyping and Computer Numerical Control (CNC) capabilities, which have provided tools to a better diagnosis and planning of the surgical procedure, with anatomic models of the defects for the development of custom surgical solutions. With the close relationship between engineers and surgeons, custom instrumentation has also been developed, as well as implants and fixation techniques that allow for faster and more precise reconstruction with more predictable outcomes.

Results: This partnership has allowed the surgeons easy access to rapid prototyping and Computer Numerical Control (CNC) capabilities, which have provided tools to a better diagnosis and planning of the surgical procedure, with anatomic models of the defects for the development of custom surgical solutions. With the close relationship between engineers and surgeons, custom instrumentation has also been developed, as well as implants and fixation techniques that allow for faster and more precise reconstruction with more predictable outcomes.
**Conclusion:** Having one interdisciplinary team treat the cases integrally, allows for better patient-follow-up and for making better decisions regarding surgical approach, with the main objective being the patient’s rehabilitation.

**TOPIC: Head and Neck Cancer Rehabilitation**

**Poster 38**

**Treatment of Midfacial Defect: A Case Report**

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Gulhane Military Medical Academy Haydarpasa Training Hospital  
Prosthodonty  
Istanbul, TR

**Purpose:** Facial prostheses act as an alternative and supplement for the surgical reconstruction of the patients with facial defects. Rehabilitation of midfacial defects always been a complicated issue for maxillofacial prosthodontists. These midfacial defects lead to functional and cosmetic deficiencies. One of the causes of such defects is midline lethal granuloma, which is a destructive granulomatous lesion of uncertain etiology, involving the nose, paranasal sinuses and the palate. Presented here is a clinical report of a 67 year-old male patient diagnosed to have lethal midline granuloma, who was referred to the GATA Hpasa Training Hospital Dental Service.

**Methods and Materials:** The patient had a severe midfacial defect involving the nose, the paranasal sinuses, the palate and upper lip and the soft tissues of the face. Although the lesion was not of the rapidly progressive type at the time of rehabilitation, the nonspecific inflammatory process was persisting. Patient was rehabilitated implant supported facial prostheses.

**Results:** The patient had a severe midfacial defect involving the nose, the paranasal sinuses, the palate and upper lip and the soft tissues of the face. Although the lesion was not of the rapidly progressive type at the time of rehabilitation, the nonspecific inflammatory process was persisting. Patient was rehabilitated implant supported facial prostheses.

**Conclusion:** Implant retained midfacial prosthesis also provided acceptable aesthetics and psychological benefit to the patient.
Poster 39

Fixed and Removable Implant Prosthodontic Solutions for Maxillectomy Defects

Beier, Ulrike Stephanie*; Kloss, Frank; Rasse, Michael; Grunert, Ingrid
Innsbruck Medical University
Department of Restorative and Prosthetic Dentistry
Department for Cranio-Maxillofacial and Oral Surgery
Innsbruck, AT

Purpose: Integration of implant therapy in conjunction with different prostheses designs for rehabilitation of maxillectomy defects are presented.

Methods and Materials: Three clinical cases of patients with maxillectomy defects are presented to compare various implant supported and implant retained prosthesis with different designs from initial therapy to definitive treatment. Fixed implant supported prosthesis and removable implants supported prosthesis for rehabilitation of maxillectomy defects are compared. Discussion of indications, limitations and outcomes of each design are described to assist the clinician with decision making and treatment prognosis.

Results: Three clinical cases of patients with maxillectomy defects are presented to compare various implant supported and implant retained prosthesis with different designs from initial therapy to definitive treatment. Fixed implant supported prosthesis and removable implants supported prosthesis for rehabilitation of maxillectomy defects are compared. Discussion of indications, limitations and outcomes of each design are described to assist the clinician with decision making and treatment prognosis.

Conclusion: Application of proper prosthesis design in conjunction with implant therapy can result in favorable long term prognosis of maxillectomy defects.
Mandibular Motor Control Evaluation in Hemi-Mandibulectomy Patients Using a 'Reach-And-Hold' Task

Bellia, Elisabetta*; Gassino, Gianfranco; Notaro, Vincenzo; Roatta, Silvestro; Carossa, Stefano; Bassi, Francesco
University of Turin-Dental School
Biomedical Science and Human Oncology Department,
Prosthodontic Section
Turin, IT

Purpose: The aim of this project is to present a system for the evaluation of the motor performance of the mandible based on “reaching” tasks, to assess its reliability in a group of healthy subjects, to define and to evaluate clinically a protocol useful for head and neck cancer patients.

Methods and Materials: All the hemy-mandibulectomized patients treated in our department who could and accepted to participate to this protocol had been evaluated by using a kinesiography-monitored reach-and-hold task.

Results: All the hemy-mandibulectomized patients treated in our department who could and accepted to participate to this protocol had been evaluated by using a kinesiography-monitored reach-and-hold task.

Conclusion: The ease and the good repeatability of this procedure allow to evaluate the motor control performance in different clinical situations. It can provide an important tool for monitoring and support of the maxillofacial rehabilitation giving an objective assessment of the therapeutic improvements. This study has been financed by grants from Regione Piemonte. The described technique is under a patent by the University of Torino.
Poster 41

Prosthetic Approach After Total Glossectomy: A Case Report

Bemer, Julie*; Dolivet Gilles, Toussaint Bruno, Lacave Marie Laure, Maire François
Centre Alexis Vautrin, Nancy, France
Department of Cervicofacial Surgery and Odontology
Nancy, FR

Purpose: The oral carcinoma often affects the tongue, floor of mouth and the base of the mandible. Tongue is one of the entities anatomico-physiological major performing essential functions such as swallowing, speech. Postoperatively, patients with a total glossectomy have difficulty or inability to control these functions and a prognosis sufficiently compromised. A surgical reconstruction associated with prosthetic rehabilitation and speech therapy approach, can reduce these functional problems, but remains a challenge.

Methods and Materials: The oral rehabilitation with implanted supported mandibular prosthesis of a total toothless 52-year-old woman, treated for squamous cell carcinoma of floor of mouth by surgery and radiotherapy/curietherapy, was exposed step by step.

Results: The oral rehabilitation with implanted supported mandibular prosthesis of a total toothless 52-year-old woman, treated for squamous cell carcinoma of floor of mouth by surgery and radiotherapy/curietherapy, was exposed step by step.

Conclusion: The prosthetic design after total glossectomy stays a very difficult aspect of the maxillofacial prosthesis. The combination of the prosthesis to the advancement of reconstructive surgery, providing improved swallowing and speech, oral feeding is facilitated, the tissues are protected. Finally, the quality of life of the patient improved, but needs to be evaluated more objectively.
Poster 42

Clinical Case of Patient with Oral Cancer

Dahlin, Christina*
Solna, SE

Purpose: Technical solution rehabilitation of patient with oral cancer

Methods and Materials: Combination obturator epithesPhotis

Results: Combination obturator epithesPhotis

Conclusion: See above

Poster 43

Impact of Obturators on Quality of Life and Speech in Patients with Acquired Palatal Defect at Various Stages of Rehabilitation

Dholam, Kanchan*; Sandeep Gurav, Karthik Bhatt, Priyanka Somani
Tata Memorial Hospital
Dental & Prosthetic Dept
Mumbai, IN

Purpose: Patients rehabilitated with maxillary obturators following maxillectomy were evaluated for quality of life and assessment of speech during the various stages of rehabilitation.

Methods and Materials: The evaluation of QOL and speech is planned to be carried out in four phases. Phase I: - Pre-operative phase, Phase II: - Immediate post surgical phase, Phase III: - Interim phase Phase IV: - Definitive phase. Quality of life for each patient will be assessed by using the quality-of-life core
questionnaire EORTC QLQ-C30 and the head and neck module EORTC QLQ-H & N 35 of the European Organization for the Research and Treatment of Cancer at all four phases. Speech evaluation: - Speech will be evaluated at different phases of study by speech therapist. Patient’s speech will be assessed with the help of Dr. Speech Software Version 4 (Tiger DRS, Inc., Seattle) with and without obturator in all the stages. Speech parameters maximum, minimum phonation (Hz), Maximum, minimum intensity (dB), phonation range (Hz), habitual phonation (Hz), jitter (%), shimmer (%), MPT (secs), s/z ratio were recorded. Statistical analysis will be done by summation of scores of item in each scale was done. The presence of problem in each scale of QLQ30 and HNQOL35 was defined as per number of items involved in each scale. Depending on the aggregated scores, score less than the number of item was considered ‘problem absent’ and more as ‘problem present’. Except for global health status (QL) the reverse was true. The speech parameters will be analyzed using paired T-test was used to test the significance at all the stages of prosthetic rehabilitation as mentioned. A p-value <0.01 was considered to be significant.

Results: The evaluation of QOL and speech is planned to be carried out in four phases. Phase I: - Pre-operative phase, Phase II: - Immediate post surgical phase, Phase III: - Interim phase Phase IV: - Definitive phase. Quality of life for each patient will be assessed by using the quality-of-life core questionnaire EORTC QLQ-C30 and the head and neck module EORTC QLQ-H & N 35 of the European Organization for the Research and Treatment of Cancer at all four phases. Speech evaluation: - Speech will be evaluated at different phases of study by speech therapist. Patient’s speech will be assessed with the help of Dr. Speech Software Version 4 (Tiger DRS, Inc., Seattle) with and without obturator in all the stages. Speech parameters maximum, minimum phonation (Hz), Maximum, minimum intensity (dB), phonation range (Hz), habitual phonation (Hz), jitter (%), shimmer (%), MPT (secs), s/z ratio were recorded. Statistical analysis will be done by summation of scores of item in each scale was done. The presence of problem in each scale of QLQ30 and HNQOL35 was defined as per number of items involved in each scale. Depending on the aggregated scores, score less than the number of item was considered ‘problem absent’ and more as ‘problem present’. Except for global health status (QL) the reverse was true. The speech parameters will be analyzed using paired T-test was used to test the significance at all the stages of prosthetic rehabilitation as mentioned. A p-value <0.01 was considered to be significant.

Conclusion: Ongoing study, results of first fifteen patients will be discussed in this poster
Implant Retained Dental Rehabilitation in Head and Neck Cancer Patients: An Assessment of Success and Failure

Dholam, Kanchan*; Pusalkar, H.; Yadav, P.; Quazi, G.; Sheety, K.; Somani, P.
Tata Memorial Hospital
Department of Dental & Prosthetic Surgery
Mumbai, IN

Purpose: Dental implants (DI) facilitates functional rehabilitation of head and neck cancer (HNC) patients after treatment comprising of excision, reconstruction, radiotherapy and chemotherapy. Success of DI in these patients following treatment remains unclear. This study aims to evaluate rate of osseointegration (ROI) and overall success rate (OSR) of DI placed in native and grafted jaws with or without radiotherapy at 5 years follow up in Indian HNC patients.

Methods and Materials: Thirty HNC patients from various socioeconomic strata were accrued for the study at Tata Memorial Hospital, Mumbai, India. These patients were rehabilitated with implant retained dental prosthesis (IRDP) after completion of treatment for cancer. Total of 85 implants were inserted in seventeen native and thirteen grafted jaws. Nineteen patients received radiation therapy. A five year follow up ROI and OSR of DI is reported. The assessment is done by clinical examination and radiological evaluation.

Results: Thirty HNC patients from various socioeconomic strata were accrued for the study at Tata Memorial Hospital, Mumbai, India. These patients were rehabilitated with implant retained dental prosthesis (IRDP) after completion of treatment for cancer. Total of 85 implants were inserted in seventeen native and thirteen grafted jaws. Nineteen patients received radiation therapy. A five year follow up ROI and OSR of DI is reported. The assessment is done by clinical examination and radiological evaluation.

Conclusion: DI contributes to the possibility of achieving proper stability and retention of dental prosthesis in compromised resected, reconstructed and irradiated jaws. Thus the failure rate of 23.53% for DI placed in head and neck cancer patients at 5 years follow-up is acceptable.
Evaluation of Masticatory Efficiency of an Obturator Prosthesis

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Master of Oral Rehabilitation
Puebla, MX

Purpose: The purpose of this study is evaluate the masticatory efficiency in the hemimaxilla with natural teeth and orthopedic obturator prosthesis to a patient in the growing stage. The obturator prosthesis was design a that will work for a period of three years with functional precision and esthetic, and avoid changing it every year to reduce the discomfort and risks of making the impressions.

Methods and Materials: A seven year old female patient who had a left hemimaxillectomy surgery due to an agressive ossifying firebomb benign. Two years later, an obturator prosthesis was desinged to function as an expander by placing a hass type screw in the midline al the height of the medial distance of the prosthesis. Theses screw must be given one turn every 30 days to compesate the growing of the maxillary and jaw so the harmony or compatibility of the bone will not be lost since the remaining hemimaxillary has a high percentage of atrophy. And was evaluate the masticatory performance, when comparing the hemimaxilla healthy with the area rehabilitated with obturator prosthesis with acrylic teeth mark Bioton, using the screening technique with artificial test, to develop silicone by condensation tablets (Optocil, Bayer) with measures of 20 mm diameter, 5 millimeter thick and 2.3 grams. The efficiency was calculated from the number masticatory strokes, was 20 required to produce a standard degree of pulverization, in the rehabilitated area with the obturator and hemimaxilla with natural teeth. Technique was used for screening, with a first tamis sieve opening 2.8 and the second sieve opening of 1.4, and was weighed in a precision moves from 1 gram. Was made a pilot test for to teach the technique.

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type screw in the midline at the height of the medial distance of the prosthesis. Theses screw must be given one turn every 30 days to compensate the growing of the maxillary and jaw so the harmony or compatibility of the bone will not be lost since the remaining heminaxillary has a high percentage of atrophy. And was evaluate the masticatory performance, when comparing the hemimaxilla healthy with the area rehabilitated with obturator prosthesis with acrylic teeth mark Bioton, using the screening technique with artificial test, to develop silicone by condensation tablets (Optocil, Bayer) with measures of 20 mm diameter, 5 millimeter thick and 2.3 grams. The efficiency was calculated from the number masticatory strokes, was 20 required to produce a standard degree of pulverization, in the rehabilitated area with the obturator and hemimaxilla with natural teeth. Technique was used for screening, with a first tamis sieve opening 2.8 and the second sieve opening of 1.4, and was weighed in a precision moves from 1 gram. Was made a pilot test for to teach the technique.

**Conclusion:** The design is considered success because it fulfilled the expectations designed for a period of the three years with minimal adjustments sealed, avoiding change it every year, and the functional results were acceptable, therefore this project is considered as an alternative to the adjustable obturator prosthesis reducing all the inconveniences that this one implies in patients undergoing the stage of growth. The patient emotional stability was retuned, which allowed her social integration.
The Efficiency of the Palatal Augmentation Prosthesis on Swallowing

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Niigata University Graduate School of Medical and Dental Sciences
Division of Dysphagia Rehabilitation
Niigata, JP

**Purpose:** Tongue plays an important role in ingestive behaviors including chewing and swallowing. During chewing, tongue mixes the food with saliva to make a bolus, resulting in propelling it into the esophagus through the pharynx during swallowing. Therefore, dysfunction or deficit of tongue may cause a critical situation such as aspiration and choking. The palatal augmentation prosthesis (PAP) may be applied to compensate for the impaired contact between the tongue and hard palate and propulsion of the bolus into the pharynx. Though it was reported PAP improved the oral stage of swallowing, the efficiency of PAP on the pharyngeal swallowing has not been fully clarified. The aim of this research is to evaluate the effects of the PAP application on oropharyngeal swallowing in the post-glossectomy patients.

**Methods and Materials:** PAP was applied to six patients who had undergone glossectomy because of tongue carcinoma. Videofluoroscopy (VFSS) were laterally recorded to evaluate the bolus propulsion and hyoid bone movement during swallowing. Pressure of tongue surface against the hard palate or PAP was also measured by our original-made sensor sheet with five measuring points. They were all compared between with and without PAP.

**Results:** PAP was applied to six patients who had undergone glossectomy because of tongue carcinoma. Videofluoroscopy (VFSS) were laterally recorded to evaluate the bolus propulsion and hyoid bone movement during swallowing. Pressure of tongue surface against the hard palate or PAP was also measured by our original-made sensor sheet with five measuring points. They were all compared between with and without PAP.

**Conclusion:** These results suggested that the rehabilitation with PAP was useful for oropharyngeal dysphagia after glossectomy.
Finite Element Analysis of the Effect of Flabby Gum on the Stability of the Record Base for Edentulous Patients with a Hemi-Maxillectomy

Ino, Teruo*; Iwase, Naoki; Endo, Satoshi; Watanabe, Akira; Noro, Hiromasa; Iizuka, Tomoaki; Teshigawara, Daisuke; Fujisawa, Masanori
Meikai University School of Dentistry
Division of Fixed Prosthodontics
Department of Restorative & Biomaterials Sciences
Sakado, Saitama, JP

**Purpose:** Flabby gum, which makes the record base more unstable and also makes the obturator denture more difficult to be fabricated, is frequently observed in the edentulous patients with a hemi-maxillectomy. Therefore, the loading position has been studied to lessen the deflection of the record base during the registration of jaw relation for edentulous patients with flabby gum.

**Methods and Materials:** A three-dimensional finite element method was used for the analysis. The analyzed model had the remaining hard palate and residual ridge that were based on an edentulous patient with a hemi-maxillectomy defect. The model contained a lining mucosa, and maxillary record base. The thickness of the mucosa was 2.0 mm in the middle, 3.0 ~ 5.0 mm in the lateral side of the palate, and 3.0 mm in the residual ridge due to the averaged normal residual ridge. In the model for the condition with flabby gum, the thickness of anterior ridge was increased to 5.0 mm. The nodes corresponding to the surface on the bone side were constrained in all directions. A load of 5 N vertical to the occlusal plane was simulated to be applied.

**Results:** A three-dimensional finite element method was used for the analysis. The analyzed model had the remaining hard palate and residual ridge that were based on an edentulous patient with a hemi-maxillectomy defect. The model contained a lining mucosa, and maxillary record base. The thickness of the mucosa was 2.0 mm in the middle, 3.0 ~ 5.0 mm in the lateral side of the
palate, and 3.0 mm in the residual ridge due to the averaged normal residual ridge. In the model for the condition with flabby gum, the thickness of anterior ridge was increased to 5.0 mm. The nodes corresponding to the surface on the bone side were constrained in all directions. A load of 5 N vertical to the occlusal plane was simulated to be applied.

**Conclusion:** Flabby gum may increase the movement of record base. To lessen the lateral displacement of the record base, the center of the force distribution should be loaded more posteriorly than that for the patients without flabby gum.

**Poster 48**

**Prosthodontic Rehabilitation after Reconstruction of Continuous Mandibular Defect with Free Vascularised Fibula Graft- Case Report**

**Korduner, Eva-Karin**

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**Malmö, SE**

**Purpose:** Case report of prosthetic rehabilitation of a 31 year old woman, partially edentulous in the lower jaw after being resected and reconstructed with a fibular graft in 2009 because of a gigantic ameloblastoma.

**Methods and Materials:** The patient was treated with a partial mandibulectomy and primary reconstructed with a microvascular fibular graft. No soft tissue was grafted. After healing and resurgery because of a pseudarthrosis, a two-stage implant surgery was made. Implants were installed in tooth position 35, 36, 33, 32, 42, 44, 46 and 47. Initially, the patient had difficulties in chewing and she could only eat a soft diet. She had a normal oral continence. The patient also had compromised speech because of reduced function of the tongue and an inability to maintain a normal lower lip posture. She mainly wanted to have teeth to improve her chewing ability. The remaining teeth were 18-28 and 34 and 37. The tooth 26 was extracted because it had elongated in contact with the gingiva in the opposite jaw. It was not possible to reduce the tooth enough by grinding.
**Results:** The patient was treated with a partial mandibulectomy and primary reconstructed with a microvascular fibular graft. No soft tissue was grafted. After healing and resurgery because of a pseudarthrosis, a two-stage implant surgery was made. Implants were installed in tooth position 35, 36, 33, 32, 42, 44, 46 and 47. Initially, the patient had difficulties in chewing and she could only eat a soft diet. She had a normal oral continence. The patient also had compromised speech because of reduced function of the tongue and an inability to maintain a normal lower lip posture. She mainly wanted to have teeth to improve her chewing ability. The remaining teeth were 18-28 and 34 and 37. The tooth 26 was extracted because it had elongated in contact with the gingiva in the opposite jaw. It was not possible to reduce the tooth enough by grinding.

**Conclusion:** The short term outcome of the surgical and prosthetic treatment was successful and contributed to a better quality of life for the patient. The risk of tumor recurrence is considered to be low because of the radical surgery.

**Poster 49**

**Reconstruction of Continuous Mandibular Defect with Free Vascularised Fibula Graft: A Comparison of Two Different Techniques**

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**Purpose:** This is a description of two different techniques to section the fibular graft and an attempt to compare the outcome of the planning.

**Methods and Materials:** Two different patients were treated with complexed reconstruction of mandibular continuous defects. One patient using computerized planning technique (Surgicase, Materialize®, Belgium) and one using a non-customized template
Results: Two different patients were treated with complexed reconstruction of mandibular continuous defects. One patient using computerized planning technique (Surgicase, Materialize®, Belgium) and one using a non-customized template.

Conclusion: Computer assisted preoperative planning gives you opportunities to come well prepared to the operating theatre. When doing the contouring of the new mandible it is also a more precise work to do it customized. On the other hand it is a more time consuming and more expensive technique compared to the non-customized template technique. Though with limited experience we believe that the computer assisted method could be preferred when dealing with more complex anatomic structures or when the facial proportions are deviating much from the average. Until the technique has developed to become more user friendly and less expensive we prefer the non-customized template method when treating less complex continuous mandibular defects.

Poster 50

Facial Prostheses Retained on Basally Osseointegrated Implants (Boi) – Case Report

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Purpose: The purpose of this report was to demonstrate option of facial reconstruction with basally implants (BOI) retained facial prostheses in patient after tumor ablation.

Methods and Materials: Two patients with BOI implant retained facial RTV silicone prosthesis. The male patient with orbital defect on the left side (exenteration for squamous cell carcinoma invading the orbital content) two BOI implants were placed in supraorbital rim laterally. The female patient underwent nose ablation for squamous cell carcinoma. BOI implants were placed in glabella and floor of the nose. The insertion of implants was delayed
for six to eight months because surgery has been followed by radiation therapy. In the meanwhile the patients were using temporary PMM acrylic color resin prostheses retained on eye glasses. After osseointegration period all purpose Co-Sm magnet was used for implant retained orbital prosthesis and bar clip retention for nasal prosthesis.

**Results:** Two patients with BOI implant retained facial RTV silicone prosthesis. The male patient with orbital defect on the left side (exenteration for squamous cell carcinoma invading the orbital content) two BOI implants were placed in supraorbital rim laterally. The female patient underwent nose ablation for squamous cell carcinoma. BOI implants were placed in glabella and floor of the nose. The insertion of implants was delayed for six to eight months because surgery has been followed by radiation therapy. In the meanwhile the patients were using temporary PMM acrylic color resin prostheses retained on eye glasses. After osseointegration period all purpose Co-Sm magnet was used for implant retained orbital prosthesis and bar clip retention for nasal prosthesis.

**Conclusion:** The use of osseointegrated BOI implants has made it possible to produce effective bone – anchored facial prostheses.

**Poster 51**

**Nutritional Change of Maxillofacial Prosthesis Wearers after Nutritional Guidance by Dieticians**

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Institute of Health Biosciences
Tokushima, Tokushima Prefecture, JP

**Purpose:** The purpose of this study was to survey quantitative and qualitative nutritional change/improvement of maxillofacial prosthesis wearers after nutritional guidance by dieticians.

**Methods and Materials:** Subjects were eight maxillofacial prosthesis wearers after maxillectomy due to carcinoma. Nutritional assessment including daily intake of following parameters was evaluated by the 3-day food diary with
Parameters were total energy, protein, fat, carbohydrate, dietary fiber, salt and vitamin C. Additionally clinical assessments were estimated by masticatory performance, mastication score, and maximum occlusal force. All subjects were evaluated 1st nutritional assessment for nutritional guidance. And each subject took 30-minute individual guidance by a dietician twice. And 2nd nutritional assessment was evaluated 2 weeks after 1st guidance. All data were analyzed statistically with SPSS ver5.

Results: Subjects were eight maxillofacial prosthesis wearers after maxillectomy due to carcinoma. Nutritional assessment including daily intake of following parameters was evaluated by the 3-day food diary with photographs. Parameters were total energy, protein, fat, carbohydrate, dietary fiber, salt and vitamin C. Additionally clinical assessments were estimated by masticatory performance, mastication score, and maximum occlusal force. All subjects were evaluated 1st nutritional assessment for nutritional guidance. And each subject took 30-minute individual guidance by a dietician twice. And 2nd nutritional assessment was evaluated 2 weeks after 1st guidance. All data were analyzed statistically with SPSS ver5.

Conclusion: It was concluded that nutritional guidance by dietician could improve nutritional status of maxillofacial prosthesis wearers qualitatively.

Poster 52

Finite Element Analysis of Bar/Clip Retention System in Okay Class I, Ii And Iii Implant-Supported Obturator Prostheses

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Purpose: Patients submitted to maxillectomy by reason of oral cancer shall be rehabilitated by means of obturator prosthesis in order to achieve a better quality of life and to be socially reintegrated. Prosthetic rehabilitation by way of obturator prosthesis is an important therapeutic measure since it diminishes functional and psychological disorders, as well as esthetic issues. This study
evaluated the biomechanics of implant-retained obturator prostheses used in cases of Okay Class Ib, II and III, analyzing the stress on maxillary osseous and gingivo-mucosal tissues.

**Methods and Materials:** Finite elements analysis was developed using a 3D digital model based on a computed tomography of an adult man. Files were processed by Software Rhinoceros®, v4.0 SR9 and generated a maxillary BioCAD 3D model, which incorporated the CAD models of the implants and UCLAS. The implants were located according to the bar/clip retention system design and obturator prosthesis, considering no surgical reconstruction: Model I (Okay Class Ib) - 6 implants in the areas of canines and lateral incisors and in the areas of left first premolar and molar teeth, retention system bar/4 clips; Model 2 (Okay Class II ) - 4 implants located in the areas of canine, lateral incisor, left first premolar and first molar teeth, retention system bar/3 clips; Model 3 (Okay Class III) - 2 implants inserted in the left first premolar and first molar teeth, retention system bar/2clips. The finite elements mesh was generated using Software Ansys®. A force of 80 N was applied to the occlusal platform, representing the posterior teeth and, at the same time, a force of 35 N was also applied to the incisal platform, representing, by its turn, the anterior teeth of the obturator prosthesis.

**Results:** Finite elements analysis was developed using a 3D digital model based on a computed tomography of an adult man. Files were processed by Software Rhinoceros®, v4.0 SR9 and generated a maxillary BioCAD 3D model, which incorporated the CAD models of the implants and UCLAS. The implants were located according to the bar/clip retention system design and obturator prosthesis, considering no surgical reconstruction: Model 1 (Okay Class Ib) - 6 implants in the areas of canines and lateral incisors and in the areas of left first premolar and molar teeth, retention system bar/4 clips; Model 2 (Okay Class II ) - 4 implants located in the areas of canine, lateral incisor, left first premolar and first molar teeth, retention system bar/3 clips; Model 3 (Okay Class III) - 2 implants inserted in the left first premolar and first molar teeth, retention system bar/2clips. The finite elements mesh was generated using Software Ansys®. A force of 80 N was applied to the occlusal platform, representing the posterior teeth and, at the same time, a force of 35 N was also applied to the incisal platform, representing, by its turn, the anterior teeth of the obturator prosthesis.

**Conclusion:** The larger the area without osseous support after a maxillectomy, the higher the tensile and compressive stress generated by bar/clip retention system in the remaining tissues and the dislodgement of the prosthesis is more 209
extensive. The high tension stresses observed in this study jeopardize the use of the bar/clip retention system design here evaluated.

Poster 53

Computerized Project for Reconstruction Surgery, Implantology and Prosthetic Rehabilitation in Mandibular Defect

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Ufr of Dental Surgery
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Purpose: Oral prosthetic rehabilitation is final and Director of surgery of mandibular reconstruction stage after cancer. Classically, the restorations in stages is long to reach the result of the final prosthesis. Scanning from the prosthetic project allows positioning implants and sections of the fibula graft and achieve in an operating time the mandibular resection, bone reconstruction and the laying of the immediate prosthesis implant-scope. Thus upon waking, the patient is left. Use the final prosthesis is realized after consolidation and maturation of soft tissue

Methods and Materials: A mandibular resection for carcinoma is being considered. After the scan digitization implant project is discussed on the prosthetic project. The fibula graft is digitally programmed to register in this implant-prosthetic project for the realization of a surgical guide. It is used in surgery to achieve the installation of implants and sections of the fibula. The whole is then vro to the prosthesis for positioning the graft in the most favourable position realized the osteosynthesis.

Results: A mandibular resection for carcinoma is being considered. After the scan digitization implant project is discussed on the prosthetic project. The fibula graft is digitally programmed to register in this implant-prosthetic project
for the realization of a surgical guide. It is used in surgery to achieve the installation of implants and sections of the fibula. The whole is then vro to the prosthesis for positioning the graft in the most favourable position realized the osteosynthesis.

**Conclusion:** Surgical prosthesis complementarity is essential in this type of rehabilitation for the good of the patient. It is imperative in this situation that surgery guide on the prosthetic project to restore prosthetic final guarantor of the quality of future life

**Poster 54**

**Patient whose Nose, Full Denture, and Palate we had Reconstructed with Implant Supported Prosthesis**

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**Purpose:** The patient came to de Dermatology Dept. in early 2008 (at that time he was 50 y/o) with a lesion on the nasal columella, its pathological study revealed a squamous cell carcinoma. After studying its extension, we performed wide surgical excision (including anterior bilateral maxillectomy and complete nasal amputation) and bilateral neck dissection and waited for pathological examination before any reconstruction. Once free margin confirmation, we performed a double free flap reconstruction: free fibula covered with radial forearm free flap. The first days were uneventful, but on the fifth day, failure of the radial flap was observed and required surgical exploration which required both flap excision.

**Methods and Materials:** At this point, with the patient tumor free and the defect not reconstructed, the oncologic committee, decided to offer the patient a less aggressive (but longer) reconstruction: external rigid distraction was the choice. It was agreed by the oncologist, the surgeons and the patient that this would be the choice, regardless that this meant not following
radiotherapy treatment, which would have been needed according to the current protocol. After external distraction was performed and clinical examinations revealed a disease free nose and neck, we planed –with stereolitographic models- implant placement for both nasal prosthesis, palatal obturator and upper dental prosthesis.

Results: At this point, with the patient tumor free and the defect not reconstructed, the oncologic committee, decided to offer the patient a less aggressive (but longer) reconstruction: external rigid distraction was the choice. It was agreed by the oncologist, the surgeons and the patient that this would be the choice, regardless that this meant not following radiotherapy treatment, which would have been needed according to the current protocol. After external distraction was performed and clinical examinations revealed a disease free nose and neck, we planed –with stereolitographic models- implant placement for both nasal prosthesis, palatal obturator and upper dental prosthesis.

Conclusion: Prosthodontic treatment was a overdenture in the upper jaw for better cleaning and control. Moreover, full denture can help the obturator retention and oro-nasal closure. Secondly fixed full-arch in the lower jaw was made because patient had it previously. Nose rehabilitation was made: a bar for better retention and stabilization. Acrylic piece with female retention was made and silicone epithesis cover it.

Poster 55

The Effect on the Biomechanical Response of Bone-Implant Contact and Length of Implant

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2. UCLA School of Dentistry  
1. Department of Partial Denture Prosthodontics  
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**Purpose:** The recent discovery of the photofunctionalization of titanium has significantly advanced the understanding of osseointegration, thereby enabling the enhancement of osseointegration to an unprecedented degree. UV-treated microroughened implants achieved a near complete degree (98.2%) of bone-implant contact (BIC) in an animal model, as opposed to 53.0% for untreated implants with machine surface. However, the nature of mechanical stress around UV-photofunctionalized implants is unknown. Finite element analysis (FEA) has played a significant role in effectively and precisely analyzing the magnitude and distribution of mechanical stress around dental implants. Until date, FEA for dental implants has been performed under an assumption of the presence of 100% BIC. The purpose of this study was to evaluate the effect on the biomechanical response of BIC and length of implant using FEA.

**Methods and Materials:** Three-dimensional FE models consisted of a cylindrical implant, abutment, and cortical and cancellous bone. The diameter of the implant was fixed at 3.75 mm, while the implant length varied 7, 10, or 13 mm. The models were then imported into FE software (ANSYS Mechanical Rel.12.1, Ansys Inc.). The BIC degree varied (53.0% or 98.2%) by controlling the number of force transfer nodes at the bone–implant interface. The active transfer nodes were randomly assigned during 10 FEA trials. FEA was conducted under simulated loading conditions on a single implant, with 50 N applied vertically or buccolingually oblique (45º) via an abutment. Counter images of stress field in bone values of the minimum principal stress(MPa) were obtained. Ten random assignments of force transfer nodes allowed statistical analysis in this FE model.

**Results:** Three-dimensional FE models consisted of a cylindrical implant, abutment, and cortical and cancellous bone. The diameter of the implant was fixed at 3.75 mm, while the implant length varied 7, 10, or 13 mm. The models were then imported into FE software (ANSYS Mechanical Rel.12.1, Ansys Inc.). The BIC degree varied (53.0% or 98.2%) by controlling the number of force transfer nodes at the bone–implant interface. The active transfer nodes were randomly assigned during 10 FEA trials. FEA was conducted under simulated loading conditions on a single implant, with 50 N applied vertically or buccolingually oblique (45º) via an abutment. Counter images of stress field in bone values of the minimum principal stress(MPa) were obtained. Ten random assignments of force transfer nodes allowed statistical analysis in this FE model.

**Conclusion:** The stress generated around 7-mm implants with 98.2% BIC was lesser than that around 13-mm implants with 53.0% BIC.
Purpose: The purpose of this paper is to present a radiation protective prosthesis which at the same time protrudes the lip to get intimate contact of the radiation cone with the tumor.

Methods and Materials: In head and neck cancer are involved several modalities like surgery and radiation mainly. The radiation use ionizing energy to act on the tumor cell cycle. This energy in head and neck produce side effects like mucositis, trismus, xerostomia, radiogenic decay, osteoradionecrosis, changes in taste, changes in pulp physiology, radiodermatitis, cataracts. To avoid or decrease this changes and suffers it is necessary to perform a protective prosthesis especially design for this treatment. With the protector we’ll be reducing the possibilities to present any of these alterations, as avoiding radiation to the structures that are outside the work area, it facilitates the radiation source action and it would give us the certain that in each application the work area will be radiate.

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Poster 57

Dental Implant-Retained Prosthetic Rehabilitation of a Bilateral Maxillectomy Patient with a Free Fibula Osteocutaneous Flap: A Case Report

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1 Oral Implantology and Regenerative Dental Medicine
Tokyo, JP

Purpose: A case report described dental implant-retained prosthetic rehabilitation of a bilateral maxillectomy patient with a free fibula osteocutaneous flap.

Methods and Materials: A 47-year-old man with a right maxillary malignant tumor was referred to the Maxillofacial Prosthetics in the Tokyo Medical and Dental University in 2005. As myoepithelioma was in left hard palate in this time, the resection of bilateral nasal cavity and bilateral maxillectomy and reconstructive surgery using a fibular osteocutaneous flap were undergone. As healing, the surgical obturator was adjusted. After stable of the flap condition, a resin based definitive dento-maxillary prosthesis was delivered. After adjusted, a speech intelligibility test and a mixing ability test were performed for evaluating theses functions. The results showed that it achieved acceptable speech and mastication for daily life. To enhance the stability of the prosthesis, we asked to the patient about a implant-retained prosthesis. The patient agreed with it. From the data of the computed tomography (CT) and the shape of the definitive prosthesis, 4 dental implants placement was planned and undergone with using the surgical guide. After second operation, two left side implants connected with the custom abutment, two right side implants also connected with. On the top of the abutment, there was a magnet keeper attached. Magnet structures were placed by using auto-polymerized resin into implant retained prosthesis (IP). From the evaluation data, masticatory and speech functions were improved. The patient was satisfied with the IP. Ten months after the delivery of IP, it became unstable. To check the recurrence, we consulted head and neck surgeons. From CT images, recurrence existed and
they thought surgical resection was difficult because the site was close to the brain and the radiotherapy was selected. During the therapy, the abutments were removed. After that, the abutments were delivered again and IP was used as same as before.

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**Conclusion:** It was thought that the reasons; 1) position of implant body, 2) abutment design and 3) no keratinized tissue, were affected the difficulty of brushing. Further treatments and a new abutment design will be required.
Poster 58

Dynamic Finite Element Analysis of a Threaded Implant Insertion

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Purpose: The purpose of this study is to simulate the insertion of threaded implants and compare the stress pattern using three-dimensional finite element analysis. We attempted to study and evaluate the stress patterns of the dental implant as it is being inserted into the mandibular bone in dynamic motion using adaptive meshing technique.

Methods and Materials: The three-dimensional models of threaded implants were made by the measurement data obtained using 3D-image software (Mimics and Patran, MSC Co.). The bone and implant were represented on the computer as elastic-plastic and rigid respectively. The dental implant was inserted into a drilled cavity. The data were analyzed using Marc Mentat (2008 r1, MSC Co.). The movements of both dental implants were analyzed and compared in relation to the Von-Misses stress pattern.

Results: The three-dimensional models of threaded implants were made by the measurement data obtained using 3D-image software (Mimics and Patran, MSC Co.). The bone and implant were represented on the computer as elastic-plastic and rigid respectively. The dental implant was inserted into a drilled cavity. The data were analyzed using Marc Mentat (2008 r1, MSC Co.). The movements of both dental implants were analyzed and compared in relation to the Von-Misses stress pattern.

Conclusion: Within the limitation of the study it is suggested that dynamic meshing can be effectively used as a research tool in understanding various forces acting in vivo. The stress pattern of the dental implant is influenced by dental implant threads, and the insertion stage of the dental implant. In this primary study not all the conditions were ideal and a lot of assumptions were made, but in the future more parameters should be added and readjusted.
Poster 59

Masticatory Function Assessment of Patients with Maxillary Obturator

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Prosthodontic
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Purpose: The purpose of this study was to evaluate the masticatory function of patients with maxillary obturators by objective assessments and subjective assessment.

Methods and Materials: Fifteen patients with maxillary obturators were recruited for this study. Masticatory efficiency was measured by the method employed by Song Zhaojun et al. (1988), using peanut. The distribution of occlusal force was measured with T-Scan II Computerized Occlusal Analysis system (Tekscan,Inc.,Boston,MA,USA). Subjective assessment was evaluated by one subjective scale containing seven questions.

Results: Fifteen patients with maxillary obturators were recruited for this study. Masticatory efficiency was measured by the method employed by Song Zhaojun et al. (1988), using peanut. The distribution of occlusal force was measured with T-Scan II Computerized Occlusal Analysis system (Tekscan,Inc.,Boston,MA,USA). Subjective assessment was evaluated by one subjective scale containing seven questions.

Conclusion: Masticatory function of patient with maxillary defect can be restored effectively by obturator.
Pre-Radiation Dental Extractions: A Retrospective Analysis of Patients Seen for Pre-Radiation Clearance at a Tertiary Dental Centre

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Purpose: The purpose of this retrospective analysis is to report our experience on patients requiring dental extractions prior to radiation to the head and neck region at a tertiary dental centre.

Methods and Materials: Between February 2011 to March 2012, 163 patients newly diagnosed with head and neck malignancies were referred to the National Dental Centre Singapore for pre-radiation evaluation and treatment. 155 of the 163 patients met the inclusion criteria and their dental records were analyzed for patient demographics, tumor type, dental extraction indications, number, site and surgical removal of teeth.

Results: Between February 2011 to March 2012, 163 patients newly diagnosed with head and neck malignancies were referred to the National Dental Centre Singapore for pre-radiation evaluation and treatment. 155 of the 163 patients met the inclusion criteria and their dental records were analyzed for patient demographics, tumor type, dental extraction indications, number, site and surgical removal of teeth.

Conclusion: The average number teeth extracted per patient were 4.0. The most common reason for teeth removal was prophylactic removal (36.2%) and periodontal disease (31.1%). A relook at prophylactically removing teeth and long term outcomes is necessary in light of the above data.
Poster 61

Recovery of Food Acceptance in Oral Tumor Patients - A Longitudinal Follow-Up Study During a Year After Surgery

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Purpose: Prosthetic rehabilitation for oral tumor patients should be provided as soon as possible after surgery. However a lot of factors might influence on the course of functional recovery of patients with prosthesis. This study was aimed to investigate the course of recovery of food acceptance during a year after surgery and factors influencing on it in oral tumor patients who underwent prosthetic treatment in our clinic.

Methods and Materials: A questionnaire survey on the state of food acceptance (5 kinds basic food) was performed in 45 oral tumor patients (17 maxillary, 13 mandibular, 15 tongue tumors) at presurgery, 1 month, 3 months, 6 months, 12 months after surgery. Normal intake rate (NIR) of 5 foods at each assessment period was calculated and was tested for the relationship with gender, age, number of molar teeth and functional measures (masticatory efficiency, maximal biting force and time for swallowing 30ml of water).

Results: A questionnaire survey on the state of food acceptance (5 kinds basic food) was performed in 45 oral tumor patients (17 maxillary, 13 mandibular, 15 tongue tumors) at presurgery, 1 month, 3 months, 6 months, 12 months after surgery. Normal intake rate (NIR) of 5 foods at each assessment period was calculated and was tested for the relationship with gender, age, number of
molar teeth and functional measures (masticatory efficiency, maximal biting force and time for swallowing 30ml of water).

**Conclusion:** Post-surgical recovery of food acceptance in mandibular and tongue tumor patients was worse than that in maxillary tumor patients with prosthesis. Much attention should be paid for dysphagia as well as tooth loss in such patients.

**Poster 62**

**Neck and Shoulder Function in Patients Treated for Oral Malignancies; A 1-Year Prospective Cohort Study**

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**Purpose:** Oral cancer is a major health problem worldwide. Cancers of the oral cavity accounted for 274,289 new cases in 2002. The main objective of the treatment of oral cancer is to maximize the survival of the patient and to avoid that the cancer reappears in the treated area. An adverse prognostic factor in oral cancer is the presence of cervical lymph node metastasis. This often indicates that a neck dissection must be performed. Neck and shoulder complaints can be a direct cause of such a neck dissection and can manifest as pain, reduced range of motion of the neck and shoulder, loss of sensation, and loss of neck and shoulder function. In this study neck and shoulder function was examined in patients treated for oral cancer with or without neck dissection and compared with healthy controls at different moments within a one-year period.

**Methods and Materials:** Maximal active lateral flexion of the neck, forward flexion and abduction of the shoulder, and self-perceived function were determined in 145 patients and 60 healthy controls. We determined the
influence of tumor stage, regional lymph node metastasis, tumor location, oncological intervention and, if present, reconstruction on the deterioration of neck and shoulder function between the measurement moments “before intervention” and “shortly after intervention”. Finally, we compared the outcomes of the various neck dissection groups with each other and with the healthy controls.

**Results:** Maximal active lateral flexion of the neck, forward flexion and abduction of the shoulder, and self-perceived function were determined in 145 patients and 60 healthy controls. We determined the influence of tumor stage, regional lymph node metastasis, tumor location, oncological intervention and, if present, reconstruction on the deterioration of neck and shoulder function between the measurement moments “before intervention” and “shortly after intervention”. Finally, we compared the outcomes of the various neck dissection groups with each other and with the healthy controls.

**Conclusion:** There is growing evidence that adjuvant radiotherapy has no significant influence on shoulder function. More extended neck dissections induced more deterioration in neck and shoulder function shortly after intervention. The deterioration of the shoulder mobility was not only influenced by the neck dissection, but also by the tumor site and extent of reconstructive surgery. Maximal active abduction of the shoulder was affected most.

**Poster 63**

**Qualitative Analysis of Bonding Between Acrylic Resin and Silicone for Facial Prostheses—An Sem Evaluation**

Sumita, Yuka*; Hattori, Mariko 1.; Yoshi, Shigen 1.; M Lovely 2.; Iwasaki, Naohiko 3.; Takahashi, Hidekazu 3.; Taniguchi, Hisashi 1.

1. Tokyo Medical and Dental University, Tokyo, Japan
2. Sree Mookambika Dental College, Tamil Nadu, India
3. Tokyo Medical and Dental University, Tokyo, Japan

1. Maxillofacial Prosthetics
2. Sree Mookambika Dental College, Tamil Nadu, India
3. Oral Biomaterials Engineering

Tokyo, JP
**Purpose:** Recently, many facial prostheses are made of silicone elastomers because of their appropriate textures, flexibility, formability, and convenient for color. In some cases, mechanical properties of silicone elastomer are insufficient to obtain good retention, and it is necessary to use acrylic resins for the framework. Therefore, a good bonding between the silicone elastomer and acrylic is required, but few studies have been discussed regarding the bonding between silicone and acrylic resin. According preliminary survey, bonding between silicone and acrylic was improved when primers were used. The purpose of this study was to confirm the effects of primers on the acrylic resin by the qualitative analysis using scanning electron microscope (SEM).

**Methods and Materials:** Acrylic specimens in 2mm thick were prepared using an autopolymerised acrylic resin (Unifast III, GC Corp) and divided into following 3 sections; 1st section: control without primer, 2nd section: primed with Sofreliner primer (Tokuyama Dental Corp), 3rd section: primed with PlasticBond (R-dental Dental- erzeugnisse GmbH). After evaporation of the primer, the specimen was sputter-coated with gold and observed with an SEM (Hitachi S-4500) under 500 magnifications.

**Results:** Acrylic specimens in 2mm thick were prepared using an autopolymerised acrylic resin (Unifast III, GC Corp) and divided into following 3 sections; 1st section: control without primer, 2nd section: primed with Sofreliner primer (Tokuyama Dental Corp), 3rd section: primed with PlasticBond (R-dental Dental- erzeugnisse GmbH). After evaporation of the primer, the specimen was sputter-coated with gold and observed with an SEM (Hitachi S-4500) under 500 magnifications.

**Conclusion:** Observed SEM suggested the different mechanisms of the primers on the acrylic resin. The smear layer was created by polishing, and interfered the interlocking effect of silicone elastomer, therefore the bonding without the primer was poor. The main composition of Sofreliner is dichloromethane which could completely remove the smear layer on the acrylic resin and dissolve the polymer particles. On the other hand, the composition of the PlasticBond is solution of polyacrylates in dichloromethane and ethyl methyl ketone, which could remove the smear layer and create new rough acrylic surface. As a result, the surface of Sofreliner was relatively smooth, while that of PlasticBond was relatively rough. These finding of this study suggested that the relatively rough surface after PlasticBond was suitable to obtain the mechanical interlocking effects. For the fabrication of the facial prostheses, further studies are needed to obtain durable bonding after various environment usage.
The Effects of Ionizing Radiation on Osteoblast Behavior and Mineralization Process

Takebe, Jun*; Ito, Shigeki; Miura, Shingo; Miyata, Kyohei; Ishibashi, Kanji
School of Dentistry, Iwate Medical University
Division of Fixed Prosthodontics, Department of Prosthodontics
Morioka, Iwate, JP

Purpose: Ionizing radiation affects bone wound healing and bone formation at the surfaces of endosseous implants used for maxillofacial prosthetic rehabilitation in patients with malignant tumors. We hypothesize that varying doses of ionizing radiation alters bone matrix formation and mineralization in the bone wound healing that occurs during the process of osseointegration. A better understanding of the phenotypic and molecular changes induced by ionizing radiation should provide the necessary foundation for tissue engineering and osseointegration techniques used in dental and maxillary prosthetic rehabilitation. The aim of this study was to investigate the effects of varying doses of ionizing radiation in osteoblasts in vitro.

Methods and Materials: Osteoblasts were isolated from the bone marrow stroma of Wistar rats. The primary osteoblasts were exposed to gamma-radiation (cobalt-60) at doses of 0, 40, 400, and 4000 mGy and cultured for 5, 7, 10, or 14 days. The distribution of phosphorus and calcium in the cultured specimens was determined using electron probe microanalysis. The reverse transcription-polymerase chain reaction was used to evaluate for bone matrix gene expression and HSP 47 gene expression.

Results: Osteoblasts were isolated from the bone marrow stroma of Wistar rats. The primary osteoblasts were exposed to gamma-radiation (cobalt-60) at doses of 0, 40, 400, and 4000 mGy and cultured for 5, 7, 10, or 14 days. The distribution of phosphorus and calcium in the cultured specimens was determined using electron probe microanalysis. The reverse transcription-polymerase chain reaction was used to evaluate for bone matrix gene expression and HSP 47 gene expression.
Conclusion: These results indicate that ionizing radiation at doses less than 400 mGy had little effect on primary stage of matrix mineralization. In contrast, at higher doses of radiation, such as 4000 mGy, ionizing radiation affected differentiation. This in vitro study suggest that the phenotypic and molecular changes induced in osteoblasts by higher doses of ionizing radiation interfere with differentiation and delay the process of matrix mineralization.

Poster 65

Prosthetic Auricles & Behind-The-Ear Hearing Aid Used to Augment Bone Conduction Hearing: A Case Report

Timm, Leslee*
Gundersen Lutheran Health System
Prosthodontics
La Crosse, WI USA

Purpose: Prosthetic auricles have been shown to restore cosmesis in cases of microtia and atresia. This case report describes prosthetic pinnae used to retain eye-glasses and a conventional hearing-aid while augmenting a Bone-Anchored-Hearing Assistive (BAHA) device.

Methods and Materials: An 86 year-old hearing impaired Caucasian male presented to the prosthodontic clinic in 2008 requesting stability for his glasses. The gentleman was missing both pinnae. He received conventional radiation and ablative surgery for skin cancer. He suffered from persistent chondritis, dermatitis, and actinic damage. The tragi were salvaged and the sub-cutaneous tissue was thinned. Seven craniofacial implants were placed in the mastoid regions and osseointegrated by six months. The bone-anchored-implants were used for retention of a unilateral BAHA device, bilateral tissue-bars and auricular prostheses. The BAHA fixture was connected and tuned. The remaining implants were splinted with custom tissue-bars. The definitive auricular prostheses were cast in silicone and extrinsically colored. The pinnae were fitted with one micro Behind-the-Ear hearing aid and eye-glasses.

Results: An 86 year-old hearing impaired Caucasian male presented to the prosthodontic clinic in 2008 requesting stability for his glasses. The gentleman was missing both pinnae. He received conventional radiation and ablative surgery for skin cancer. He suffered from persistent chondritis, dermatitis, and
actinic damage. The tragi were salvaged and the sub-cutaneous tissue was thinned. Seven craniofacial implants were placed in the mastoid regions and osseointegrated by six months. The bone-anchored-implants were used for retention of a unilateral BAHA device, bilateral tissue-bars and auricular prostheses. The BAHA fixture was connected and tuned. The remaining implants were splinted with custom tissue-bars. The definitive auricular prostheses were cast in silicone and extrinsically colored. The pinnae were fitted with one micro Behind-the-Ear hearing aid and eye-glasses.

**Conclusion:** Implant supported prosthetic pinnae: retain BTE instruments and glasses, improve high frequency gain with conventional hearing aids, can augment the lower frequency bone conduction hearing via BAHA device.

**Poster 66**

**Relationship Between Post Surgical Qol and Oral Functional Measures in Oral Tumor Patients**

Yamamoto, Masaaki*; Shiroshita, Naoko; Ono, Takahiro; Itani, Yasuhiro; Sakagami, Joe; Tamine, Kenichi; Kondo, Jugo; Kondo, Sato; Yokoyama, Sumiko; Fukatsu, Yuki; Fujiwara, Shigehiro; Kida, Momoyo; Kosaka, Takayuki; Fujio, Takahumi; Minagi, Yoshitomo; Kikui, Miki; Tokuda, Yoshitugu; Hori, Kazuhiro 2.; Maeda, Yoshinobu

Osaka University Graduate School of Dentistry

2. Niigata University Graduate School of Medical and Dental Sciences, Department of Prosthodontics Gerodontology and Oral Rehabilitation

2. Division of Dysphagia Rehabilitation of Oral Biological Science

Suita, Osaka, JP

**Purpose:** The goal of prosthetic rehabilitation for oral tumor patients is to prevent the decline of patients’ QOL. The purpose of this study is to investigate the change of patients’ QOL before and 6 months after surgery and its relationship with oral functions in oral tumor patients.
Methods and Materials: A questionnaire survey using EORTC QLQ-H&N35 was performed in 28 oral cancer patients (16 males and 12 females, average age 59.6 yrs.) before and 6 months after surgery. The maximal biting force was measured by Dental Presscale® (GC, Japan). Swallowing function was evaluated by the time to swallow 30 ml of water. Masticatory performance was calculated by the increased surface area of comminuted gummy jelly after chewing at 30 times. Oral functional measures were compared between 2 groups (patients with increased QOL scores and those with decreased QOL scores after surgery) was analyzed by Mann-Whitney U tests (P<0.05).

Results: A questionnaire survey using EORTC QLQ-H&N35 was performed in 28 oral cancer patients (16 males and 12 females, average age 59.6 yrs.) before and 6 months after surgery. The maximal biting force was measured by Dental Presscale® (GC, Japan). Swallowing function was evaluated by the time to swallow 30 ml of water. Masticatory performance was calculated by the increased surface area of comminuted gummy jelly after chewing at 30 times. Oral functional measures were compared between 2 groups (patients with increased QOL scores and those with decreased QOL scores after surgery) was analyzed by Mann-Whitney U tests (P<0.05).

Conclusion: Our results indicate that post surgical QOL in oral tumor patients is significantly related with oral functional measures such as biting force and swallowing time.
Poster 67
Tomographic Protocols Analysis for Prototypes Construction
De Lima Moreno, J. Javier*; Soler, Roberto; Salatino,Gabriela; Dias Da Silveira,Heraldo; Dias Da Silveira, Heloisa
Universidad De La República. Udelar
Servicio De Prótesis Buco Maxilo Facial
Montevideo, UY

Purpose: Maxillofacial Prostheses performs complexes rehabilitations in head and face. Nevertheless, in some cases, by the traditional method of taking a conventional impression, it is impossible to get an adequate adaptation for clinical rehabilitation. Therefore, there is a need to obtain 3D models that can reproduce the defect in a more accurate way. We compared the prototypes obtained with different protocols of image capture by different tomographic devices related to surface roughness, the reconstructed site, the radiation dose generated and trying to establish which is the more accurate one to construct skull prototypes.

Methods and Materials: 9 Prototypes were created from a dry bone piece of the skull. The comparison between the prototypes related to surface roughness were evaluated with a profilometer the reconstructed site by pictures (photos) and the radiation dose with profilometer. If the evaluation shows a significant difference, the Tukey multiple comparison test will be used as a complement. A significant level is 5%

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Conclusion: The accuracy of the prototype is determined by the treatment to be performed.
The Uses of Thermal Plastic Sheeting for the Treatment of Hypertrophic and Keloid Scarring

Grew, Paul*; Richards, Mark; Khan, Mansoon; Tiernan, Eunan
Salisbury District Hospital
Maxillofacial Department
Salisbury, Wiltshire, UK

Purpose: The treatment of scars following trauma, surgery or congenital defects with moulded thermal plastic sheeting is not a new concept but we feel the results that we are achieving are worth making others aware.

Methods and Materials: A custom impression of the scar is firstly taken and a model is poured from this impression. This model is then manipulated in the laboratory to correct the deformity. The splint is then constructed, using vacuum form technology. Over the course of the last few years we have had a number of patients. The splints were applied for periods of up to 6 months with occasional modifications to continue the reduction/remodelling of the scar. The splints were worn for more than twelve hours a day, with periods of non splinting to prevent tissue maturation and to prevent Arthrodesis of the joints located under the scar.

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Conclusion: Thermal plastic sheeting is both a cost effective scar treatment tool and an effective tool in scar reduction.
Implant Supported Auricular Prostheses After Trauma: A Case Report

Gunay, Yumushan*; Atay, Arzu
Gmma Haydarpasa Training Hospital Dental Service Prosthodonsty
Istanbul, TR

Purpose: Congenital deformities, trauma, and surgical ablative treatment of maxillofacial cancer may cause facial disfigurement and consequently psychologic disturbances. The application of the principles of osseointegration to the craniofacial skeleton can offer the patient with defects from trauma or ablative cancer surgery a functional and aesthetic restoration, with minimal morbidity.

Methods and Materials: A 10 years old female patient received two extraoral implants after surgical resection who lost right ear due to a gas cooker burn. The time taken for osseointegration of the temporal bone was three months. After fabrication of the implant-retained auricular prostheses, the patient was monitored for 12 months.

Results: A 10 years old female patient received two extraoral implants after surgical resection who lost right ear due to a gas cooker burn. The time taken for osseointegration of the temporal bone was three months. After fabrication of the implant-retained auricular prostheses, the patient was monitored for 12 months.

Conclusion: In this case the use of implants can eliminate or minimize the need for adhesive and allows for proper orientation and seating of an ear prosthesis by the patient.
Poster 70

The Cover Up- Working Around Existing Anatomy

Shrader, Colette*
University of Texas Health Science Center
Maxillofacial Prosthetics Center
San Antonio, TX USA

Purpose: Traumatic loss of an ear or unsatisfactory surgical reconstruction can result in a significant amount of remaining tissue. Often times a patient does not want to undergo surgery for tissue removal and placement of implants and a clinician has to work around the remaining tissue in order to fabricate an acceptable auricular prosthesis. The purpose of this poster is show results from prostheses that were fabricated for patients who elected to keep their tissue intact.

Methods and Materials: Impressions of non-treatment and treatment side were made with alginate and vinyl polysiloxane; boxing wax was used for sculpting. In some cases trial prostheses were made with polysiloxane by taking an impression of the modified cast in order to determine the best fit of prosthesis. Vel-mix stone and silicone elastomer 2186F were used in fabrication of final prosthesis. Beta Bond Adhesive was used to adhere prosthesis to patient’s skin.

Results: Impressions of non-treatment and treatment side were made with alginate and vinyl polysiloxane; boxing wax was used for sculpting. In some cases trial prostheses were made with polysiloxane by taking an impression of the modified cast in order to determine the best fit of prosthesis. Vel-mix stone and silicone elastomer 2186F were used in fabrication of final prosthesis. Beta Bond Adhesive was used to adhere prosthesis to patient’s skin.

Conclusion: The final restoration achieved the patient’s desire of having a normal looking ear which results in a more symmetrical appearance. The prosthesis restores more than the physical appearance, it restores their confidence, comfort levels, self-esteem and allows them to carry on a normal lifestyle.
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Conference Workshops

Monday, October 29th

Workshop #1- Craniofacial Reconstruction: Scan, Plan and Manufacture
Commercial support by 3dMD and Geomagic, Sensable Group

Time: 13:30-17:00
There are two identical group sessions.
Group A and B are repetitive, select a group time that best suites your schedule.
Group A- 13:30 to 15:00
Group B- 15:15 to 17:00

Course Objectives: Introduce the participants to Digital Craniofacial Capture. Perform a manipulation of the participants image using 3D software techniques with a haptic device. Prepare the modified image for print on a 3D Printer.

Description of Workshop: Participants have the opportunity to take advantage of a workshop that spans the process of image capture, downloading and modifying an image on 3D software using a haptic device, and setting up the image for printing. Images will be captured by the 3dMD systems, downloaded into Sensible software where you will be guided by Mr. Shayne Kondor as to how to modify the image to a stylized image of yourself or loved one, then prepared for printing. This will expose the attendee to all of the steps in the production of medical models, allow for some personal time with the participating vendors for image capture, image manipulation, and printing. Workshop will run for two hours.
Instructor:
Shayne A. Kondor, MSAE
Medical Modeling Engineer
Naval Postgraduate Dental School
Bethesda, MD USA

Mr. Kondor is a Medical Modeling Engineer with the Craniofacial Imaging Research Group at the Naval Postgraduate Dental School in Bethesda, MD, where he has been conducting research in Craniofacial Imaging and Rapid Prototyping Modeling techniques since October 2008 as a contractor. His research interests are the acquisition and use of Cone Beam Computed Tomography in craniofacial reconstruction. From 1996–2008 Mr. Kondor was a full-time research engineer with GTRI investigating fluid flow, medical modeling, rapid prototyping and dental materials. He earned a Bachelor of Aerospace Engineering in 1990 and Master of Science in Aerospace Engineering in 1991 from Georgia Tech.

Workshop #4- Silicone & Magnetic Retention: "2012"

Time: 13:30-17:00

Course Objectives: The course will demonstrate the use of a new Magnetic Attachment for auricular appliances. Demonstrate the use of silicones, and bonding the Magnet into the Silicone using more than one silicone. Discussion on the various primers and solvents available for a success implant retained prosthesis.

Description of Workshop: Participants of the workshop will be introduced to the New 2012, S Range “O Ring Magnet,” which is the State of the Art for auricular patients with implants. Workshop will also demonstrate the use of various silicones for 2012, in fabricating a prosthesis, the use of more than one silicone in an appliance. The attendees will be exposed to various forms of silicone from: RTV’s, LSR’s and HCR’s and their practical use in Maxillofacial Prosthetics.
Instructors:

John D. McFall

Mr. 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. John trained at The University of Texas, M.D.Anderson Hospital 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 manufacturer’s 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. John believes that 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.

Professor Mark Walters

Mr. Walters has over 20 years of research experience in the area of biomaterials, and particularly in the development of novel silicone rubber materials. He is currently a Professor in Biomaterials at Cardiff University as
well as Director of Technovent Ltd. He has published over 50 papers in national and international peer reviewed journals in the area of polymeric biomaterial development. Professor Waters has been responsible for the development of numerous materials for use in maxillofacial prosthetics and dentistry, in addition to industrial materials. Technovent manufactures and markets worldwide the Magna-Cap magnetic retention system for use with dental and craniofacial prostheses. The technology and functionality of Technovent products has been established over many years of research, development and clinical use. Since becoming director of Technovent Professor Waters has enhanced their product line and has been instrumental in developing new innovations in magnetic retention for facial and dental prostheses.

David Trainer

Mr. Trainer is a maxillofacial prosthetist with 25 years of clinical experience in all phases of prosthetic rehabilitation. David received his initial training in Dental Prosthetics at Matthew Boulton College in Birmingham, England. He then went on to receive his Licentiateship in London in Maxillofacial Prosthetics. David’s work with materials has been very instrumental in product development specifically for use in Maxillofacial Prosthetics working with Factor II Incorporated and Technovent LTD of the UK, for many years.
Tuesday, October 30th
*The following workshops are concurrent and you may select one from the following:*

**Workshop #2- Maxillofacial Insurance Reimbursements**

**Time: 13:30-17:00**

**Course Objectives:** The future of our sub-specialty rests on reasonable reimbursement for our services. Workshop participants will learn how to properly bill for services, and will be brought up to date with current and future challenges in the insurance arena.

**Description of Workshop:** This year, several topics will be discussed in the workshop. An overview of the billing process for both private and institution-based practices will be reviewed, including commercial insurance, and Medicare. We will have a Medicare representative give a presentation as well, updating us on the current and future issues on reimbursement in the U.S. Finally, a member of the ISMR will enlighten participants on reimbursement issues in countries outside the U.S.

**Instructor:**

Dr. Craig Van Dongen

Dr. Craig Van Dongen has been in private practice in Providence, Rhode Island for the past 22 years. He held the position of clinical professor, and Co-Director of the Maxillofacial Prosthetics Clinic at Tufts University from 1986-1993. He is currently the Chairman of the Insurance and Oral Health Committee of the AAMP.
Workshop #3- Cochlear™ Vistafix® Workshop: Osseointegrated Implants & Facial Prosthetics

Time: 13:30-17:00

Dr. Drew Schnitt and Jay McClennen will facilitate a training course focusing on surgical and prosthetic aspects of craniofacial rehabilitation utilizing osseointegrated implants. Course participants will be introduced to Cochlear’s new Vistafix 3 System, which features trusted, advanced implant technology designed to deliver predictable prosthetic outcomes to clinicians and their patients. The Vistafix bone anchored facial prosthetic solution offers patients the potential to face life with renewed confidence. Topics covered in this unique, in-depth workshop include implant placement and facial restoration through prosthetic design.

Instructors:
Drew Schnitt, MD, PA
Jay McClennen, AOCA, CCA, CFm

Dr. Schnitt is a board certified internationally recognized plastic and reconstructive surgeon specializing in all areas of plastic, reconstructive and cosmetic surgery

Dr. Schnitt is a member of multiple United States and International specialty organizations. He has published multiple peer reviewed articles and has given countless presentations the world over. Dr. Schnitt has active staff privileges at several hospitals in South Florida and also cares for patients in his office.

Dr. Schnitt grew up in Virginia Beach and graduated from The George Washington University with a bachelor’s degree in science. He graduated from Eastern Virginia Medical School and began his training at Louisiana State University Medical Center for general surgery internship and residency. His plastic and reconstructive surgery training was completed at the University of Oklahoma Health Sciences Center and his special focus in cosmetic surgery was completed at Lenox-Hill Hospital in New York City. His first fellowship was completed with Operation Smile which is an international organization providing cleft lip, palate and craniofacial surgery to indigent patients free of charge. His second fellowship was completed in craniofacial surgery at the world renowned Australian Craniofacial Unit in Adelaide, Australia.
Jay McClennen is a classically trained figurative sculptor. Upon graduation from the Ontario College of Art & Design in Canada, Jay spent 17 years working as a successful freelance artist with his own company; Spire Art & Design. Specializing in silicone prosthetics for the Hollywood film industry, Jay received several awards including an Emmy nomination for prosthetic make-up in HBO’s Truman in 1995 and he was shortlisted for an Academy Award for prosthetic make-up on X2 in 2003.

At Toronto’s Sunnybrook Regional Cancer Center, Jay worked in the Craniofacial Prosthetic Unit where he honed his clinical and implant skills before moving to Durham, North Carolina where he owns The Anaplastology Clinic; a clinic that has a 40 year history at Duke University Medical Center. Fully trained in the art of Forensic Facial Reconstruction, Jay has done work for the Ontario Provincial Police and the Ontario Coroner’s Office in Canada helping to put a face to unidentified remains.

Jay is a Certified Clinical Anaplastologist and an active member of both the International Anaplastology Association, where he is the current President-Elect, and the International Association for Identification; the world’s oldest and largest forensic science/identification association.
Conference Panel Discussions

Sunday, October 28th

Time: 9:00-9:45
Cutting Edge Approach of Digital Surgical Design for Prefabricated Flaps with Immediate Loading in Microvascular Reconstruction of the Jaws

Panel Description: The International Congress on Maxillofacial Rehabilitation will feature a special panel session on the cutting edge approach of digital surgical design for prefabricated flaps with immediate loading in microvascular reconstruction of the jaws.

Time: 13:30-14:45
Discussion Group: Dysphagia Research Society

Mapping Dysphagia Phenotypes: Standardized Physiologic Approach to Oropharyngeal Swallowing Assessment

Panel Description: As Past-President of the international Dysphagia Research Society (DRS), Dr. Martin-Harris will detail the scope and mission of the society and present the findings of years of swallowing research on swallowing assessment. She will demonstrate a rigorously tested, valid and reliable approach that details swallowing impairment and identifies targets for swallowing rehabilitation using. The didactic presentation will include data from a series of current studies using a case based approach with 3-D animated and videofluoroscopic recordings. The implications for maxillofacial reconstruction and prosthetic interventions will be discussed.

Objectives: Participants will:
• Understand the Mission, Scope and Interdisciplinary Membership of DRS
• Identify the critical physiologic components of pressure generation and airway protection required for functional oropharyngeal swallowing
• List the advantages to standardized swallowing assessment approaches for optimizing functional patient outcomes
• Recognize the potential for differentiating phenotypic patterns of swallowing impairment following treatments for head and neck cancer and the role of these patterns in predicting outcome and treatment planning.

**Instructors:**

**Bonnie Martin-Harris, Ph.D., CCC-SLP, BRS-S, ASHA Fellow**  
Professor, Otolaryngology Head & Neck Surgery & College of Health Professions  
Adjunct Professor, College of Dental Medicine  
Director, Evelyn Trammell Institute for Voice and Swallowing  
Director, Doctoral Program in Health and Rehabilitation Science  
VA Clinical Scientist, Ralph H. Johnson Veterans Administration Medical Center  
Medical University of South Carolina

**Bronwyn Jones, MB, BS, FRACP, FRCR**  
Professor of Radiology  
Director, The Johns Hopkins Swallowing Center  
The Russell H. Morgan Department of Radiology & Radiological Science  
The Johns Hopkins University School of Medicine  
Baltimore, MD USA

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**Time: 15:30-17:00**

**Special Interest Group: Oral Hygiene in Maxillofacial Rehabilitation Patients**

**Objective:** To develop an international group dedicated to improving maxillofacial rehabilitation relating to oral hygiene through the dissemination of clinical and research experience.

**Topic themes:**

• Oral and dental considerations for the head and neck cancer & maxillofacial rehabilitation patient;
• Challenges and Care for the Osseointegrated implant oral rehabilitation patient;
  2. Tooth loss after conventional and intensity modulated radiotherapy for the treatment of head and neck cancer – presenter Richelle Beesley
  3. Dental Screening as work up for head and neck oncology treatment - presenter Hester Groenewegen

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• Open discussion - future direction of the special interest group (SIG) and outreach collaboration initiatives and modalities.

**Visions and Goals:** The ISMR is a group of interdisciplinary professionals dedicated to improving maxillofacial rehabilitation. The development of an international special interest group focusing on oral hygiene care has been established to initiate a team dedicated to the dissemination of research and clinical care for this unique patient population.

**Presentation Objectives:**
1. To develop clinical processes and resources for oral maxillofacial hygiene in patients with cancer, congenital and acquired conditions of the head and neck.
2. To collaborate internationally to improve maxillofacial rehabilitation patient care through dissemination of research and clinical care.
3. To develop a platform for members to collaborate internationally to share their knowledge through education, research and outreach in the field of maxillofacial rehabilitation.
4. To generate research questions based on clinical issues encountered and integrate evidence-based research into clinical practice.
5. To build upon the current SIG initiatives and discuss the prospective development and recommendations for the special interest group.

**Instructors:**

**Richelle Beesley, RDH, MSc**
Institute for Reconstructive Sciences in Medicine
Misericordia Community Hospital
University of Alberta
Alberta Health Services
Covenant Health
Edmonton, AB. Canada

**Hester Groenewegen, Oral Hygienist**
Dept. for Oral and Maxillofacial Surgery
University Medical Center Groningen and University of Groningen
Groningen, The Netherlands

**Sabine Harck, Dip. OH**
University of the Witwatersrand, Johannesburg, South Africa
Oral Hygienist with: Dr. D. G. Howes, PI Branemark Institute, Johannesburg, SA
**Time: 17:00-18:00**  
**Special Interest Group: Behavioral Special Interest Group Session**

**Background:** In the ISMR-congress in Bangkok, 2008, we presented on the subject of “the voice of the non-survivor of head and neck cancer”. As a reaction we were invited to organize an afternoon session during the congress in Sestri Levante, 2010. We were very happy with this request and we managed – by paying one of our speakers from own resources - to organize a session which many of you attended: “Patient involvement in treatment selection”. It was in this charming ambiance of Sestri Levante that a Behavioral Special Interest Group was formed, with colleagues sharing interest in patient factors in treatment decisions of head and neck cancer.

We intended to build on these experiences with a next afternoon session in the Joint meeting of the AAMP and ISMR in Baltimore. Unfortunately, due to the continuing lack of financial resources we haven’t been able to find speakers who could attend the congress on their own expense.

**Objectives:** Of course we continue to be motivated discussing the topic of “Shared decision making in head and neck cancer”. Therefore, we plan to meet as the Behavioral Special Interest Group of the ISMR, during an afternoon gathering on Sunday October 28, 17 – 18 h.

We would like to invite all colleagues interested in this topic.

Aim of the meeting is to explore how the Behavioral Special Interest can give life to subjects that are especially meaningful for this group during ISMR-congresses to come. Max Witjes, PhD, oral maxillofacial surgeon from the University Medical Center Groningen, the Netherlands, is most willing to initiate the discussion.

**Instructors:**

**Chiquit van Linden van den Heuvell, PhD**  
Center for Special Dental Care and Maxillofacial Prosthetics  
Department for Oral and Maxillofacial Surgery  
University Medical Center Groningen  
Groningen, The Netherlands

**Max Witjes, MD, DDS, PhD**  
Center for Special Dental Care and Maxillofacial Prosthetics  
Department for Oral and Maxillofacial Surgery  
University Medical Center Groningen  
Groningen, The Netherlands
Monday, October 29th

Time: 7:00-7:45
*Special Interest Group*: Information Session & Discussion on Facial Prosthetics

**Instructors:**
Rosemary Seelaus  
University of Illinois at Chicago  
Craniofacial Center  
Chicago, IL USA

Suzanne Verma  
Baylor College of Dentistry, Texas A&M Health Science Center  
Department of Oral & Maxillofacial Surgery  
Dallas, TX USA

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Time: 13:30-15:00
*Panel Presentation*: ORONET

**ORONet Approach to Measures for Clinical Outcomes Studies with Implants**

In clinical practice, understanding the outcomes of care requires use of measures that have been demonstrated to be relevant to the intended purpose. There is an increasing declared need to identify and use clinical outcomes measures that are patient-centered. The presentation will provide information on the patient-centred outcomes measures approach adopted by the Oral Rehabilitation Outcomes Network (ORONet).

The literature is replete with measures used clinically or in research but it is seldom known whether these measures contribute to an understanding of the desired outcome of care. Rheumatology confronted this challenge by forming the Outcome Measures in Rheumatoid Arthritis Clinical Trials (OMERACT) group to develop consensus on clinically relevant outcomes measures. OMERACT developed a rigor to assess clinical outcomes measures that are
patient-centered. OMERACT has continued to develop this system and this is now recognized by the WHO and the Cochrane Collaboration.

Clinicians from six universities and hospitals adopted the OMERACT model to develop ORONet. To date, ORONet has focused on implant care. ORONet has adopted OMERACT methodology as a long term goal to identify patient-centered clinical outcomes measures. As first step, ORONet has undertaken systematic reviews in four domains: function, psychosocial, economics and longevity. The aim of the systematic reviews was to identify current clinical outcomes measures and to subject them to the OMERACT filter.

The presentation will provide insight into:
• The OMERACT system
• ORONet and the adoption of OMERACT method
• The results of the systematic reviews
• Future development of ORONet

**Instructors:**

**Dr. Martin Osswald, BDS, Mdent (Pros)**
Institute of Reconstructive Sciences in Medicine
Faculty of Medicine and Dentistry
University of Alberta
Edmonton, AB. Canada

**Thomas J. Salinas, D.D.S.**
Mayo Clinic
Department of Dental Specialties
Rochester, MN USA

**Johan Wolfaardt, BDS, PhD, Mdent**
Institute for Reconstructive Sciences in Medicine
Misericordia Community Hospital
University of Alberta
Alberta Health Services
Covenant Health
Edmonton, AB. Canada
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