

International Congress on Maxillofacial Rehabilitation

Joint meeting of the

60th Annual Meeting of the

**AMERICAN ACADEMY OF
MAXILLOFACIAL PROSTHETICS**

and the

10th Biennial Meeting of the

**INTERNATIONAL SOCIETY FOR
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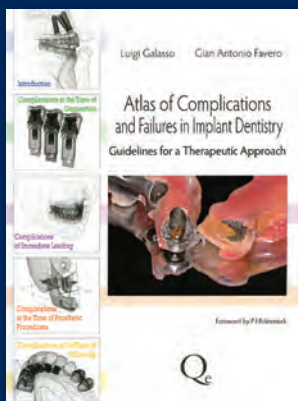
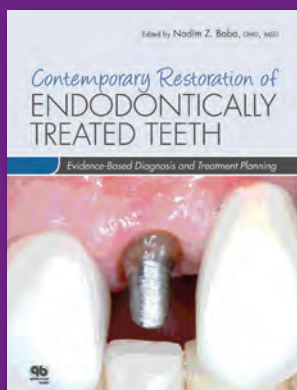
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In Memory of Luis Richard Guerra



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

2013 Presidential Greetings:

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Welcome Message

Welcome to the 2013 joint meeting of the AAMP and ISMR. After the unforeseen cancellation of the 2012 meeting in Baltimore, due to Superstorm Sandy, both the AAMP and ISMR organizations decided to take the opportunity to work together in 2013 as well. So, for many reasons, the conference in Santa Ana Pueblo represents an historical landmark, as after the disastrous events in Baltimore, it still represents the 60th annual meeting of the AAMP as well as the 10th biennial international conference of the ISMR and the second Joint Meeting of the two groups.

We thank you for joining us in beautiful Santa Ana Pueblo to celebrate these most important landmarks. Today, partnership is essential to success and moving forward in a challenging world. The joint meeting in Santa Ana Pueblo is a wonderful example of partnering for success. Our conference theme focuses on *Interdisciplinary Rehabilitation Care for Head and Neck Patients*. An interdisciplinary approach is essential to gain optimal success 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 among all involved disciplines are the foundational principles of the ISMR and AAMP. With this in mind, it was an easy step to join the strengths of the AAMP and ISMR in developing the scientific program for both 2012 and 2013. The conference program provides a breadth of interdisciplinary opportunities for all participants and has been designed to include both acquired and congenital conditions as well. Added value is provided by the concurrent sessions, the workshops and the special interest group presentation. Please attend the special interest groups as these will bring particular value to focused areas in the overall care spectrum. Our thanks to the Oral Rehabilitation Outcomes Network (ORONet) for contributing special interest group presentations.

It is remarkable 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 continue to engage with us in the exciting programs that both organizations have planned for the future.

The last year has been a trying and challenging one for both organizations, but 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 beauty of New Mexico, to grow professionally and find pleasure in meeting with colleagues and friends.

Harry Reintsema

A handwritten signature in black ink, appearing to be 'H. Reintsema', with a long horizontal stroke extending to the right.

Lawrence E. Brecht

A handwritten signature in black ink, appearing to be 'Lawrence E. Brecht', with a stylized, cursive script.

Dr. Reintsema's Biography

DDS, PhD



Maxillofacial prosthodontist, Head of the Center for Special Dental Care and Board Member of the department for Oral and Maxillofacial Surgery of the University Medical Center Groningen in the Netherlands

His clinical and research interests are in the area of Maxillofacial Prosthodontics / Maxillofacial Rehabilitation with particular emphasis in the area of head and neck reconstruction, osseointegration and treatment outcomes.

Dr Reintsema has published numerous 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 Reintsema has served on Boards of the International Society for Maxillofacial Rehabilitation (ISMR), and the Dutch Society for Prosthetic Dentistry and Orofacial Pain (NVGPT). Dr Reintsema was awarded the Schuiringa Award for his achievements in maxillofacial prosthodontics in the Netherlands in 2000.

DDS



Lawrence E. Brecht, DDS, is Clinical Associate Professor of Prosthodontics and Occlusion at New York University College of Dentistry where he serves as the Director of Maxillofacial Prosthetics in the Jonathan & Maxine Ferencz Advanced Education Program in Prosthodontics. He has a joint appointment at the Institute of Reconstructive Plastic Surgery of New York University School of Medicine where he is Director of the Dental Services & Craniofacial Prosthetics and serves on the Institute's Cleft Palate, Craniofacial and Ear Anomalies teams. In

addition, he serves on the Executive Committee of the Institute. Dr. Brecht received his DDS from New York University and completed a residency at Boston's Brigham & Women's Hospital and a Fellowship at Harvard School of Dental Medicine. He then earned his Certificates in both Prosthodontics, as well as Maxillofacial Prosthetics from the New York Veterans Administration Hospital. Dr. Brecht is a member of the American College of Prosthodontists, and served on its Board of Directors. In addition to serving as the President of the American Academy of Maxillofacial Prosthetics, he is currently the President-elect of the Greater New York Academy of Prosthodontics. He is a Fellow of the Academy of Prosthodontics, and a member of the American Cleft Palate/Craniofacial Association. He is a frequent contributor to the cleft, plastics and maxillofacial literature. He maintains a practice limited to prosthodontics and maxillofacial prosthetics in New York City.

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 Drs. 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



AAMP HISTORY

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 Academys 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 Associations 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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- Institute for Reconstructive Sciences in Medicine/IRSM, Alberta, CA
- Shanghai Ninth People's Hospital, CN • Children's Hospital Los Angeles
- Hospital for Sick Children, Toronto • National Institutes of Health (NIDCR), USA
- UMC St Radboud, Nijmegen, NL • The Eastman Dental Institute/GOSH, UK
- University of Illinois at Chicago • Cincinnati Children's Hospital • NYU Medical Center
- Universität Tübingen, DE • Universität Würzburg, DE • University of Pittsburgh



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Dr. Daniel O'Connell

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Dr. Robert Taft

Dr. Alvin Wee

Executive Director

Joseph M. Jackson, CAE

ISMR Past Presidents

John Beumer III, D.D.S, M.S.....	1994 Palm Springs, CA
John Beumer III, D.D.S, M.S.....	1996 Seoul, KR
John Beumer III, D.D.S, M.S.....	1998 Torino, IT
Salvatore Esposito, D.M.D.....	2000 Kauai, HI
Ian Zlotolow, D.M.D.	2002 Okinawa, JP
Takashi Ohyama, D.D.S, PhD.....	2002 Okinawa, JP
John Beumer III, D.D.S, M.S.....	2004 Maastricht, NL
Robert van Oort, D.D.S, PhD	2004 Maastricht, NL
John Beumer III, D.D.S, M.S.....	2006 Maui, HI
David J. Reisberg, D.D.S.....	2008 Bangkok, TH
David J. Reisberg, D.D.S.....	2010 Sestri Levante, IT
Johan Wolfaardt, B.D.S, PhD	2012 Baltimore, MD

We thank all past ISMR Presidents for their dedication and service

ISMR Committees

Please visit:

<http://www.ismr-org.com/?page=Committees>

to view all current 2013 committee members



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Dr. Arun B. Sharma

Dr. Joseph M. Huryn

AAMP Past Presidents

*Aeldred C. Fonder, D.D.S.....	1953 Chicago, IL
*Robert E. Stewart, D.D.S.....	1954 Chicago, IL
*Thomas E. Knox, D.D.S.....	1955 Chicago, IL
*Arthur H. Bulbulian, D.D.S.....	1956 Chicago, IL
*Arthur H. Bulbulian, D.D.S.....	1957 Chicago, IL
*Mervin C. Cleaver, D.D.S.....	1958 Dallas, TX
*Joseph B. Barron, D.D.S.....	1959 Chicago, IL
*Joseph B. Barron, D.D.S.....	1960 Los Angeles, CA
*Benjamin B. Hoffman, D.D.S.....	1961 Philadelphia, PA
*Edward J. Fredrickson, D.D.S.....	1962 Miami Beach, FL
*Kenneth I. Adisman, D.D.S.....	1963 Atlantic City, NJ
*Joe B. Drane, D.D.S.....	1964 San Francisco, CA
*Louis J. Boucher, D.D.S.....	1965 Las Vegas, NV
*Victor J. Niiranen, D.D.S.....	1966 Dallas, TX
*Victor J. Niiranen, D.D.S.....	1967 Washington, DC
*Ralph S. Lloyd, D.D.S.....	1968 Miami, FL
*Herbert H. Metz, D.D.S.....	1969 New York, NY
*Morton S. Rosen, D.D.S.....	1970 Las Vegas, NV
*John E. Robinson, D.D.S.....	1971 Cherry Hill, NJ
*Thomas A. Curtis, D.D.S.....	1972 Las Vegas, NV
Sebastian A. Bruno, D.D.S.....	1973 San Antonio, TX
William R. Laney, D.M.D.....	1975 Lake Geneva, WS
*James B. Lepley, D.D.S.....	1976 San Diego, CA
*Augustus J. Valauri, D.D.S.....	1977 Orlando, FL
Arthur O. Rahn, D.D.S.....	1978 Las Vegas, NV
Dorsey J. Moore, D.D.S.....	1979 New Orleans, LA
James S. Brudvik, D.D.S.....	1980 San Antonio, TX
*Seymour Birnbach, D.D.S.....	1981 St. Louis, MO
James W. Schweiger, D.D.S.....	1982 Monterey, CA
Norman G. Schaaf, D.D.S.....	1983 San Diego, CA
*Verdi F. Carsten, D.D.S.....	1984 Nashville, TN
*David N. Firtell, D.D.S.....	1985 Seattle, WA
Ronald P. Desjardins, D.M.D.....	1986 Williamsburg, VA
Mohammad Mazaheri, D.D.S.....	1987 San Diego, CA
Richard J. Grisius, D.D.S.....	1988 Baltimore, MD
*Charles C. Swoope, D.D.S.....	1989 Tucson, AZ
Stephen M. Parel, D.D.S.....	1990 Charleston, SC
Donald L. Mitchell, D.D.S...	1992 Tampa, FL
Clifford W. Van Blarcom, D.D.S.....	1993 Palm Springs, CA

Gordon E. King, D.D.S.....	1994 New Orleans, LA
Gregory R. Parr, D.D.S.	1995 Washington, DC
James E. Ryan, D.D.S.....	1996 Kansas City, MO
*Carl J. Andres, D.D.S.....	1997 Orlando, FL
Salvatore J. Esposito, D.M.D.....	1998 Victoria, BC
Timothy R. Saunders, D.D.S.....	1999 Philadelphia, PA
Jonathan P. Wiens, D.D.S.....	2000 Kauai, HI
Alan J. Hickey, D.M.D.....	2001 New Orleans, LA
Robert E. Gillis Jr., D.M.D, M.S.D.	2002 Orlando, FL
*Thomas R. Cowper, D.D.S.....	2003 Scottsdale, AZ
Mark T. Marunick, D.D.S, M.S.....	2004 Ottawa, Canada
Thomas J. Vergo Jr., D.D.S.....	2005 Los Angeles, CA
Rhonda F. Jacob., D.D.S., M.S.....	2006 Maui, HI
Jeffrey E. Rubenstein, D.M.D, MS	2007 Scottsdale, AZ
Terry M. Kelly, D.M.D.....	2008 Nashville, TN
Glenn E. Turner, D.M.D., M.S.D...	2009 San Diego, CA
Steven E. Eckert, D.D.S., M.S.....	2010 Orlando, FL
Robert M. Taft, D.D.S.,.....	2011 Scottsdale, AZ
Stephen P. Haug, D.D.S, M.S.D.	2012 Baltimore, MD

**Denotes Deceased*

We thank all past AAMP Presidents for their dedication and service

AAMP Committees

Please visit:

<http://www.maxillofacialprosth.org/AboutUS/Committees.html>

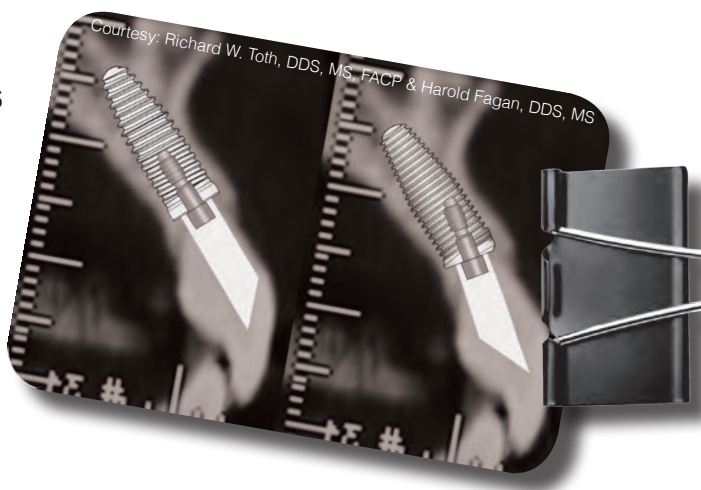
to view all current 2013 committee members

Recipients of the Ackerman Award

Andrew J. Ackerman, D.D.S.....	1961
Mervin C. Cleaver, D.D.S.....	1962
Arthur H. Bulbulian, D.D.S.....	1964
Joe B. Drane, D.D.S.....	1966
Victor J. Niiranen, D.D.S.....	1968
Totten S. Malson, D.D.S.....	1969
William R. Laney, D.M.D.....	1971
I. Kenneth Adisman, D.D.S.....	1972
Joseph B. Barron, D.M.D.....	1974
Herbert Metz, D.D.S.....	1976
Varoujan A. Chalian, D.D.S.....	1978
Thomas A. Curtis, D.D.S.....	1980
John E. Robinson, Jr., D.D.S.....	1981
Arthur O. Rahn, D.D.S.....	1982
Sebastian A. Bruno, D.D.S.....	1984
Mohammad Mazaheri, D.D.S.....	1989
Ronald P. Desjardins, D.M.D.....	1991
Norman G. Schaaf, D.D.S.....	1994
Richard J. Grisius, D.D.S.....	1995
Luis R. Guerra, D.D.S.....	1997
Gordon E. King, D.D.S.....	1998
Dorsey J. Moore, D.D.S.....	1999
Stephen M. Parel, D.D.S.....	2000
James P. Lepley, D.D.S.....	2001
Cliff W. Van Blarcom, D.D.S.....	2002
Carl J. Anders, D.D.S.....	2003
John Beumer III, D.D.S., M.S.....	2005
Salvatore J. Esposito, D.M.D.....	2007
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Social Events & Guest Activities

Sunday, October 27th

- 06:45 - 09:45 **Hot Air Balloon Ride** (*Elective*)
Meet in hotel lobby
- 17:30 - 20:00 **AAMP/ISMR Poster Session & Exhibit Reception**
Located in Tamaya EFGH

Monday, October 28th

- 07:00 - 08:00 **Daily Breakfast - Exhibit Review**
Located in Tamaya EFGH
- 10:00 - 10:45 **Cultural Learning Center Tour** (*Elective*)
Meet in hotel lobby
- 12:00-13:30 **AAMP Luncheon and Business Meeting**
AAMP Members only- Located in Puma Room
- 17:00 - 21:30 **AAMP/ISMR Social Outing** (*Elective*)
Sandia Peak Tramway & Dinner
Meet in hotel lobby

Tuesday, October 29th

- 07:00 - 08:00 **Daily Breakfast - Exhibit Review**
Located in Tamaya EFGH
- 07:00 - 08:00 **AAMP New Members Breakfast**
Invite only- Located in Rio Grande Lounge
- 09:00 – 15:00 **Santa Fe Tour** (*Elective*)
Meet in hotel lobby
- 12:00 - 13:30 **ISMR Luncheon and Business Meeting**
ISMR Members only- Located in Hawk BC
- 19:00-22:00 **AAMP / ISMR Presidential Reception & Banquet** (*Elective*)
Located in Tamaya Ballroom

Wednesday, October 30th

- 07:00 - 08:00 **Daily Breakfast - Exhibit Review**
Located in Tamaya EFGH
- 09:00 - 10:00 **Guided Nature Walk** (*Elective*)
Meet in hotel lobby
- 10:00 and 14:00 **Horseback Riding Trail Rides** (*Elective*)
Please contact Hyatt Tamaya directly for details

Thursday, October 31st - Saturday, November 2nd

- Post-Conference** (*Elective*)
- Santa Fe Tour**
Departs from hotel lobby at 9:00am

International Congress on Maxillofacial Rehabilitation



ISMR

Joint meeting of the

American Academy of Maxillofacial Prosthetics

and the

International Society for Maxillofacial Rehabilitation

October 27 - 30, 2013

Hyatt Regency Tamaya Resort, Santa Ana Pueblo, New Mexico USA



Welcome from
Santa Ana Pueblo, New Mexico

2013
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2013 Scientific Program Overview

Saturday, October 26th

8:00-16:00 ISMR Board Meeting (*Council Members only*)-Located in Eagle Room

17:00-20:00 AAMP Executive Meeting (*Executive Board only*)-Located in Hawk BC

Sunday, October 27th

8:00-17:00 AAMP Board Meeting (*Council Members only*)- Located in Hawk BC

10:30-16:30 *Exhibit Room - available for Exhibit booth set-up*

15:00-17:00 **Special Interest Group on Facial Prosthetics**

Information Session & Discussion: Led by **Rosemary Seelaus**

15:00-16:00 Poster Set-up

16:00-17:30 Poster Review

17:30-20:00 Poster Session & Exhibit Reception

Posters remain displayed throughout the meeting

Monday, October 28th

7:00 Continental Breakfast - *Exhibit Review*

7:45 Opening Remarks-

In Memoriam: Lou Guerra presented by Craig Van Dongen

In Memorium: Ari Shifman presented by John Wolfaardt

8:00-9:45 **Plenary Session - Head & Neck Cancer Rehabilitation**

Located in Tamaya ABCD

Moderator: Dr. Robert Taft

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*

Moderator: Dr. Robert Taft

Panel Members:

Lawrence Brecht, David L. Hirsch, Harry Reintsema,

Hadi Seikaly, Max Witjes and Johan Wolfaardt

9:45 AM Coffee Break- *Exhibit Review*

Sponsored by Quintessence Publishing & Conexão Sistemas de Prótese

10:15-12:00	Plenary Session - Head & Neck Cancer Rehabilitation Located in Tamaya ABCD Moderator: Dr. Thomas Salinas	
10:15	4- Robert Foote	<i>Advances in Radiation Delivery for Head & Neck Cancers</i>
10:45	5- Jan Lewin	<i>Functional Outcomes in Patients with Head and Neck Cancer: Current Knowledge and Collaborative Initiatives</i>
11:15	6- W.P. Andrew Lee	<i>The Promises and Challenges of Face and Other Vascularized Composite Allo-Transplantation</i>
11:45	<i>Discussion</i>	
12:00-13:30	AAMP Business Lunch (Members only)- Located in Puma Room	
13:30-15:00	Selected Abstracts	

	<u>Concurrent Session A</u> Located in Tamaya ABC Moderators: Dr. Jana Reiger Dr. Alvin Wee	<u>Concurrent Session B</u> Located in Tamaya D Moderators: Dr. Joseph Huryn Dr. James Kelly
13:30	7- Shogo Ozawa- <i>Maxillofacial Prostheses using Japanese Magnetic Attachments</i>	14- Yuka Sumita- <i>Clinical System in Tokyo Medical and Dental University for Brachytherapy</i>
14:00	8- Samuel Zwetchkenbaum- <i>Nursing Homes: An Orientation</i>	15- David Reisberg- <i>The Craniofacial Team: Welcome to Tomorrow</i>
14:15	9- Chiquit Van Linden Van Den Heuvel- <i>Fly on the Wall-Participating Observations During Treatment Decision Sessions in Head and Neck Oncology</i>	16- Ho Beom Kwon- <i>Three-Dimensional Finite Element Analysis of Obturator Prostheses for Acquired Palatal Defects</i>
14:30	10- Sabine Harck- <i>Head and Neck Cancer - Protocols for the Oral Hygienist as Part of the Cranio-Facial Team</i>	17- Robert Schneider- <i>Oromandibular Dystonia: A Multidisciplinary Treatment Entity</i>
14:45	11- Caroline Speksnijder- <i>Mastication and Tongue Function in Patients Treated for Malignancies in Tongue and/or Floor of Mouth; A 1-Year Prospective Study</i>	18- Richard Cardoso- <i>A Retrospective Review of Radiation-Induced Trismus in Head and Neck Cancer: An M.D. Anderson Experience</i>
15:00	PM Coffee Break- Exhibit Review Sponsored by Quintessence Publishing & Conexão Sistemas de Prótese	

	<u>Concurrent Session A</u> <i>Located in Tamaya ABC</i> Moderators: Dr. Jana Reiger Dr. Alvin Wee	<u>Concurrent Session B</u> <i>Located in Tamaya D</i> Moderators: Dr. Joseph Huryn Dr. James Kelly	<u>Concurrent Panel</u> <i>Located in Wolf Room</i>
15:30	12- Azadeh Afshari- <i>Fabrication of a Tissue Equivalent Prosthesis for Radiation Therapy: A Case Report</i>	19- David Trainer- <i>A Novel Approach to Osseointegrated Auricular Prosthesis Retention</i>	<u>Special Interest Group</u> 15:30-16:30 Chiquit van Linden van den Heuvell
15:45	13- Anat Sharon- <i>The Antibacterial Properties of Obturator Lining Materials, Incorporated with Quaternary Ammonium Polyethylenimine Nanoparticles</i>	20- Louis R. Marion- <i>Rehabilitating Extensive Acquired Mandibular Defects with Screw-Retained Implant-Supported Prostheses</i>	<i>Behavioral Special Interest Group Session</i>
16:00	Session Adjourns		
17:00-21:30	Social Outing		

Tuesday, October 29th

7:00	Continental Breakfast - <i>Exhibit Review</i>	
7:45	Opening Remarks	
8:00-9:45	Plenary Session - Craniofacial / Congenital Defects <i>Located in Tamaya ABCD</i> Moderator: Dr. Lawrence Brecht	
8:00	21- Stephen M. Warren	<i>Primary Cleft Lip and Palate Care with Nasoalveolar Molding</i>
8:30	22- John O. Wirthlin	<i>Craniofacial Orthodontics</i>
9:00	23- Gorman Louie	<i>Advanced Digital Technologies in Craniofacial Reconstruction</i>
9:30	<i>Discussion</i>	
9:45	AM Coffee Break- <i>Exhibit Review</i> <i>Sponsored by Quintessence Publishing & Conexão Sistemas de Prótese</i>	
10:15-12:00	Plenary Session - Congenital / Craniofacial Rehabilitation <i>Located in Tamaya ABCD</i> Moderator: Dr. David Reisberg	
10:15	24- Ann W. Kummer	<i>Jaws (They're Not Just an Eating Machine): How Jaw Anomalies Affect Speech and Resonance</i>
10:45	25- Claudia Crilly Bellucci	<i>Quality of Life for Patients with Congenital or Acquired Craniofacial Conditions</i>

11:15 **26- Mark P. Mooney** *The ACPA and Its Role in Advancing Cleft Care Globally*

11:45 *Discussion*

12:00-13:30 **ISMR Business Lunch** (*Members only*)- Located in Hawk BC

	<u>Concurrent Session A</u> <i>Located in Tamaya ABC</i> Moderators: Dr. Peter Gerngross Dr. Steven Haug	<u>Concurrent Session B</u> <i>Located in Tamaya D</i> Moderator: Dr. Richard Cardoso Dr. Arun Sharma	<u>Concurrent Workshop</u>
13:30	27- TBD	38- Luciano Lauria Dib- <i>Sponsored Speaker</i>	<u>Workshop I.</u> FACTOR II
14:00	28- Qing Lin- <i>The Correlation Between Mental Condition And Quality Of Life Of Patients With Maxillary Defects</i>	39- Jana Rieger- <i>Pharyngeal Stimulation in Head and Neck Cancer Patients with Dysphagia: Outcomes and Issues</i>	<i>Located in Eagle Room</i> 13:30 – 17:00 <i>Silicone & Magnetic Retention “2013”</i> <i>(Fee Required)</i>
14:15	29- Stephen Wagner- <i>Prefabricated Impression Trays For Use With Patients Presenting With Maxillofacial Defects</i>	40- Joseph Huryn- <i>Dose Distribution to the Mandible Following Intensity Modulated Radiation Therapy for Oropharyngeal Cancer</i>	
14:30	30- Dale Howes- <i>The Impact of Digital Technologies on Craniofacial Rehabilitation – The South African Experience</i>	41- Alvin Wee- <i>Influence Of Physical Activity On Patients With Head And Neck Cancer Therapy</i>	
14:45	31- Elisabetta Bellia- <i>The Rehabilitation with Obturator of the Maxillectomized Patient: The Application of a Novel Method</i>	42- Gianfranco Gassino- <i>Prosthodontic Rehabilitation for Total Glossectomy with an Implant assisted Tongue Prosthesis: A Clinical Report</i>	
15:00	PM Coffee Break – <i>Exhibit Review</i> <i>Sponsored by Quintessence Publishing & Conexão Sistemas de Prótese</i>		

	<u>Concurrent Session A</u> <u>Located in Tamaya ABC</u>	<u>Concurrent Session B</u> <u>Located in Tamaya D</u>	<u>Concurrent Panel</u> <u>& Workshop</u>
	Moderators: Dr. Peter Gerngross Dr. Steven Haug	Moderator: Dr. Richard Cardoso Dr. Arun Sharma	
15:30	32- Susan Habakuk- <i>Osseointegrated Implants and the Rehabilitation of the Microtia Patient</i>	43- Gerald Grant- <i>Digital Design and Fabrication of a Facial Mask for Facetransplant Donor</i>	<u>Workshop I.</u> FACTOR II (Continued) <u>Located in Eagle</u> 13:30 – 17:00 <i>Silicone & Magnetic Retention "2013"</i>
15:45	33- Sidney Fels- <i>A Computer Modelling-Based Approach to Studying Human Oral, Pharyngeal and Laryngeal Complex</i>	44- Linping Zhao- <i>Principles and Practice of Virtual Cranio-maxillofacial Surgery: Technical Issues Surrounding Simulation and Planning</i>	<i>(Fee Required)</i> <u>Special Interest Group</u> <u>Located in Bear</u> 15:30 - 17:00
16:00	34- Anton Petrich- <i>Clinical Use of Digital Imaging and Additive Manufacturing in Fabrication of Facial Prostheses</i>	45- Sebastian B.M. Patzelt- <i>3D Face Scans in Dentistry</i>	Richelle Chuka, Hester Groenewegen, Sabine Harck
16:15	35- Doke Buurman- <i>Prosthetic Rehabilitation of Head and Neck Cancer Patients. Zooming in on Lower Dentures in Irradiated Patients</i>	46- Graham Blackbeard- <i>Custom Made Arthroplastics and Prosthetics in Maxillo-Facial Rehabilitation</i>	<i>Oral Hygiene in Rehabilitation Maxillofacial Patients</i>
16:30	36- Loenardo Ciocca- <i>Mandible Reconstruction using CAD-CAM Scaffolding and Bone Plate</i>	47- Paul Tanner- <i>Depigmented Skin & Phantom Color Measurements for Realistic Prostheses</i>	
16:45	37- Zhihong Feng- <i>Virtual Transplantation In Designing A Facial Prosthesis For Extensive, Crossing-Facial-Midline Maxillofacial Defects With Computer-Assisted Technology</i>	48- Alejandro Arango- <i>Development of a Protocol for the Treatment of Mandibular Defects with Custom Made Implants</i>	
17:00	Session Adjourns		
17:00-18:00	AAMP Mentors Meeting- Located in Puma Room		
19:00-22:00	Conference Reception, Silent Auction & Banquet		

Wednesday, October 30th

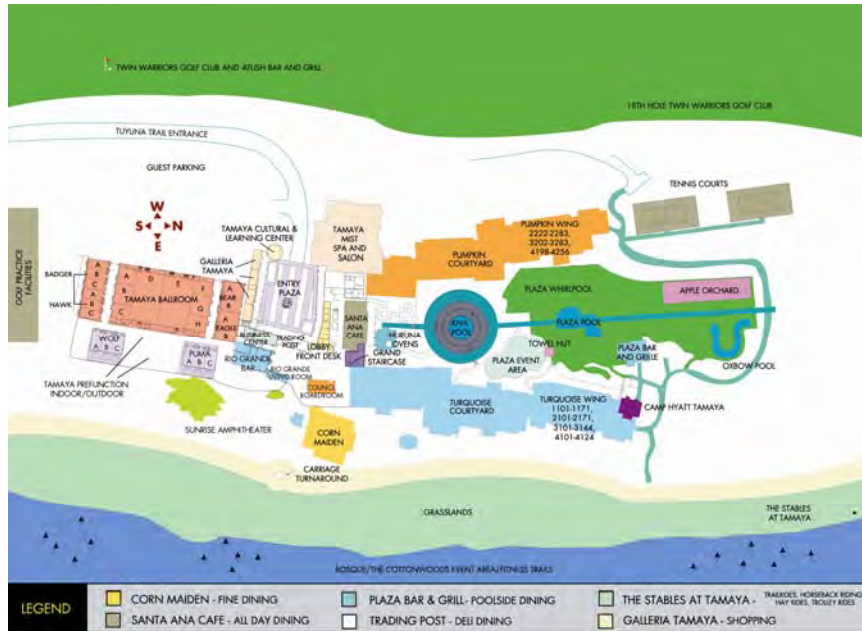
7:00	Continental Breakfast - <i>Exhibit Review</i>	
7:45	Opening Remarks	
8:00-9:45	Plenary Session – Head & Neck Trauma Located in Tamaya ABCD Moderator: Dr. Gerald Grant	
8:00	49 - Harry Reintsema	<i>Clinical Management of Salivary Gland Hypofunction and Xerostomia in Head-and-Neck Cancer Patients</i>
8:30	50- Dale Howes	<i>The Role of the Prosthodontist in Craniofacial Trauma</i>
9:00	51- Robert Taft	<i>Reconstruction of Trauma Wounds</i>
9:30	Discussion	
9:45	AM Coffee Break- <i>Exhibit Review</i>	
10:15-12:00	Plenary Session- Located in Tamaya ABCD Moderator: Dr. Mark Chambers	
10:15	52- Maureen Stone	<i>Instrumental Assessment of Tongue Function</i>
10:45	53- Jeff Harris	<i>Global Picture of Required Competencies in H&N Services</i>
11:15	54- Jeffrey N. Myers	<i>The Role of the H&N Team in the Era of Personalized Cancer Care</i>
11:45	<i>Discussion</i>	
12:00	Conference Adjourns - <i>Exhibit Breakdown</i>	
13:00-14:30	ISMR ACOM Lunch Meeting- <i>Located in Eagle Room</i>	
13:30-17:00	Concurrent Workshops	

<u>Workshop II.</u> <i>Located in Tamaya ABC</i>	<u>Workshop III.</u> <i>Located in Bear</i>	
AAMP-ISMR 13:30-17:00 <i>Maxillofacial Insurance Reimbursements</i> <i>(Fee Required)</i>	Cochlear Vistafix System 13:30-17:00 <i>Advancements in Bone Anchored Facial Prosthetic Solutions</i> <i>(Fee Required)</i>	

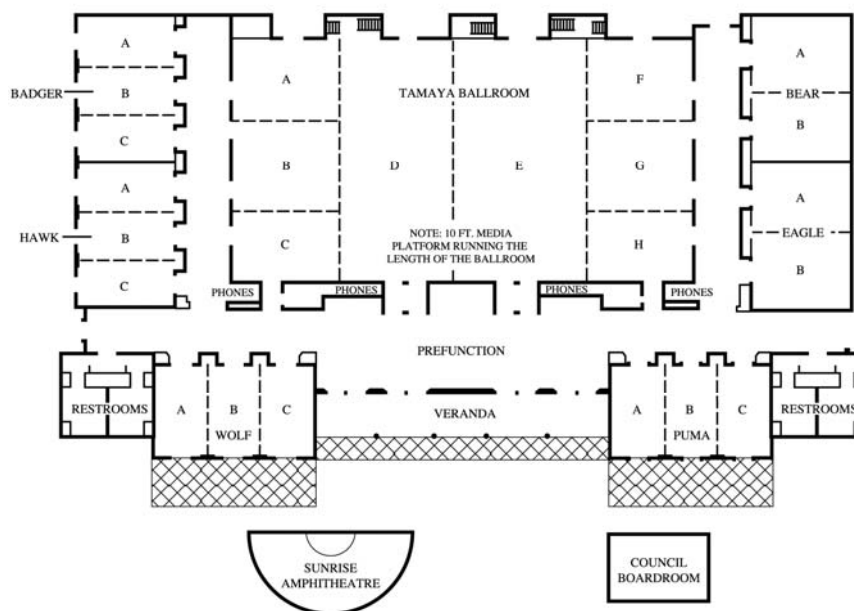
Thursday, October 31st – Saturday, November 2nd

9:00	Elective Post Conference Santa Fe, New Mexico Tour 2 nights/3 days Santa Fe Tour and Food Tasting
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Resort Map



Meeting Room Map



2013 Scientific Program

In order of appearance

Session I. Head & Neck Cancer Rehabilitation Monday, October 28th 2013

1

Invited Speaker

Head & Neck Cancer Rehabilitation

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.

PREOPERATIVE VIRTUAL PLANNING FOR MAXILLARY FREE FLAP RECONSTRUCTION TO OPTIMIZE FUNCTIONAL IMPLANT SUPPORTED PROSTHETIC REHABILITATION

Seikaly, Hadi* MD, FRCSC

Professor of Surgery, Divisional Director and Zone Section Head

Otolaryngology, Head & Neck Surgery, University of Alberta

Alberta Health Services

Alberta, AB CA

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.

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Invited Speaker

Head & Neck Cancer Rehabilitation

ADVANCES IN RADIATION DELIVERY FOR HEAD AND NECK CANCERS

Foote, Robert L.* MD, FACR, FASTRO

Professor and Chair

Department of Radiation Oncology

Mayo Clinic, College of Medicine

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.

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.

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Invited Speaker

Head & Neck Cancer Rehabilitation

THE PROMISES AND CHALLENGES OF FACE AND OTHER VASCULARIZED COMPOSITE ALLO-TRANSPLANTATION

Lee, W. P. Andrew* MD; Shores, Jaimie T. MD; Gordon, Chad DO;

Brandacher, Gerald MD

Department of Plastic and Reconstructive Surgery

Johns Hopkins University School of Medicine

Baltimore, MD USA

Despite the advances in reconstructive surgery using autogenous tissues, severe injuries to the face and extremities often result in permanent disfigurement and dysfunction. In addition, morbidity from extensive surgery and prolonged rehabilitation further compromise outcomes. For most devastating injuries for which conventional reconstruction is not optimal or feasible, Vascularized Composite Allo-transplantation (VCA) has become a viable and immediately available alternative to conventional reconstruction. Over the past decade, over 20 face transplants and 90 upper extremity transplants have been performed around the world with favorable long-term success rates and encouraging functional outcomes in most cases. However, the toxicities and adverse effects of the high dose immunosuppressive drugs needed have curtailed wider application. In particular, the use of conventional triple drug combination for maintenance therapy including tacrolimus, mycophenolate mofetil and steroids, currently the mainstay therapy in both solid organ transplantation and VCA, is associated with substantial morbidity such as opportunistic infections, metabolic disorders, or malignancies. Thus, the central challenge for VCA is to develop novel treatment concepts to minimize/avoid immunosuppression and extend the benefits of these life-enhancing procedures to the military and civilian patient populations.

The team currently at Johns Hopkins has pioneered donor bone marrow (BM) cell based strategies to modulate rather than suppress immune rejection and thereby minimize the need for immunosuppressive medication after VCA. Six patients received between March 2009 and December 2012 a total of ten hand/forearm transplants. Patients were treated with alemtuzumab and methylprednisolone for induction followed by tacrolimus monotherapy with target trough levels ranging between 12-15ng/ml during the early post transplant period and 6-10ng/ml thereafter. On pod 14 patients received

an unmodified whole donor BM cell infusion isolated from nine vertebral bodies. The case series includes the first American male and female bilateral hand transplants and the world's first combined total forearm and hand transplant. Hand/forearm allografts are currently maintained on low levels (3-10 ng/ml) of tacrolimus monotherapy in 5 of 6 patients. Acute episodes of skin rejection were infrequent and reversible in all cases. No systemic infectious (bacterial or viral) complications occurred. Patients demonstrate sustained improvements in motor function (ROM, intrinsic return, grip and pinch strength) and sensory return correlating with the time after transplantation, level of amputation and participation in hand therapy. This immune-modulatory protocol renders the risk-balance favorable in suitable VCA candidates and will be utilized in the face transplant program at Johns Hopkins.

7

Featured Speaker

Head & Neck Cancer Rehabilitation

MAXILLOFACIAL PROSTHESES USING JAPANESE MAGNETIC ATTACHMENTS

Ozawa, Shogo

Aichi Gakuin University, School of Dentistry,

Department of Removable Prosthodontics

Nagoya, Japan

In maxillofacial prosthetics the magnetic attachments have been applied as effective tools, however conventional magnetic attachments have some problems for clinical applications, those were inappropriate size and insufficient retentive force. Furthermore, resistance to corrosion is a crucial point in clinical situation. The purpose of this presentation is to demonstrate the applicable potential of Japanese magnetic attachments for maxillofacial prostheses.

The attachment was evaluated by the standardized evaluation methods for the magnetic attachment which has been filed in ISO13017 (International Organization for Standardization). The results revealed that increased attractive force and improved 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, a large number of the magnetic applications were prospectively studied and resulted in a higher success rate for oral appliances. The Japanese magnetic attachments should be applicable for various kinds of maxillofacial treatment. It is useful to retain implant overdenture prosthesis for a defected jaw and to assemble sectional prosthesis or facial prosthesis to combine oral appliance.

NURSING HOMES: AN ORIENTATION

Zwetchkenbaum, Samuel*
University of Michigan
School of Dentistry
Ann Arbor, MI USA

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.

FLY ON THE WALL- PARTICIPATING OBSERVATIONS DURING TREATMENT DECISION SESSIONS IN HEAD AND NECK ONCOLOGY

**Van Linden Van Den Heuvel, 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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Head & Neck Cancer Rehabilitation

HEAD AND NECK CANCER - PROTOCOLS FOR THE ORAL HYGIENIST AS PART OF THE CRANIO-FACIAL TEAM

Harck, Sabine*

P-I.Branemark Institute of South Africa

Johannesburg, South Africa

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 & 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: 27 of the 33 patients suffered from Xerostomia. Radiation and or Chemo-Radiation was undertaken in half the sample, all of which complained of Xerostomia. Surgery was performed on 16 patients of which 11 developed significant trismus. Fibula Free Flaps were performed on 4 Patients, 2 of which were for rehabilitation of recurrence. 9 patients suffered recurrences, of which 4 had been treated with Surgery and Radiation, 4 had radiation only while 1 had surgery only. Other complications included speech (9/33) and dysphagia (8/33) all of which had radiation.

Conclusion: Oral hygienists are indispensable 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.

MASTICATION AND TONGUE FUNCTION IN PATIENTS TREATED FOR MALIGNANCIES IN TONGUE AND/OR FLOOR OF MOUTH; A 1-YEAR PROSPECTIVE STUDY

Speksnijder, Caroline*, Andries Van Der Bilt, Matthias A.W. Merkx, Ron Koole
University Medical Center Utrecht &
Radboud University Medical Centre Nijmegen
Oral and Maxillofacial Surgery
Utrecht, Netherlands

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. 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 & 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: Surgical intervention had a large negative impact on oral function. Radiotherapy further worsened dental state, bite force, and masticatory performance. However, radiotherapy did not significantly influence sensation, mobility, or maximum force of the tongue. Nevertheless, patients treated by surgery and radiotherapy had a significant worse dental state, bite force, masticatory performance, tongue sensation, and tongue mobility than patients treated by surgery only. The tongue force in patients of both groups increased significantly in the first half year after surgery. However, this increase disappeared in the next half year.

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.

FABRICATION OF A TISSUE EQUIVALENT PROSTHESIS FOR RADIATION THERAPY: A CASE REPORT

Afshari, Azadeh*, Gerngross, Peter; Pettit, Nathan; Wilson, Joella E
Michael E. Debakey VA Medical Center
Dental - Prosthodontics
Houston, TX USA

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.

THE ANTIBACTERIAL PROPERTIES OF OBTURATOR LINING MATERIALS, INCORPORATED WITH QUATERNARY-AMMONIUM POLYETHYLENIMINE NANOPARTICLES

Sharon, Anat*, Atar-Froyman L , Beyth N, Weiss E I ,Sela M
Hadassah Medical Organization, Hebrew University, Dental School
Maxillofacial Rehabilitation
Jerusalem, Israel

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 possess 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 polyethylenimine (PEI) nanoparticles, incorporated at 1-2% w/w in soft liner materials (lining obturators) compared to the non-modified soft liners.

Methods & 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: DCT showed potent antibacterial activity in the soft liner materials incorporating PEI nanoparticles against all tested bacteria ($p < 0.001$). ADT showed no inhibition halo in all tested bacteria, indicating the antibacterial nanoparticles are not diffusing into the agar. There is no inhibition in the Bacterial growth, indicating the antibacterial activity is not leaching out to the materials' elute.

Tensile strength of a soft liner material incorporating 1% & 2%w/w PEI nanoparticles compared to the control showed insignificant differences in the 1%w/w group when compared to the control group. In the 2%w/w group the decrease was significant compared to control and 1%w/w group but still in the range of the standard ($p < 0.01$) (ANSI/ADA ISO 10139).

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 conducts in our department, shows similar clinical results.

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Featured Speaker

Head & Neck Cancer Rehabilitation

CLINICAL SYSTEM IN TOKYO MEDICAL AND DENTAL UNIVERSITY FOR RADIOTHERAPY

Sumita, Yuka*

Tokyo Medical And Dental University

Maxillofacial Prosthetics

Tokyo, Japan

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, radiotherapy prostheses 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.

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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 & 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: Treatment outcomes will be reviewed and evaluated within the context of these new activities. Safety, efficacy, and financial considerations will be presented.

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.

THREE-DIMENSIONAL FINITE ELEMENT ANALYSIS OF OBTURATOR PROSTHESES FOR ACQUIRED PALATAL DEFECTS

Kwon, Ho Beom*, Fels, Sidney; Song, Woo-Seok; Kim, Myung-Joo;

Lim, Young-Jun

School of Dentistry, Seoul National University University of British Columbia

Department of Prosthodontics

Department of Electrical and Computer Engineering

Seoul, Korea (South)

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 & 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: The displacements of prosthesis and abutments were larger in the obturator model than in the removable partial denture model. In the obturator model the posterior portion of the prosthesis showed the largest displacement. Among abutments in the obturator model anterior teeth showed larger displacements than posterior teeth and there was higher stress concentration in molars. Lingual retentive clasps reduced the displacement of prostheses. The scar band contributed positively in stabilizing the obturator.

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.

OROMANDIBULAR DYSTONIA: A MULTIDISCIPLINARY TREATMENT ENTITY

Schneider, Robert*, Hoffman, Henry
University of Iowa Hospitals and Clinics
Hospital Dentistry Institute
Otolaryngology Head and Neck Surgery Institute
Iowa City, IA USA

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 & 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: Treatment is tailored for the individual patient. Oral medications have been utilized to treat OMD. Approximately one-third of patient's symptoms improve with clonazepam, trihexyphenidyl, diazepam and others. Although, as noted, the symptoms vary, approximately 70% of patients with OMD may experience some reduction of spasm and improvement in chewing and speech after injection of botulinum toxin (Botox) into muscles of mastication (masseter, temporalis and lateral pterygoid). These injections are most effective in mandibular closing and less effective in mandibular opening dystonia. Use of botulinum toxin has been reported to occasionally be effective

in the treatment of lingual dystonia, however side effects such as swallowing difficulties, speech problems and excessive muscle weakness where the injection was placed have been reported. The use of a dental prosthesis has been shown to be of value in reduction of OMD symptoms.

Conclusion: OMD treatment with a dental prosthesis can result in significant resolution in the patients symptoms with much less trauma/side effects than repeated injection of Botox or other medications and is less costly and relatively easily tolerated by most patients.

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Head & Neck Cancer Rehabilitation

A RETROSPECTIVE REVIEW OF RADIATION-INDUCED TRISMUS IN HEAD AND NECK CANCER: AN M.D. ANDERSON EXPERIENCE

Cardoso, Richard*; Beadle, Beth; Chambers, Mark
The University of Texas, M.D. Anderson Cancer Center
Department of Head and Neck Surgery, Section of Oral Oncology
Houston, TX USA

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 & 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 total of 551 patients were identified for the study; 290 of which had reference to an oral opening. A total of 33% (97/290) of patients in this group developed trismus. Preliminary results indicate that variables such as tumor size (T4 vs. T1,2,3), location within the oropharynx (retromolar trigone, posterior pharyngeal wall vs. tongue base, tonsil, soft palate), non-use of radiation stents, concomitant chemotherapy

(concomitant vs. induction alone or no chemotherapy), and post radiation surgery increase the risk of trismus ($p=0.05$). Variables such as nodal stage, gender, tumor pathology, race, and social habits do not appear to increase the incidence of trismus in this patient population; however, the population was mostly Caucasian (91%), male (88%) with tumors that were squamous cell carcinomas (93%). A total of 32 patients were treated for trismus with active motion (14/32, 44%) or passive motion (18/32, 56%). A total of 15 patients were treated with the range of motion device, Jaw DynaSplint System. When dichotomized by compliance (missing =2 appointments), the compliant group showed better oral opening averaging 9.6mm overall increase versus 3.3mm.

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.

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Head & Neck Cancer Rehabilitation

A NOVEL APPROACH TO OSSEOINTEGRATED AURICULAR PROSTHESIS RETENTION

Trainer, David*, Schnitt, Drew M.D
Cleveland Clinic Florida
Naples, FL USA

Purpose: The application of extraoral implants for the prosthetic rehabilitation of auricular defects is widely accepted. The traditional technique of implant retention using the bar and clip provides good retention but the bar prevents easy patient access for cleaning. An alternative method of using magnetic retention is limited by the corrosive nature of the magnet and its low breakaway strength. We present a new approach for auricular prosthesis retention using the Baha® (bone anchoring hearing aid) snap attachment method which promotes ease of hygiene, improved retention, and increased breakaway strength for active patients.

Methods & Materials: Patients presented with auricular deformities received prosthetic rehabilitation of the auricle. After all reconstructive options were discussed, both patients selected and underwent a single stage auricular prosthetic implant placement with the Baha® snap attachment method. The Baha® snap attachment method is successfully applied to prosthetic rehabilitation of auricular deformities. After a patient is identified, a molding of the contralateral normal ear is formed and the patient is marked for prosthetic attachment with three titanium fixtures and abutments. In the

operating room, the positions of the fixtures and prosthesis are verified. A thin skin flap is carefully raised. Holes in the temporal bone for the titanium fixtures are carefully drilled with adequate irrigation to prevent overheating of bone. An auricular prosthesis is formed with embedded Baha® snap attachments.

Results: The Baha® snap attachment method provides a high retentive force of 30 N per implant which allows for swimming and sport activities while wearing the prosthesis. The hardware cost for this retention method is about 25 percent less than the gold bar method. Patients report a high degree of satisfaction with ease of prosthesis placement and hygiene of the implant at one year follow-up.

Conclusion: We present the first known report of extraoral retention of an auricular prosthesis using the Baha® snap attachment method. This technique has the following advantages over current gold bar or magnet retention methods: Relative ease of placement in a single stage procedure High retention breakaway strength Ease of access for hygiene Low hardware and fixture costs

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Head & Neck Cancer Rehabilitation

REHABILITATING EXTENSIVE ACQUIRED MANDIBULAR DEFECTS WITH SCREW-RETAINED IMPLANT-SUPPORTED PROSTHESES

Marion, Louis R.*; Dickey, Robert J.²; Taub, Daniel I.²

¹University of Pennsylvania School of Dental Medicine

²Thomas Jefferson University Hospital

¹Department of Pediatric Dentistry, Department of Periodontics

²Department of Oral and Maxillofacial Surgery

Philadelphia, PA USA

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 & 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: Successful clinical results were obtained although with some complications. In total, 28 implants were placed with each patient receiving at least 5 implants for their prosthesis. The most significant complication was dealing with the non-keratinized tissue which in one case needed an additional grafting procedure to eliminate soft tissue hyperplasia and overgrowth.

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.

Session II.
Craniofacial / Congenital Defects
Tuesday, October 29th 2013

PRIMARY CLEFT LIP AND PALATE CARE WITH NASOALVEOLAR MOLDING

Warren, Stephen M.* MD

Associate Professor

Department of Plastic Surgery and Cell Biology

NYU Langone Medical Center

New York, NY USA

Cleft lip with or without cleft palate (CL/P) is the most common congenital craniofacial anomaly (1 in 700 live births). While many surgical techniques have been developed to treat CL/P, nasoalveolar molding (NAM) has emerged as a presurgical technique capable of preparing patients for any type of surgical repair. NAM is designed to align alveolar segments, restore lower lateral cartilage position, and increase columellar length. In order to achieve optimum results, nasal molding and columellar elongation should follow alveolar segment correction. By orderly restoring nasoalveolar anatomy, the craniofacial orthodontist/prosthodontist can avoid alar rim over expansion. NAM can be combined with primary retrograde nasal reconstruction in order to prevent lower lateral cartilage relapse and to improve tip shape by removing the fibrofatty tissue that is interposed between the widely separated dome cartilages. In addition to improving lip and nose symmetry and aesthetics, NAM improves dentoalveolar alignment enabling primary gingivoperiosteoplasty (GPP). Primary GPP restores dentoalveolar continuity which is essential for stabilization of the maxillary arch, support of dental roots on either side of the cleft, and ultimate eruption of the permanent lateral incisor and canine teeth. In addition, restoration of the maxillary arch is important to provide a stable platform for the alar base of the cleft nose, allowing for improved aesthetic appearance of the nose, as well as supporting dental implants/prostheses. Taken together, the data demonstrated that presurgical NAM with primary retrograde nasal reconstruction improves the quality of the nasolabial outcomes. Moreover, NAM-mediated GPP reduces the need for secondary bone grafting and results in greater stability of the premaxilla and functional occlusion. Furthermore, secondary bone grafting, when required after GPP, is technically easier with the presence of bone along the occlusal surface of the dentoalveolar ridge. In sum, NAM treated patient has few secondary cleft procedures; the reduction in the number of surgical procedures has the potential to lower the total cost of treatment over the lifetime of the patient.

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Invited Speaker

Craniofacial/Congenital Defects

CRANIOFACIAL ORTHODONTICS

Wirthlin, John O.* DDS, MSD

Assistant Professor

Division of Plastic Surgery

Baylor College of Medicine

Houston, TX USA

Craniofacial orthodontics is a subspecialty of orthodontics focused on the orthodontic treatment of patients with various craniofacial anomalies such as cleft lip and palate, Crouzon syndrome, Apert syndrome, craniofacial microsomia, and other congenital and acquired craniofacial anomalies. This lecture will provide insight into the subspecialty of craniofacial orthodontics and provide an introduction into NasoAlveolar Molding (NAM), an innovative presurgical orthopedic treatment for infants with cleft lip and palate.

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Invited Speaker

Congenital/Craniofacial Defects

ADVANCED DIGITAL TECHNOLOGIES IN CRANIOFACIAL RECONSTRUCTION

Louie, Gorman* MD, FRCSC

Associate Professor, Division of Plastic Surgery Department of Surgery

University of Alberta Edmonton

Alberta, CA

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.

Session III.
Congenital / Craniofacial Rehabilitation
Tuesday, October 29th 2013

JAWS (THEY'RE NOT JUST AN EATING MACHINE): HOW JAW ANOMALIES AFFECT SPEECH AND RESONANCE

Kummer, Ann W.* 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

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.

QUALITY OF LIFE FOR PATIENTS WITH CONGENITAL OR ACQUIRED CRANIOFACIAL CONDITIONS

Bellucci, Claudia Crilly* MS

Research Project Coordinator

Northwestern University and Reserach Consultant to Shriners

Hospitals for Children

Chicago, IL USA

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.

THE ACPA AND ITS ROLE IN ADVANCING CLEFT CARE GLOBALLY

Mooney, Mark P.* PhD

Professor and Chair

Department of Oral Biology

University of Pittsburgh

School of Dental Medicine

Pittsburgh, PA USA

The American Cleft Palate-Craniofacial Association (ACPA) is an international, non-profit society of health care professionals and basic scientists who treat and/or perform research on birth defects of the head and face. ACPA is unique - it is a multidisciplinary organization of over 2500 members, representing more than 30 disciplines in 60 countries. The mission of the ACPA is to optimize the interdisciplinary care and management of children and adults affected by cleft lip, cleft palate, and other craniofacial anomalies. A primary objective of the Association is to foster communication and cooperation among professionals from all specialties. Because of the diverse needs of these patients, and the required services of many different specialists, interdisciplinary cooperation and team care is essential to the patients served. For over 65 years, our goal has been to provide optimal care for this group of patients and their families worldwide. ACPA is an exciting and growing organization. Unlike most associations, it is a true forum for communication among specialists around the globe, all with a wide variety of backgrounds and training, but with the common interest in the overall outcome of their patients. ACPA provides a number of vehicles to facilitate global, interdisciplinary communication. These include: publishing the Cleft Palate-Craniofacial Journal, a bimonthly specialty periodical; organizing an annual scientific meeting of the membership where over 200 papers are presented from around the world, and; sponsoring Americleft, a project designed to develop inter-center collaborative outcome studies in several disciplines to facilitate evidence-based practice. While ACPA's focus is on professional education, its affiliated Cleft Palate Foundation also provides a number of diverse services such as acting as an information clearinghouse on parameters of care and team standards for affected individuals and their families through periodicals and the CleftLine, public education about facial differences through periodicals and dvd's, and providing limited research funding to members interested in improving treatment or understanding the etiology of craniofacial anomalies. ACPA is well situated to continue to be one of the premier, international organizations which help define the gold standard for team treatment and management of individuals affected with birth defects of the head and face.

TBD

THE CORRELATION BETWEEN MENTAL CONDITION AND QUALITY OF LIFE OF PATIENTS WITH MAXILLARY DEFECTS

Lin, Qing*; Wei-Hong, Ren

Capital Medical University School of Stomatology, Beijing 100050, China

Department of Prosthodontics

Beijing, China

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 & 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 statistic package for social science (SPSS).

Results: There were significant correlations between the scores of mental health and that of quality of life, with statistically significant ($p < 0.01$) in the linear regression.

Conclusion: There was close correlation between mental health and quality of life in patients with maxillary defects. Proper psychological treatments should be provided to patients as early as the beginning of antitumor treatments and should be arranged as routine items during the whole process of treatments and rest of their lives. Clinical doctors should pay more attention to the maintaining of mental health and quality of life in patients with maxillary defects.

PREFABRICATED IMPRESSION TRAYS FOR USE WITH PATIENTS PRESENTING WITH MAXILLOFACIAL DEFECTS

Wagner, Stephen*

University of the Pacific, Arthur A. Dugoni School of Dentistry

Prosthodontics

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 & 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 resultant impression equals or exceeds the quality of a traditional impression made in a laboratory fabricated custom tray.

Conclusion: It is now possible to shorten the fabrication time of a definitive edentulous obturator by one appointment by using this impression technique.

THE IMPACT OF DIGITAL TECHNOLOGIES ON CRANIOFACIAL REHABILITATION – THE SOUTH AFRICAN EXPERIENCE

Howes, Dale*; Spence, Carol

Brånemark Institute South Africa

Johannesburg, Gauteng, South Africa

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 & 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.

In 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: In general, practitioners found a benefit with the application of digital technologies to their craniofacial patients. There was a general consensus in the advantages of reduction in operation time and acceptance that visualization of the operating field was advantageous. There was however a large range in the personal expectation and satisfaction levels with the applications of digital technology in craniofacial surgery. There was also a difference in these outcomes between restorative and surgical specialties. There were improvements in accuracy in all quartiles, in particular the maximal discrepancies. Unplanned cases ranged from -7.08 to +37.2 mm deviation from the virtual plan, while the Planned cases ranged between -7.9 to +15 mm from the virtual plan. All planned cases were on average closer to the plan than the unplanned cases.

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

Bellia, Elisabetta* ; Ceruti, Paola ; Gassino, Gianfranco ; Carossa, Stefano

University of Turin- Dental School

Dept. of Surgical Science, Dental School, Prosthodontic Section

Turin, Italy

Purpose: Patients undergone to surgery for cancer of the hard palate with extended tissue losses will have, if not rehabilitated, severe functional and aesthetical limitations. The purpose of the study is to present an innovative, simple, time saving technique, called SET (Simplified edentulous treatment) ,thought originally for the treatment of the edentulous patient, that allows for reliable recording phases and an early delivery of the prosthesis.

Methods & Materials: A silicone is applied in the inner surface of a commercial impression tray to adapt it to the defect area . The MIT[®] ,a composite sheet made up of a 2mm light curable composite resin layer and a sheet of wax used for support, is applied to the impression tray and any excess material is removed. The MIT[®] is heated again and the impression of the defect taken and then polymerized with UV light. The light cured composite resin layer is removed from the wax layer, providing a precise and stable individual base . A maxillary rim is constructed on the resin base by means of the BRCC (Bone Resorption Compensating Curve [®]) and a light curing uncured resin roll and then is light cured . The patient's aesthetics is defined choosing the maxillary front teeth with the aid of plasticized paper teeth copies, that correspond to the definitive artificial resin teeth. The final impression of the defect is taken using a polysulfide. The block obtained is then sent to the lab for the construction of the obturator and the Delivery is performed in the customary way.

Results: With the SET method one clinical session may be enough for giving the dental laboratory all and clear information for the realization of the obturator; It allows precise and stable record bases and impression tray. The use of the BRCC for the occlusion rim realization makes the manoeuvre very fast and easy. The method of the Adhesive Paper Teeth is less time consuming and very "patient friendly".

Conclusion: This technique collects all clinical data from the defect morphology, the aesthetics and maxillo-mandibular relationships using the same base and at the same time and could allow to accumulate qualitatively and quantitatively less errors during all phases and to maintain precision and stability of the bases during all clinical phases until the delivery of the denture.

OSSEOINTEGRATED IMPLANTS AND THE REHABILITATION OF THE MICROTIA PATIENT

Habakuk, Susan*

University of New Mexico

Department of Surgery

Albuquerque, NM USA

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 & 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: Selected congenital cases illustrating prosthetic rehabilitation through the use of osseointegrated implants will be presented as a valid treatment option which serves to restore patients' self image as well as their ability to achieve improved hearing.

Conclusion: The use of osseointegrated implants using the team approach can be a successful treatment modality for the microtia patient.

A COMPUTER MODELLING-BASED APPROACH TO STUDYING HUMAN ORAL, PHARYNGEAL AND LARYNGEAL COMPLEX

Fels, Sidney*; Abugharbieh, R.¹; Green, S.¹; Stavness, I.²; Wolfaardt, J.³

The University of British Columbia

¹The University of Saskatchewan; ²The University of Alberta

³Head of the Human Communication Technologies Research Laboratory Dept. of Electrical and Computer Engineering
Vancouver, BC, Canada

Purpose: Our research network projects aim to create dynamic, 3D, patient-specific computer models of oral and upper-airway anatomy to predict functional mastication and swallowing outcomes for head and neck treatment and surgery. Predictions are targeting approaches to optimize functional outcomes through simulation and design of surgical treatments, reconstruction, surgical guides, prostheses, implant installation and post-operative treatment regimens. Current state-of-the-art geometric modeling provides only a static view, and does not predict functional outcomes, such as how effectively a patient will chew or swallow and whether they are at risk for aspiration. These outcomes enormously impact patients' quality of life, with swallowing deficits, i.e., dysphagia, producing significant risk of morbidity and mortality due to aspiration. We are creating a complete, functional, generic facial, oral, pharyngeal and laryngeal model for mastication, swallowing, breathing, speaking and emoting. To date, we have created complex 3D biomechanical models of the jaw, hyoid, larynx, tongue, lips, face and soft-palate using a coupling of finite element models and rigid body elements. We use models to morph to particular subjects and then to patients. Our results model food boluses with computational fluid dynamics interacting with the 3D tissue models. Finally, we report on our efforts with a robotic approach for simulating facial expression and mastication. Our international interdisciplinary team of researchers and students from the University of British Columbia (Drs. R. Abugharbieh, S. Fels, C. Flynn, S. Green, A. Hannam, J. Lloyd), University of Alberta/iRSM (Drs. J. Rieger, J. Wolfaardt), University of Saskatchewan (Dr. I. Stavness), CNRS, (Dr. Y. Payan), Joseph Fourier University (Drs. F. Faure), Seoul National University (Dr. H. Kwon), University of Maryland (Drs. M. Stone, J. Woo), Widener University (Dr. M. Nicosia), Medical University of South Carolina (Drs. B. Martin-Harris), and Walter Reed National Military Medical Center (Drs. G. Grant, N. Solomon). Together, we are advancing the state of fluid and tissue modeling from medical imaging and functional data acquisition protocols to support assessing clinic usage of the models and tools in parallel with patient treatments. The project is supported by grants from the Natural Sciences and Engineering Research Council and the Canadian Institute for Health Research.

CLINICAL USE OF DIGITAL IMAGING AND ADDITIVE MANUFACTURING IN FABRICATION OF FACIAL PROSTHESES

Petrich, Anton*; Grant, Gerald
Naval Postgraduate Dental School
Maxillofacial Prosthetics
Bethesda, MD USA

Purpose: To present the workflow and principles of digital imaging, digital design, and additive manufacturing in the production of molds for facial prostheses.

Methods & Materials: Additive manufacturing devices have become more common, and access to this technology has become more cost effective. The processes of digital imaging, digital design, and fabrication of prosthetic molds will be discussed, along with clinical outcomes. A review of the appropriate imaging, software, and options for additive manufactured molds will be presented.

Results: The principles of digital workflow and additive manufacturing can be employed to reduce production times for facial prostheses. In many cases, the patient image can be acquired, prosthesis digitally designed, and a mold fabricated the same day. This workflow can be a realistic option in many maxillofacial prosthetics practices.

Conclusion: This workflow can be a realistic option in many maxillofacial prosthetics practices.

PROSTHETIC REHABILITATION OF HEAD AND NECK CANCER PATIENTS; ZOOMING IN ON LOWER DENTURES IN IRRADIATED PATIENTS

Buurman, Doke*; Vaassen, Lauretta; Böckmann, Roland; Kessler, Peter
Maastricht University Medical Center
Department of Cranio-Maxillofacial Surgery
Maastricht, Netherlands

Purpose: This retrospective study assessed treatment outcomes and patient satisfaction of irradiated head and neck cancer patients treated with mandibular implant overdentures (IOD) or conventional dentures (CD). All patients were treated at the Department of Prosthodontics and Special Dental Care of the Maastricht University Medical Center (MUMC).

Methods & Materials: Fifty-one irradiated head and neck cancer patients, out of a total of 158 patients included, completed the standardized questionnaire: "Satisfaction of the denture" and underwent a clinical assessment. Nineteen patients were treated with removable conventional mandibular dentures (CD, n=19), 32 patients received implant-retained overdentures (IOD, n=32) between January 2006 and January 2011. The mean follow up of the patients after diagnosis was 5,75 years (range 1-23 ys).

Results: A total of 45 (88,3%) mandibular dentures were in function at the time of assessment. The overall denture satisfaction was 7.3 (range 1-10, s.d. 2,14). Patients being treated with adjuvant concepts including surgical tumour ablation scored worse than patients after radiotherapy alone. Edentulous patients seem to benefit from implants, especially with respect to prostheses retention. Male patients take more benefit of IOD's than female.

Conclusion: Our results are comparable to other studies in head and neck cancer patients, but also to healthy individuals. Surgical interventions in adjuvant therapy concepts lead to reduced denture satisfaction. The concept of prosthetic rehabilitation as part of the oncological treatment of the Dutch Society of Head and Neck Cancer can be judged as successful.

MANDIBLE RECONSTRUCTION USING CAD-CAM SCAFFOLDING AND BONE PLATE

Ciocca, Leonardo*; Lesci, Isidorogiorgio; Dozza, Barbara; Scotti, Roberto

University of Bologna

1) Department of Biomedical and Neuromotor Sciences 2) Department of Chemistry "G. Ciamician" 3) Osteoarticular Regeneration Laboratory, Rizzoli Orthopaedic Institute
Bologna, Italy

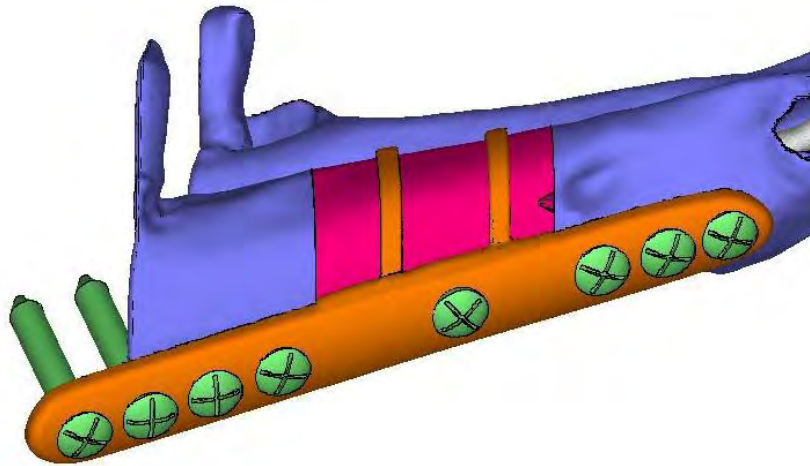
Purpose: A major challenge in bone reconstructive surgery of the mandible is developing a system [scaffold, mesenchymal stem cells (MSCs) and bone plate] that could replace the fibula-free flap. The aim of this pilot study was to 1) test the adhesion and proliferation of human MSCs on a new biocompatible composite scaffold formed by synthetic biomimetic hydroxyapatite (HA) nanocrystals with high surface reactivity, which synergistically interact with poly(e-caprolactone) and Lactoferrin; and 2) test the CAD-CAM-customized scaffolding and bone plate in an *in vivo* sheep model that simulated full-thickness resection and mandibular reconstruction.

Methods & Materials: Bone marrow-derived human MSCs were seeded and cultured on the scaffold up to 7 days *in vitro*. Cell seeding efficiency was tested and MSC adhesion, distribution and proliferation were evaluated 24 h and 7 days after seeding using scanning electron microscopy and confocal laser microscopy. Moreover, the influence of the scaffold on MSC metabolism was assessed by alamarBlue reagent, an indicator used to visualize metabolic cell activity. To complete the translational model, experimental surgery was performed on a sheep model that had a monolateral mandibular defect. CAD-CAM construction of the cutting guide, bone plate and scaffold mold were carried out. The potential biocompatibility of the scaffold and spontaneous resorption of the composite graft material were evaluated after four months. Data were collected using micro computed tomography (CT) and histomorphometric analysis.

Results: *In vitro* MSCs grown on the scaffolding displayed normal morphology, and cells formed a monolayer on most of the scaffold surface. Cells entered the pores of the biomaterial and colonized the interior of the composite scaffold. *In vivo* studies showed no adverse reaction to the implanted material; Micro-CT and histomorphometric analysis revealed important levels of bone maturation

and material degradation in the inner scaffolding.

Conclusion: In this preliminary report, a new scaffold was prepared, and MSC growth and cell distribution in and around the scaffolding were evaluated 24 h and 7 days after *in vitro* seeding. This scaffolding material was successfully implanted in the *in vivo* sheep model. The results suggest that the scaffold is biocompatible and allows the *in vitro* colonization and proliferation of MSCs; moreover, [GoBack](#) due to the mechanical support of the custom-made bone plates, this scaffolding is adequate for bone tissue engineering in mandible reconstruction.



VIRTUAL TRANSPLANTATION IN DESIGNING A FACIAL PROSTHESIS FOR EXTENSIVE, CROSSING-FACIAL-MIDLINE MAXILLOFACIAL DEFECTS WITH COMPUTER-ASSISTED TECHNOLOGY

Feng, Zhihong*; Dong, Yan; Bai, Shizhu; Wu, Guofeng; Bi, Yunpeng; Wang, Bo; Zhao; Yimin

School of Stomatology, the Fourth Military Medical University

Department of Prosthodontics

Xi'An, Shaanxi, China

Purpose: To demonstrate 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 mimics 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 final 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 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.

Dr. Luciano Lauria Dib.

Coordinator of the Center for Prevention and Diagnosis of Oral Cancer UNIP
University, Sao Paulo, Brazil

Coordinator of the Center for Rehabilitation of the Department of Maxillofacial
Surgery Head and Neck UNIFESP University (Fac of Medicine)

Associate Researcher at the University of Gothenburg Sweden

missing abstract

PHARYNGEAL STIMULATION IN HEAD AND NECK CANCER PATIENTS WITH DYSPHAGIA: OUTCOMES AND ISSUES

Rieger, Jana*; Harris, Jennifer A. Msc.¹ Sadowski, Daniel C. MD² Paslawski,
Teresa Phd.¹ Jones, Kelvin Phd.³ Norton, Jonathan A. Phd.⁴
Boliek, Carol A. Phd.¹

¹Department of Speech Pathology and Audiology, Faculty of Rehabilitation
Medicine, 2-70 Corbett Hall, University of Alberta, Edmonton, Alberta,
Canada T6G 2G4

²Division of Gastroenterology, Faculty of Medicine and Dentistry, 215 CSC
Royal Alexandra Hospital, Edmonton, Alberta, Canada T5H 3V9

³Faculty of Physical Education and Recreation, W1-34 Van Vliet Centre,
University of Alberta, Edmonton, AB, T6G 2H9

⁴Department of Surgery, Faculty of Medicine and Dentistry, 2J2.00 WC
Mackenzie Health Sciences Centre, University of Alberta, Edmonton, Alberta,
Canada T6G 2R7
Edmonton, Alberta, Canada

Purpose: Swallowing disorders in head and neck cancer patients can have serious consequences on health and quality of life. This study investigated the application of electrical stimulation to the pharynx on swallowing outcomes in head and neck cancer patients who underwent surgical intervention followed by chemoradiation. In addition, transcranial magnetic stimulation was used to assess for potential changes in motor evoked potentials (MEPs) within the pharynx after stimulation.

Methods & Materials: Videofluoroscopy was performed in five patients with moderate-severe dysphagia before, and 30 minutes after, ten-minutes of electrical stimulation to the pharynx. MEPs were obtained from the pharynx in response to transcranial magnetic stimulation to cortical structures related to swallowing before and after stimulation.

Results: Significant differences in swallowing outcomes from the pre- to post-stimulation times were found for the following variables: pharyngeal transit time, cricopharyngeal opening duration, total number of swallows, penetration/aspiration score, and duration of contact between the base of tongue and posterior pharyngeal wall. The direction of change within each variable across participants was not always consistent. MEP amplitude changes were apparent in three of five participants. Like the swallowing outcomes data, the direction of change was not consistent across participants and did not appear to be related to severity of surgical intervention or functional changes in swallowing following stimulation.

Conclusion: While significant changes in swallowing behavior were noted, the conclusions are limited by a clear direction of change. Furthermore, the variability in MEP data prevents the identification of any consistent cortical changes related pharyngeal stimulation. These outcomes suggest that pharyngeal stimulation may be beneficial for some, but not others in the rehabilitation swallowing disorders in head and neck cancer. Several issues in carrying out this experimental protocol were identified and will be discussed in the context of planning for future studies.

DOSE DISTRIBUTION TO THE MANDIBLE FOLLOWING INTENSITY MODULATED RADIATION THERAPY FOR OROPHARYNGEAL CANCER

Huryn, Joseph*; Estilo, Cherry; Lee, Ryan; Hansen, Heidi; Williams, Tijaana; Bohle, George; Riedel, Elyn; Lee, Nancy
Memorial Sloan Kettering Cancer Center
Dental Service Department of Surgery
New York, NY, USA

Purpose: In the era of intensity modulated radiation therapy (IMRT) there is no study to date that delineates the radiation dose delivered to the tooth-borne regions of the mandible. In this study we examined the dose delivered to specific mandibular regions in 245 patients treated with IMRT (to 7000 cGy) for oropharyngeal cancer.

Methods & Materials: For all patients the right and left molar, premolar and anterior regions of the mandible were contoured in their entire height using pre-treatment CT images and our institution's planning software. The average mean (avg_mn) and average maximum (avg_max) volume doses for each defined region for ipsilateral (with respect to tumor location) and contralateral sides and anterior location were calculated. The patients were grouped on primary tumor size (T) and nodal status (N): T1 (n=67), T2 (n=96), T3 (n=49), and T4 (n=33); and N0 (n=21), and N+ (n=224). Both univariate and multivariate analysis of variance and linear regression were used to examine: (a) the percent difference between ipsilateral and contralateral doses (pdiff); (b) the association of T and N stages on avg_mn and avg_max doses to the regions of the mandible; (c) the effect of T stage on pdiff.

Results: For all T stages avg_max of at least 6800 cGy and 4700 cGy were seen in the ipsilateral and contralateral molars respectively. Doses were significantly higher in the ipsilateral versus contralateral side ($p < 0.0001$). Overall T stage was found to be significantly associated with dose in all five sites (avg_mn $p = 0.005$; avg_max $p = 0.01$). However N stage did not correlate with dose in any of the five sites (avg_mn $p = 0.21$; avg_max $p = 0.68$). T stage was significantly linearly associated with pdiff in the molar region (avg_mn $p = 0.03$; avg_max $p = 0.01$); it was not found to be significant in the premolar region (avg_mn $p = 0.83$; avg_max $p = 0.84$).

Conclusion: Our findings indicate that the T stage drives the dose received in the mandible. This knowledge should guide clinicians as they make dental treatment recommendations prior to and after completion of radiation therapy.

INFLUENCE OF PHYSICAL ACTIVITY ON PATIENTS WITH HEAD AND NECK CANCER THERAPY.

Wee, Alvin*; Givens, Deborah

Creighton University Medical Center

Department of Prosthodontics and Department of Physical Therapy

Omaha, NE USA

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 & 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: In cancer patients, increased physical activity has been shown to provide physiological and psychological during and after cancer treatment. These benefits included decrease rates of fatigue, decreased depression, enhanced physical performance, and improved quality of life. Unfortunately, only a limited number of publications exist about the association between physical activity and HNSCC patients. A theoretical behavioral framework for integrating disease-related symptoms into a social cognitive theory approach to physical activity in HNSCC has been suggested in the literature.

Conclusion: There is reason to believe that physical activity, such as walking, can lead to desirable outcomes for HNSCC patients.

PROSTHODONTIC REHABILITATION FOR TOTAL GLOSSECTOMY WITH AN IMPLANT ASSISTED TONGUE PROSTHESIS: A CLINICAL REPORT

Gassino, Gianfranco*; Ceruti, P.; Feng Z.¹; Carossa, S.

University of Torino

¹Fourth Military Medical University X'ian,

Biomedical Sciences and Human Oncology,

Section of Oral and Maxillofacial Prosthodontics

¹Department of Prosthodontics Torino, Italy 1X'ian, Shanxi, P.R.China

Torino, Italy

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

Methods & 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: The maxillary and mandibular prostheses increased the patient's ability to produce intelligible sounds, prevent the maceration of the lower lip and assist with a return to a near normal diet. Prosthetic rehabilitation can also improve the patient's appearance and psychosocial adjustment. The implants and ball attachments provided sufficient retention for the tongue prosthesis. The quality of life of the patient was significantly improved.

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.

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Congenital/Craniofacial Rehabilitation

DIGITAL DESIGN AND FABRICATION OF A FACIAL MASK FOR FACETRANSPLANT DONOR

Grant, Gerald*

Naval Postgraduate Dental School/Johns Hopkins Hospital

Research/Department of Plastics

Kensington, MD USA

Purpose: A method for presurgical fabrication of a post-surgical face mask for a face transplant donor using direct digital fabrication techniques is presented.

Methods & Materials: Presurgical head CT images of a Face Transplant donor. The images are segmented into a digital image in the .stl format. A mold is designed to define the external surface and support of the intaglio surfaces. The external surface mold is printed using a Projet 460 gypsum printer, and a support was printed on a Projet 5000 SLA device. The mold was packed with silicon using layered coloring techniques, support placed and entire mold pressed and heated to silicone cure. Once recovered the mask was trimmed and any extrinsic modification made.

Results: A Donor face mask was fabricated using digital imaging and direct digital manufacturing of the mold. The design of the molds required minimal time and complexity, however direct digital printing required about 6 hours. The molds were easily packed by the maxillofacial laboratory technicians using conventional silicone layering techniques. Using the CT soft tissue surface appeared to not provide as detailed of a surface as a moulage technique. However this technique allows fabrication of a silicone only mask which is indicated for a full dermal transplant and a resin support silicone mask as would be indicated for a bone-tissue transplant. The masks were available at the time of the surgery, and are easily modified.

Conclusion: Face Transplant protocols generally require a face mask of the donor to preserve the dignity and anonymity of the donor. Conventional moulage and fabrication techniques can often be disruptive to the face transplant workflow when time can be limited. Presurgical images of the donor can be used to design and direct digital manufacture of a mold and a silicone mask can be fabricated prior to the transplant operation.

PRINCIPLES AND PRACTICES OF VIRTUAL CRANIOMAXILLOFACIAL SURGERY: TECHNICAL ISSUES SURROUNDING SIMULATION AND PLANNING

Zhao, Linping*; Patel, Pravin; Morris, David

Shriners Hospitals for Children - Chicago; The Craniofacial Center, University of Illinois Hospital & Health Science System; Division of the Plastic, Reconstructive and Cosmetic Surgery, Department of Surgery, University of Illinois at Chicago
Chicago, IL USA

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 craniomaxillofacial 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 & 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: These principles and guidelines have been applied successfully in our clinical practice.

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.

3D FACE SCANS IN DENTISTRY

Patzelt, Sebastian B M*; Winterhalter, Diana; Kohal, Ralf J

University Hospital, School of Dentistry, Albert-Ludwigs-University

Department of Prosthodontics

Freiburg, Baden-Württemberg, Germany

Purpose: Intraoral digital three-dimensional (3D) scanners are among the digital technologies that are currently available in dentistry. However, there is less demand for extraoral 3D scanners. This presentation provides an overview of contemporary extraoral face scanning systems and data of an investigation on correlations between extraoral facial measurements and intraoral distances.

Methods & Materials: 42 subjects (Caucasian, 21 females, 21 males, mean age 23 ± 3.01 years) were included. Impressions of the dentate maxillae and mandibles were taken, casts were fabricated and digitized (Activity 101, smart optics Sensortechnik GmbH, Bochum, Germany). All subjects were scanned three times (neutral mien, smiling mien, and with a reference device) 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 different datasets and identification of constant areas on the faces. Measurements between these extraoral landmarks (i.e. distance between the medial corners of the eyes) and intraoral reference points (i.e. cuspids or gingival margins) were performed. Thus, it was possible to characterize potential correlations. Descriptive statistical analyses were done using means \pm 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 extraoral and intraoral distances.

Results: 65 measurements (46 distances and 19 angles) were performed and 2080 ratios were calculated per subject. Correlations between intraoral and extraoral measurements could be identified with predominately no statistical significance between female and male subjects ($p > 0.05$). A slight preexisting orthodontic treatment had no statistically significant influence on the calculated correlations. The vast majority of measurements was comparable with the literature, however, some of them were different suggesting a verification of the existing dogmatic values in future studies.

Conclusion: In conclusion, this study presents a new possibility of merging datasets of dentulous jaws and faces and provides information on teeth positions, jaw positions, and jaw-to-jaw relationships. Nevertheless, future studies with a greater sample size including subjects of different ages and ethnic backgrounds are necessary for verification.

CUSTOM MADE ARTHROPLASTICS AND PROSTHETICS IN MAXILLO-FACIAL REHABILITATION

Blackbeard, Graham*; Geldenhuys, Giuseppe
Southern Implants(Pty)Ltd
Engineering
Pretoria, South Africa

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

Results: A case from Africa and one from Russia will be used to illustrate how this "medium-technology" facilitates communication and accuracy of operation, resulting in efficient and cost effective rehabilitation.

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.

DEPIGMENTED SKIN AND PHANTOM COLOR MEASUREMENTS FOR REALISTIC PROSTHESES

Tanner, Paul*; Leachman, S.; Boucher, K.; Ozcelik, TB

University of Utah Huntsman Cancer Institute

Facial Prosthetics

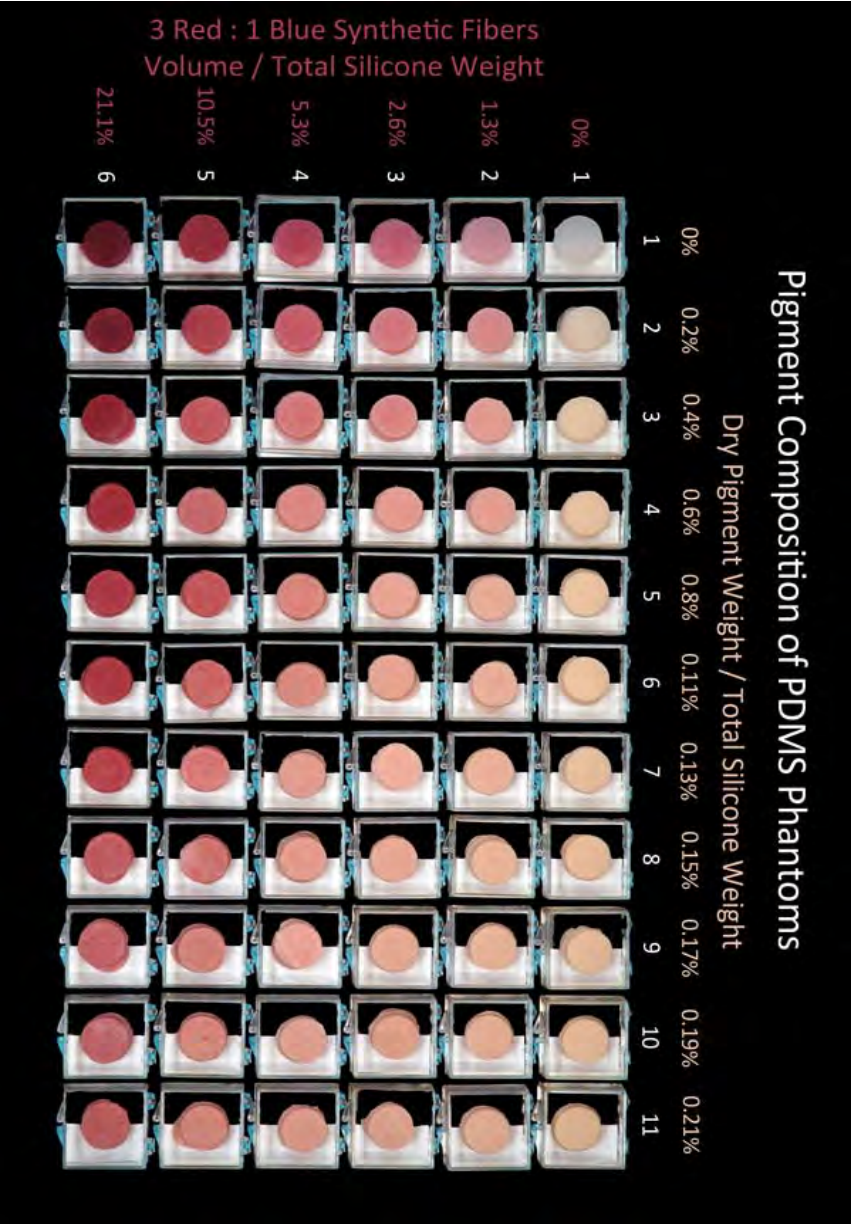
Salt Lake City, UT USA

Purpose: The purpose of this study was to test the hypothesis that regardless of human skin phototype, areas of depigmented skin, as seen in vitiligo, are optically indistinguishable among skin phototypes. The average of the depigmented skin measurements can be used to develop the base color of realistic prostheses.

Methods & Materials: Data was analyzed from 20 of 32 recruited vitiligo study participants. Diffuse reflectance spectroscopy measurements were made from depigmented skin and adjacent pigmented skin, then compared with 66 pigmented polydimethylsiloxane phantoms to determine pigment concentrations in turbid media for making realistic facial prostheses.

Results: The Area Under spectral intensity Curve (AUC) was calculated for average spectroscopy measurements of pigmented sites in relation to skin phototype ($P = 0.0505$) and depigmented skin in relation to skin phototype ($P = 0.59$). No significant relationship exists between skin phototypes and depigmented skin spectroscopy measurements. The average of the depigmented skin measurements (AUC 19,129) was the closest match to phantom 6.4 (AUC 19,162).

Conclusion: Areas of depigmented skin are visibly indistinguishable per skin phototype, yet spectrometry shows that depigmented skin measurements varied and were unrelated to skin phototype. Possible sources of optical variation of depigmented skin include age, body site, blood flow, quantity/quality of collagen, and other chromophores. The average of all depigmented skin measurements can be used to derive the pigment composition and concentration for realistic facial prostheses.



DEVELOPMENT OF A PROTOCOL FOR THE TREATMENT OF MANDIBULAR DEFECTS WITH CUSTOM-MADE IMPLANTS

Arango, Alejandro*; Lopera, Juan; Monroy, Clara; Toro, Mauricio; Valencia, Natalia; Rios, Tatiana; Zuñiga, Sergio

**Instituto De Cancerología (IDC) Las Americas. Medellin, Colombia
Medellin, Colombia**

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 & 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: Three cases that underwent treatment with the protocol will be presented: Patient 1: 19 year old female diagnosed with right mandibular ameloblastoma, 6 month follow-up. Patient 2: 27 year old female with a diagnosis of mucoepidermoid carcinoma of the mandible with also a 6-month follow-up. Patient 3: 59 year-old female who underwent surgery 15 years before being treated with the protocol. The previous treatment consisted of several failed attempts to restore anatomy and function by means of a standard titanium reconstruction plate. The protocol was used on her and the effect of the treatment on the patient has significantly improved her quality of life; she has had a 6-month follow-up so far.

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 IV.
Head & Neck Trauma
Wednesday, October 30th 2013

CLINICAL MANAGEMENT OF SALIVARY GLAND HYPOFUNCTION AND XEROSTOMIA IN HEAD AND NECK CANCER PATIENTS

Reintsema, Harry* DDS, PhD; Vissink, Arjan
University Hospital Groningen
Department of Oral & Maxillofacial Surgery
Groningen, The Netherlands

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.

THE ROLE OF THE PROSTHODONTIST IN CRANIOFACIAL TRAUMA

Howes, Dale* B.Sc; BDS; M.Dent; FCD(SA)

Department of Oral Rehabilitation

University of the Witwatersrand

Johannesburg, South Africa

Maxillofacial Trauma and ablative craniofacial surgery for the removal of invasive tumours often leave similar hard and soft tissue defects.

While the techniques for rehabilitation may be similar, their management is often very different.

The quest for effective rehabilitation of form and function is becoming more challenging with advances in technology and the demand for improved outcomes.

It is now well established that carefully planned multidisciplinary treatment improves treatment outcomes for the oncology patients and appropriate referral is becoming more common.

The serious head and neck trauma patient seldom has the luxury of time on presentation except in dedicated trained trauma units. The results following emergency and short-term management of these patients can be very dependent on the nature and extent of injury as well as the geographical location and medical disciplines involved in stabilization and primary repair.

Head and neck trauma has a changing presentation with improved motor vehicle and battlefield technology. However, apparent increasing societal violence and personal pressures often results in self-inflicted and aggressor gunshot and other injuries aimed at mutilation of the craniofacial complex challenging functional and cosmetic rehabilitation.

In addition, growing poverty and overcrowded informal settlements often experience uncontrolled fires, particularly in winter, resulting in disfiguring burn injuries with victims losing digits, limbs and extremities including noses and ears which need to be rehabilitated.

The Prosthodontist has become a critical member of the trauma team, particularly in

the secondary rehabilitation of craniofacial anatomy following traumatic ablation. He / she needs to be involved as early as possible to help facilitate effective rehabilitation to optimize reconstructive outcomes with establishment of an appropriately positioned skeletal base, and stable intraoral and extraoral prostheses with or without the support of osseointegrated fixtures.

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Invited Speaker

Head & Neck Trauma

RECONSTRUCTION OF TRAUMA WOUNDS

Taft, Robert M.* DDS, CAPT, DC, USN

Deputy Director, Navy Dental Corps

Bureau of Medicine and Surgery

Falls Church, VA 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.

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Invited Speaker

Head & Neck Trauma

INSTRUMENTAL ASSESSMENT OF TONGUE FUNCTION

Stone, Maureen* PhD

Professor, Department of Neural & Pain Sciences

Clinical & Transitional Research

University of Maryland

School of Dentistry

Baltimore, MD USA

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.

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Invited Speaker

Head & Neck Trauma

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

Monday, 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.



Hadi Seikaly, MD, FRCSC

Professor of Surgery
Divisional Director and Zone Section Head
Otolaryngology
Head & Neck Surgery
University of Alberta
Alberta Health Services
Alberta, AB Canada

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



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.



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.

Tuesday, October 29th



Stephen M. Warren, MD, FACS

Associate Professor
Department of Plastic Surgery
and Cell Biology
NYU Langone Medical Center
New York, NY USA

Stephen M. Warren, MD, FACS is a tenured Associate Professor of Plastic Surgery, Associate Professor of Oral & Maxillofacial Pathology, Radiology and Medicine, Director of the Division of Clinical and Translational Research, and Director of the Craniofacial Surgery Fellowship at NYU Langone Medical Center. Dr. Warren is a Diplomate of the American Board of Plastic Surgery and a Fellow of the American College of Surgeons. He has authored over two hundred textbook chapters, clinical, and scientific articles in journals such as *Tissue Engineering*, *Nature*, *Bone*, *Gene Therapy*, *New England Journal of Medicine*, and *Plastic and Reconstructive Surgery*. In addition to his diverse interests in basic and health services research, he practices adult and pediatric cleft and craniofacial surgery.



John O. Wirthlin, DDS, MSD

Assistant Professor
Division of Plastic Surgery
Baylor College of Medicine
Houston, TX USA

Dr. John Wirthlin received his DDS degree from the University of Texas Health Science Center at San Antonio. After his dental training Dr Wirthlin completed his orthodontic residency at the University of Texas Health Science Center at Houston. Dr Wirthlin continued his education after residency at the Institute of

Reconstructive and Plastic Surgery at the New York University Langone Medical Center. Here he completed his ADA accredited craniofacial orthodontic fellowship under the direction of Dr Barry Grayson. During his fellowship he received extensive training in NasoAlveolar Molding (NAM), team treatment of patients with craniofacial anomalies, and surgical orthodontics. Dr Wirthlin is currently a full time assistant professor at Baylor College of Medicine in the Division of Plastic Surgery, a part time faculty member at the University of Texas Health Science Center at Houston in the Department of Orthodontics, and maintains a full time craniofacial orthodontic practice at Texas Children's Hospital.



Gorman Louie, MD, FRCSC

Associate Professor
Division of Plastic Surgery Department of Surgery
University of Alberta Edmonton
Alberta, Canada

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%).



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.



Claudia Crilly Bellucci, MS

Research Project Coordinator

Northwestern University and Research Consultant to
Shriners Hospitals for Children

Chicago, IL USA

Claudia Crilly Bellucci, MS, has over ten years of experience with research and

clinical assessment of children with congenital and acquired craniofacial conditions. She is currently the research project coordinator overseeing three projects involving infants and children with clefts and other craniofacial conditions. Ms. Bellucci has presented papers at national and international conferences and co-authored an article about psychosocial considerations for adolescents undergoing orthognathic surgery. She is currently earning a PhD in International Psychology and her dissertation research focuses on quality of life of adolescents with craniofacial anomalies in Mexico and the United States. Ms. Bellucci is a member of the American Cleft Palate-Craniofacial Association where she serves on a number of committees. She is also a member of the International Society for Quality of Life Research.



Mark P. Mooney, PhD

Professor and Chair
Department of Oral Biology
University of Pittsburgh
School of Dental Medicine
Pittsburgh, PA USA

Dr. Mark P. Mooney is Professor and Chair of the Department of Oral Biology and the Director of the Oral Biology Graduate Program at the University of Pittsburgh. He also holds appointments in the Departments of Anthropology, Plastic Surgery, Orthodontics, and Communication Sciences and Disorders and is a member of the Cleft Palate-Craniofacial Center, Children's Hospital of Pittsburgh. He is currently president of the American Cleft Palate-Craniofacial Association (ACPCA) and was recently awarded the 2012 Distinguished Scientist Award in Craniofacial Biology from the International Association of Dental Research (IADR). Dr. Mooney received his Ph.D. degree in Physical Anthropology in 1986 from the University of Pittsburgh and is the author or co-author of over 350 peer reviewed papers, abstracts, book chapters, and books. His research interests include: Normal and pathological suture morphogenesis and craniofacial biology; phenotypic variability and morphology in individuals with craniofacial anomalies, and; the development of animal models of craniofacial anomalies.



Harry Reintsema, DDS, PhD

University Hospital Groningen
Department of Oral & Maxillofacial Surgery
Groningen, The Netherlands

Maxillofacial prosthodontist, Head of the Center for Special Dental Care and Board Member of the department for Oral and Maxillofacial Surgery of the University Medical Center Groningen in the Netherlands.

His clinical and research interests are in the area of Maxillofacial Prosthodontics / Maxillofacial Rehabilitation with particular emphasis in the area of head and neck reconstruction, osseointegration and treatment outcomes.

Dr Reintsema has published numerous 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 Reintsema has served on Boards of the International Society for Maxillofacial Rehabilitation (ISMR), and the Dutch Society for Prosthetic Dentistry and Orofacial Pain (NVGPT). Dr Reintsema was awarded the Schuiringa Award for his achievements in maxillofacial prosthodontics in the Netherlands in 2000.



Dale Howes, Prof.

Department of Prosthodontics
School of Oral Health Sciences
Faculty of Health Sciences
University of the Witwatersrand
Johannesburg, South Africa

Professor Dale Geoffrey Howes, B.Sc. (Dent); BDS; M.Dent (Wits); FCD (SA) Pros

Dale Howes is in full time private prosthodontic practice in Johannesburg and Professor in the department of oral rehabilitation at the University of the Witwatersrand.

He is the current Vice President of the ISMR, board member of the ICP, invited fellow of the International academy for Oral and Facial Rehabilitation (IAOFR) and serves on the North American working group for Advanced Digital Technology in Craniofacial Reconstruction.

He serves on the College of Dentistry of South Africa and is the past president of the Academy of Prosthodontics of South Africa, and founder member of the P-I Brånemark Institute of South Africa.

He has delivered keynote presentations to The Australasian Osseointegration Society (2009, 2011), The British Society for the Study of Prosthetic Dentistry (BSSPD) and the Latin American and Cuban Associations of Face Rehabilitation and Maxillofacial Prostheses in 2012 and 2013.

Speaker invitations received for the 40th anniversary World Celebration of Osseointegration in Sao Paulo in 2005, the ICP (2009), the AAMP (2009) and The Russian Implant Society (2010).



Robert M. Taft, DDS, CAPT, DC, USN

Deputy Director, Navy Dental Corps
Bureau of Medicine and Surgery
Falls Church, VA USA

Captain Taft was born and grew up in Little Neck Long Island, New York. He received his D.D.S. degree from Emory University School of Dentistry in 1983. He entered the Navy in 1983 following graduation and was commissioned a Lieutenant in the U. S. Navy Dental Corps.

Following graduation, Captain Taft's first duty station was a one-year general practice residency at Portsmouth Naval Hospital, Portsmouth Va. In July of 1984 he reported to Naval Station San Miguel in the Philippines as Department Head for Dental Services. His next duty station was at Naval Air Station Brunswick, Maine, where he served as the Prosthodontic and Division Officer.

In 1988, Captain Taft entered the Prosthodontic residency program at the Naval Postgraduate School in Bethesda, MD and two years later received a certificate. He stayed on staff in the Prosthodontic Department as the Laboratory Officer and Head of Fixed Prosthodontics. Captain Taft then continued in a fellowship in Maxillofacial Prosthetics at Wilford Hall USAF Medical Center, San Antonio, TX receiving a certificate in 1992. Following his specialty training, Captain Taft served in various positions at Naval Medical Center San Diego, CA. Captain Taft next served as Chairman and Program Director for the Maxillofacial Fellowship Officer program, Naval Postgraduate Dental School from 1997 – 2001 and later as professor in the Naval Postgraduate Prosthodontics Residency Program, 2002. He then took assignment at the Navy Medicine Education and Training Command, Bethesda, MD, as Director, Graduate programs and was the Medical Joint-Service Education Director, for the 2005 BRAC process. Captain Taft served as Dean of the Naval Postgraduate Dental School and Specialty Leader to the Surgeon General for Postgraduate Dental Education from June 2006 to June 2011 and is currently Deputy Chief, United States Navy Dental Corps..

Captain Taft is a Diplomate and Board Examiner of the American Board of Prosthodontics, Fellow of the American College of Prosthodontists, President of the American Academy of Maxillofacial Prosthetics and past Specialty Leader to the Surgeon General for Maxillofacial Prosthetics and Implant Dentistry. His personal awards include the Legion of Merit, 3 Meritorious Service medals, two Navy Commendation medals and two Navy and Marine Corps Achievement medals.



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.



Jeffrey N Myers, 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

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.

Japanese Academy of Maxillofacial Prosthetics

Featured Speaker Biographies

Monday, October 28th



Shogo Ozawa, PH.D

Aichi Gakuin University
Removable Prosthodontics, School of Dentistry
2-11 Suemori-dori, Chikusa-ku
Nagoya, Japan

Dr. Ozawa is a Maxillofacial Prosthodontist who graduated from Dental School and Ph D course in Tokyo Medical and Dental University in 1995 and completed fellowship training in University of California at Los Angeles in 2000. He is Associate Professor at Department of Removable Prosthodontics in Aichi Gakuin University, School of Dentistry, Nagoya, Japan. He leads a Maxillofacial Prosthetic Clinic in Aichi Gakuin University Hospital. He has been working in the field of Maxillofacial Rehabilitation, Implantology and Regenerative Medicine and Dentistry, and published various articles in international journals. He and his mentor, Professor Y. Tanaka developed various magnetic applications in maxillofacial prosthetics. He has been on the board of the Japanese Academy of Maxillofacial Prosthetics since 2008.



Yuka Sumita, DDS, PH.D.

Junior Associate Professor,
Section of Maxillofacial prosthetics
Department of Maxillofacial Rehabilitation
Division of Maxillofacial/ Neck Reconstruction
Graduate school, Tokyo Medical and Dental School
Vice Director, Clinic for Stomatognathic Dysfunction,
University Hospital, Faculty of Dentistry,
Tokyo Medical and Dental University
1-5-45, Yushima Bunkyo Tokyo 113-8549 Japan

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.

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TOPIC: Congenital/Craniofacial Rehabilitation

Poster 1

EVALUATION OF THE SEALING CAPABILITY OF IMPLANTS TO TITANIUM AND ZIRCONIA ABUTMENTS AGAINST PORPHYROMONAS GINGIVALIS, PREVOTELLA INTERMEDIA, AND FUSOBACTERIUM NUCLEATUM UNDER DIFFERENT SCREW TORQUE VALUES

Smith, Nicole*; Turkyilmaz, Ilser

Air Force Postgraduate Dental School, Prosthodontics

JBSA-Lackland, TX USA

Purpose: The implant-abutment junction (IAJ) can harbor bacteria and cause marginal bone loss. To eliminate this concern, it is important to tighten abutment screws to the manufacturer recommended torque values. Limited information regarding bacterial leakage at the IAJ, or microgap, is available. The purpose of this investigation was to evaluate the sealing capability of two different implant-abutment interfaces under different abutment screw torque values; the amount suggested by the manufacturer and a torque less than that recommended.

Methods & Materials: Forty sterile zirconia and titanium abutments were screwed into 40 sterile implants and placed in test tubes. The ability of a bacterial mixture of Prevotella intermedia, Porphyromonas gingivalis, and Fusobacterium nucleatum to infiltrate the IAJ under 20 and 35 N-cm torque values were evaluated daily for leakage. Samples were plated, and the number of colonies was electronically counted. The implant-abutment units were removed, rinsed with phosphate buffered saline, and evaluated with a stereomicroscope. The microgap of the IAJ was measured and correlated with the amount of bacterial leakage. The data was analyzed using analysis of variance (ANOVA).

Results: Bacterial leakage was noted in all samples. When using titanium abutments, increasing the screw torque value from 20 to 35 N-cm did not significantly affect the amount of leakage. When using zirconia abutments, increasing the screw torque value from 20 to 35 N-cm did significantly affect the amount of leakage ($p < 0.017$). The IAJ tended to be larger at the zirconia-abutment interface than the titanium-abutment interface, irrespective of the screw torque value ($5.25 \pm 1.99 \mu\text{m}$ versus $12.38 \pm 3.73 \mu\text{m}$ respectively). Stereomicroscopy revealed a non-uniform microgap in all samples.

Conclusion: The results showed that all systems had bacterial leakage through the implant-abutment microgap. Overall, implants with a titanium abutment demonstrate a smaller microgap. Tightening the zirconia abutment screw from 20 N-cm to 35 N-cm decreases the size of the microgap, suggesting a more intimate fit between the implant and abutment when the manufacturer recommended screw torque value is used.

Poster 2

THE COSMETIC RESTORATION OF THE DOUBLE DENTITION REMOVABLE DENTURE FOR ADULT PATIENTS WITH CLEFT LIP AND PALATE: A CASE REPORT

Wang, Ying*; Ren, Weihong

Capital Medical University School of Stomatology, Dept. of Prosthodontics

Beijing, China

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 prosthodontics 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.

Poster 3

FABRICATION OF A TISSUE EQUIVALENT PROSTHESIS FOR RADIATION THERAPY: A CASE REPORT

**Afshari, Azadeh*; Gerngross, Peter; Pettit, Nathan; Wilson, Joella E.
Michael E. DeBakey VA Medical Center
Dental - Prosthodontics
Houston, TX USA**

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.

THE USE OF MILLED BARS IN MAXILLOFACIAL REHABILITATIONS: A CASE REPORT

Andresen, C.*; Tajima, D.; Kelly, J.
University of California – Los Angeles (UCLA)
Maxillofacial Prosthetics
Los Angeles, CA USA

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 than 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.

Poster 5

THE APPLICATION OF A MECHANICAL JAW OPENING DEVICE IN PATIENTS AT EARLY STAGE AFTER MAXILLECTOMY

Ao, Hongwei*; Ren, Wei-Hong
Capital Medical University School of Stomatology
Department of Prosthodontics
Beijing, China

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 6

CASE REPORT FOR PALATAL LIFT PROSTHESIS

Bak, Sun-Yung*; Erman, Andrew; Kelly, James
University of California – Los Angeles (UCLA)
Maxillofacial Prosthetics
Los Angeles, CA USA

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 prosthesis 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 7

FLOATING MAXILLARY OBTURATOR IN SUBTOTAL MAXILLECTOMY: CASE REPORT

Barrow, Vania*; Tórres, José Federico; González, Vicente Ernesto
Universidad Nacional Autónoma De México
Protesis Maxilofacial
Mexico

Purpose: This article describes the prosthetic rehabilitation of an 83 year old woman with diagnosis of hard palate melanoma and metastasis to lungs and mediastinum which received bilateral subtotal maxillectomy and radiotherapy. The purpose of this rehabilitation is to seal the communication between the oral and nasal cavities thus, improving hyper nasal speech, fluid leakage into nasal cavity, impaired masticatory function, and cosmetic deformity.

Methods & Materials: For this rehabilitation a hollow bulb, closed definitive maxillary acrylic obturator was designed with a permanent elastic lining; also a thermocured gingiva characterizer was employed. The implementation of various techniques and materials should be considered when proposing a treatment plan for maxillectomized patients once the remaining biological structures are maintained healthy and the objectives of the rehabilitation are achieved; as in this case report were modifications and alterations to clinical and laboratory sequences were required.

Results: As a result of this rehabilitacion a clear improvement on the aesthetics of the patients facial projection was observed. The upper lip was lifted and with the aid of a removable mandibular prosthesis the vertical dimension was augmented. With the recreation of the division between the nasal and oral cavities the nasal leakage and phonation were improved providing support to the tongue during speech and reducing nasal resonance. The patient also improved her diet by being able to ingest more solid foods; not having to be limited to liquid foods and dietary supplements.

Conclusion: The maxillofacial prosthetics play a significant role in the improvement of the patient's quality of life and it is an excellent prosthetic option for patients with total and subtotal maxilectomy that are not candidates for osseointegrated implants due to their reduced weight; more so when an elastic lining is added to the rehabilitation. The elastic lining adds retention to obturator providing comfort when resting upon the delicate mucosa of oncologic patients. All these characteristics collaborate in the improvement of phonation, aesthetics and the masticatory function and therefore on the patient's emotional well-being.

Poster 8

STENT GRAFT IN SURGERY FOR FLOOR MOUTH CANCER LESION: A CASE REPORT

Carrillo Acevedo, Laura Sarai*; Echevarría Y Pérez, Enrique; Díaz Aguirre, Celia Minerva; Hernández Cuellar, Arturo
Hospital General De Mexico- Universidad Nacional Autónoma De México
Protesis MaxiloFacial-Oncología
DF, Mexico

Purpose: Excision of tumors in the mouth floor requires immediate reconstruction through dermoepidermal graft to avoid direct closure of surgical margins causing an unstable area for rehabilitation with intraoral prosthesis. It also prevents alterations in swallowing movements and phonation, with this application to allow the free movement of cheeks and tongue. For this will be necessary graft adherence to the surgical site and the maintenance through stent graft.

Methods & Materials: Male patient 58 years old with diagnosis of squamous cell carcinoma of floor of mouth, with a history of smoking and alcohol positive. Clinically there exophytic sessile base diameter of 1 cm (T1N0M0) mobile, non-bleeding, ventral side of the tongue and he was a candidate for surgical treatment with wide local excision over graft placement. Prior to surgery, impressions were taken for the preparation of a graft applicator floor of mouth, prepared with methyl methacrylate and conventional retainers, which was placed during surgery in the graft with application of fabric conditioner to help healing sutured to adjacent tooth organs.

Results: The evolution of the patient and hospitalization time were better, allowing not have functional alterations in oral cavity thanks to stent graft.

Conclusion: Preoperative planning can develop an applicator (stent), which causes a whole graft adherence to the surgical site, reducing development time and improving functional reintegration of the oral cavity.

FABRICATION OF TONGUE POSITIONING STENT FOR A PARTIAL MAXILLECTOMY PATIENT

Colebeck, Amanda*; Hury, Joseph M.
Memorial Sloan-Kettering Cancer Center
Maxillofacial Prosthetics, Dental Service, Department of Surgery
New York, NY USA

Purpose: Introduction: Radiotherapy devices reduce mucositis and subsequent fibrosis of normal tissues in the field of radiation by shielding or positioning the healthy tissue away from the radiation site. The tongue falls within most radiation fields in the head and neck region and can benefit from displacement with an intraoral stent. Often, these stents are retained by the patient's existing dentition or resting on edentulous ridges. Patient's who have maxillectomy defects and subsequently undergo radiation therapy may not have adequate dentition or ridge surfaces to retain a traditional positioning stent.

Methods & Materials: Case Description: A 52-year-old African American male diagnosed with salivary gland neoplasm of the maxillary left hard palate underwent a left partial maxillectomy with subsequent placement of surgical and interim obturators. The patient's radiation oncologist requested fabrication of a tongue positioning prosthesis to be worn with the obturator throughout radiation treatment. An irreversible hydrocolloid impression was made of the patient's existing maxillary obturator prosthesis and an acrylic resin base plate with ball clasps was fabricated to fit against the cameo surface of the obturator prosthesis. Green cake compound was placed against the acrylic surface in contact with the patient's tongue and molded to create an imprint of the tongue in a depressed position. The compound was converted to acrylic resin and delivered to the patient at the following visit. The prosthesis was verified to be adequately retentive, comfortable, and easy for the patient to insert.

Results: Discussion: The tongue positioning stent fabricated for this patient is somewhat unusual, as a traditional acrylic stent retained by the patient's natural dentition or resting on the patient's edentulous ridges was not an option in this case. The fabricated prosthetic can clip onto the patient's existing obturator prosthesis and be worn throughout radiation therapy, sparing the tongue of harmful radiation effects.

Conclusion: Conclusion: This case report demonstrates fabrication of a simple tongue positioning stent for a patient with a partial maxillectomy defect undergoing radiation therapy.

VIRTUAL TRANSPLANTATION IN DESIGNING A FACIAL PROSTHESIS FOR EXTENSIVE, CROSSING-FACIAL-MIDLINE MAXILLOFACIAL DEFECTS WITH COMPUTER-ASSISTED TECHNOLOGY

Feng, Zhihong*; Dong, Yan; Bai, Shizhu; Wu, Guofeng; Bi, Yunpeng; Wang, Bo; Zhao, Yimin

School of Stomatology, the Fourth Military Medical University

Department of Prosthodontics

Xi'An, Shaanxi, China

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 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.

INDIVIDUAL APPLICATOR FOR HIGH-DOSE RATE BRACHYTHERAPY IN PATIENT WITH UNDIFFERENTIATED SKIN CARCINOMA OF PARIETAL HAIRY REGION

Garrido Garrido, Marayadith*; Echevarría Y Pérez, Enríque; Díaz Aguirre, Celia Minerva; Fuentes Mariles, Sonia Guadalupe; Bautista Hernández, Yicel
Hospital General De México - Universidad Nacional Autónoma De México
Prótesis Maxilofacial (Oncología)
Distrito Federal, Mexico

Purpose: Radiation therapy for skin carcinoma (non-melanoma) is accepted as radical treatment option, especially in the modality known as brachytherapy. Brachytherapy can be used in different anatomical areas; it's very useful to provide an adequate dose to the tumor while reducing dose to the normal tissue and the organs at risk. The application of brachytherapy for skin carcinoma requires the design of individualized and personalized applicator like the one we show in this case report.

Methods & Materials: A female patient, 65 years old and diagnosed with proliferating trichilemmal tumor of the scalp. In May 2006 she has a surgical resection (wide local excision) and an autologous graft application. The pathology report indicate microscopic positive surgical margin. The patient receives adjuvant radiation therapy with electrons 6MeV, total dose of 50Gy in 20 fractions.

Results: After radiation therapy she began surveillance. She has a disease free survival of 7 years. In May 20, 2013 she goes to her follow up visit showing a depressed lesion, with irregular borders, presence of melicerica crust and a mild secretion. We proceeded to perform a biopsy. The result of pathology report was an undifferentiated skin carcinoma of hairy region. Re-excision of the lesion was not possible, so the patient goes to re-irradiation. We decided to use high-dose rate brachytherapy using customized-mold multicatheter (afterloading applicators). The design includes 13 parallel catheters, with a distance of 0.8cm between each one. The total dose was 5064 cGy in 12 fractions, equivalent to 66Gy to 0.5cm depth in relation to the surface of the skin and a 2 cm margin around the lesion. An anatomic impression of the involved area is taken, and then each catheter is fixed with acrylic to the mold, finally the mold and the catheters are cover with wax.

Conclusion: This type of modality of treatment is called contact brachytherapy. Applicators can be used with Leipzig or catheters molds which can award a homogeneous dose distribution in the treatment site.

ACRYLIC RESIN POLYMERIZATION FOLLOWING EXTRINSIC PIGMENTATION OF FACIAL PROSTHESES

Holanda, Geraldo Sávio Almeida*; Lima, Cacilda; Fernandes, Marta;
Neto, Diógenes; Hecker, Laura
Universidade Federal Da Paraíba-UFPB/Brazil
Escola Técnica De Saúde
João Pessoa, Paraíba, Brazil

Purpose: A technique to create facial prosthetics by polymerizing the acrylic resin of the prosthesis after completing extrinsic pigmentation is presented.

Methods & Materials: Twenty elderly patients were rehabilitated in the Department of Oral and Maxillofacial Rehabilitation of the Lauro Wanderley University Hospital, Federal University of Paraíba, Brazil. The facial prostheses, made of intrinsically pigmented acrylic resin, were tested on patients in the rubber phase of polymerization, while the extrinsic pigmentation was completed by replicating the characteristics of deep and superficial skin according to Tunner, 2006. After extrinsic characterization, the prosthesis is again compressed in the mold and polymerized by microwave energy; then finished for use with the patients.

Results: It was observed that 80% of the prostheses presented with satisfying extrinsic pigmentation. Ninety percent of patients indicated their satisfaction with the characterization and, after one year, more than 60% of the patients had no desire to enhance or change the extrinsic pigmentation.

Conclusion: The technique used for facial rehabilitation using acrylic resin prostheses improved the self-image, self-esteem and quality of life of elderly patients. Additionally, the durability of the acrylic facial prostheses resulted in lower long-term costs for the public health system that offers the treatment.

VITILIGO-LIKE CHARACTERIZATION OF A NASAL PROSTHESIS FOR ELDER PATIENT

Lima, Cacilda Chaves Morais*; Holanda, Geraldo; Alfenas, Elizabeth;
Bós, Angelo; Lima, Larissa
Pontifícia Universidade Católica Do Rio Grande Do Sul-PUCRS-Brazil
Instituto De Geriatria E Gerontologia
João Pessoa, Paraíba, Brazil

Purpose: The objective is to present the technique of a nasal prosthesis fabrication for a patient with vitiligo.

Methods & Materials: The loss of the nose due to trauma or disease limits the aesthetic, functional and psychological well being of elder patients. The reconstruction of the nasal region cannot always be immediate; therefore a silicone nasal prosthesis can be used in the interim, providing an improved quality of life. The 70 year old patient suffers from vitiligo and nasal trauma. The wax up for the nasal prosthesis was created from a donor with similar anatomical characteristics of the patient, observed through a photograph. The wax model was characterized according to texture and wrinkles consistent with the age of the patient. The mold was made from the wax model and we mixed colorants with M-511 HTV silicone for intrinsic and extrinsic characterization. The pigmentation of the prosthesis needed to be consistent with the areas of vitiligo on the face of the patient.

Results: The patient and family members reported an excellent degree of satisfaction with anatomy, texture and naturalness of the prosthesis in relation to the characteristics of the face affected by vitiligo.

Conclusion: We observed that the greatest benefit from rehabilitation was psychological for a patient that was dynamically affected by vitiligo and nasal trauma.

LONGEVITY OF ABUTMENT TEETH FOR OBTURATOR PROSTHESES

Makihara, Kana*; Kimura, Naomi; Ozawa, Shogo; Yoshioka, Fumi; Miyamae, Shin; Hattori, Masami; Tanaka, Yoshinobu
Aichi Gakuin University, School of Dentistry
Department of Removable Prosthodontics
Nagoya, Aichi, Japan

Purpose: The retention and stability of obturator prosthesis are mostly relied on abutment teeth, so that excessive load should be applied to the abutment teeth. However, to my knowledge, there is no report regarding a survival rate of the abutment teeth for long term clinical observation. The aim of this study was to assess longevity of abutment teeth for obturator prosthesis.

Methods & Materials: Eighty four patients who were treated in Maxillofacial Prosthodontic Clinic, Aichi Gakuin University, Dental Hospital were enrolled in this study. Those who were followed less than three years were excluded to demonstrate long-term clinical outcomes. Maxillary defect configuration (Aramany's classification), the number and kinds of retainers, followed up periods of abutment teeth and prosthesis were surveyed using the medical record and the clinical protocol.

Results: Total of one hundred and forty nine prostheses and three hundred and eighty two abutment teeth were studied. The results revealed that more than two prostheses were fabricated for each patient. As for the maxillary defect, number of Aramany Class I patient were thirty two, those of Class II were thirty eight, Class III were three, Class IV was one, and class V were three respectively. Over all eighty four abutment teeth were extracted then survival rate of the abutment teeth were 78.2 % and mean observation period were seven year and seven month. The statistical analysis showed significant longer prognosis of abutment teeth was seen in Class II as compared to Class I patients. As for the kinds of retainer, there were no significant differences in longevity among the retainer designs. The etiology of the teeth extraction was mostly periodontal disease. It is suggested that increased stresses to stabilize the prosthesis should related to the longevity of the abutment teeth.

Conclusion: The survival rate of the abutment teeth for obturator prosthesis was 78.2 %. Eighty four of three hundred and eighty two abutment teeth were extracted owing to periodontal disease.

BIODYNAMIC PHONOARTICULATOR WITH PHYSIOLOGIC MOBILITY ATTACHMENT ON PALATOPHARYNGEAL INSUFFICIENCY

Mena, Wilfredo*; Jiménez, René; González, Vicente; Torres, Federico
Universidad Nacional Autónoma De México- UNAM
Maxillofacial Prosthetics
Heredia, Costa Rica

Purpose: Soft palate defects for clinicians represent a great professional challenge. They were giving back to patient's masticatory, phonetics, respiratory and swallowing functions. In the departments of Maxillofacial Prosthetics of UNAM and INCa a biodynamic phonoarticulator was made incorporating a physiologic movement attachment, in order to achieve mobility of the prosthetic palatal veil during phonation and deglutition. The aim of this rehabilitation was to find an interaction between the retropharyngeal muscles and the biodynamic prostheses portion. The prosthetic structure was placed in a patient with palatopharyngeal deficiency due to an adenoid cystic carcinoma treated with surgery.

Methods & Materials: It was used the functional impression, using further than the hard and soft palate with modeling composition and Polysulfide such as functional impressions materials. The prosthetic device was made in Chrome- Cobalt, using a physiologic mobility attachment of the same material.

Results: Despite the total absence of soft palate the patient could move the velar section of biodynamic phonoarticulator during the speech and pronunciation of such phonemes, such as a/e/i. The same patient referred the movement of prosthetic velar section at the same talk time and during deglutition. It was not observed difficult deglutition on patient. Also was improved voice quality compared to previous prosthesis.

Conclusion: Despite the absence of soft palate, movement of the velar section of the phonoarticulator was possible during swallowing and phonation, it due to the action of retropharyngeal and velar muscles, tongue and air. The patient improved speech quality and managed to increase the oral communication with society.

PROSTHETIC REHABILITATION OF COMBINED DEFECTS: CASE REPORT

Morales Martinez, Jesus Fernando*; Gonzalez Cardin, Vicente
Universidad Nacional Autonoma De Mexico
Protesis Maxilofacial
Mexico City, Mexico

Purpose: The purpose of this prosthetic rehabilitation is to return the functionality characteristic of the affected area as well as the resocialization of the patient.

Methods & Materials: The prostheses offered to the patient was a polymethylmetacrylate maxillary obturator with magnetic retention attachments and a medical type silicon characterized facial prosthesis that involves the top lip and right side cheek and nose wing.

Results: Proper adaptation, support and retention of the maxillary obturator were achieved therefore improving phonation and deglutition. The facial prostheses restores the esthetic aspect; thus contributing in the social reinsertment of the patient

Conclusion: The presence of a maxillary defect brings along complications on the retention of the prostheses due to the absence of the peripheral seal. Because of this the aid of several retention methods is always useful as long as the lightness of the prostheses is preserved. The use of tissue lining contributes to the stability and comfort to the patient on the maxillar sinus extention. The medical type silicon along with the extrinsic and intrinsic pigments provides a more natural facial prostheses improving the patient's selfconfidence.

A COMPARATIVE PHOTOELASTIC STUDY BETWEEN TWO TYPES OF CRANIOFACIAL IMPLANTS

Reis, Heitor B.*; Dib, Luciano L.; Mello, Monica; Cortizo, Daniela L.;
Oliveira, J. Piras
UNIP - Universidade Paulista, Brasil
Implantology Pós-Graduate
São Paulo Capital, Brazil

Purpose: The aim of this study was to compare stress distribution in two types of craniofacial implants : a existing model and a new model, whit 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 straigth 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.

INFLUENCE OF MACRO-GEOMETRY IN THE PRIMARY STABILITY OF CRANIOFACIAL IMPLANTS - A PILOT STUDY

Reis, Heitor B.*; Dib, Luciano L.; Oliveira, J. Piras; Mello, Monica; Bezerra, Fabio; Cortizo, Daniela L.; Guedes Jr., Reinaldo; Duarte, Luiz F.

**UNIP - Universidade Paulista
Pós-Graduate of Implantology
São Paulo Capital, Brazil**

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 some 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 Ostell (Ostell 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.

INDIVIDUAL APPLIANCE FOR RADIOTHERAPY IN UPPER LIP CANCER LESION

Rivera Romero, Brenda Patricia*; Echevarria Y Perez, Enrique; Diaz Aguirre, Celia Minerva

Hospital General De México - Universidad Nacional Autónoma De México
Unidad De Oncología, Servicio De Protesis MaxiloFacial
Mexico

Purpose: Ionizing radiation is an important alternative in the treatment of cancer and is planned according to the specific characteristics of each patient, success depends on several factors including the use of attachments to homogenize the dose anatomical areas with different levels, as in head and neck. Side effects caused by ionizing radiation are known, can reduce the incidence and severity through individualized applicators exemplify the clinical case report:

Methods & Materials: Male patient, 68 years old, Catholic, occupation lawyer, alcohol positive addiction snuff from 18 years of age (15-20 cigarettes daily) reported having initiated growth of upper lip injury evolution of two years to the current dimensions of 2 x 3 cm. She underwent biopsy reporting Basal Cell Carcinoma. Due to lesion size is chosen as the preferred treatment to avoid ionizing the defect that the size of the lesion cause surgical resection, functional and aesthetically would impact the patient. Was administered with 45 Gy in 25 fractions with cobalt 60. For part of our service is dynamically staying protective acrylic 3mm thick lead to protect the upper gum. More mouth opening device with tongue depressor to protect the lower jaw impression subsequently took injury for the development of a compensator for the administration of radiotherapy.

Results: With the use of these applicators the patient received a radiation dose consistent across the tumor, had protection of their jaws, and have avoided side effects of ionizing radiation in the oral cavity, so it could adequately improving feed their quality of life.

Conclusion: The use of these accessories for radiotherapy are individualized for each patient and thus ensure correct positioning, adaptation and stability that will be ongoing throughout treatment. Do not forget that dental surveillance should be carried out before, during and after the application of radiotherapy and fields especially when involving areas around the oral cavity.

Poster 20

FABRICATION OF PROSTHESIS FOR INTRAORAL BRACHYTHERAPY: A CASE REPORT

Rosen, Evan*; Estilo, Cherry L.; Huryn, Joseph M.
Memorial Sloan-Kettering Cancer Center
Dental Service
New York, NY USA

Purpose: Treatment of oral malignancies requires a multidisciplinary approach for optimal patient care. Intraoral disease can be treated with multiple modalities including variable prescriptions of radiotherapy. When indicated, the radiation oncologist may prescribe brachytherapy which requires collaboration with a dental professional for the fabrication of the brachytherapy delivery prosthesis. This poster presents a case report describing the use and fabrication of a brachytherapy prosthesis in the treatment of intraoral malignancy.

Poster 21

APPLICATION OF THREE-DIMENSIONAL FACIAL MEASUREMENT USING A GENERAL-PURPOSE DIGITAL CAMERA

Teshigawara, Daisuke*; Ino, Teruo; Endo, Satoshi; Noro, Hiromasa;
Fujisawa, Masanori
Meikai University
Division of Fixed Prosthodontics
Department of Restorative & Biomaterials Sciences
Saitama, Japan

Purpose: As a shape-taking procedure for fabricating facial prostheses, methods using space measurement devices are reported, instead of the conventional facial impression techniques. A three-dimensional (3D) measurement system, consisting of a digital camera with two lenses and an application to analyze the 3D image, has been recently developed to measure distances in remote locations. Similar to a camera, this system is portable and can easily photograph objects. It is mainly used for industrial applications; however, there are few reports on its clinical applications. Also, the capacity to build the 3D coordinate dataset was significantly affected by objects and the shooting environment. To apply this system to facial measurement, the following need to be

considered: a) a suitable shooting condition for facial measurement and b) an accurate 3D image. In this study, the effect of shooting conditions such as camera conditions and the shooting environment were investigated.

Methods & Materials: A stone facial model and a wax facial prosthesis were chosen as objects for determining the effect of the shooting conditions. A pair of stereo images was photographed using a general-purpose digital camera (FinePix Real 3D W3M, Fujifilm, Japan). Then, a 3D point cloud dataset was built using space measurement software (3D Sassoku, Armonicos, Japan). Each dataset built from the following conditions was compared. Camera conditions: exposure, sensitivity, shutter speed, diaphragm Shooting environment: background color, bearing of the exposure axis, projection of images onto the object

Results: The color tone and brightness of the object were affected by the capacity for building the point cloud dataset, even though the exposure and background color were hardly affected. Image projections on the objects tend to relieve distortions on the surface.

Conclusion: The suitability of this system as a facial shape-taking method was verified.

Poster 22

MULTIDISCIPLINARY MANAGEMENT OF AN AURICULAR DEFECT

Vásquez, José*; González, Vicente; Uribe-Querol, Eileen

Instituto Nacional De Cancerología

Universidad Nacional Autónoma De México

Maxillofacial Prosthetics

Mexico City, Mexico

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 auricectomy. 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.

TOPIC: Trauma

Poster 23

TOOTH-MAGNET-RETAINED FACIAL PROSTHESIS

Cushen, Sarra* ; Piper, James; Sutton, Alan

Wilford Hall Ambulatory Surgical Center and San Antonio Military Medical Center, JBSA-Lackland, TX

Maxillofacial Prosthetics Department

San Antonio, TX USA

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 mouldage was accomplished using PVS impression material for the teeth and magnets, then reversible hydrocolloid impression material backed with dental stone to complete the facial mouldage. 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.

**BRAIN AREAS INVOLVED IN SELF-BODY IMAGE
RECONSTRUCTION WHEN EXPERIENCING FOR THE
FIRST TIME THE USE OF A NEW A PROSTHETIC EYE**

Lucía, Zárate*; Sergio Solis-Najera; Rene Jiménez; Paulina Palacios; Silvia Hidalgo; Alejandro Benavides; José Vásquez; Alfredo Rodriguez; Eileen Uribe-Querol

División De Estudios De Posgrado E Investigación, Facultad De Odontología,
Universidad Nacional Autónoma De México, Instituto Nacional De Psiquiatría
Ramón De La Fuente Muñiz, Departamento De Ingeniería Eléctrica,
Universidad Autónoma Metropolitana Iztapalapa
Maxillofacial Prosthesis
D.F., Mexico

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.

TOPIC: Congenital/Craniofacial Rehabilitation

Poster 25

MULTIDISCIPLINARY REHABILITATION OF HOLDENHART'S SYNDROME: A CASE REPORT

Flores, Alejandro*

Autonomous University of Chihuahua, School of Dentistry
Chihuahua, Mexico

Purpose: Conformation of a multidisciplinary team, for the prosthetic rehabilitation of a Goldenhar's Syndrome pediatric patient.

Methods & Materials: A boy aged 7 years 8 months was referred to the Autonomous University School of Dentistry at Chihuahua, Chihuahua, Mexico . He had received a diagnosis of Goldenhar syndrome at born. At age 2 , he underwent surgery for reconstruction of both auricles. At age 5 years, he started to receive neuromotor therapy, at 6 years he started to receive language therapy (sings language). He is the youngest son of three, and there was no family history of this syndrome. Examination revealed no evidence of mental or developmental disability. Clinical investigation showed asymmetry of the lower half of the face, hearing impairment, anotia of the right ear and microtia of the left ear. Intraoral examination showed, microglosia, contraction of the lower jaw, with midline deviation to the affected side, and protrusion of the upper incisors. The multidisciplinary team was formed by: The Pediatric Dentist, responsible of the oral rehabilitation, the Psychologist to work in the acceptance of the treatment by the mother and by the patient, the Maxillofacial Prosthodontist to fabricate the prosthetic ears and the language therapist to assure the effective communication during the rehabilitation process.

Results: After complete examination, the Pediatric Dentist, decided to expand the maxillary with an expansion device activated periodically; both right and left ear were fabricated by the Maxillofacial Prosthodontist, the retention method chosen was mechanical retention achieved by a personalized confectioned diadem; the Psychologist evaluated the acceptance of the treatment by using a acceptance scale. During the rehabilitation process, the language therapist, teach the patient new words, so he can fully understand the treatment.

Conclusion: The social insertion of a craniofacial syndrome patient, requires multiple procedures performed by a multidisciplinary team, it is just with the conjunction of knowledge and long-term regular follow-up, that the success of the treatment will be shown on the patient environment.

DETECTION OF THE FACTORS RELATED TO THE REHABILITATION OF MASTICATORY FUNCTION FOR MAXILLOFACIAL PROSTHETIC PATIENTS

Miyamae, Shin*; Asami, Kazuya; Ozawa, Shogo; Yoshioka, Fumi;
Hirai, Hideaki; Kimura, Naomi; Takeuchi, Kazuo; Tanaka, Yoshinobu;
Hattori, Masami

Aichi-Gakuin University, School of Dentistry

Department of Gerodontology, Department of Removable Prosthodontics

Nagoya, Japan

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 & 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: The increased surface area of the gummy jelly demonstrated significantly higher correlations with the occlusal support, occlusal contact points, remaining teeth, age, gender and remaining teeth. Masticatory scores that were calculated from the food questionnaire also confirmed significantly higher correlations with the occlusal contact points, remaining teeth, age and interocclusal relation. Furthermore, the significant correlation between the improvement of masticatory performance and occlusal contacts of the artificial teeth on the defect area was detected.

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.

EVALUATION OF AGE AND BEAUTY WITH THE iPhone[®]: A PILOT STUDY

Patzelt, Sebastian B M*, Schaible, Leonie K, Kohal, Ralf J
University Hospital, School of Dentistry, Albert-Ludwigs-University
Department of Prosthodontics
Freiburg, Baden-Württemberg, Germany

Purpose: Esthetics plays a major role in society as well as in medicine. Usually, the face is the central part of visual examinations. 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 were tested regarding their use as an objective evaluation tool for age and beauty.

Methods & 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 selected and two frontal portraits of each subject were taken (smiling and neutral mien). The apps PhotoAge[™] and PhotoGenic[™] (Version 1.5, ©2012, Percipo Inc., San Francisco, CA, USA) were applied to evaluate the age and beauty, 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 based on an visual analogue scale. Statistical analyses were implemented (linear mixed models with random intercepts; least square means, CI 95%, $p < 0.05$).

Results: PhotoAge[™] revealed a mean age of 43.14 ± 18.16 years, whit a difference from the true mean age of -1.01 ± 8.16 ($p = 0.5996$). The evaluation by the raters revealed a mean age of 41.51 ± 18.98 , which was different from the true mean age of 0.63 ± 8.54 ($p = 0.6078$). There was no statistical significance between the two groups ($p = 0.2783$). The mean beauty score was 6.44 ± 1.79 for PhotoGenic[™] and 4.87 ± 1.80 for the human raters. A statistically significant difference was detectable between the two groups ($p < 0.0001$).

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 comparable to human raters; however, PhotoGenic[™] rates the subjects' beauty 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 beauty.

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, Italy

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 & 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: The Tc analysis of the 12 sites (upper jaw: 6; lower jaw: 6) highlighted, in height, a mean bone gain of 4.1 mm in the lower jaw (range 5-1,9 mm; alveolar walls mean height after extraction = 7.6 mm, 4 months later = 11.7 mm) and 3.35 mm in the upper jaw (range 4-2,3 mm; alveolar walls mean height after extraction = 4.87 mm, 4 months later = 8.22 mm). In width, a mean bone gain of 2.02 mm in the lower jaw (range 2.8-1.5 mm; alveolar walls mean width after extraction = 6,32 mm, 4 months later = 8.34 mm) and 2.15 mm in the upper jaw (range 2.8-1.6 mm; alveolar walls mean width after extraction = 6,9 mm, 4 months later = 9.05 mm). The histological analysis of the samples showed an intense bone metabolic activity with active osteoblasts both on the implant surface and at the level of the native bone-graft interface, and in the grafted area. The grafted material was partially replaced by new regenerated bone and a partially mineralized osteoid matrix was visible with new vessels: the matrix produced was going to be organized in a more mature tissue.

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.

DEPIGMENTED SKIN AND PHANTOM COLOR MEASUREMENTS FOR REALISTIC PROSTHESES

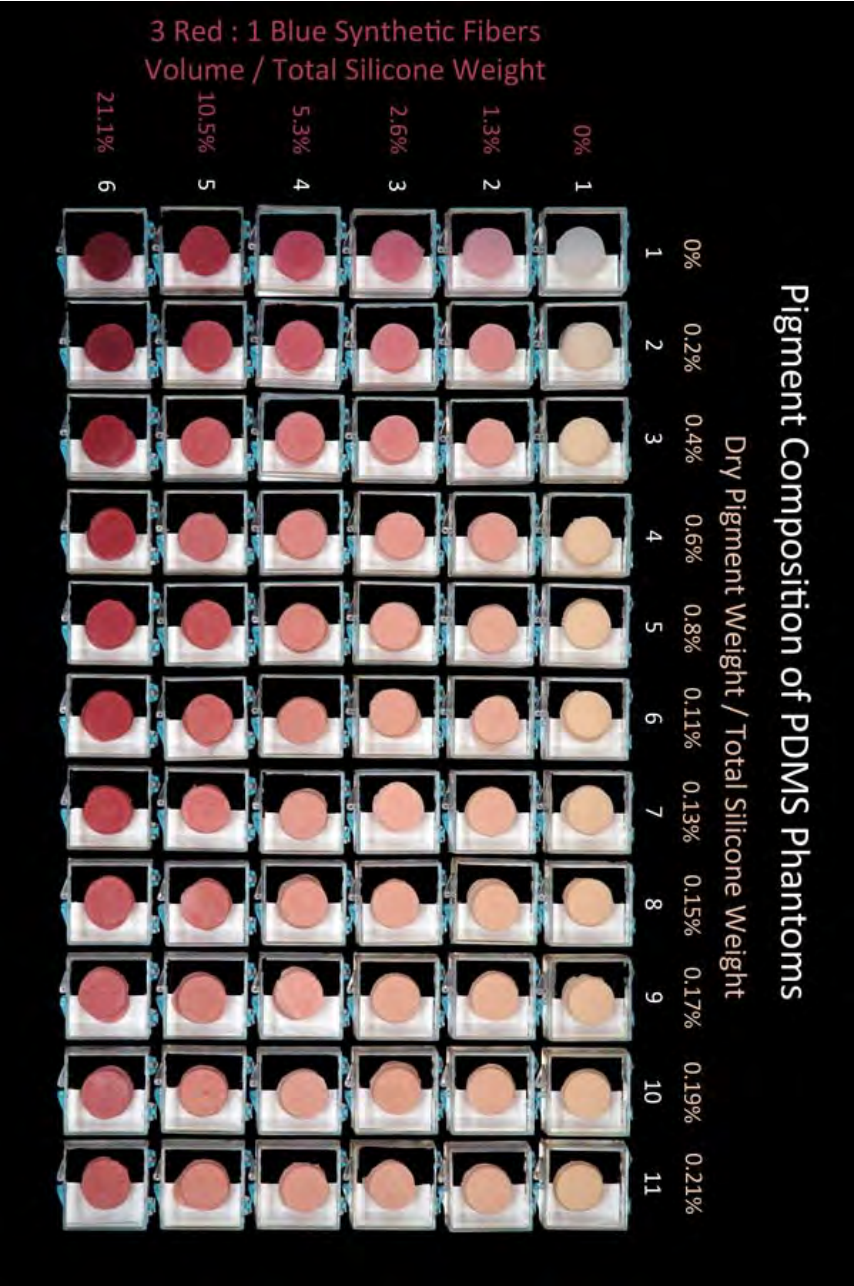
Tanner, Paul *; Leachman, S.; Boucher, K.; Ozcelik, TB
University of Utah Huntsman Cancer Institute
Facial Prosthetics
Salt Lake City, UT USA

Purpose: The purpose of this study was to test the hypothesis that regardless of human skin phototype, areas of depigmented skin, as seen in vitiligo, are optically indistinguishable among skin phototypes. The average of the depigmented skin measurements can be used to develop the base color of realistic prostheses.

Methods & Materials: Data was analyzed from 20 of 32 recruited vitiligo study participants. Diffuse reflectance spectroscopy measurements were made from depigmented skin and adjacent pigmented skin, then compared with 66 pigmented polydimethylsiloxane phantoms to determine pigment concentrations in turbid media for making realistic facial prostheses.

Results: The Area Under spectral intensity Curve (AUC) was calculated for average spectroscopy measurements of pigmented sites in relation to skin phototype ($P = 0.0505$) and depigmented skin in relation to skin phototype ($P = 0.59$). No significant relationship exists between skin phototypes and depigmented skin spectroscopy measurements. The average of the depigmented skin measurements (AUC 19,129) was the closest match to phantom 6.4 (AUC 19,162).

Conclusion: Areas of depigmented skin are visibly indistinguishable per skin phototype, yet spectrometry shows that depigmented skin measurements varied and were unrelated to skin phototype. Possible sources of optical variation of depigmented skin include age, body site, blood flow, quantity/quality of collagen, and other chromophores. The average of all depigmented skin measurements can be used to derive the pigment composition and concentration for realistic facial prostheses.



HOW CAN YOU HELP YOUR GAGGING PATIENTS?

Van Linden Van Den Heuvel, Chiquit*

University Medical Center Groningen, the Netherlands

Oral and Maxillofacial Surgery and Special Dental Care

Groningen, Netherlands

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 & 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: This has resulted in a multidisciplinary method that will be described and illustrated with video fragments. Here the pros and cons of implants with dental gagging will be clarified. Recommendations and specific tips will also be provided for specialists who want to transcend the level of home remedies for their gagging patients.

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.

AURICULAR PROSTHESIS FOR AN ELDERLY TREACHER COLLINS SYNDROME PATIENT

Wu, Henry*; Donald, Curtis
Oakland, CA USA

Purpose: To fabricate the auricular prosthesis for an elderly Treacher Collins syndrome patient and its modification to improve the marginal adaptation of prosthesis to the facial tissue.

Methods & Materials: Treacher Collins syndrome (TCS) or mandibulofacial dysostosis is rare (1 in 50,000 births), congenital autosomal disorder that is related to the mutation of TCOF1 gene with variable expression. The typical clinical features includes under-developed mandibular and zygomatic bones, malformation of ears and conductive hearing loss, downward slanting eyes, drooping lower eyelids, dental anomalies (tooth agenesis, enamel deformities, malocclusion). A 61 y/o woman was referred for a pair of auricular prostheses. A Preliminary impression was completed, stone casts poured and wax patterns of ears evaluated clinically. The Otolaryngologist removed the residual ear lobes and placed three Vistafix 3 mm implants (Cochlear Americas) following the surgical guide. A bar-clip was fabricated to retain the auricular wax pattern during final try-in and an issue of marginal adaptation at inferior and lower part of wax pattern was identified due to soft tissue displacement during mandibular opening. The wax pattern was modified to improve the adaptation by a functional alter-cast impression technique. The final prostheses were completed with A-2186-F, platinum RTV silicone Elastomer and internal fiber coloration. (Factor II, Inc.)

Results: The bar-clip supported by the implants can retain the auricular prosthesis, the marginal adaptation needs to be modified to avoid the displacement from mandibular movements

Conclusion: Retention, stability and adaptation can be improved by the implants and bar-clip system and additional impression technique.

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, China

Purpose: to introduce a lab method for fabrication of maxillary obturator

Methods & 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: Both esthetic and functional goals fulfilled.

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

**THE RESTORATION OF A NASAL DEFECT ACCOMPANY
WITH MISSING MAXILLARY ANTERIOR TEETH-
CASE REPORT**

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

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

Methods & 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: Both esthetic and functional goals fulfilled.

Conclusion: Bar-clips and magnetic attachments can be very useful in facial defect restoration.

THE EXPERIENCE OF AN INTERDISCIPLINARY TEAM IN THE TRATMENT OF ONCOLOGIC PATIENTS WITH CRANIOMAXILLOFACIAL DEFECTS

Zúñiga, Sergio*; Lopera, Juan Fernanado; Monroy, Clara; Toro, Mauricio;
Valencia, Natalia; Rios, Tatiana; Arango, Alejandro
Intituto De Cancerología IDC Las Americas
Medellin, Colombia

Purpose: Setting up an interdisciplinary team is crucial to correctly rehabilitate craniomaxillofacial oncologic patients. At the Instituto de Cancerologia 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 & 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: The goal of this poster is to share the experiences of this particular team and the benefits of working as a truly interdisciplinary group. The treatment goes beyond regular staff-meetings and follows a common stepwise workflow, every team member does not simply performs individual tasks but the whole team focuses on recovering the patient's quality of life.

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.

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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, Italy

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 & 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: The presented technique allows to detect different motor ability in the different subjects and shows a good repeatability. For the analysed pathological subjects a significant improvement was observed.

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.

COMPARISON OF TOOTH LOSS BETWEEN INTENSITY-MODULATED AND CONVENTIONAL RADIOTHERAPY IN HEAD AND NECK CANCER PATIENTS

Chuka, Richelle*; Rieger, Jana; Compton, Sharon; Parliament, Matthew;
Seikaly, Hadi; Wolfaardt, Johan
Institute for Reconstructive Sciences In Medicine, Covenant Health
University of Alberta
Edmonton, Alberta, Canada

Purpose: Advanced radiotherapy (RT) such as intensity-modulated radiotherapy (IMRT) has become more common in the management of head and neck cancer (HNC). IMRT includes focused target volume coverage to the tumour while sparing vital functional tissues in hopes to protect salivary function. Preserving salivary tissue and function can potentially minimize salivary changes and prevent the loss of saliva. The side effects from RT, such as xerostomia, radiation-related caries, and problems with oral functions are often life-long. Preventive dental care is implemented to preserve the dentition and only high-risk or unsalvageable teeth are removed prior to the initiation of RT. With the increase in the number of younger subjects being diagnosed with HNC, particularly due to the growing influence of human papillomavirus and the reality that more people are keeping their teeth for longer, there is the potential for more teeth to be at risk for RT related changes years after RT. The ability to deliver lower radiation doses to non-target tissues potentially help protect and reduce the treatment side effects that contribute to oral and dental complications. However, the long-term effects on dentition after IMRT are not well established. The primary objective of this study was to: (1) understand the status of the dentition by comparing tooth loss after IMRT and conventional RT in HNC patients and (2) determine the relationship between the subject demographic information and tooth loss after RT.

Methods & Materials: A retrospective chart review was conducted on individuals who received IMRT or conventional RT (+/- surgery, +/- chemotherapy) for oropharyngeal, oral cavity, and nasopharyngeal cancer between 2000 and 2010 at the Institute for Reconstructive Sciences in Medicine, iRSM. Tooth loss, the primary outcome measure, was assessed using intraoral photographs, radiographs, and clinical records. The influence of patient demographics on tooth loss was assessed as well.

Results: Eighty-six patients were eligible for review at baseline; 44 received IMRT and 42 received conventional RT. Twenty-four had data collected up to 2 years after RT. After adjusting for the baseline number of teeth, no significant differences were found between groups up to 2 years after RT using repeated measures analysis of covariance RM-ANCOVA (p .079). The site of disease was significantly different between groups.

Conclusion: No statistically significant differences in tooth loss between RT groups were found 2 years after RT; however, trends in the data suggest that tooth loss increased each year after RT up to two years after treatment. The early findings of this study need to be viewed with caution as long-term data beyond 3 to 5 years as well as a larger sample size are needed to further understand the dental effects after advanced RT.

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IMPACT OF OBTURATORS ON QUALITY OF LIFE AND SPEECH IN PATIENTS WITH ACQUIRED PALATAL DEFECT AT VARIOUS STAGES OF REHABILITATION

Dholam, Kanchan*; Pusalkar, H.; Yadav, P.; Quazi, G.; Sheety, K.; Somani, P.

Tata Memorial Hospital

Department of Dental & Prosthetic Surgery

Mumbai, India

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 & 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 HNQL35 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: Ongoing study, results of first fifteen patients will be discussed in this poster

Conclusion: Ongoing study, results of first fifteen patients will be discussed in this poster

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EVALUATION OF MASTICATORY EFFICIENCY OF AN OBTURATOR PROSTHESIS

Estrada, Blanca Estela*; Perea, Patricia; Rodríguez, Jonathan
Benemérita Universidad Autónoma Depuebla (México)
Master of Oral Rehabilitation
Puebla, Mexico

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 & Materials: A seven year old female patient who had a left hemimaxillectomy surgery due to an aggressive 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.

Results: Each period of activation was correlated with the periods of growth. The masticatory efficiency the particle size obtained was Tamiz 2.8 Tamiz 1.4 Hemimaxilla with natural teeth .4 grs = 17.3% 1.9 grs=52.6% Prosthesis obturator with acrylic teeth

(Bioton)1.2grs= 52.1% 1.1grs= 47.8% According to the results of screening performed. The functional results were acceptable the masticatory ability as the right foods chewing good nutrition improves patient especially in growth.

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 returned, which allowed her social integration.

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THE SURVEY BETWEEN MANDIBULECTOMY AND/OR GLOSSECTOMY PATIENTS AND SMOKING

Haraguchi, Mihoko*; Yamashiro, Masashi^{2,5}; Sumita, I. Yuka¹; Suzuki, Miho²; Michi, Yasuyuki²; Tachikawa, Noriko³; Munakata, Motohiro^{3,6}; Kasugai, Shohei³; Harada, Hiroyuki⁴; Omura, Ken⁴; Harada, Kiyoshi²; Taniguchi, Hisashi¹

Tokyo Medical and Dental University, Graduate School

¹Department of Maxillofacial Prosthetics, ²Department of Maxillofacial Surgery, ³Department of Oral Implantology and Regenerative Dental Medicine, ⁴Department of Oral and Maxillofacial Surgery, ⁵NTT Medical Center Tokyo, Dentistry & Oral Surgery, ⁶Department of Prosthodontic Dentistry for Function of TMJ and Occlusion, Kanagawa Dental University Tokyo, Asia, Japan

Purpose: Smoking is one of the risk factors in head and neck cancer. However, smoking rate in the general Japanese is very high (23.4 % in 2009) in developed countries. The purpose of this study was to investigate the relationship between mandibulectomy and/or glossectomy patients and smoking at pre- and post-surgery caused by cancer.

Methods & Materials: Sixty-six mandibulectomy and/or glossectomy patients (45 males and 21 females, mean age 67.3 years) referred to Tokyo Medical and Dental University Hospital's Maxillofacial Prosthetic Clinic participated as the subjects in this study. Resected part, neck dissection and radiotherapy were checked by visual inspection and operation summary. Smoking habits within 1 year of pre-surgery and within current 1 year of post-surgery were investigated by a questionnaire from 2012. Resected parts were classified into marginal mandibulectomy, segmental mandibulectomy, partial glossectomy, over hemi-glossectomy and over hemi-glossectomy + mandibulectomy.

Results: Neck dissection was almost undergone in segmental mandibulectomy, over hemi-glossectomy and over hemi-glossectomy + mandibulectomy. Radiotherapy was also undergone in about half patients of these same groups. Smoking rates of pre- and post-surgery decreased from 16.7 to 0 % at marginal mandibulectomy, from 29.4 to 5.9 % at segmental mandibulectomy, from 55.6 to 11.1 % at partial glossectomy, from 30.0 to 20.0 % at over hemi-glossectomy and from 75.0 to 41.7 % at over hemi-glossectomy + mandibulectomy. These results were greatly higher than Japanese smoking rate in their 60s.

Conclusion: The smoking rates at pre-surgery were high in all resected parts excluding marginal mandibulectomy, but the smoking rates at post-surgery decreased in all resected parts. Nevertheless the smoking rate of patients over hemi-glossectomy including mandibulectomy were still higher than that of Japanese through pre- and post-surgery. Higher smoking rate indicated to extend the resected area for cancer. As the extent of resection depends on degree of progression of cancer, low interest in health may enlarge the extent of resection. As maxillofacial prosthodontists engage in rehabilitation of cancer patients, in the future, we also want to advise patients to stop smoking from our prosthodontists standpoint.

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ANATOMICAL EXAMINATION OF THE FIBULA: DIGITAL IMAGING STUDY FOR OSSEOINTEGRATED IMPLANT INSTALLATION

Ide, Yoshiaki*; Matsunaga, Satoru; Seikaly, Hadi; Harris, Jeffrey; O'connell, Dan; Wolfaadt, Johan
Alberta Health Services/Covenant Health/University of Alberta
Institute for Reconstructive Sciences In Medicine (IRSM)
Edmonton, Alberta, Canada

Purpose: Free vascularized fibular flaps have been used for jaw reconstruction and have shown, from cadaver studies, to have adequate bone volume for osseointegrated implant installation. In order to fully describe the anatomy of the fibula a digital imaging study of the fibula was undertaken. The purpose of the present study was to examine the anatomical structure of the fibula using patient CT images.

Methods & Materials: The CT scan images of fibulae of twenty patients were used for the study. Three transverse sections of the fibula within the free flap harvesting region were analyzed using the following measures: (1) width from margins (anterior border, lateral border and medial crest) of the fibula to their opposing surfaces (posterior

surface, medial surface and lateral surface); (2) shape type (triangular, quadrilateral and irregular type); (3) height and width related to implant long axis of installation; (4) length of available bone volume for the osseointegrated implants (with the diameter of 4.3 mm) installation.

Results: The results were as follows: (1) The results of the analysis showed that of the widths from the margins of the fibulae to their opposite surfaces, the anterior border of the fibula to the posterior surface was the largest dimension ($P<0.01$). (2) The shape type analysis showed that the triangular type was most prominent in the section near the fibula head and the irregular type was most prominent in the section near the lateral malleolus. (3) The results of height and width related to implant long axis of installation showed that width of the central section was the largest in all sections ($P<0.01$). (4) The length of available bone volume measure showed that the length in the section near the lateral malleolus was larger than in the section near the fibula head ($P<0.05$). The results showed that there were significant differences in size between male and female fibulae ($P<0.01$).

Conclusion: The present study provides important information for the optimal site of installation of osseointegrated implants in fibular free flap reconstructions.

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FINITE ELEMENT ANALYSIS OF THE EFFECT OF FLABBY GUM ON THE STABILITY OF THE RECORD BASE FOR EDENTULOUS PATIENTS WITH A UNILATERAL MAXILLARY DEFECT

Ino, Teruo*; Iwase, Naoki; Endo, Satoshi; Watanabe, Akira; Noro, Hiromasa; Iizuka, Tomoaki; Teshigawara, Daisuke; Fujisawa, Masanori

School of Dentistry, Meikai University

Division of Fixed Prosthodontics

Department of Restorative & Biomaterials Sciences

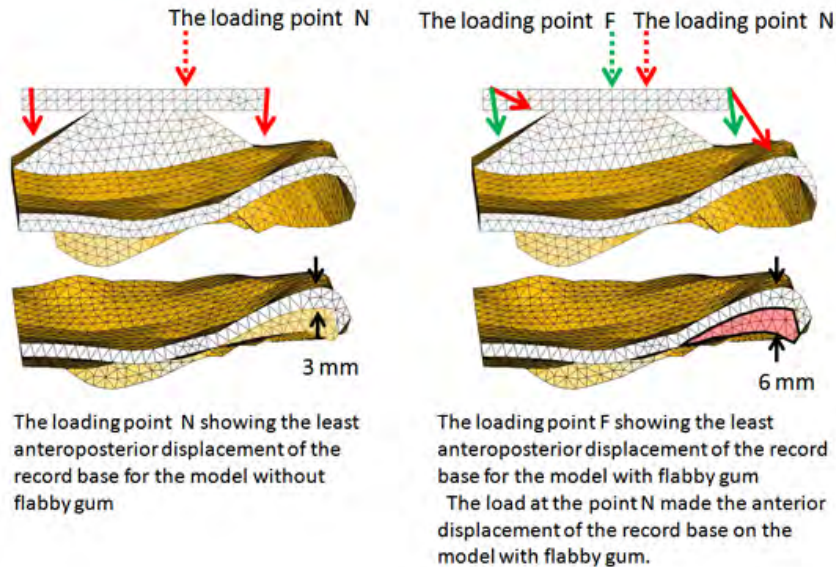
Sakado, Saitama, Japan

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 unilateral maxillary defect. 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 & 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 unilateral maxillary defect. The model contained a lining mucosa, and maxillary record base. And the interface between the record base and mucosa was not connected and was able to slide. 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 50 N vertical to the occlusal plane was simulated to be applied.

Results: Under the load at the anteroposterior center of alveolar arch without flabby gum, the record base showed relatively even depression. However, under the same load for condition with flabby gum, the record base showed the anterior direction of displacement and intrusive displacement of its anterior portion. On the other hand, under the loading to anteroposteriorly mid area of posterior ridge for the case of flabby gum, the record base showed little displacement.

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.



REHABILITATION OF MAXILLECTOMY DEFECTS WITH CAD-RP OBTURATOR PROSTHESES: A PILOT STUDY

Jiao, Ting*; Chenyuan, Zhu; Xian, Dong; Xiaoyu, Gu
College of Stomatology, Ninth People'S Hospital, Shanghai Jiao Tong
University, Shanghai 200011, PR China
Department of Prosthodontics
Shanghai, China

Purpose: In this study, a new method is established to design and fabricate an obturator prosthesis using a computer-aided design (CAD) and rapid prototyping (RP) technique and to evaluate the functional results of this technique.

Methods & Materials: Eleven patients with acquired maxillary defects because of head and neck cancers were treated under a protocol based on 3-D reconstruction, CAD, and RP technologies to fabricate obturator prostheses. To evaluate the quality of the obturator prostheses and the patients' satisfaction, the Obturator Functioning Scale (OFS) of the Memorial Sloan-Kettering Cancer Center was applied.

Results: Each patient received an individualised obturator, which exactly represented the defective shape and fit of the defect. The obturators easily fit the defects with little modification and were suitably placed in the patients' defective cavities without shifting or swinging. The patients showed good results in all fields of functional outcomes and social acceptance. The OFS scores were comparable with those reported in other studies using traditional methods.

Conclusion: This study combined CAD with RP technology to explore a new and feasible method for manufacturing individualised obturators for patients after maxillary resection. The new method has the significant clinical value of reducing the chair-side time needed for both patients and prosthodontists and of decreasing difficulties in surgery and patient suffering.

APPLICATION OF THE THERAPY MAKEUP USING THE NOVEL COSMETICS BASE MATERIAL IN PATIENTS WITH CRANIOFACIAL DEFORMITY AND DEFECT

Koyama, Shigeto*; Hiroyasu, Kanetaka; Yoshinori, Sagehashi; Soshi, Hanawa; Nobuhiro, Yoda; Keiichi, Sasaki

Tohoku University Hospital, Tohoku University Graduate School of Dentistry, Shiseido Co., Ltd.

Maxillofacial Prosthetics Clinic Liaison Center for Innovative Dentistry

Division of Advanced Prosthetic Dentistry

Sendai, Miyagi, Japan

Purpose: Facial prostheses can help restore their cosmetic disturbance of the patient with craniofacial deformity and defect. However, since patients may have various limitations of the facial prostheses application, other options which would suit individual demands are required. The objectives of this study were to evaluate the usefulness of the novel cosmetics base material for craniofacial deformity and defect by an application of the therapy makeup for the two preliminary cases.

Methods & Materials: Subject #1: 63-year-old man who after surgery for a left maxillary tumor had a left facial skin concavity with an extensive facial and maxillary defect including the orbit. We applied a silicone facial prosthesis, but a large gap of bottom margin between his skin and the prosthesis was observed because of including movable region. Then, we applied the novel cosmetics base material to fill the gap of the movable region. Subject #2: 67-year-old woman who has undergone partial maxillectomy has aesthetic problems including the concave on left middle face. Since the existence of concave, she always uses a Band-Aid on the area. First, we applied a silicone facial prosthesis, but she did not like to use. Second, we applied the novel cosmetics base material in craniofacial deformity by an application of the therapy makeup. The novel cosmetics base material was made from oil based silicone gel, produced by Shiseido Co., Ltd.

Results: The novel cosmetics base material showed a flexibility which could follow the motion of their movable regions, and could be stick to skin for 6 hours. Also, it showed no allergic reaction or irritation in the patients. The application of the novel cosmetics base material could help restore their cosmetic disturbance and asymmetry facial counter.

Conclusion: These results suggested that the novel cosmetics base material could be usefully used as a subsidiary material for facial prostheses or independent new method for patients with craniofacial deformity.

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FACIAL PROSTHESES RETAINED ON BASALLY OSSEOINTEGRATED IMPLANTS (BOI) – CASE REPORT

Lazic, Vojkan*; Vitomir, Konstantinovic

School of Dentistry

Department for Prosthodontics Department for Maxillofacial Surgery

Belgrade, Serbia

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 & 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: After an unloaded osseointegration phase of 3 months, all implants appeared well integrated in the irradiated bone according to radiologic criteria and clinical stability. At the control examinations after 6 and 12 months, respectively, there were no signs of recurrence of the tumor or any complications related to the implants. A satisfied cosmetic result and excellent stability and retention in both patients were achieved.

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

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FINITE ELEMENT ANALYSIS OF BAR/CLIP RETENTION SYSTEM IN OKAY CLASS IB, II AND III IMPLANT- SUPPORTED OBTURATOR PROSTHESES

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 & 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 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 generate 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: Results considered a qualitative analysis, based on the scale of maximum principal stress, and values obtained through quantitative analysis were expressed in MPa. The dislodgement of the obturator prosthesis in the area with no osseous support increases as the area of the osseous support, the number of implants and clips diminish; the tensile and compressive stress in the gingival mucosa, the cortical and the trabecular bone increase as the osseous support, the number of implants and of clips diminish. The tension stress (50.10 MPa) induced by bar/clip retention system designed for Okay Class III, with no surgical reconstruction, is extremely above the physiological limits of the maxillary bone tissue.

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 extensive. The high tension stresses observed in this study jeopardize the use of the bar/clip retention system design here evaluated.

DETERMINATION OF POTENTIALLY PATHOGENIC MICROORGANISMS IN OCULAR PROSTHETIC WEARERS

Nunez, Jaime*; Sanchez, Luis Octavio
Universidad Autonoma De Cd. Juarez. Mexico
School of Dentistry
Juarez, Chihuahua, Mexico

Purpose: The ocular prosthetics has high recurrence anophthalmic cavity infections and remaining eye. One cause of the prevalence of these infections is in the use, handling and inadequate care that are given to the Ocular Prosthetics (OP), as well as the characteristics of acrylic colonized with various microorganisms.

Methods & Materials: The aim of this study was to determine the presence of potentially pathogenic microorganisms with microbiological studies in samples from 35 Mexican patients with a history of recurrent infections.

Results: The samples completed 315 cultives, plated with CHROMAgar Orientation [®], CHROMAgar CHROMAgar Staph [®] and CHROMAgar Candida [®]. Being able to establish the relationship between the microorganisms found in the anophthalmic cavity with prosthetic surface and fornix of the eye. Finding Staphylococcus aureus, Pseudomonas, Klebsiella, Enterobacter, Proteus, Citrobacter, Streptococci, E. coli and C. albicans. Anophthalmic cavity was the area where most isolates were collected. The prosthetic acrylic surfaces reported the lowest number.

Conclusion: In this study the effect was detected in the care, hygiene and handling insertion and removal of the ocular prosthetic are critical for bacterial colonization.

DEVELOPMENT OF ARTIFICIAL TONGUE TO ASSIST IN SWALLOWING

Ohkubo, Chikahiro*; Ogawa, Takumi; Shigeta, Yuko

Tsurumi University School of Dental Medicine

Department of Removable Prosthodontics

Department of Fixed Prosthodontics

Yokohama, Kanagawa, Japan

Purpose: Dysphagia and disturbance of phonation are caused by glossectomy done for tumor ablation, remarkably decreasing patients quality of life. After a tongue segmentectomy, the artificial tongue is attached to the maxillary arch, and the alimentary bolus is moved to the pharynx because it is being pressed between the artificial tongue and the residual part of the tongue. On the other hand, after a glossectomy, the artificial tongue is commonly attached to the mandibular arch, and the alimentary bolus is moved to the pharynx because it is being pressed between the artificial tongue and the palate. The tongue prosthesis for swallowing is made with a trough in its posterior slope to guide the food bolus into the pharynx. However, only a trough is inadequate to assist in swallowing. It is very difficult to reproduce normal tongue movement in the oral phase of swallowing with an artificial tongue. The purpose of this present study was to develop a novel artificial tongue to assist in swallowing without actuator.

Methods & Materials: The fabric of the artificial tongue was constructed with plastic and rubber bands to be applied in the oral cavity. The artificial tongue was designed to reproduce tongue movement in the oral phase of swallowing. A series of movements of the artificial tongue were induced by applying slight pressure to the artificial tongue.

Results: Our artificial tongue reproduced the series of tongue movements as follows; 1. Hold the food bolus to the center of dorsum of tongue via closing mouth (trigger) + Closing the pharynx, 2. Open the pharynx via lifting base of tongue, 3. Flowing the food bolus into the opened pharynx, 4. Flowing the food bolus into laryngopharynx with pressure on the base of tongue, without any actuator. The trigger for the series of tongue movements was volitional movement (closing mouth) in the patients. Therefore, it was considered that the artificial tongue could assist in more normal physiological swallowing.

Conclusion: The series of tongue movements in the oral phase of swallowing could be reproduced by our artificial tongue, without an actuator.

RADIATION PROTECTIVE PROSTHETIC. CASE REPORT

Osorio, Jesus*

Universidad Autónoma De Baja California

Prosthodontics

Mexicali, Mexico

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 & 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.

Results: A 72 year old female patient, with a diagnostic of squamous cell carcinoma in superior left lip, which measures 4x3 centimeter in diameter. We perform an intraoral protector which at the same time protrudes the lip to get intimate contact of the radiation cone with the tumor. The areas to protect are the tongue, gums and the inferior lip. After the radiation is finished we observed moderate mucositis, radiodermatitis and a residual tumor, it submitted the a second cycle to achieved the tumor elimination and avoiding recurrence 6 months later.

DYNAMIC FINITE ELEMENT ANALYSIS OF A THREADED IMPLANT INSERTION

Ozawa, Shogo*; Mishra, M.; Masuda, T.; Miyamae, S.; Yoshioka, F.; Tanaka, Y.

Aichi-Gakuin University, School of Dentistry

Department of Removable Prosthodontics Department of Gerodontology
Nagoya, Japan

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 & 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-Mises stress pattern.

Results: In adaptive meshing there is continuous refining of the mesh to improve accuracy where required with minimal intervention by the analyst. So that elements of bone around the implant increased, and the size of the element was changed during the implant insertion. Stresses were not continuous but intermittent as the implant was inserted into the bone. Two different thread designs showed slight changes of stress pattern in the bone.

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 50

MASTICATORY FUNCTION ASSESSMENT OF PATIENTS WITH MAXILLARY OBTURATOR

Ren, Weihong*; Zhang, Zhenting; Dong, Haitao
Stomatology School, Capital Medical University
Prosthodontic
Beijing, China

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

Methods & 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: The masticatory efficiency was improved significantly with obturator by 44.71% ($P < 0.01$). With obturator, the Center of Force (COF) of patient moves to defective side about 3.9mm and the defective side could bear 12.67% occlusal force on average ($P < 0.01$). All the subjects were willing to wear the denture during eating and they could eat granular food and hard food.. 93.33% subjects expressed that the denture improved their digestion function and didn't affect their choice with food.

Conclusion: Masticatory function of patient with maxillary defect can be restored effectively by obturator.

Poster 51

NECK AND SHOULDER FUNCTION IN PATIENTS TREATED FOR ORAL MALIGNANCIES; A 1-YEAR PROSPECTIVE COHORT STUDY

Speksnijder, Caroline*, Van Der Bilt, Andries; Merks, Matthias; Koole, Ron
University Medical Center Utrecht
Radboud University Nijmegen Medical Center, the Netherlands
Department of Oral-Maxillofacial Surgery and Special Dental Care
Utrecht, Netherlands

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 & 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: All patients treated by a neck dissection showed a deteriorated neck and shoulder function shortly after intervention. The deterioration of the shoulder mobility, from before to shortly after intervention, was not only influenced by the neck dissection, but also by the tumor site and extent of reconstructive surgery. No significant influence of radiotherapy was found on objective and self perceived neck and shoulder function ($p>0.05$). One year after intervention patients treated with bilateral neck dissection still showed deteriorated lateral flexion of the neck, while patients treated by unilateral modified radical neck dissection still reported pain while moving the neck. Maximal forward flexion of the shoulder returned to the level of healthy controls one year after intervention. On the other hand, all patients, also the no neck dissection group, showed significant lower maximal abduction of the shoulder than controls one year after intervention.

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.

QUALITATIVE ANALYSIS OF BONDING BETWEEN ACRYLIC RESIN AND SILICONE FOR FACIAL PROSTHESES – AN SEM EVALUATION

Sumita, Yuka*; Mariko, Hattori¹; Shigen, Yoshi¹; Lovely, M.²; Naohiko, Iwasaki³; Hidekazu, Takahashi³; Hisashi, Taniguchi¹

¹Tokyo Medical and Dental University, Tokyo, Japan

²Sree Mookambika Dental College, Tamil Nadu, India

³Tokyo Medical and Dental University, Tokyo, Japan

¹Maxillofacial Prosthetics

²Sree Mookambika Dental College, Tamil Nadu, India

³Oral Biomaterials Engineering

Tokyo, Japan

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 & 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: The surfaces of three conditions showed obviously different patterns. The surface of section 1 displayed numerous scratched lines due to the polishing with a 600-grid SiC paper. The surface of section 2 primed with Sofreliner exhibited removal of the smear layer and exposure of slightly dissolved polymer particles. The surface of section 3 primed with PlasticBond showed no obvious scratches but several brush marks.

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.

Poster 53

THE EFFECTS OF IONIZING RADIATION ON OSTEOBLAST BEHAVIOR AND MINERALIZATION PROCESS

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

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 & 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: Electron probe microanalysis indicated that phosphorus and calcium signals were more evident throughout the culture period at doses of up to 400 mGy than at 4000 mGy. Ionizing radiation doses of less than 400 mGy induced no significant changes in bone matrix gene expression. In contrast, HSP47 gene expression was significantly greater in samples with 4000 mGy.

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 54

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 & 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: Hearing tests demonstrated improved speech reception threshold and word recognition. The patient had peak gain of 800-1100Hz and reduction of tinnitus with the BAHA device. The BTE instrument increased gain in the 1500-3000Hz region which improved audibility, clarity and ultimately communication.

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 55

THE CONSTRUCTION OF AN OUTREACH CLINIC FOR MAXILLOFACIAL PROSTHETICS IN PMSI CENTER ONCOLOGICAL INSTITUTE IN CHISINAU, REPUBLIC OF MOLDOVA. 2007 – 2012

**Van Oort, Robert*¹; Mindruta, Rodica²; Luca, Valentina²; Vilcu, Iwan²;
Reintsema, Harry¹; Cernat, Victor²; Tsibirna, George**

¹University Medical Centre Groningen, the Netherlands

²PMSI Insitute of Oncology, Chisinau, Republic of Moldova

³Medisch Spectrum Twenthe, Centre for Maxillofacial Prosthetics

**Oral Maxillofacial Surgery University Medical Center Groningen Department
of Head and Neck Oncology PMSI Oncological Institute
Groningen, Netherlands**

Purpose: The purpose of the maxillofacial prosthetic project was starting a new service for care in the PMSI Institute of Oncology. After agreement of the MFP project between UMCG and PMSI oncological Institute the second step was to start a fundraising. The proposed plans were included to the organization plan: 'MFP for LAMIC' (Low and middle Income Countries) and translated into an action program. The fundation "Smiles for moldova" was established for this particular project in 2008.

Methods & Materials: In October 2007 PUM, Netherlands senior experts - The Hague requested to advice for the initiation of a Dental Centre for Head and Neck Oncology in Chisinau. On the basis of the general plan "MFP for LAMIC" Dr Mindruta and Dr Pogonet described a project plan in two languages. The board of the Fund Smiles for Moldova and working group Urgenta (Utrecht) prepared a project budget. A fundraising started in 2007 with a Kayacking sponsor tour by a patient over 4000 KM. and was completed in 2009. A Dutch and Moldovan NGO was contracted to accompany the construction of the clinic in Chisinau and was finished in May 2010.

Results: A PUM Bussiness link programm and training programm was worked out (PUM, Netherlands senior experts, The Hague). Dr Valentina Luca, stomatologist and Ivan Vilcu,

technician were trained in the department of Oromaxillofacial surgery and the MFP prosthetic Laboratory Gerrit van Dijk, Groningen. The clinic started in October 2010. As part of the project plan four workshops were organized in PMSI by doctors of the Foundation Smiles for Moldova from 2010-2012. The number of patients treated from October 2010/ 2011= 82; The total number for 2012 = 138. Ocular=74; auricular= 1; maxillary= 20; nasal= 3; facial= 9; combined= 2; Orbital= 9; consultations and advice= 27; periodical revisions = 75

Conclusion: The numbers of treated patients of the project are majorly exceeded the expectations of the beginning. (50 treated patients over 2 years and 50 recall patients) The reconstructed rooms, clinics and the equipment are still in good condition with a maintenance support of PMSI/OI. Regular supply of prosthetic materials must still be organized by the foundation Smiles for Moldova. The market prices plus shipping of MFP materials are too high for this low income country. The success factor of the initiation of a maxillofacial prosthetics centre was realized by a contract with The National Insurance which was achieved in 2011 for a couple of years.

Poster 56

DIGITAL MAXILLOFACIAL PROSTHETIC REHABILITATION IN CHINA – FMMU CLINICAL SOLUTION AND CASES REPORTS

Wu, Guofeng*; Zhao, Yimin
School of Stomatology, Fourth Military Medical University
Department of Prosthodontics
Xi'an, China

Purpose: The facial defects due to accident traumas 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. Only limited numbers of prosthodontists in China could handle the treatment. New advanced technologies have recently been introduced in past years and demonstrated significant advantages for CAD/CAM of facial prosthetics although their usefulness still beyond a shadow of a doubt. This presentation introduces a digital solution for the intelligent simulation and rapid manufacture of facial prostheses, which was achieved by FMMU, Xi'an, China. More than 100 clinical cases have proved its good effects and high efficiency.

Methods & Materials: This digital solution developed its own software system, which contains three major functional units: data acquisition of digital facial impression, individual simulation of prostheses design and 3D printing of customized prostheses. For

the unilateral facial defects (e.g., orbital defects), a new optical (structured-light) 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. Then an ocular prostheses database was applied to ascertain the ocular prosthesis's size and position to the orbital prosthesis. 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), which included thousands of individual samples, was built in advance 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. After the simulation design of the facial 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: The new digital system realized the excise recovery of individual patients' appearances. It also greatly shortened the clinical time for patients within one day. Other physicians also could share and enjoy the interesting process by internet during CAD/CAM simulation. The technique of negative pattern produced the definitive facial prostheses directly. Our clinical experiences proved that this novel approach time and cost more effective. The patients were very satisfied with the definitive facial prosthesis.

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

WORKFLOW OF FABRICATING FACIAL PROSTHESIS USING 2 KINDS OF 3D MODELING SYSTEMS

Yoshioka, Fumi*; Ozawa, Shogo; Miyamae, Shin; Naomi, Kimura; Makihara, Kana; Tanaka, Yoshinobu

Aichi Gakuin University, School of Dentistry

Department of Removable Prosthodontics

Nagoya, Aichi, Japan

Purpose: Conventional facial impression could be uncomfortable for patients and weight of the impression material could cause inaccuracy in fabricating facial prosthesis. Furthermore, sculpting wax prototype requires artificial talents and well trained skills. Recently, 3D modeling systems had been introduced as simpler modeling methods without making impression. This study describes the methods for fabricating facial prostheses using the 3D modeling system.

Methods & Materials: Three subjects who have the facial defects due to cancer in orbital, mid facial and auricular area respectively were participated in this study. Informed consent was obtained in each subject. 3D data were acquired using white-light phase-shifting triangulation system. Acquired data were converted into STL data and exported to the 3D modeling software. For fabricating the orbital and auricular prosthesis, mirror image techniques in which a cut is made through the mid line of the face, reflected from the healthy side and the difference between mirrored data and defect data are going to be the model of the prosthesis, were used to design the prosthesis. For designing the nasal prosthesis, the patient daughter's data were utilized as a reference. Designed facial prosthesis were manufactured using 3D milling machine with the skin colored wax. Facial mold was manufactured by 3D printer. Then wax prototypes were tried in and confirmed the profile, marginal fitting then finalized on the patient's face by adding the texture of the skin. Finally, prototype was flaked and intrinsic colored and packed with silicone material in conventional way. Final prosthesis was delivered to the patient.

Results: 3D digital facial data was obtained precisely in detail. Especially, it was effective for partial auricular defect with avoiding disfigurement of the remaining ear. 3D designing of orbital and auricular prosthesis was simply achieved using mirror image technique.

Conclusion: In this study, the orbital, auricular and nasal prostheses were fabricated by 3D modeling systems. This technique could utilize to reproduce the facial curvature in detail and the clinical application of the alternative method of conventional facial impression is promising.

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, Uruguay

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 & 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%

Results: The prototype obtained is directly related to the amount of tomographic cuts and to the amount of radiation dose applied. Radiation differs according to the Tomograph Scanner that is used

Conclusion: The accuracy of the prototype is determined by the treatment to be performed.

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 & 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: In order to work around the existing anatomy, compromises had to be made in the shape, position, and margins of prosthesis. The patients had the final say in which direction to compromise and this resulted in an acceptable non-surgical auricular prosthesis.

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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Tuesday, October 29th

Workshop I- Silicone & Magnetic Retention: "2013"

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 2013, 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 2013, 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.

Sponsored by Factor II

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 Waters

Mr. Waters 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 Licentiate'ship 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.

Wednesday, October 30th

The following workshops are concurrent and you may select one from the following:

Workshop II- 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 III- Cochlear™ Vistafix® System: Advancements in Bone Anchored Facial Prosthetic Solutions

Time: 13:30-17:00

Course Objectives: This workshop will facilitate a training course focusing on surgical and prosthetic aspects of craniofacial rehabilitation utilizing osseointegrated implants. Course participants will be introduced to Cochlear 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 prosthetic solutions offers patients the potential to face life with confidence. Topics covered in this unique, in-depth workshop include implant placement and facial restoration through prosthetic design.

Sponsored by Cochlear Americas

Instructors:

Dr. Bradley P. Pickett is a board certified Otologist/Neurotologist with over twenty years of experience specializing in cochlear implants and bone anchored surgeries. Dr. Pickett is currently the director of Otology/Neurotology at the University of Mexico School of Medicine, as well as the director of Otology/Neurotology for the Veterans Administration health system in Albuquerque. Dr. Pickett received his Bachelor of Arts degree from Colorado College, and earned his M.D. from Dartmouth Medical School. He performed his residency at Walter Reed Army Medical Center in Washington DC and held a number of clinical positions for over 10 years with the US Army, where he attained the rank of Major. Dr. Pickett is actively involved in several medical societies, including the American Academy of Otolaryngology, where he participates in the Head & Neck surgery skull base committee and the neurotology education committee. Dr. Pickett's research interests include the epidemiology of Aural Atresia in Native American and Hispanic Populations.

Susan Habakuk is a certified clinical anaplastologist and Clinical Associate Professor in the Department of Surgery at the University of New Mexico in Albuquerque and Adjunct Clinical Associate Professor at the University of

Illinois Medical Center at Chicago. Her teaching, research and clinical interests focus on the role of the clinical anaplastologist and the use of osseointegrated implants in the provision of craniofacial rehabilitation services. Professor Habakuk received her Bachelor of Science Degree in Medical Art at the University of Illinois at Chicago where she specialized in 3D models and facial prosthetics. Ten years later she received her Masters Degree in Medical Education from the University of Illinois Medical Center in Chicago. For over thirty years, she provided facial prosthetic services at the UIC Craniofacial Center where she served as a member of the maxillofacial prosthetic team. She also directed a graduate program in clinical anaplastology/medical art at the University of Illinois at Chicago which has gained international recognition for setting the standards in the field of anaplastology. Professor Habakuk has been an active member in her professional and peer associations which include the International Anaplastology Association, American Society of Ocularists, Association of Medical Illustrators, Academy of Osseointegration, International Society of Maxillofacial Rehabilitation, American Academy of Maxillofacial Prosthetics, Institute of Maxillofacial Prosthetists and Technologists, About Face and Lets Face It. She has been invited to present lectures and workshops nationally and internationally, served as a consultant and an editor of journals and authored articles and book chapters on her research interests and clinical experience. Throughout her professional career, she has received honors and awards for her academic and clinical achievements.

Conference Panel Discussions

Sunday, October 27th

Special Interest Group: Information Session & Discussion on Facial Prosthetics

Time: 15:00-17:00

Instructors:

Rosemary Seelaus & Peter Evans

University of Illinois at Chicago

Craniofacial Center

Chicago, IL USA

Monday, October 28th

Cutting Edge Approach of Digital Surgical Design for Prefabricated Flaps with Immediate Loading in Microvascular Reconstruction of the Jaws

Time: 9:00-9:45 AM

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.

Moderator & Closing Remarks: **Robert M. Taft, DDS**

Panel Members: **Lawrence Brecht, DDS**

Harry Reintsema, DDS, PhD

Max Witjes, MD, DDS, PhD

David L. Hirsch, DDS, MD

Hadi Seikaly, MD, FRCSC

Johan Wolfaardt, BDS, PhD, Mdent

Special Interest Group: Behavioral Special Interest Group Session

Time: 15:30-16:30

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.

Instructor:

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

Tuesday, October 29th

Special Interest Group: Oral Hygiene in Maxillofacial Rehabilitation Patients

Time: 15:30-17:00

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

Format:

- Opening remarks and introduction
- Research related presentations (15 minute presentations)

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;

1. Head and Neck Cancer – Protocols for the Oral Hygienist as Part of the Cranio-Facial Team – presenter Sabine Harck.
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

- 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

Department 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

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notes

Asian-Pacific Conference on Maxillofacial Rehabilitation

September 13-15, 2014, Xi'an, China

<http://www.apcmr.org>



Save the date!

Host - Chinese Society of Maxillofacial Rehabilitation and FMMU

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FFOFR (Foundation of Oral Facial Rehabilitation)

Conference Co-Chairs

Yimin Zhao DDS, PhD
John Beumer III, DDS, MS

Paradise Resort, Xi'an, China

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The Academy will be hosting the 61st meeting at the Westin New Orleans Canal Place. Adjacent to the historical French Quarter, this amazing venue offers sweeping views of the beautiful Mississippi River, making it the perfect downtown New Orleans hotel to savor the Big Easy's zest for living.

Just steps from popular attractions and things to do including Jackson Square, the New Orleans Convention Center, the luxurious shops at Canal Place, Harrah's Casino, museums, art galleries, dining and the central business district.

Conference Topics

Surgical Reconstruction
Rehabilitation Medicine
Nanotechnology and Biomaterials
Maxillofacial Prosthetics
Chemotherapy and Radiation Therapy
Psychosocial Considerations
Tissue Engineering and Regenerative Medicine
Facial Prosthetics
Digital Technology
Implant Care
Functional Outcomes
Supportive Care

Call for Papers

Delegates are encouraged to submit abstracts for poster presentations.

Abstract papers must be submitted via the internet on the AAMP website. Link to>> AAMP 2014 Meeting and then "Call for Papers".

Submission Deadline: August 1, 2014

All Dental Professionals Welcome!

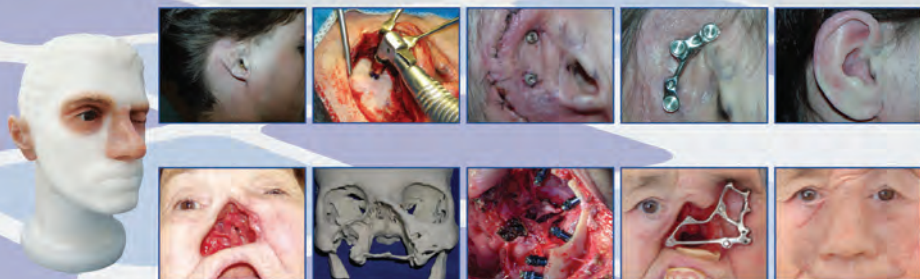
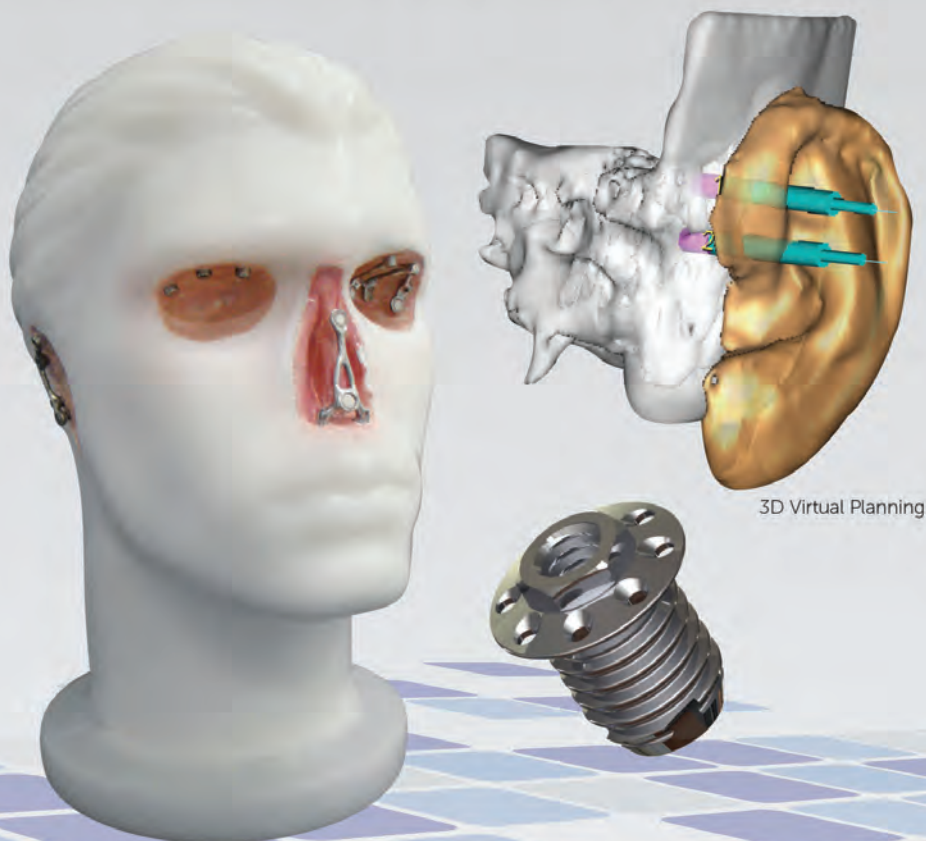
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