American College of Oral and Maxillofacial Surgeons 36th Annual Scientific Conference and Exhibition, April 18-20, 2015 Scientific Abstracts

The 36th Annual Scientific Conference and Exhibition of the American College of Oral and Maxillofacial Surgeons (ACOMS) convened April 18-20, 2015 at the Ritz-Carlton Fort Lauderdale, Florida. Special thanks are owed to the Scientific Chair of the meeting, Jon D. Perenack, DDS, MD who, along with the Committee on Continuing Education, organized an outstanding scientific and social program. The College bestowed its foremost honor, the W. Harry Archer Award, to Joseph Niamtu III, DMD, who presented the Kurt H. Thoma Memorial Lecture: Oral and Maxillofacial Surgery is Not a Job. It is a Privilege.

All attendees were invited to submit scientific abstracts for presentation at the conference in poster and oral sessions. Outstanding abstracts from OMS residents were entered in the Resident Abstract Competition and were eligible for cash prizes. We are pleased to announce the winners of the Resident Abstract Competition:

First Place (Oral Scientific Abstract): David Martinez, DMD, MD - Baylor College of Dentistry/Texas A&M University Department of Oral Maxillofacial Surgery Additional Authors: Sterling R. Schow, DMD; David R. Kang, DDS, MD

Cystic Fluid Component of Mandibular Ameloblastomas: A Potential Source for Seeding or Recurrence?

Second Place (Oral Scientific Abstract): Ryan Richards, DDS and Pooja Gangwani, DDS, MPH - St. Joseph’s Regional Medical Center Oral & Maxillofacial Surgery

Additional Authors: Michael Erlichman, DDS; Hillel Ephros, DMD, MD; Richard P. Szumita, DDS

Airway Management and Control of Severe Hemorrhage by Transarterial Embolization Through Interventional Radiology and 3-Staged Repair of Multiple Facial Fractures in a Maxillofacial Trauma Patient.

Third Place (Scientific Poster): Zachary Kerr, BSc, DDS - University of Western Ontario, London, Ontario, Canada

Additional Authors: Thomas D. Daley, DDS, MSc, FRCD; Zia A. Khan, PhD; Mark R. Darling, BChD, MSc (Dent), MSc (Med), MChD (Oral Path)

Expression of Kallikrein-Related Peptidases (Klks) In Adenoid Cystic Carcinoma.

ACOMS has two upcoming opportunities for residents to submit abstracts to win prizes and get published in TripletO:


The ACOMS 37th Annual Scientific Conference and Exhibition — April 7-12, 2016, Ritz-Carlton, San Juan, Puerto Rico.


NON-OSTEOTOMY TREATMENT OF CLASS III SKELETAL MALOCCLUSION USING BONE ANCHORED MAXILLARY PROTRACTION. NATHAN EBERLE, DDS, MD, ERIC STELNICKI, MD, JOHN MARCHETTO, DMD.

PRESENTING AUTHOR: NATHAN EBERLE, DDS, MD.

Purpose: Class III dentofacial deformities are most commonly growth-related deformities characterized by deficiency of the maxilla and/or a prognathic mandible, however many times it is some combination. Three approaches to the correction of class III skeletal malocclusion are growth modification, orthodontic camouflage, and surgery. Treatment of class III skeletal malocclusion with maxillary deficiency has been historically based upon protraction of the maxilla with or without maxillary setback. Orthopedic devices such as reverse pull headgear attached to orthodontic hardware have been used and shown to be effective. However, the collateral damage of the forces applied results in posterior rotation of the mandible and an unaesthetic increased vertical dimension of the face. Surgical treatment involves Le Fort I osteotomy or a combination of lefort I and BSSO set-back. A newer approach involves manipulating the immature facial skeleton by way of bone anchored maxillary protraction. This hybrid of the traditional three approaches uses growth modification with the assistance of a minor surgical procedure attempting to avoid a major surgical procedure. We evaluated this method using miniplates in patients with class III skeletal relationships.

Method: A retrospective chart review was performed to identify patient who underwent placement of bollard plates for class III skeletal malocclusion. Data collected included clinical photographs, lateral cephalograms, and information obtained during exams. Maxillary and mandibular skeletal positions were assessed using cephalometric radiographs. Occlusal relationships were determined by reviewing intra-oral photographs.

Results: Thirteen patients (9 female, 4 male) with a mean age 12.3 years & cervical maturation stage II, at start of treatment, were included. Maxillary growth was initiated two weeks post operatively with a 16 month mean duration of treatment. Comparing patients from start to treatment finish, the mean ANB angle changed from -0.2 to +2.3 and mean Wits appraisal from -9.4 to -4.1, respectively. The facial convexity values of all patients increased. Occlusal relationships improved in all patients, with establishment of class I molar relationship in 8 of 13 patients. Four patients experienced plate loosening requiring revision with no major complications seen.

Conclusions: Our results demonstrate this method was effective at normalizing the maxillomandibular relationship in these patients without significantly increasing the vertical dimension of the face. Bone anchored maxillary protraction with Bollard miniplates appears to offer an alternative to both reverse pull headgear & orthognathic surgery for the treatment of class III dentofacial deformities in a growing patient population.
AIRWAY MANAGEMENT AND CONTROL OF SEVERE HEMORRHAGE BY TRANSARTERIAL EMBOLIZATION THROUGH INTERVENTIONAL RADIOLOGY AND 3-STAGED REPAIR OF MULTIPLE FACIAL FRAC TURES IN A MAXILLOFACIAL TRAUMA PATIENT. RYAN RICHARDS, DDS, POOJA GANGWANI, DDS, MPH, MICHAEL ERLICHMAN, DDS, HILLEL EP HROS, DMD, MD, RICHARD P. SZUMITA, DDS.
PRESENTING AUTHOR: RYAN RICHARDS, DDS.

RESIDENCY PROGRAM: St. Joseph's Regional Medical Center Oral & Maxillofacial Surgery.

Purpose: Airway compromise and severe hemorrhage are the two most common life-threatening problems associated with maxillofacial trauma. The treatment of intractable hemorrhage to prevent airway obstruction and hypovolemic shock is imperative. Common methods for initially controlling hemorrhage include oronasal packing, placement of Foley catheters, and temporary reduction of facial fractures. When these measures are unsuccessful, carotid artery ligation has proven effective. However, the modern application of Interventional Radiology to achieve transarterial embolization (TAE) of the offending vessel is equally effective and offers improved morbidity and mortality. Here we present a case of a 39-year-old male who sustained life threatening hemorrhage of bilateral internal maxillary artery with multiple facial fractures. The purpose of this report is to discuss evidence based approach to control and treat intractable hemorrhage in complex maxillofacial trauma patients.

Method: A 39-year-old male was brought to the trauma center by EMS after he sustained maxillofacial crush injuries. He was hemodynamically unstable on arrival. As per ATLS protocol airway was secured by endotracheal intubation. Aggressive fluid resuscitation and blood transfusion was started. Initial attempts to visualize and control the hemorrhage through tamponade and oronasal packing were successful in slowing the hemorrhage. These efforts, fluid resuscitation and blood transfusion allowed for stabilization of the patient for transport. The systolic pressure was maintained above 90 mmHg and the patient was then taken to the operating room for surgical exploration. Initial attempts at ligation of the terminal vessels were unsuccessful. External carotid artery ligation was considered, however embolization of bilateral internal maxillary arteries was performed through interventional radiology. Tracheostomy was performed for definitive airway management.

Results: Massive oronasal bleeding was successfully controlled by transarterial embolization of bilateral maxillary arteries. Patient was hemodynamically stable at the end of the procedure.

Conclusions: Severe hemorrhage associated with mid facial trauma can result in airway compromise and hypovolemic shock. Control of life threatening hemorrhage reduces morbidity and mortality associated with severe exsanguination.

PREVALENCE DATA ON 3RD MOLARS IN THE U.S. POPULATION. CAITLIN B.L. MAGRAW, DDS, MD, KEVIN L. MOSS, TOM BRADER, BS, SARAH J. BROBECK, BA, STEVEN OFFENBACHER, DDS, PHD, MMSC, RAY WHITE, DDS, PHD.
PRESENTING AUTHOR: CAITLIN B.L. MAGRAW, DDS, MD.

RESIDENCY PROGRAM: University of North Carolina at Chapel Hill.

Purpose: Most young adults in their 20’s have 3rd molars. Hugoson et al (1988) published the only existing epidemiologic data based on a sample of 700 individuals representative of the Swedish population and revealed 75% of individuals in their 20’s have four 3rd molars and 5% have none. By the age of 30 years, only a third have four 3rd molars. Though it would be helpful, no data exist from these cross-sectional analyses to determine the reasons for the difference over a decade. Having prevalence data on 3rd molars from the U.S. population would be useful to clinicians, policy makers, health care administrators, and the public. The purpose of this study is two-fold: (1) to analyze cross-sectional data for visible presence/absence of 3rd molars by age cohort from NHANES 2011-2012 and (2) to compare and contrast the NHANES 2011-2012 data on prevalence of 3rd molars with the Swedish population data.

Method: Cross-sectional analyses with descriptive statistics of the NHANES 2011-2012 data by age cohorts 20-29 years through 60-69 years. Outcomes include mean number and absence of visible 3rd molars, and a comparison with data from the Swedish population (Hugoson et al).

Results: The mean number of visible 3rd molars in NHANES 2011-2012 decreased progressively from the cohort 20-29 years, 1.48, to 60-69 years, 0.81. No visible 3rd molars were observed in 47% of the cohort 20-29 years, increasing to 61% for the cohort 60-69 years. These data contrasted sharply with the Swedish population data until the cohort 50-59 years. For example, for the cohort 20-29 years only 2% of the Swedish population had no visible 3rd molars compared with 47% in the US population. Comparing subjects in the 50-59 years cohorts 57% of the Swedish population and 53% of the US population had no visible 3rd molars. No data were available from either population to determine why 3rd molars were absent.

Conclusions: Over half the population of U.S. young adults 20-29 years have at least one visible 3rd molar and a quarter have four. The prevalence of at least one visible 3rd molar declines with each succeeding decade such that at 60-69 years two-thirds of subjects have no visible 3rd molars. A similar trend exists for the presence of four 3rd molars. By the decade of the 60’s fewer than 10% subjects have four 3rd molars.

EFFECTS OF TOTAL INTRAVENOUS ANESTHESIA VERSUS BALANCED INHALATION ANAESTHESIA ON HEMODYNAMICS AND RECOVERY IN ORTHOGNATHIC SURGERY. FREDRIK WIDAR, JOSEPHINE SKALDSTAM, JAN CREUTZ, HOSSEIN KASHANI, CHRISTER DAHLIN.
PRESENTING AUTHOR: FREDRIK WIDAR.

Purpose: The main objective of the present study was to evaluate hemodynamics and recovery parameters in relation to two anaesthetic techniques; remifentanil-propofol based total intravenous anaesthesia (TIVA), versus fentanyl-sevoflurane based balanced inhalation anaesthesia (BA) in orthognathic surgery. The second objective was to evaluate long duration local anaesthesia administered after surgery on recovery parameters.

Method: Medical records were retrospectively reviewed from 269 patients who had undergone orthognathic surgery between 2003 and 2013. Ninety-four patients were audited due to strict inclusion criteria to compare the two anaesthetic techniques. Hemodynamics was evaluated with parameters such as blood loss, mean arterial pressure (MAP), values of systole and diastole, and heart rate. Recovery was investigated with parameters such as postoperative nausea and vomiting (PONV), recovery time at the post-anaesthesia unit (PACU), pain and hospitalization.
Furthermore, we analysed possible influences of age, gender, body mass index (BMI) and operating time.

**Results:** No significant differences regarding blood loss, operating time, recovery time, PONV and hospitalization were found between the two anaesthetic techniques. There was a significant continuously improvement regarding reduced blood loss, operating time and hospitalization during the 10-year follow-up. TIVA facilitated hemodynamic stability through superior pain/stress control during surgery. The addition of long duration anaesthesia (ropivacaine 7.5/ mg/ml) given at the end of surgery significantly reduced hospitalization (p=0.0028) when analysed separately.

**Conclusions:** No significant differences were found between the two anaesthetic techniques regarding blood loss, operating time, recovery time, PONV and hospitalization. TIVA facilitates hemodynamic stability. Long duration local anaesthetics given at the end of surgery appears to improve mobilization of the patient and reduce hospitalization.

THE COST OF DELAYING THE REMOVAL OF THIRD MOLARS. S. ROSS MARTIN, DMD, KEVIN S. SMITH, DDS.

**Purpose:** Odontogenic infections continue to be a preventable burden on the busy hospital emergency department. A large number of these odontogenic infections requiring hospitalization are associated with retained third molars. While some practitioners in the dental community continue to protest that wisdom teeth do not need to be removed until they start to cause problems, they do not manage the life-threatening infections or see the financial burden on the patient and/or hospital caused by these retained teeth. While other studies have looked at odontogenic infections as a group, the purpose of this study is to specifically identify odontogenic infections caused by retained third molars and evaluate their financial drain on the patient, associated hospital and insurance program.

**Method:** A retrospective chart review was conducted for patients who were admitted to the OMS service from 2010-2013. Inclusion criteria included patients who were admitted for an odontogenic infection and taken to the operating room for an incision and drainage between 2010 and 2013. Patients were crosschecked with the assistance of a surgical log from the University of Oklahoma Oral and Maxillofacial Surgery program to ensure that these patients had an extraction of a third molar at the same time as the incision and drainage. Systematic reviews of operative reports and panoramic radiographs verified that the third molar was associated with the odontogenic infection that warranted admission.

**Results:** In total, 50 patient charts were included. The average hospital bill of each patient included in this study was $49,036 for a total of $2,451,826. The average length of stay of each patient was slightly over five days and one patient died from complications of his infection. 60% of these patients were uninsured. Of the $2,451,826 in hospital charges, only $247,456 was collected, leaving $2,204,370 to be written off by the admitting hospital.

**Conclusions:** The American Association of Oral and Maxillofacial Surgeons has dedicated a tremendous amount of time and money regarding the guidelines for removal of third molars when indicated. Most, if not all, of the odontogenic infections associated with third molars can be prevented with proper oral hygiene, basic dental care, and early removal of the offending tooth in a dental office when indicated. In these 50 patients, a reasonable estimate of $2000 could be assumed for extraction of all four third molars with general anesthesia for a total of approximately $100,000. Alternatively, the delay in removal dramatically accelerated costs to $2.4 million in charges.

While not all third molars need to be removed, we believe these numbers demonstrate the “wait and see” approach to management must be questioned due to the potential cost. A conscientious effort must continue to properly manage third molars to prevent financial drain on patients, hospitals and insurance programs.

PARTIALLY AND FULLY GUIDED IMPLANT PLACEMENT WITH IMMEDIATE PROVISIONALIZATION: A REVIEW OF THREE THOUSAND CONSECUTIVELY PLACED IMPLANTS. JOEL S. BERGER, DDS, MD.

**Presenting Author:** JOEL S. BERGER, DDS, MD.

**Purpose:** This is a research study to evaluate the cumulative survival rate (CSR) of implants placed in patients requiring multiple extractions, followed by immediate insertion and immediate loading using 3-D stereolithographic models, for surgical planning guides.

**Methods:** A retrospective study of patients treated in one facility, with the same Oral surgeon and Prosthodontist, over a four-year period. An approach will be discussed in which pre-operative planning, using articulated stereolithographic models, allows one to predictably do the procedure in a cost-effective and timely manner. This aids in placing implants in ideal bone, minimizing grafting procedures and allowing for a highly predictable outcome. In this study, a specific treatment planning protocol has been used on 230 patients and 325 full arches. 1681 implants were immediately loaded with full arch hybrid prostheses.

**Results:** A 1-4 year follow up showed the following results: The cumulative survival rate (CSR) was measured from a minimum of one year to four years. Immediate provisional prostheses were inserted in 321 total arches (177 arches in the maxilla, 144 arches in the mandible). A total of 1657 total implants were inserted. The mean insertion torque was 60.02 ± 13.1 (range 15-75) N cm. All implants received the final abutment (multi-unit abutment) the same day as the surgery took place. A final prosthesis was delivered in 304 jaws after a mean of 7.9 + 2.6 months. All implants placed were followed for zero to 52 months (mean 20.01 ± 11.3 months).

A total of six implants were lost in the first four months. One patient lost three implants and one patient lost two implants. Additionally, two implants were lost after the definitive prostheses were delivered. Additionally, two patients each lost a single implant after the definitive prosthesis were delivered. One definitive prosthesis fractured distal to the most distal abutment. No other definitive prostheses have failed in four years. The CSR 99.7% for the implants was 99.4%.

**Conclusions:** Patients with periodontally involved teeth can have their teeth removed, implants placed, and a provisional prosthesis inserted the same day, with a very high success rate.

The total treatment time is reduced from traditional implant treatment protocols. In many patients, bone grafting procedures are reduced or eliminated. The high survival rates of both implants and prostheses demonstrate this to be a very predictable technique.
NEUROSENSORY RECOVERY OF THE INFRA-ORBITAL NERVE FOLLOWING MAXILLARY ORTHOGNATHIC SURGERY. ALBRAA B. ALOLAYAN, BDS, MDS.
PRESENTING AUTHOR: ALBRAA B. ALOLAYAN, BDS, MDS.
RESIDENCY PROGRAM: The University of Hong Kong.

Purpose: To define the neurosensory recovery of the infra-orbital nerve and to investigate the risk factors that might contribute to the incidence neurosensory disturbances after maxillary orthognathic surgeries.

Method: A prospective observational study was carried out on patients who underwent orthognathic surgery between 2012 and 2013. Patients were divided into three groups according to the maxillary surgical procedures: 1. LeFort I ostectomy in one piece; 2. LeFort I ostectomy in two pieces; 3. LeFort I ostectomy in four pieces. Neurosensory function was assessed by subjective assessment and three objective testing modalities which included static light touch threshold, two-point discrimination and pain threshold. Neurosensory tests were performed preoperatively as a baseline and at 2 weeks, 6 weeks, 3 months, 6 months and 1 year post-operatively. Possible risk factors of neurosensory disturbances including subjects’ age, gender, surgeons’ experiences, total time of the surgery and segmentation procedure of LeFort I ostectomy were recorded. Subjective assessments of the presence of numbness were rated by the patients on a visual analog scale (VAS) from 0 (normal) to 10 (most severely affected). The data were analyzed with the Statistical Package for Social Sciences (SPSS version 20.0 SPSS Inc, Chicago, IL, USA). A 5% level of significance was applied.

Results: 48 patients with 96 sides. (17 male, 31 female) with mean age of 25.8 years (S.D. 6.3 years) were recruited. LeFort I ostectomy in one piece, two pieces and four pieces were performed on 42 sides, 14 sides and 40 sides, respectively. The incidences of neurosensory deficit for the infra-orbital region at 2 weeks, 6 weeks, 3 months, 6 months and 1 year were 81.3%, 60.4%, 41.7%, 17.7% and 10.4% respectively. Static light touch threshold, two-point discrimination and pain threshold neurosensory tests approached preoperative levels as early as 6 weeks post-operatively for the 3 groups. There were no statistical differences in the incidences of neurosensory disturbances in relation to age, gender, surgeon’s experiences, total time of the surgery and segmentation procedures.

Conclusions: Subjects with neurosensory disturbances of the infra-orbital nerve recovered from 81.3% to 10.4% within 1 year. Persistent neurosensory disturbances at 1 year rated mild by all subjects. Objectively all patients approached preoperative levels by 6 weeks post-operatively. Age, gender, surgeon’s experiences, total time of the surgery and segmentation procedure of LeFort I ostectomy did not appear to influence the incidence of neurosensory deficit in maxillary procedures of orthognathic surgery.

THE EFFECTIVENESS OF ANTIBIOTICS IN THE TREATMENT OF EARLY POSTOPERATIVE INFECTIONS OF MANDIBULAR FRACTURES. SCOTT MARTYNA, DMD,
DEAN TIBORIS, DMD, RAVI AGARWAL, DDS, GEORGE OBEID, DDS.
PRESENTING AUTHOR: SCOTT MARTYNA, DMD.
RESIDENCY PROGRAM: Washington Hospital Center.

Purpose: The treatment of mandibular fractures can be associated with various complications, one commonly being postoperative infection. Subsequent management of postoperative infected fracture sites can be challenging, and there does not appear to be consensus within the literature for the treatment of this condition. Antibiotics are typically prescribed once an infection is diagnosed, however how often they provide resolution is unknown. The aim of this retrospective chart review is to identify possible relationships between patients, the use of antibiotic treatment and outcomes to develop a treatment algorithm for post-operative infections.

Method: A retrospective chart review of mandible fracture patients treated at the author’s institution between April 2009 and Dec 2013 was conducted. Post-operative infected mandibular fracture patients were identified based on the following inclusion criteria: new onset swelling after resolution of initial post-surgical edema, unresolved post-operative swelling, intraoral or extraoral purulent discharge, and persistent pain from the fracture site. Patients were excluded from the study if they had insufficient follow-up, symptoms developed after eight weeks, or the patient presented initially with an infected mandible fracture. Management of these infections was categorized into two broad categories: 1. Those that were controlled with the use of oral antibiotics, with or without simple incision and drainage, and 2. Those that required further intervention to obtain resolution of infection. Further interventions included tooth extraction, plate removal, and retreatment of the fracture.

Results: 49 male and 11 female patients with a total of 64 infected mandible fractures were identified that satisfied the criteria. 25 (39%) infected fractures resolved with antibiotic treatment alone. Of note, only two of these patients (8%) had successful resolution as the result of multiple, or prolonged courses of antibiotics. The remaining 39 patients (61%) required further surgical intervention, of which plate removal (74%) was the most common.

Conclusions: Postoperative infection after the treatment of mandible fractures is a relatively common complication. In this chart review we identified that many patients have resolution with a single treatment course of antibiotics. However, if patients fail a single new course of antibiotics, it is likely that further surgical intervention is required for resolution of infection.

CYSTIC FLUID COMPONENT OF MANDIBULAR AMELOBLASTOMAS: A POTENTIAL SOURCE FOR SEEDING OR RECURRENCE?. DAVID D. MARTINEZ, DMD, MD,
STERLING R. SCHOW, DMD, DAVID R. KANG, DDS, MD.
PRESENTING AUTHOR: DAVID D. MARTINEZ, DMD, MD.
RESIDENCY PROGRAM: Baylor College of Dentistry/Texas A&M University Department of Oral Maxillofacial Surgery.

Purpose: Mandibular ameloblastomas are a complex family of benign tumors that are notorious for local aggressive-ness and recurrence. It is well accepted that close bony margins and inadequate soft tissue resection may lead to ameloblastoma recurrence. What has yet to be studied is the content of the cystic fluid component of mandibular ameloblastomas that may potentially contribute to the risk of tumor recurrence and seeding to organs such as the lung.

Method: We present a non consecutive case series of five mandibular ameloblastomas referred to the Department of Oral & Maxillofacial Surgery at Texas A&M Health Sciences Center Baylor College of Dentistry from October 2013 to present. The age range of the confirmed cases was 18-57. There were four men and one female included in the series. Ethnicities included two Caucasian, two African American and one Hispanic. Four of the five cases were treated with partial mandibular resection and one case treated by enucleation and curettage. All five cases were
confirmed by histology prior to cytology analysis. In all five cases the aspirate was taken at the time of definitive resection with a 16 gauge hypodermic needle entered directly into the tumor corpus. All five case aspirates were centrifuged for 5 minutes and only the fluid component was evaluated.

**Results:** There were no tumor cells seen in any of the five cases. Case 1 yielded 2.1 cc of red cloudy fluid with scant macrophages seen on cytology. Case 2 yielded 5 cc of red fluid showing acute inflammatory cells. Case 3 yielded 4 cc of yellow cloudy fluid and acute inflammatory cells and lymphocytes were identified. Case 4 yielded 10 cc of yellow cloudy fluid with acute inflammatory cells and histiocytes. Case 5 yielded 3 cc of red cloudy fluid showing macrophages and blood elements.

**Conclusions:** The findings of our case series shows that the cystic fluid of mandibular ameloblastomas is devoid of tumor cells. This finding may suggest the cystic fluid encountered either during biopsy or definitive treatment may not be a source for tumor seeding and recurrence. Of course, selection bias and internal validity are lacking in the case series design and no conclusion can be made as to whether cystic fluid can in fact lead to recurrence. However it does provide a promising outcome and basis for ongoing clinic research into this area which may lead to increased benefit to patients in the future.

**RECONSTRUCTION OF THE ORBITAL RIM, PIRIFORM, AND MAXILLARY ALVEOLUS WITH A FIBULA FREE FLAP. DAVID R. KANG, DDS, MD, BENJAMIN P. ARCHER, DDS, JASON N. BURKES, DDS, MD. PRESENTING AUTHOR: BENJAMIN P. ARCHER, DDS. RESIDENCY PROGRAM: Texas A&M Health Science Center Baylor College of Dentistry.**

**Purpose:** The fibula free flap was first introduced in 1979 by Ian Taylor for the reconstruction of trauma to the extremities, but it was not until 1989 that it was first used by David Hidalgo for reconstruction of mandibular defects. Although the fibula free flap has become the gold standard for mandibular reconstruction, there is still debate on what is the optimal free tissue to reconstruct maxillary defects, especially when considering reconstruction of the orbit and alveolus. The maxilla has been reconstructed with local flaps including temporalis and temporoparietal cranial bone grafts, radial forearm free flap, multi skin paddle rectus and anterolateral thigh free flaps. Furthermore, fibula, scapula, and iliac crest free flaps have been utilized when an osseous component has been needed. However, the soft tissue reconstructions neglected to take into consideration dental rehabilitation because there was no osseous component for placement of dental implants. The fibula has been proven to be versatile in contouring to the maxilla as described by Yim and Wei, but still neglects the alveolar component taking the aesthetic aspect into priority. We would like to describe a new design for reconstruction of the orbital rim, piriform, and alveolus with a fibula free flap.

**Method:** The investigators describe two case reports with the proposed design, and demonstrate implant placement withTx STUDIO (Hatfield, PA) virtual surgical planning software.

**Results:** While maintaining proper eye position and cheek projection, the proposed design accounts for a more acute arch-form of the maxilla.

**Conclusions:** Current reconstructions of the midface focus on maintaining proper eye position and esthetic cheek projection but do not account for the more acute offset of the maxillary arch in comparison to the zygomatic arch. Therefore, these treatments present significant dental restorative challenges, especially in the maxillary posterior. The proposed design accounts for the more acute arch-form of the maxilla, placing the alveolus into a more restorable position.