Abstracts presented at the 32nd Annual Scientific Conference and Exhibition of the American College of Oral and Maxillofacial Surgeons, April 3—5, 2011, Las Vegas, Nevada

This spring the American College of Oral and Maxillofacial Surgeons (ACOMS) met in Las Vegas for its 32nd Annual Scientific Conference and Exhibition. The meeting was truly special as it honored one of the legends of the oral and maxillofacial surgical specialty, Professor Hugo Obwegeser. Special thanks are owed to the scientific chair for the meeting, R. Bryan Bell, DDS, MD, FACS, who, along with the Committee on Continuing Education, yet again prepared an outstanding scientific and social program.

Edward Ellis, DDS, MS, received the W. Harry Archer Award and delivered the Kurt H Thoma Memorial Lecture on “Maxillofacial Trauma: Global Trends.” The conference covered a wide range of topics over the course of 3 days of lectures. In addition, there were 16 outstanding abstracts submitted from the teaching centers, presented by the future leaders of the profession.

Scientific Sessions

PLENARY SESSION: PATHOLOGY

Dr. Eric J. Dierks, Moderator

Parsch to Pogrel: The Evolution and Current Management of the Keratocystic Odontogenic Tumor (Formerly Known as Odontogenic Keratocyst). Dr. M. Anthony Pogrel.

This session discussed the evolution of our understanding of odontogenic cysts, particularly the lesion now known as the keratocystic odontogenic tumor. The different treatment options now available for the management of this lesion were discussed with the advantages and disadvantages of each.

Understanding Oral Cancer in the Genome Era. Dr. Brian L. Schmidt.

This session discussed why oral cancer has proven to be more elusive and complex than expected and why genomics has not led to a cure. It presented the modest headway made in predicting cancer behavior with genomics and showed how this knowledge has affected our understanding of the key elements of oral carcinogenesis. This session also discussed how technologic advances might hold promise for improving oral cancer patient survival and quality of life.


This session presented a retrospective review of 109 primary aggressive jaw tumors in 102 children over an 18-year period. These were predominantly “benign,” nonodontogenic, mesenchymal tumors. Participants were able to learn that clinical behavior usually did not correspond to the “benign” histologic patterns. Aggressive tumors displayed rapid growth, large size, and high recurrence rates. En bloc resection rather than curettage is appropriate therapy for these tumors.

PLENARY SESSION: RECONSTRUCTION

Dr. R. Bruce MacIntosh, Moderator


Professor J. Obwegeser reviewed the current state of the art of maxillary and mandibular reconstruction. He highlighted the indications and outcomes for microvascular free tissue transfer in both the maxilla and mandible, the role of nonvascularized bone grafting in mandibular reconstruction, and implant-supported prosthetic rehabilitation of acquired maxillary and mandibular defects, and he described the future of tissue engineering in cranio-maxillofacial surgery.


American Oral and Maxillofacial Surgeons have contributed to the development and advancement of cleft and craniofacial surgery. Walker, Boyne, Lyons, Henny, Epker, Ballenger, Bell, and Waite, to name a few, made early and remarkable contributions to these important surgical fields. After the early contributions, others, such as Hall, Fonseca, Precious, el Deeb, Posnick, and Schendel, spearheaded efforts to improve the Oral and Maxillofacial Surgery presence in very important ways. This ses-
sion highlighted the contributions of multiple North American Oral and Maxillofacial Surgeons to cleft and craniofacial surgery.

PLENARY SESSION: ORTHOGNATHIC SURGERY
Dr. Bruce N. Epker, Moderator

KEYNOTE: Asymmetries of the Facial Skeleton: Recommendations for Surgical Treatment Based on a Lifetime of Experience and Innovation. Prof. Hugo Obwegeser.

Professor Obwegeser reviewed his perspective on the diagnosis and management of facial asymmetry, highlighting a 60-year career in treatment of congenital, developmental, and acquired craniomaxillofacial deformities. He discussed innovative approaches toward optimizing outcomes, speculated on future therapeutic modalities, and described his vision for oral and maxillofacial surgery over the next century.

Achieving Optimal Facial Esthetics in the Orthognathic Surgery Patient. Dr. Jeffrey Posnick.

Adult orthognathic surgery patients (>40 years) presented with the same dentofacial deformities as their adolescent counterparts. Their concerns and physical findings may have progressed from need to correct the occlusion to resolving complex dental rehabilitative issues, from difficulty breathing through the nose to resolving obstructive sleep apnea, and from reconstruction of the jaws to achieving facial rejuvenation. This session discussed the importance of evaluating and clarifying objectives before undertaking orthodontics and orthognathic surgery in adults. There are no shortcuts to thorough patient education and comprehensive care every step of the way.

The Evolution of Maxillary Orthognathic Surgery Techniques. Dr. William H. Bell.

Doctor William Bell presented his 50-year perspective on the evolution of orthognathic surgery in general and maxillary orthognathic surgery in particular. He reviewed the current trends in the treatment of dentofacial deformities and outlined his vision of the coming “paradigm shift,” which incorporates rapid orthodontics, outpatient orthognathic surgery, and computer planning to achieve greater treatment efficiency.

PLENARY SESSION: TRAINING THE NEXT GENERATION OF NORTH AMERICAN ORAL AND MAXILLOFACIAL SURGEONS
Dr. Robert A. Strauss, Moderator

Craniomaxillofacial Trauma and Free Tissue Transfer: Why the Next Generation of North American Oral and Maxillofacial Surgeons Should Be Trained in Microvascular Surgery. Dr. Rui Fernandes.

This session described the current training in oral and maxillofacial surgery (OMS) within the United States and abroad, the scope of practice in academic medical centers, and the microvascular training for OMS. The session also provided an overview of the OMS–microvascular surgeon within the medical center.

The Role of the Oral and Maxillofacial Surgeon in Pediatric Cleft and Craniofacial Surgery: Avenues for Training and Program Development. Dr. Ramon Ruiz.

This session described the role of the oral and maxillofacial surgeon in the comprehensive care of the pediatric patient with cleft and craniofacial disorders. Contemporary techniques for the management of cleft lip and palate, nonsyndromic craniosynostosis, and craniofacial dysostosis were also reviewed. Currently available opportunities for young oral and maxillofacial surgeons to receive fellowship training in pediatric cleft and craniofacial surgery were highlighted.


This session described the coalescence of factors and individuals that resulted in the availability of postresidency fellowship opportunities for motivated American OMS. Although a minority of American OMS pursue oncologic and microvascular training, their presence has forever changed the specialty.


The current status of training puts roughly one-half of trainees in single-degree programs and one-half in double-degree programs. This will create a status of a cleanly divided educational model for the entering generation of oral and maxillofacial surgeons. Changes in dental education have decreased the biomedical and university status of dentistry. Oral and maxillofacial surgery education must change in response to this environment. This session discussed ideas on the improvement of the specialty in the future through acceptance of a universal educational model.


This session reviewed the environment, both political and professional, in which surgical training is delivered in the U.K. Has the process materially improved on training in the past? What does modern
enchymal stem cells were isolated from subcutaneous canine maxillary alveolar cleft model. Derived stem cells and autogenous bone graft in a regeneration of tissue-engineered bone from adipose-derived stem cell with autogenous bone graft in maxillary alveolar cleft repair with tissue-engineered bone from adipose-derived stem cells in one side and corticocancellous tibial autograft in the other side. Bone regeneration was evaluated by histomorphometry on the 15th and 60th days after implantation. Biopsies were taken at those times, and cross-sections of 3 μm thickness were prepared, stained by Masson trichrome, and studied by light microscope. The data were analyzed with descriptive and t test methods (α = 0.05).

Results. The bone formation of the autograft sides was higher than the stem cell sides at both 15 and 60 days: 45% and 96% versus 5% and 70%, respectively. Although the sides treated with stem cell showed less bone formation on the 15th day, the rate increased more rapidly in coming days to approach an acceptable level of 70% on the 60th day. The differences between the 2 groups on the 15th and 60th days were significant: P values .004 and .001, respectively.

Conclusions. Although autograft is still a criterion standard for bone regeneration, tissue-engineered bone from adipose-derived stem cells provide an acceptable alternative for conventional method, especially in the case of limited availability of autograft or donor site morbidity.

THE ROLE OF PROTON EMISSION TOMOGRAPHY IN THE SURGICAL MANAGEMENT OF PATIENTS WITH SQUAMOUS CELL CARCINOMA OF THE ORAL CAVITY: AN OUTCOMES ASSESSMENT.

Shrinivas Rangarajan, DMD, MA, Eustorgio Lopez, DDS, MD, Shawn McClure, DMD, MD, and Steven Kalman, DMD, MD.

Objective. Proton emission tomography (PET) can play an important role in the management of the patients diagnosed with oral cancer. Uptake of fluorodeoxyglucose (FDG) by malignant tissue provides data to assist in the initial staging, surgical planning, and follow-up of these patients. However, PET scans have limited sensitivity for cervical nodes that contain small areas of metastatic disease, resulting in down-staging of
cervical nodes. Other reports have noted false positive results. The purpose of this study was to compare the histopathologic results with the PET findings of N0 and N+ necks.

Methods. A retrospective study was undertaken of cases involving 27 patients, with 25 of these patients undergoing surgery. The patients underwent PET scan at initial staging and were grouped based on having N0 or N+ necks. Data analyzed from PET were evaluated for the extent and location of nodal involvement. This was then compared with the final histopathology reports of the nodes submitted during surgery.

Results. The cohort consisted of 20 man and 7 woman. Fifteen patients (60%) had clinically negative necks (N0). Nine of these patients (60%) had no evidence of metastatic disease on histologic exam. Of the remaining 6 patients, 3 (20%) had no evidence of hypermetabolic nodes, but the pathology report found metastatic disease to the cervical nodes. Three patients (20%) had consistent results on PET scan and the pathologic reports.

Ten patients (40%) had N+ necks. PET scans and the histologic findings were consistent in 4 patients (40%). In 2 patients (20%) with N+ necks, PET was positive for nodes on one side and negative on the other side, but the pathology report showed bilateral cervical node malignancy. Of the remaining 4 patients (40%), 2 did not have PET scans and 2 were treated with adjuvant therapy.

Conclusions. The variability of the results of the PET scan must be kept in mind when treatment planning for surgery. Our findings, which are in line with other literature, showed no definitive and consistent outcomes in the use of PET scan. The PET scan should be used only as a reference for staging and treatment planning for patients with squamous cell carcinoma of the oral cavity. The decision to perform the type of neck surgery should not be based on the PET scan alone.

REFERENCES

PREDICTING OSSEOINTEGRATION OF IMMEDIATELY LOADED SINGLE MOLAR IMPLANTS BY THE USE OF OSTELL RESONANCE FREQUENCY ANALYZER.
Mo’men A. Atieh, BDS, MS.

Objective. Resonance frequency analysis (RFA) has been extensively used to evaluate the stability of oral implants in experimental and clinical research. In immediate-loading protocols, predicting implant stability may allow an uneventful placement of immediate restoration, particularly in molar sites. The purpose of this study was to evaluate the diagnostic accuracy of the RFA instrument in detecting the long-term stability of immediately loaded single wide-diameter implants after 1 year of function and to determine the optimum cutoff value for immediate loading.

Methods. A total of 28 participants (18 female and 10 male; mean age 49.7 years) were equally assigned to 2 treatment groups (immediate versus delayed placement). Externally hexed Southern Implants of 8 or 9 mm diameter with lengths of 9 or 11 mm were placed either immediately after extraction or after complete bone healing. Thereafter, each implant was restored with temporary crown within 48 hours and a definitive crown 8 weeks later. Implant stability quotients (ISQs) were recorded during the surgical procedure and at 8 weeks and 1 year after the definitive restoration, with the use of the Oststell mentor device. Receiver operating characteristic (ROC) analysis was used to identify the optimum cutoff level for detecting implant stability. Sensitivity and specificity were also determined at the selected cutoff value.

Results. After 1 year, implant success rates were 71.4% for the immediate-placement group and 78.6% for the delayed-placement group (\( P > .05 \)). No significant differences in implant stability measurements were observed between the 2 treatment groups at surgery, 8 weeks, or 1 year (\( P > .05 \)). The area under the ROC curve for implant stability measurements at 8 weeks was 0.93 with a significant \( P \) value (\( P = .001 \)). According to ROC coordinates, the optimum cutoff value for detecting implant stability was ISQ 77.5 measured at 8 weeks, with a sensitivity and specificity of 100% and 76.2% respectively.

Conclusions. The area under the ROC curve suggested a high diagnostic accuracy of RFA for the detection of immediately loaded implant stability. The RFA cutoff value was estimated at a higher level than previously reported in the literature. Namely, a recorded RFA value of ISQ \( \geq 77.5 \) at 8 weeks may predict implant stability after 1 year of function. However, the presence of a lower ISQ value may not necessarily confirm the loss of osseointegration. The high optimum RFA value suggested by the present findings as a predictor for osseointegration highlights the need for more stringent inclusion criteria for immediate loading in molar region.
BUCCAL MUCOSAL GRAFT FOR MALE URETHROPLASTY: A TEAM APPROACH.
W. Jonathan Fillmore, DMD, and Kevin L. Rieck, DDS, MD.

Objective. Free oral mucosal grafts are finding new and varied reconstructive applications beyond simple local placement. One established use is as a urethral mucosa surrogate in urethroplasty. Some studies have examined morbidity of this oral harvest site as performed by the reconstructive urologist. However, there is a paucity of data regarding the harvesting as performed by an oral and maxillofacial surgeon (OMS). We examined the senior author’s results with this procedure in terms of intraoperative and postoperative complications on both donor and recipient sides in an effort to assess any advantage to a joint approach between urologist and OMS.

Methods. We reviewed the senior author’s cases of oral mucosa harvest for the purpose of urethroplasty between April 2003 and March 2010. Approval of Mayo Clinic’s Institutional Review Board was obtained before patient record access and data retrieval. Data analysis was performed with the use of JMP 8.0 software.

Results. Forty-nine unique patients underwent buccal mucosa grafting (BMG), and fifty-eight grafts were harvested for the purpose of reconstructive urethroplasty. In total, 10 patients were smokers, median age at time of surgery was 30 years, and median length of follow-up was 15.5 months. Three grafts were extended to the labial mucosa. One of these resulted in transient paresthesia. Primary closure was obtained in 52 grafts. No donor site infection, bleeding, or hematoma occurred. No patients reported limitation in range of motion, and no injuries to the parotid duct or mucoceles were induced. Graft success rate was 98%, with no donor site infections and 4 recipient site infections. Nine patients required unplanned reoperation (5 for hypospadias, 2 for fistula, and 2 for stricture). Overall stricture recurrence was 7%. Median graft width was 2.5 cm, and median graft length was 5.25 cm. Patient age, smoking status, and manner of closure had no statistical association with measured outcomes, as was expected.

Conclusions. Our experience, particularly regarding donor site morbidity, shows exceptional results. Others have advocated for donor site healing by secondary intention, and we have always sought to close these primarily. Scarring is minimized, and restriction of opening has not been problematic in our patients. OMS involvement in a team approach minimizes morbidity compared with urologic studies. A prospective study with a survey is currently underway to more objectively quantify metrics such as incisal opening, patient discomfort, and patient satisfaction.

REVIEW OF EMERGENCY SURGICAL AIRWAY: TRACHEOTOMY VERSUS CRICOTHYROTOMY?
Jasjit K. Dillon, DDS, MD, BDS, FDSRCS, Brian Christensen, Todd Fairbanks, DDS, Kristen Moe, MD, FACS, and Mark Whipple, MD, FACS.

Objective. The emergency surgical airway is an essential skill required for management in a small fraction of trauma patients. Traditionally, a cricothyrotomy is used, because it is, in theory, safer, quicker, associated with less bleeding, and less technically challenging for the surgeon. For these reasons, cricothyrotomies receive the most emphasis during training and surgical simulations; however, tracheotomies are also used to secure airways in the emergency setting; they are often regarded as more definitive and associated with fewer long-term complications. We therefore sought to investigate whether the primary choice of surgical airway at a major level I trauma center was the emergency cricothyrotomy or the emergency tracheotomy.

Methods. We conducted a retrospective chart review of all emergency airways performed at Harborview Medical Center (Seattle, WA), from July 1, 2004, to June 30, 2010, by obtaining charts with CPT code 31605 for emergency cricothyrotomies or 31603 for emergency tracheotomies. We reviewed these charts to ensure that they were accurately coded and were truly emergency, meaning that there were only minutes until the procedure was performed and no time to obtain consent from anyone.

Results. There were 34 patients: 24 received tracheotomies and 10 cricothyrotomies, indicating that far more tracheotomies were performed than expected by American College of Surgeons/Advanced Trauma and Life Support guidelines.

Conclusions. At our institution, the emergency cricothyrotomy is more indicated when the patient is in the field or obese, the provider does not have sufficient experience performing tracheotomies, or there is challenging local anatomy. Given the high likelihood that emergency tracheotomy rather than cricothyrotomy will be performed at our institution, improved practical and simulation-based training on tracheotomies should be included in continuing education and residency teaching programs.

RISK FACTORS FOR FATALITY IN SELF-INFLICTED CRANIOMAXILLOFACIAL GUNSHOT WOUNDS.
Jeremiah Johnson, DDS, MD, Michael R. Markiewicz, DDS, MPH, R. Bryan Bell, DDS, MD, FACS, Bryce E. Potter, DMD, MD, FACS, and Eric J. Dierks, DMD, MD, FACS.

Objective. The purposes of this study were: 1) to evaluate whether orientation of firearm predicts for
survival; and 2) to identify risk factors associated with fatality, in subjects with self-inflicted craniomaxillofacial (CMF) gunshot wounds.

Methods. The investigators initiated a retrospective cohort study, and a sample of subjects were derived from a population of subjects treated by the Oral and Maxillofacial Surgery Service at Legacy Emanuel Hospital, Portland, OR, between 1999 and 2009. Inclusion criteria included those subjects who arrived to the emergency department with a self-inflicted gunshot wound to the CMF region. The primary predictor variable was orientation of the weapon defined as either in the coronal (lateral) or the sagittal (anterior-posterior) direction based on the trajectory injury pattern. The primary outcome variable was death and included those subjects who were deceased on arrival or died during their hospital stay. Other covariates measured included: age, gender, type of firearm, having a psychiatric diagnosis, having positive blood alcohol content, having blood alcohol content over 0.08%, testing positive for marijuana, and testing positive for other illicit drugs. Descriptive statistics were computed for each study variable. Risk factors for fatality were identified with the use of multivariate logistic regression. Candidate variables for inclusion into the model were those covariates associated with the outcome variables at P ≤ .05 in the univariate analyses. Biologically significant variables, i.e., age and gender, were entered into the model. Level of statistical significance was set at an α level of 0.05. All P values were 2 sided. Database preparation and management and statistical analyses were carried out with the use of SAS software (version 9; SAS Institute).

Results. Of the 92 subjects that met study inclusion criteria, 47 (67.2) held the firearm in the coronal position. Covariates significantly associated with the fatality included coronal firearm orientation (odds ratio [OR] 7.4, 95% confidence interval [CI] 2.4-22.9; P = .001), and having a psychiatric diagnosis (OR 0.1, 95% CI 0.04-0.3; P < .001). In the full multivariate model, coronal gun orientation was associated with an increased risk for fatality (OR 7.7, 95% CI 2.0-30.1; P = .003). The absence of a psychiatric diagnosis was also associated with an increased risk for fatality (OR 0.1, 95% CI 0.04-0.5; P = .002).

Conclusions. Coronal firearm orientation was associated with an increased risk of fatality after self-inflicted CMF gunshot injuries. Though poorly understood, the presence of a psychiatric diagnosis was found to be protective in CMF self-inflicted gunshot wounds.

DO INTRAOPERATIVE IONOTROPES AND VASOPRESSORS AFFECT FREE TISSUE TRANSFER OUTCOMES: ANALYSIS OF 100 CONSECUTIVE FLAPS.

Nathan Eberle, DDS, MD, Rui P. Fernandes, DMD, MD, FACS, and Phillip Pirgousis, DMD, MD.

Objective. The aim of this study was to evaluate the effect of intraoperative administration of vasopressors on the outcomes of microvascular tissue transfer in head and neck surgery.

Methods. This study involved the retrospective chart review of the last 100 consecutive free tissue transfers performed by 1 senior surgeon in a teaching tertiary care center from 2007-2009.

Results. One hundred free tissue transfers were performed on 99 patients. The overall flap survival rate was 95% (95/100). A total of 83.8% of patients (83/99) received either ephedrine, phenylephrine, dopamine, or a combination of the 3 intraoperatively, with ephedrine and phenylephrine being the most commonly used: 42% (35/83). Isolated use of ephedrine made up 33.7% of the patients (28/83), 24% (20/83) received only phenylephrine, and 1 patient received all 3 vasopressors. Of the 5 flaps that failed, 4 were exposed to both ephedrine and phenylephrine and 1 to all 3 vasopressors. There was a 30% (25/83) incidence of complications, consisting of minor wound dehiscence, seromas, and hematomas, in patients receiving vasopressors. In the subset of patients not receiving vasopressors, 29% (5/17) had similar complications. The most common reason for flap failure was venous thrombosis (4 flaps), followed by arterial thrombosis (1 flap).

Conclusions. Our overall flap success rate was 95%. This rate is consistent with reported success rates in the literature from high-output centers. In light of the fact that 83% of our flaps were exposed to intraoperative vasopressors, our study does not show a deleterious effect of the use of intraoperative vasopressors in microvascular tissue transfer for head and neck reconstruction. We found the use of intraoperative vasopressors to be more prevalent than previously thought, a fact that is likely to be the same in other centers.

PATTERNS OF CRANIOFACIAL INJURY SECONDARY TO GUNSHOTS IN AN URBAN TRAUMA CENTER.

Mark A. Miller, DMD, and Rui P. Fernandes, DMD, MD, FACS.

Objective. Interpersonal armed violence continues to be one of the greatest problems facing society. The incidence of gun violence continues to rise, and its effects are seen on a daily basis in trauma centers. Injury patterns to the craniofacial region due to gunshot wounds have not been reported in the literature for the
past 15 years. Given societal changes as well as technologic advances in firearms, we sought to review recent patterns of craniofacial gunshot injuries in our urban trauma center. Our hypothesis was that there is a change in pattern and extent of injury within this subset of patients.

Methods. This was a retrospective review of the trauma registry database at the University of Florida, Jacksonville. Inclusion criteria selected patients in our trauma center with a documented gunshot injury during the period of August 2008 to August 2010. We excluded all patients who did not initially present at our trauma center and those whose injuries were not surgically treated. Demographics of gender, age, location of injury, initial management, and outcomes were included in the study.

Results. We identified 35 patients who met the inclusion criteria for our study: 29 (83%) male and 6 (17%) female. The distribution of injury was: 11 (31%) upper face; 13 (37%) midface, and 20 (57%) lower face/neck. Nine patients (26%) had combined injuries to ≥2 regions. The most common combination of involved regions was the lower and middle face: 4 (11%); the second most common presentation was the middle and upper face: 3 (9%). Two patients had injuries affecting all 3 regions. All of the patients underwent a phased approach to treatment, consisting of multiple debridement and irrigation, followed by definitive surgery. Eleven of the 35 patients (31%) required tracheostomies at the time of presentation or shortly thereafter. Of the 35 patients, only 3 (9%) had significant soft tissue avulsion requiring free tissue transfer during the initial hospitalization.

Conclusions. The patterns of facial injuries secondary to gunshot in our case series were roughly equally distributed to each facial third. This pattern had not changed since the last report in the literature >15 years before. The majority of the patients in this series did not present with significant soft or hard tissue injuries requiring free tissue transfer. Our experience shows that although the pattern of injury has remained constant, the incidence of soft tissue or hard tissue avulsion has decreased significantly.

ADJUNCTIVE NASAL SURGERY IN THE SLEEP APNEIC AND ORTHOGNATHIC PATIENT.

Carl Bifano, DMD, and Scott Matson, DMD.

Objective. The aim of this presentation is to illustrate how nasal surgery, in conjunction with orthognathic and sleep apnea procedures, is an important aspect of treatment planning. External nasal valve collapse is a common finding in patients with maxillary retrusion or midface deficiency. It most often goes untreated at the time of surgery. External nasal valve collapse can induce severe nasal airway obstruction and leads to loss of nasal airway and induces compensatory mouth breathing. Treatment planning and correction is readily accomplished at the time of orthognathic surgery.

Methods. Three individuals with similar histories of severe sleeping disorders, myofascial pain, and maxillary/mandibular retrusion who underwent corrective surgery are presented. Each patient had surgery that included maxillary/mandibular advancement and corrective nasal surgery. Preoperative and postoperative pictures for assessment were used to evaluate corrections made and to show improvements.

Results. Postoperative assessment of surgical outcomes showed that the patients noticed significant improvement in sleep patterns as well as decrease in myofascial pain.

Conclusions. Adjunctive nasal surgery can significantly improve outcomes for patients who are having surgery for sleep apnea and for orthognathic reasons. Proper assessment of the nasal anatomy can improve treatment planning and increase the patients’ overall quality of life.

ORAL BISPHosphONATE–RELA TED OSTEONECROSIS OF THE JAWS IN AN ASIAN COHORT OF PATIENTS.

Din Lam DDS, MD, Linda Huang DDS, MD, Dennis Lee, DDS, and Sidney Eisig, DDS.

Objective. The majority of published reports regarding bisphosphonate-related osteonecrosis of the jaw (BRONJ) focus on intravenous bisphosphonates (BPs). Very little is known regarding its oral BRONJ (OBRONJ). The purpose of this prospective study was to elucidate some of the risk factors in developing OBRONJ.

Methods. OBRONJ patients were identified during their initial consultations. Charts were marked and put aside for study purposes. General demographic information, medical history, and a medication list were obtained. All included patients were asked for a detailed history regarding the duration and frequency of their Oral BP use. Initial complaints, symptoms, and clinical photographs were all documented. Lesions were staged based on their initial presentation. A minimum of 3 months’ follow-up was required to be included in the study.

Results. A total of 59 patients were identified and followed. The average age was 75 years. Forty-two patients (71.2%) had symptoms after extractions, and 7 (11.9%) presented with spontaneous bone exposure. The most common complaint was at the site of bony exposure. Seven patients (11.9%) had stage I BRONJ, 33 (55.9%) had stage II, and 3 (5.1%) had stage III. Sixteen patients (27.1%) were symptomatic but without
exposed necrotic bone. Patients seen in <17 weeks from the time of the triggering event showed a better clinical outcome than those who were seen after 17 weeks, regardless of their clinical stages (odds ratio \[ OR \] 3.797). There was no correlation between the length of oral BP use and the lesion’s size (\( R = 0.0138 \)). As the clinical stage advanced, the lesion’s size increased accordingly (stage I mean 1.32 cm\(^2\), stage II mean 2.27 cm\(^2\), nonexposed mean 4.75 cm\(^2\), stage III mean 9.02 cm\(^2\)). Forty-six patients received sequestrectomy, but the clinical outcome was no different than that for treatment without sequestrectomy (\( OR 0.69; P > .05 \)).

Conclusions. Our prospective study demonstrated the importance of patients’ age, ethnicity, and timing of treatment as risk factors in the disease’s severity and clinical outcome. In our patient population, early diagnosis and management (<17 weeks) had a 3.79 times higher chance of improved clinical outcome. Contrary to common belief, initial treatment with sequestrectomy had a similar clinical outcome as treatment without sequestrectomy.

MAXILLOMANDIBULAR DISCREPACIES: THREE-DIMENSIONAL EVALUATION AND TREATMENT.

Marianela Gonzalez, DDS, MS, Cesar A. Guerrero, DDS, T. Campbell Bourland, MS, DDS, Michael P. Ding, DDS, MD, and Enif A. Dominguez, DDS.

Objective. Extreme surgical movement and feared complications such as surgical relapse due to osseous defects and restrictive soft tissues may be more predictably avoided with the use of distraction osteogenesis. For the 3-dimensional analysis and treatment of extreme surgical movements that are needed to achieve more normalized facial forms and the restrictive nature of the soft tissue envelope, distraction osteogenesis may be better used in the management of selected patient populations with maxillofacial skeletal deformities.

Methods. The surgical procedure is based on the combination of orthognathic surgery and selective distraction osteogenesis. Analysis of each patient should include not only a thorough clinical exam, but also radiographic images (lateral cephalometric, posteroanterior, and panoramic), available space versus required space, inclination of the incisors (1MPA = 90°), presence of a deep bite or a marked curve of Spee, intermolar width, and size and shape of the incisors. In certain cases where complicated bimaxillary movements are planned, stereolithographic models are helpful in the presurgical phase of planning to assist the surgeon in planning the vector of movement and in prebending hardware. Along with the clinical and radiographic information, occlusograms from study models are important in evaluating patients. Thirty patients in this study were evaluated both clinically and radiographically prior to their surgical procedure. Follow-up ranged from 2 to 8 years. Clinical examination of their occlusal relationships at each follow-up appointment was evaluated on a weekly basis while distraction was occurring, and then on a monthly basis during the consolidation phase.

Results. Thirty patients treated during the time period from 2002 to 2010 were treated by a combination of conventional orthognathic surgery and distraction osteogenesis. Comparison of the surgical treatment objective and postoperative cephalometric radiographs were evaluated, and it was shown that the combination of these 2 techniques is a viable option in treating patients with severe maxillofacial skeletal discrepancies. Clinical evaluation of the occlusal relationships of these patients also showed stability after surgery with no 3-dimensional arch discrepancies.

Conclusions. Traditional orthognathic surgery is often used in the reconstructive phase of treatment in these patients with compromised results. By combining traditional orthognathic surgery with distraction osteogenesis, many of the compromises and complications that are seen in traditional orthognathic surgery can be minimized or avoided altogether. A combination of these surgical procedures in patients with severe maxillofacial skeletal discrepancies can lead to stable results both clinically and radiographically.

TEN-YEAR RETROSPECTIVE EVALUATION OF CRANIOFACIAL FRACTURES IN HELMETED VS NONHELMETED MOTORCYCLE CRASHES IN BROWARD COUNTY, FLORIDA.

J. M. Kalman, DMD, Michael W. Parra, MD, I. Puente, MD, FACS, E. Carillo, MD, FACS, and S. I. Kaltman, DMD, MD.

Objective. On July 1, 2000, Florida became the 30th state to amend its mandatory helmet law. Much attention has been focused on death rates and intracranial trauma since the amendment. The purpose of this review was to compare the number and types of craniofacial injuries sustained in helmeted versus nonhelmeted motorcyclists involved in crashes.

Methods. A retrospective chart review from July 2000 to December 2010 was obtained from the trauma registries at Broward General Medical Center and Memorial Regional Hospital, both level I, and North Broward Medical Center, a level II trauma center. The data collected included Glasgow Coma Scale (GCS), types of craniofacial injuries, Abbreviated Injury Scale (AIS), and deaths, which were compared in helmeted and nonhelmeted motorcyclists. Chi-square analysis was used to determine significance of the data.
Physicians’ Knowledge Quotient of Dental Implants: A Four-Year Study.

Harry Dym, DDS, and Edmund Wun, DDS.

Objective. The purpose of this study was to assess resident physicians’ basic knowledge and awareness of dental implants. In our society, people have greater access to medical care than dental care, and as a result, physicians have the opportunity to educate their patients about implants. To gauge if physicians have the knowledge and comfort level to encourage patients to inquire about implants, a survey was conducted asking basic questions regarding history, cost, placement, success rate, and overall comfort level. This survey was distributed in 2007 and again in 2011. The aim in redistribution was to determine any change in resident knowledge regarding implants over the past 4 years.

Methods. An 11-question survey was distributed in 2007 and 2011 to physician residents in the following departments: internal medicine, general surgery, pediatrics, family practice, obstetrics/gynecology, and emergency medicine. Surveys were voluntary, anonymous, and confidential. Results were tabulated and calculated by percentages.

Results. Seventy-three results from 2007 showed that residents were uncomfortable recommending implants; the majority of participants thought that they had an inadequate knowledge base (61.6%) and were uncomfortable recommending them (54.8%). Fewer than one-half of the participants were familiar with their history (45.2%), and just over one-half were aware of their composition (54%). One-third (32.9%) of the participants were familiar with success rates, and responses varied regarding implant cost and which specialty places implants. One hundred residents were surveyed in 2011, and their responses showed overall improvement in participants’ responses regarding history (51%), success rate (43%), and composition (72%).

Fewer residents thought that they had an inadequate knowledge base (56%), but approximately the same percentage still felt uncomfortable recommending them (56%). Overall comparisons showed increased knowledge of implants but approximately the same percentage of responses regarding comfort in that knowledge.

Conclusions. The past 4 years has seen an increase in resident knowledge regarding dental implants, particularly regarding history, composition, and success rate. Previously varied responses regarding which specialty should place implants appear to be more focused, with 62% of participants thinking oral and maxillofacial surgeons should be the ones to place them. Residents still do not appear comfortable recommending implants, despite their improvement in knowledge base. As a result, the dental community should continue educating their colleagues in the medical field such that dental implants can more readily be recognized as the ideal restoration for the oral cavity.

Cervical Necrotizing Fascitis and Descending Mediastinitis of Odontogenic Origin.

T. Campbell Bourland, DDS, MS, and William Phillips, III, DDS, MD.

Objective. Dental infections are frequently contained by anatomic substructures and can be adequately treated with removal of the source of infection, incision and drainage and antibiotic therapy. When anatomic boundaries are traversed, late-stage infections can rapidly spread and become life threatening. The most extreme uncontrolled infection can develop into necrotizing fasciitis and spread rapidly throughout fascial planes and descend to the anterior mediastinum. This progressive infection is often accompanied by electrolyte disturbances, acid-base imbalance, leukocytosis, fever, and hypoalbuminemia. Radiographic findings on computerized tomography show necrotic tissue surrounded by gas pockets. Success in treatment is dependent on early diagnosis.1 Despite aggressive medical and surgical management, this affliction is often fatal.2 We report on the treatment outcomes of 2 patients with cervical necrotizing fasciitis with descending mediastinitis developed from odontogenic origin.

Case 1. An unresponsive 54-year-old African-American man was transported to the emergency department after being found fallen down with a history of pain and swelling in his neck. The patient was last seen by his

family 24 hours earlier complaining of a severe sore throat and pain from the posterior left portion of his mandible. Clinical exam showed erythema and swelling of bilateral neck area descending below the clavicles.

Case 2. A 48-year-old European-American man was transferred to the emergency department after a 1-week admission at an outside regional facility secondary to a sepsis profile from an odontogenic infection. The patient was transferred after showing ST-segment elevation in his electrocardiogram secondary to descending mediastinitis and pericarditis. Clinical inspection revealed the patient complaining of chest pain and difficulty breathing with severe neck swelling and erythema.

Results. Both patients were taken to the operating room emergently for incision and drainage, extraction of the indicated teeth, and debridement. The patient described in case 1 expired 18 hours after admission. The patient described in case 2 survived and spent 1 month in the intensive care unit, followed by multiple return trips to the operating room with eventual discharge to a skilled nursing facility.

Conclusions. Cervical necrotizing fasciitis with descending mediastinitis is a difficult disease to treat. Infection can spread rapidly, and the patients require a multidisciplinary response for appropriate treatment. Despite aggressive efforts of the surgical and medical teams, this type of infection is often fatal.

THYROIDECTOMY IN AN ACADEMIC ORAL AND MAXILLOFACIAL SURGERY PRACTICE: OUTCOMES ASSESSMENT.

Reza Fouladi, DDS, and Rui P. Fernandes, DMD, MD, FACS.

Objective. The aim of this study was to retrospectively analyze the complications of all partial and total thyroidectomy procedures performed by the senior author at the Division of Oral and Maxillofacial Surgery, Section of Head and Neck Surgery, University of Florida, Jacksonville, FL.

Methods. Charts of 48 consecutive patients treated by the senior author at the Division of Oral and Maxillofacial Surgery from July 2008 to December 2010 were retrospectively reviewed.

Results. A total of 79 hemithyroidectomies were performed on 48 patients. Malignancy was the indication for the operation in 29% (14) of the cases. Four patients underwent neck dissections, and 3 patients had concurrent parathyroidectomies. Six of the patients with total thyroidectomies had a substernal component of the goiter. However, none required stenotomy. Unilateral temporary paralysis of the recurrent laryngeal nerve (RLN) occurred in 4 patients (5.0%). One of the patients with temporary RLN paralysis had a substernal goiter, 1 required a neck dissection, and 1 had 2 earlier thyroid operations at a different facility. All 4 patients regained normal RLN function, as verified by fiberoptic examination ≤6 months after surgery. No individual experienced permanent RLN paralysis. Two of the patients with multinodular goiters, who underwent total thyroidectomy, experienced transient symptomatic hypocalcemia requiring intravenous calcium replacement. Both of these patients had a substernal goiter component. None of the patients in this study experienced permanent hypocalcemia. Other complications, such as surgical wound infection, hematoma formation, and blood transfusion, did not occur in this study.

Conclusions. The incidence of RLN paresis in the patients of this study (5.0%) is similar to the range reported in some large studies (2.5%-5%). Risk factors for RLN injury, such as revision thyroid operation, size of the gland, and neck dissection, in this study were similar to those reported in the literature. The 2.5% incidence of transient symptomatic hypocalcemia in this study falls below the range of 7%-25% reported in the literature. In conclusion, thyroid surgeries can be performed safely by oral and maxillofacial surgeons with the appropriate training.

Poster Abstracts

VENOUS ANASTOMOSES USING MICROVASCULAR COUPLER IN FREE FLAP HEAD AND NECK RECONSTRUCTION.

Tao Zhang, DDS, MD, Andrew Salama, DDS, MD, Joshua Lubek, DDS, MD, John Caccamese, DDS, MD, FACS, and Mohammed Nadershah, BDS.

Objective. The anastomosis is a critical feature in the success of free flaps. The microvascular anastomotic coupler was introduced several years ago as an alternative to the hand-sewn technique. This study was a retrospective review of the experience using the venous coupler for head and neck reconstruction.

Methods. We reviewed 184 consecutive cases of microvascular free flaps performed at the Department of Oral and Maxillofacial Surgery, University of Maryland Medical Center, between May 2007 and September 2010 for demographic information, flap type, recipient vessels, method of anastomosis, complications, coupler size, and orientation. The Gem microvascular anastomotic coupler (Synovis) was used according the manufacturer’s instructions.

Results. A total of 178 microvascular free flaps were performed on 164 patients, including 56 women and 108 men. Follow-up time ranged from 1 month to 3 years. The mean age of the patients was 56 years. Surgical defects were due to malignant pathology (66.3%, 118/178), benign pathology (29.2%, 52/178),
trauma (2.2%, 4/178), and secondary reconstruction (2.2%, 4/178). Five types of free flaps were used: fibular flap (90, 50.6%), forearm flap (57, 32.0%), anterior thigh flap (25, 14.0%), deep circumflex iliac artery osteomuscular flap (4, 2.2%), and scapular flap (2, 1.1%).

There were 294 anastomotic coupler devices used in 173 flaps. Hand-sewn venous anastomoses were used in 5 patients (no coupler device used), 1 of which failed. Single-venous anastomosis was performed in 58 patients and double-vein anastomoses were performed in 115 patients. Two patients had a combination of both. Vein grafts were used in 7 patients. The facial vein, external jugular vein, and common facial vein were the most commonly used recipient veins. An end-to-end anastomotic configuration was used in 274 patients (93.2%) and an end-to-side used in 20 (6.8%).

The overall flap success rate was 94.9% (169/178). There were 8 flap failures among cases in which the coupler was used (8/173), for a success rate of 95.4%. There were 7 venous thromboses and 1 arterial thrombosis. One patient developed an expanding hematoma, and the anastomotic device was found in an uncoupled state.

Conclusions. Microvascular coupler is reliable for venous anastomosis in free flap head and neck reconstruction. Dual-vein anastomoses have better results than single-vein anastomosis. The flow coupler has a promising utility in monitoring of buried flaps and flaps that are difficult to observe.

MALONDIALDEHYDE LEVELS AND TOTAL ANTIOXIDANT CAPACITY IN THE DENTAL FOLLICLES OF ASYMPTOMATIC IMPACTED THIRD MOLARS.

Umut Tekin, DDS, PhD, Ucler Kisa, PhD, Fethi Atil, DDS, PhD, Ozlem Dogan, MD, and Safa Gurcan, PhD.

Objective. Increased levels of reactive oxygen species (ROS) lead to oxidative stress and tissue damage. Malondialdehyde (MDA) is one of many low-molecular-weight end-products of lipid peroxidation that increases in oxidative stress. Antioxidants, such as indicated by total antioxidant capacity (TAC), have a protective effect against ROS. We hypothesized that the risk of developing pathology at third molar sites might be associated with endogenous free radical scavenging mechanisms (antioxidant enzymes) preventing free radical accumulation. If the scavenging capacity of dental follicular tissues is exceeded by an overwhelming production of free radicals, significant tissue damage could occur. The aim of this study was to determine the antioxidant defense mechanism in dental follicles (DFs) of radiologically asymptomatic impacted third molars (ITMs) with the use of MDA and TAC.

Methods. The study involved 40 DFs of 40 patients referred for clinically and radiographically asymptomatic ITMs. Forty healthy gingival tissues in the same patients obtained during surgical removal of teeth served as a control group. DF widths on periapical radiographs <2.5 mm were included in the study. All tissues samples were analyzed for MDA and TAC.

Results. Levels of MDA and TAC in the ITMs were significantly higher than in healthy gingival tissues of the same patients (P < .01).

Conclusions. The results revealed that MDA levels and TAC were significantly elevated in DFs. In conclusion, the results of our study suggest that a significant oxidative stress may occur in DFs of asymptomatic ITMs. However, the results of our study also showed that an important antioxidant defense mechanism may occur in DFs of asymptomatic ITMs. In light of these preliminary findings, supplementary studies should be undertaken to establish the differences between inflammation affecting the DFs and clinical outcomes.

SHORT-TERM OUTCOMES OF COMPUTERIZED TOMOGRAPHY-ASSISTED ENDOSSEOUS DENTAL IMPLANTS.

Ryan Hagan, DMD, Mathew Conquest, DMD, and James Christian, DDS.

Objective. Computer-guided surgery in dental implantology has allowed the clinician to plan more accurately and place dental implants with greater precision. With the planning software, a virtual treatment plan is used to create a surgical template that guides the placement of the implants. This in turn can allow for flapless surgery, which can decrease surgery time, minimize postoperative pain and edema, and hasten recovery. The purpose of the present Institutional Review Board–approved preliminary study was to evaluate the short term outcomes of surgically placed dental implants with the use of 3-dimensional virtual planning and stereolithographic guide–assisted surgery.

Methods. Two hundred twelve implants (31.6% mandibular) in 31 patients (15 women, 16 men; ages 27-79 years) were treated at 1 academic center over the course of a 12-month period with the use of Proceras planning software and computer-assisted stereolithographic surgical templates. Patients were followed for ≥12 months (mean 14 months). Implant failure criteria consisted of clinical implant mobility, suppuration around the implant, pain, and >25% thread exposure radiographically at 12 months after surgery.

Results. Of the 212 implants placed with the computer-aided method, 194 were fully integrated and free of any of the failure criteria, giving a cumulative success rate of 91.5%. There were no major surgical complications. There was a statistically significant correla-
tion between tobacco use and decreased integration success (86.2%). Flapless surgery was performed with 78 implants (36.8%) with no statistically significant difference in success compared with implants placed with the use of mucoperiosteal flaps. Implants placed in mandibular sites and those that did not require grafting showed greater success (95.4% and 93.4%, respectively) compared with those implants placed in maxillary sites and those that required bone graft placement (90% and 89%, respectively).

Conclusions. The described technique allows for greater precision and accuracy in the planning and placement of endosseous dental implants. This exactitude decreases tissue damage and treatment time while simultaneously controlling for risk. Based on this preliminary clinical study from one academic institution, computer-aided oral implant surgery provides an acceptable implant survival rate (91.5%) at 12 months of follow-up.

METASTATIC MYOEPITHELIAL CARCINOMA TO THE JAW AND NOSE: A CASE REPORT.

Niven Tien, DDS, MD, David Hirsch, DDS, MD, Beverly Wang, MD, and Fang Ming Deng, MD.

Objective. Myoepithelial carcinoma tends to be a low-grade carcinoma occurring 1% of the time in salivary glands, most commonly in the parotid gland, but it can present in minor salivary glands, as in the present case. We report a case of myoepithelial carcinoma that had originated in the submandibular gland and after excision metastasized to the right mandible and right nose. There are only 2 reported cases where this type of tumor has had cutaneous metastasis. We will report this case along with treatment and histopathology that was discovered with this type of carcinoma.

Methods. A 71-year-old man with a history of 2 left submandibular gland myoepithelial carcinoma resection (initial resection in 2008, recurrence in 2009) with previous carboplatin chemotherapy and radiation therapy in January 2010 presented to the department of oral and maxillofacial surgery with a 2-week history of intermittent moderate to severe left neck and jaw pain. He also admitted to paresthesia of the right tongue with some mild tongue mobility restriction. It should be noted that on the initial surgery, the initial pathology was diagnosed as benign pleomorphic adenoma, but on the second operation, a diagnosis of myoepithelial carcinoma was made. Magnetic resonance imaging of the face revealed an enhancing lesion within the right mandibular angle measuring 1.4 × 0.6 cm along the course of the mandibular canal. Another 2-cm lesion was observed to be invading into the lingual cortex of the mandible. A biopsy of this lesion revealed metastatic myoepithelial carcinoma. The patient went to the operating room for resection of the right mandibular lesion and free fibula flap reconstruction with the use of medical modeling. It was also noted that a nasal lesion was also observed and biopsied. The patient recovered well with minimal morbidity.

Results. The original left submandibular pathology was a multilobulated malignant myoepithelial carcinoma with myxoid matrix, confirmed by immunohistochemistry for positivity for myoepithelial markers, including cytokeratin AE1/AE3 and S-100, and focally positive for epithelial membrane antigen (EMA) and calponin. Two years later, the right mandibular tumor and lateral nose skin nodular lesion showed morphology and immunology phenotype identical to that of the original tumor.

Conclusions. Myoepithelial carcinoma of the submandibular gland is considered in the literature to be a low-grade malignancy, as originally classified by the World Health Organization in 1991. However, though rare, metastasis can occur to distant sites, such as the mandible and the nose (the present case being the first report in literature) and can affect the prognosis of the patient.

ANALYSIS OF MOTOR VEHICLE EJECTION VICTIMS AND ASSOCIATED ORAL AND MAXILLOFACIAL INJURIES.

Richard R. Rolle, DDS, and Michael W. Parra, MD.

Objective. We compared restrained and unrestrained passengers involved in motor vehicle collisions at a level I trauma center.

Methods. We undertook a retrospective review of our trauma registry of all adult motor vehicle collision victims from January thru December 2008.

Results. Five hundred fifteen total motor vehicle collisions were reported. Three hundred fifty-five (69%) were restrained victims. One hundred thirty (25%) were unrestrained nonejected. Thirty (6%) were unrestrained ejected victims with resultant oral and maxillofacial injuries. Injuries included closed head injuries, multiple facial fractures, and complex lacerations. Ages ranged from 19 to 94 years. Unrestrained ejected victims sustained increased mortality and morbidity, including the head and neck region requiring surgical intervention.

Conclusions. Although uncommon, motor vehicle collisions resulting in ejection exhibited an increased risk of oral and maxillofacial injuries that required surgical repair.

IDIOPATHIC BONE CAVITIES OF THE MANDIBLE: REVIEW OF THE LITERATURE AND CASE REPORT.

Robert P. Horne, DDS, Daniel J. Meara, MS, MD, DMD, and Edwin L. Granite, DMD.

Objective. The term “idiopathic bone cavities” refers to lesions previously described as traumatic bone cysts,
hemorrhagic bone cysts, and solitary bone cysts. The latter descriptions have fallen out of favor, because these lesions do not have an epithelial lining and do not appear to be traumatic in origin. Most idiopathic bone cavities are discovered incidentally during the second and third decades of life, and surgical exploration stimulates bony refill in 95% of cases. A recent PubMed search revealed only 1 other case in the literature involving bilateral recurrence of idiopathic bone cavities in the mandible, and in that case the patient was noted to be free of relapse 14 months after surgical intervention.

Methods. In addition to a review of the relevant literature, we present the case of a 48-year-old Hispanic woman with a history of breast cancer who had multiple episodes of recurrent idiopathic bone cavities in the mandible since they were first discovered in 2006. Surgical exploration had been undertaken with each new recurrence since 2006 to rule out malignancy.

Results. Each pathology report to date has supported these lesions’ benign and idiopathic nature.

Conclusions. This case is unique not only in its discovery beyond the usual second and third decades of life, but also in its persistently recurrent nature.

CONTROVERSIES IN TREATMENT MODALITIES FOR ODONTOGENIC KERATOCYSTS WITH LIMITED ANATOMIC BOUNDARIES: REVIEW OF LITERATURE AND A CASE REPORT.

Dmitry Peysakhov, DMD; Gary Jones, DDS; Allen F. Fielding, DDS, MD; Brian Smith, DMD, MD.

Objective. Owing to a significant reported recurrence rate of odontogenic keratocysts (OKCs) different treatment modalities have been proposed throughout the years. Treatments that have been described range from the most conservative procedures, such as simple enucleation, to very invasive procedures, such as en bloc resection. The goal of all procedures is the same: to eliminate cystic lining and to prevent future recurrences. The aim of this presentation is to discuss how sometimes the treatment of OKCs is limited by local anatomy and to present case reports to further illustrate the discussion.

Methods. Three cases are presented and data from additional reports from the literature is reviewed.

Results. Although anatomic resection results in the least number of reported recurrences, this treatment often compromises the quality of life of a patient with multiple further operations to rebuild hard and soft tissues. This can have a significant psychologic impact on a patient. In addition, other statistically successful treatments, such as enucleation with a peripheral osteotomy, are less aggressive but rely on a good support of bony walls overlying the cystic lining.

Conclusions. In many instances, treatment options are limited by surrounding anatomy that includes support of soft tissue and dentition and various vital structures.

ORTHOGNATHIC SURGERY IN A PATIENT WITH HAJDU-CHENEY SYNDROME: ANALYSIS OF A CASE AND LITERATURE REVIEW.

Kenneth Wu, DDS, and Huy Trinh, DDS.

Objective. Hajdu-Cheney syndrome, also termed acro-osteolysis, is a very rare disorder that results in systemic osseous dysplasia and is associated with multiple craniofacial anomalies. Presently, only about 60 cases have been documented worldwide. We present a case of a 15-year-old boy with Hajdu-Cheney syndrome who underwent maxillomandibular advancement and genioplasty for improved breathing and facial esthetics. We also attempt to provide the maxillofacial surgery literature with a review of the syndrome and highlight the associated difficulties with the surgeries, as well as review management considerations of future patients with Hajdu-Cheney syndrome undergoing orthognathic surgery.

Methods. A systematic search of the literature was performed using PubMed and Medline databases. Articles were selected based on relevance to management of Hajdu-Cheney syndrome.

Results. There are multiple publications on Hajdu-Cheney syndrome in the medical literature but, to the best of our knowledge, our case is the first of a patient with Hajdu-Cheney syndrome undergoing maxillomandibular advancement with genioplasty. From our experience, the factors associated with Hajdu-Cheney syndrome that make perioperative management and surgery challenging are mobile dentition secondary to alveolar process resorption, large occiput, severely retropositioned maxilla, microgenia, and airway abnormalities. In addition to these issues, we encountered an unexpected amount of intraoperative bleeding during the mandibular ramus corticotomies, which forced an intraoperative decision to stage the procedures over 2 surgeries. However, no coagulopathies were identified after a full hematologic work up.

Conclusions. Orthognathic surgery can be used to correct the craniofacial abnormalities associated with Hajdu-Cheney syndrome. The issues reviewed here can assist the oral and maxillofacial surgeon to anticipate and identify potential problems regarding preoperative and surgical management of these patients.
CRANIOFACIAL BONE FIXATION USING CYANOACRYLATE: A META-ANALYSIS AND REPORT OF A LONG-TERM COMPLICATION 14 YEARS AFTER INTRAORAL VERTICAL RAMUS OSTEOTOMY.

Huy Trinh, DDS, Jason Knellar, DDS, and George Obeid, DDS.

Objective. Cyanoacrylates are a group of polymers with adhesive properties. Butyl-2-cyanoacrylate (Histoacryl) was first introduced to the medical community in the 1960s as a soft tissue adhesive. Since then, its use has been reported in various surgical disciplines. Histoacryl’s physical properties make it an attractive alternative to fixate facial bones for fractures and osteotomies. We review earlier literature on its use for cranial and maxillofacial fixation and present a case of significant foreign body reaction.

Methods. A systematic search of the literature was carried out using the PubMed and Medline databases to identify relevant articles. Additional articles were obtained from the reference lists. A meta-analysis was performed to evaluate postoperative outcomes, complications, and amount of follow-up for patients treated with Histoacryl to stabilize cranial or maxillofacial bones. We also review a case of a patient who developed a severe foreign body reaction secondary to Histoacryl 14 years after intraoral vertical ramus osteotomy.

Results. The use of Histoacryl is well described in the medical literature with diverse applications in medicine and dentistry. However, there are few articles evaluating the use of Histoacryl for cranial or maxillofacial fixation. Our search of the literature found 9 articles where Histoacryl was used for this off-label indication. Human subjects were involved in only 3 articles reporting on a total of 29 patients. Twenty-six patients were treated for trauma-related injuries, and 3 underwent frontal bone reconstruction for different pathologies. Follow-up ranged from 1 to 12 months. Three complications were reported in this cohort, including delayed healing, focal bone resorption, and localized abscess formation. These complications resolved with no further effects. Animal studies that were reviewed varied in success, ranging from good bone healing to foreign body reaction with nonunion. To our knowledge, the present case is the first long-term follow-up and significant complication reported on a patient where Histoacryl was used to fixate facial bones.

Conclusions. Currently, there is little data with no long-term follow-up for using Histoacryl to fixate facial bones. Our case illustrates the need for careful consideration when using Histoacryl for cranial and maxillofacial fixation, as well as the necessity for extended follow-up.

MIGRATION OF DENTAL IMPLANTS INTO THE MAXILLARY SINUS: A REVIEW OF PROPOSED RISK FACTORS AND RECOMMENDATIONS FOR PREVENTION.

Ravi Agarwal, DDS, Hamid Shafie, DDS, and George Obeid, DDS.

Objective. A rare but documented complication of implant placement in the posterior maxilla is implant migration into the maxillary sinus. Many reports describe the management of migrated dental implants but fail to catalog the associated risk factors. We attempt to identify and classify the risk factors associated with dental implant migration in the posterior maxilla. Furthermore, we provide recommendations to help minimize these risks.

Methods. A search of the literature was performed regarding dental implant migration. The resulting articles and references were evaluated for relevance. A meta-analysis was performed focusing on common factors associated with implant migration based on clinical descriptions, clinical photos, and/or radiographs. Factors reviewed were timing of migration from placement, implant fixture geometry, anatomic location, previous bone grafting, and prosthetic loading. In addition, we review a case of implant migration from our institution.

Results. Our search resulted in 24 articles discussing dental implant migration: 22 in a case report format and 2 retrospective reviews. A total of 65 migrated dental implants were reported. Potential risk factors could not be identified in the migration of 25 implants, whereas in the remainder ≥1 factors were identified. Of 31 migrated dental implants, 25 were in the the molar region and 6 in the premolar region. Implant migration occurred immediately during surgical placement in 15 cases and while healing or during second-stage surgery in 13 cases. Only 7 cases reported migration occurring after prosthetic loading. Analysis of implant fixture geometry revealed a parallel implant in 23 cases and a screw-type implant in 21 cases. Seven cases of migration were seen in sites with earlier alveolar bone grafting before implant placement. The most commonly suggested cause of implant migration was poor implant stability in the posterior maxilla.

Conclusions. Based on our analysis, proposed risk factors can be classified as anatomic location, instrumentation selection, surgical design, implant fixture design, patient selection, and prosthetic design. Recommendations for prevention are provided to improve dental implant stability in the posterior maxilla. Further
research is needed on the etiology of dental implant migration.

FACTORS THAT AFFECT PRIMARY IMPLANT STABILITY USING RADIOFREQUENCY ANALYSIS.

Jason Kneller, DDS, Huy Trinh, DDS, Hamid Shafie, DDS, and George Obeid, DDS.

Objective. Primary implant stability is a prerequisite for dental implant osseointegration. The initial stability is important in minimizing micromotion during the healing phase, optimizing the potential for osseointegration. Meredith in 1996 proposed a noninvasive technique to assess the stability of an implant with the use of radiofrequency analysis. This technique is a simple method to quantitatively assess the stability of an implant in vivo and produces a measurement called the implant stability quotient (ISQ). Using this technique, we attempted to isolate factors that may have a negative effect on primary implant stability.

Methods. The charts of all patients who underwent dental implant placement at 1 institution (Washington Hospital Center, Washington, DC) from September 1, 2009, to December 1, 2010, were reviewed. Patient records with documented ISQ values were included in the study. All implants placed were BioHorizon LaserLok tapered internal implants. Implants placed were categorized according to size (length and diameter), anatomic location, year in training of surgeon who placed implant, patient age, smoking habit, presence of comorbidities, immediate versus nonimmediate implants, and placement into previously grafted maxillary sinuses.

Descriptive statistics for each group was calculated. Because the average ISQ value was not a normally distributed variable, a Wilcoxon rank sum test or Kruskal-Wallis test was used to assess the difference of average ISQ between the groups. Rank-sum multiple comparisons with Tukey adjustment was then used for comparison of the variables in each group. P < .05 was considered to be statistically significant. All statistical analyses were conducted with the use of SAS software, version 9.1 (SAS Institute).

Results. A total of 279 implants with recorded ISQ values were reviewed. The average ISQ for all implants placed was 72.4. There was no significant correlation between primary implant stability and surgeon experience, patient age, gender, implant length, systemic comorbidities (hypertension, diabetes, and human immunodeficiency virus), or patients who smoke. Factors found to have a statistically significant (P < .05) effect on primary implant stability included anatomic location, implant diameter, immediate implants, and implants placed into previously grafted maxillary sinuses.

Conclusions. Using radiofrequency analysis as a means to determine primary implant stability, our data suggest the factors that have a significantly negative effect on primary implant stability are immediate implants, placement of implants into previously grafted maxillary sinuses, implants placed into the maxilla compared with the mandible, and smaller-diameter implants.

UNIQUE TREATMENT MODALITY: TRANSTRACHEAL ADMINISTRATION OF LIDOCAINE, AN EFFECTIVE TREATMENT FOR LARYNGOSPASM.

Samuel C. Nwogu, DDS, and Edwin L. Granite, DMD.

Objective. The purpose of this abstract is to review a unique treatment modality for the treatment of laryngospasm.

Methods. Laryngospasm, a protective reflex to prevent foreign matter from entering the larynx, trachea, or lungs, is a common complication of airway management in the management of anesthesia. Laryngospasm, if left untreated, can lead to hypercarbia, hypoxia, pulmonary edema cardiac collapse, or death. It often occurs with insufficient depth of anesthesia on endotracheal intubation, and or a combination of either an airway irritant, such as blood, mucus, laryngoscope blade placement, suction catheter, or surgical debris, or other foreign body. The management of laryngospasm includes positive pressure ventilation, small intravenous dose of succinylcholine or lidocaine, increasing the depth of anesthesia, and tracheal intubation. Although not commonly used, the administration of transtracheal lidocaine to relieve laryngospasm produces complete and rapid resolution.

Results. Laryngospasm is optimally prevented rather than treated. Hemostasis of the surgical field, suctioning of the oropharynx before extubation, and/or extubation in a deep plane of anaesthesia can help prevent laryngospasm. Direct application of local anesthetic by direct laryngoscopy is difficult and uncomfortable for a patient that is awake. In addition, it produces poor laryngeal anesthesia compared with transtracheal administration of lidocaine.

Conclusions. Although transtracheal administration of lidocaine is not a common treatment modality in the management of laryngospasm, it has been reported as safe, effective, and well accepted by patients who present for bronchoscopy. In conclusion, transtracheal administration may be considered when continuous-positive-pressure bag-mask ventilation is not successful or neuromuscular blockade is not readily available.
SPECIAL INDICATIONS FOR ZYGOMA IMPLANTS.

Cesar A. Guerrero, DDS, Rebeca Rodriguez, DDS, Elena Mujica, DDS, and Patricia Lopez, DDS.

Objective. The aim of this study was to evaluate the functional and cosmetic results of maxillary reconstruction by anchorage prosthesis on zygoma implants in particular patients with congenital defects or after tumor resections.

Methods. Fifteen patients between 14 and 82 years old (average age 43.6 years) were treated with 44 zygoma implants for maxillary reconstruction. They were rehabilitated in a variety of biomechanical protocols, using 2, 3, or 4 anterior or posterior zygomatic fixtures and conventional implants according to the remaining bone. Patients’ records included clinical, radiographic, and photographic analyses before and after surgery. Every patient was diagnosed, planned, and treated individually according to quantity and quality of bone, remaining dentition, occlusion, and vertical and anteroposterior maxillomandibular relationship. All fixtures were placed under general anesthesia with the use of Brånemark concepts and instrumentation. The zygoma implants were inserted transmucosally; the sinus membrane was separated and medially repositioned before the implant placement. All implants were immediately loaded after surgery. Prosthodontists were available for immediate impressions and metal structure fabrication, with meticulous metal-to-metal adaptation. All patients were followed for ≥6 months.

Results. All implants were rehabilitated definitively within 6 months after surgery with adequate cosmetic and functional results. A metal structure uniting all implants was used in every case. Prostheses were removed and evaluated every 12 months, and periodontal visits were scheduled every 3 months. One patient with sinusitis was treated via Caldwell-Luc procedure, and 1 oroantral fistula was treated with a local flap with no complications. Longer follow-up and further clinical trials are required.

Conclusions. The zygoma implants offer an excellent option to treat maxillary 3-dimensional defects as an alternative to conventional implants or traditional prosthesis when there is not adequate bone volume and quality. They can offer function and esthetics, immediate loading and predictable results, as well as stability in the long term, avoiding the use of bone grafting.

COMBINED ORTHOGNATHIC SURGERY WITH L-SHAPED NASAL BONE GRAFTS FOR BINDER SYNDROME.

Cesar A. Guerrero, DDS, Mariana Henríquez, DDS, Elena Mujica, DDS, Rebeca Rodriguez, DDS, and Alejandro Ayala, DDS.

Objective. The aim of this study was to evaluate the functional and esthetic results after combining orthognathic surgery with intraoral L-shaped parietal bone grafting rhinoplasty in patients with Binder syndrome.

Methods. Ten patients between 14 and 40 years of age (average age 22.5 years) with maxillonasal dysplasia (Binder syndrome), were treated by orthognathic surgery and intraoral L-shaped parietal bone grafting rhinoplasty. Patients’ records included clinical, radiographic, and photographic analyses before and after surgery. The patients were treated between September 1998 and September 2010 and were followed from 1 to 12 years, with an average follow-up of 5.4 years. Orthognathic surgery osteotomies included Le Fort I, mandibular sagittal split, subapical, and genioplasty. The parietal graft was obtained by hemicoronal approach in a zig-zag fashion; the L-shaped bone graft was tailored after meticulous sectioning out of the external parietal cortex. The two parts of the graft were assembled with 1.5 mm plate and 4.0 mm screws to unite the dorsal and columella grafts. Metzembaum scissors were used to create a tunnel by careful dissection from the anterior maxilla, through the nasal dorsum, up to the glabellar area. A transcutaneous 12-mm-long screw was used to fix it to the subglabellar site, and another plate was fixed to the anterior maxillary area. The graft size and shape was previously measured in the lateral cephalic radiograph to obtain the adequate projection and ideal nasolabial angle. Patients were followed every 3 months for 1 year and then once a year.

Results. Three-dimensional maxillonasal corrections were obtained with an ideal occlusion with adequate cosmetic and functional results. All patients expressed satisfaction; however, 2 patients needed a secondary cartilage auricular graft, because the screws showed through at the nasal tip, and were resolved without further complications. The nasal tip rigidity did not present as a problem.

Conclusions. A combination of these surgical procedures in patients with maxillonasal deficiency (Binder syndrome) can lead to stable results both clinically and radiographically. Improved function and esthetics result in the long-term follow-up. A rigid nasal tip and possibility of secondary nasal tip cartilage graft are inconveniences. Longer follow-up and further clinical trials are required.

SINUS HISTIOCYTOSIS WITH MASSIVE LYMPHADENOPATHY/ROSAI-DORFMAN DISEASE: UNIQUE CASE PRESENTATION AND REVIEW OF THE LITERATURE.

Steven P. Best, DMD, and Jordan M. Kaltman, DMD.
**Objective.** Rosai and Dorfman first described sinus histiocytosis with massive lymphadenopathy (SHML) in 1969 in a paper detailing 4 cases in which they differentiated this disease entity from the grouping of diseases categorized as histiocytosis X where it was previously classified. Also known as Rosai-Dorfman disease (RDD), it is clinically characterized as massive, painless, bilateral, symmetric cervical lymphadenopathy, fever, and leukocytosis.

**Methods.** An 11-year-old male African American was referred to our clinic for extraction of a severely decayed tooth #30 and evaluation of a large right-side neck mass. Initially, the patient had been seen by his general dentist, who had diagnosed the mass as an odontogenic abscess. After 2 courses of different antibiotics, no changes in the mass were noted. Subsequently the patient was sent to the emergency department, where computerized tomography revealed multiple right-side neck masses, with the largest measuring 4 cm × 2 cm. The patient underwent an incisional biopsy by otolaryngology, and a diagnosis of necrotic lymph tissue was made. On our examination, the curious tooth #30 was thought to be an incidental finding, and fine-needle aspiration cytology of the largest mass was performed in 2 places. This also provided a diagnosis of necrotic lymph tissue.

**Results.** In concert with the patient and his mother, the decision was made to excise the mass owing to psychosocial concerns. A massive right-side lymph node attached to the submandibular gland was found and excised without complication. Histologic examination with S-100 stain confirmed a diagnosis of RDD. The patient healed well after surgery and had experienced no further lymphadenopathy at the time of writing.

**Conclusions.** This case presentation and review of the literature is unique, because the patient presented with unilateral cervical lymphadenopathy only. Open biopsy and 2 fine-needle aspirations all returned as necrotic lymph tissue. Obtaining the correct diagnosis was additionally hampered by coincidental dental pathology on the affected side, and final diagnosis was made only by excisional biopsy, which is not necessarily indicated in cases of RDD.

**RECONSTRUCTION OF PERIORBITAL DEFORMITY SECONDARY TO UNTREATED PERIORBITAL TRAUMA: A CASE STUDY.**

Atul Deshmukh, DMD, Carl Bifano, DMD, and Brian Smith, DMD, MD.

**Objective.** Management of facial fractures requires sound assessment of bony involvement and soft tissue deficiencies. At the onset of treatment planning for midface injury, particularly periorbital trauma, the aim of repair is to prevent long-term complications. In select circumstances, individuals present with untreated periorbital deformity secondary to trauma. Our goal was to predictably generate a cosmetic benefit with minimal peri-/postoperative complications, using allograft and soft tissue to correct a periorbital deformity.

**Methods.** This was a case study for the use of freeze-dried femur as an allograft.

**Results.** Neither postoperative complications nor cosmetic deficiencies have been noted to date.

**Conclusions.** Allograft can be a valuable asset in repairing untreated periorbital trauma as well as decreasing patient morbidity from donor site harvests.

**DENTAL PAIN, TOOTH MOBILITY, AND DELAYED DENTAL ERUPTION AS INITIAL PRESENTATION OF ACUTE LYMPHOBLASTIC LEUKEMIA: A CASE REPORT.**

David Tran DDS, MD, and Brian Murphy, DDS.

**Objective.** We present a case of acute lymphoblastic leukemia where the initial presentation consisted of dental pain, tooth mobility, and delayed dental eruption.

**Case report.** An 8-year-old African-American boy was referred to the oral surgery clinic on October 22, 2010, for delayed eruption of tooth #9. Tooth #8 had erupted 6 months before. On clinical examination, excessive attached gingiva was associated with tooth #8 and was noted to completely cover tooth #9. A panoramic radiograph showed that tooth #9 had two-thirds of its crown erupted above the alveolar bone. No localized factors, such as impacted teeth or lesions in the path of eruption, and no systemic factors were detected on history and physical examination. A diagnosis of delayed eruption of tooth #9 with excessive attached gingiva was made. The patient returned to the clinic on November 5, 2010, for gingivectomy and exposure of teeth #8 and #9 under local anesthesia. At the 2-week postoperative visit, the patient was asymptomatic; the surgical site was healing within normal limits.

The patient returned to the clinic on December 9, 2010, complaining of generalized oral pain. Symptoms of fatigue, intermittent knee pain, and 5 pounds of weight loss in the preceding 2 weeks were also reported by his father. Clinical examination revealed generalized dental and gingival tenderness. All teeth, including permanent teeth, had gross mobility. An anterior open bite of 15 mm was noted which was not present 2 months before. Panoramic radiograph showed generalized alveolar bone loss. A systemic disorder, such as leukemia or lymphoma, was suspected, and the patient was immediately referred to his pediatrician for laboratory work.
Results. A complete blood count showed a white blood cell count of 119,000/mm³ with 67% blasts. A final diagnosis of T-cell acute lymphoblastic leukemia was made by histopathologic examination of the bone marrow biopsy. The patient was then placed on chemotherapy.

Conclusions. Systemic symptoms, such as fatigue, weight loss, fever, and bleeding tendency, are commonly the initial symptoms of systemic malignancies. Attention should be paid to cases of delayed dental eruption and acute generalized tooth mobility associated with dental pain without a demonstrable cause. These oral symptoms may be the initial manifestation of a malignant disease that requires rapid treatment.

AN EYE FOR TREATMENT: ORBITAL/FACIAL CELLULITIS.

R. Isaac, BDS, A. Chai, BDS, and J. Pallot, BDS.

Background. Maxillofacial units are regularly referred patients presenting with varying degrees of facial cellulitis. Orbital and periorbital swelling secondary to acute sinusitis is also fairly common. Distinguishing between preseptal and orbital involvement is an arduous task based on clinical observations alone. Nevertheless, a delay in accurate diagnosis can result in serious complications such as blindness and life threatening intracranial sepsis.

Case report. A case of a 51-year-old woman is presented in which despite late presentation, prompt and resolute emergency surgical intervention was both life and sight saving.

Conclusions. This case highlights the need for thorough assessment of a patient before, during, and after surgery in all patients.

AUDITING AUDITS: AN ASSESSMENT OF CLINICAL AUDITS CONDUCTED BY ORAL AND MAXILLOFACIAL SURGERY DEPARTMENTS IN WALES.

James Pallot, BDS, and Simon Jones, BDS, MBBCH, MFDS, RCS, MRCS.

Background. The effectiveness of clinical audits in achieving their goal of improving health care is increased when feedback following systematic analysis of medical care is delivered successfully. This statement is supported by the National Institute for Health and Clinical Excellence in their document Principles for Best Practice in Clinical Audit, advocating the process of collecting data for repeated analysis, after changes have been introduced, as being central to both assessing and maintaining improvements made during audits.

Objective. This article intends to investigate audits completed by oral and maxillofacial surgery departments in 2 teaching hospitals and 3 district general hospitals in Wales to verify whether those providing recommendations to practice are subject to prospective repeated cycles. Results obtained during reaudit cycles are to be monitored individually to verify whether recommendations to practice appertained.

Methods. Retrospective analysis of available completed audits stored in hospital databases was undertaken. All studies were considered against inclusion criteria for audits outlined in the British Association of Oral and Maxillofacial Surgery Quality Improvement Partnership document of 2009. Databases and audit meeting schedules were assessed for prospective repeated audit cycles in all cases that providing recommendations to practice. Evaluation of results obtained from reaudit cycles was undertaken to measure improvements in practice after implementation of changes or recommendations suggested.

Results. Eighty percent of audits undertaken made recommendations for improvements to current practice as a result. Only 30% of these audits were subjected to prospective reaudit. More than 75% of audit subjects participating in reaudit cycles yielded superior results on completion.

Conclusions. This review demonstrates clinical audits to being highly conducive toward promoting improved practice in situations where reaudits were performed. However, neglecting to repeat audit cycles where necessary is a major shortcoming of oral and maxillofacial surgery departments in Wales, made pertinent by the growing body of evidence demonstrating audits to be most successful in accomplishing goals of bettering standards of care when they are facilitated by provision of effective feedback. Coherent strategies adopted within individual hospital departments to allocate resources and foster audit within areas deemed to be most appropriate could help to maximize the value of clinical audits in the future.

RECOGNITION OF TOXIC EPIDERMAL NECROLYSIS AND MANAGEMENT OF SEVERE BLEEDING: A REVIEW OF MEDICAL AND SURGICAL TREATMENT AND REPORT.

Rob Goeckermann, DDS, and Brian M. Smith, DMD, MD.

Objective. This review and report aims to further an understanding of the outcomes and consequences of toxic epidermal necrolysis and the treatment modalities for this syndrome as they relate to systemic and local wound care.

Methods. A patient admitted in December 2010 to Cooper University Hospital in Camden, NJ, was diagnosed with toxic epidermal necrolysis (TEN). The suspected causative agent was a class of cephalosporin. The patient’s systemic condition was poor, relating to a
past medical history of hepatitis and liver failure. This manifested as severe and uncontrolled bleeding from the oral cavity with a severe drop in hemoglobin. A literature search was performed using PubMed, Ovid, Web of Knowledge, Cinahl, and StatRef for recent (1995 to present) articles regarding treatment for toxic epidermal necrolysis. Only articles that included local wound care topics were included.

**Results.** Literature reviews for care of the patient suffering from TEN reflected similar treatments, including intensive care or burn unit admission, fluid and nutritional therapy, skin, mouth, and eye care, ventilatory support, catheter placement, and assessments of infection. Adjuvant treatments, which included cyclosporin, cyclophosphamide, intravenous immunoglobulin, and plasmapheresis, had a variable response. Selected medical treatments like systemic corticosteroids and thalidomide remain controversial. Although medical treatment modalities up to that point had failed to control the oral hemorrhage, they did help to stabilize the present patient’s systemic condition. Her severe lip bleeding was controlled with topical silver nitrate sticks, which acted to cauterize the many bleeding points as well as provide some bacteriostatic control in the area.

**Conclusions.** TEN is a life-threatening condition which must be recognized quickly by clinical suspicion and percentage of skin detachment. An illness severity score (Scorten) can be applied to predict mortality rates. The oral and maxillofacial surgeon can play a role in the interdisciplinary treatment of a patient diagnosed with this rare condition. Most times, this is characterized by local oral wound care to minimize pain, reduce chances of infection, and control bleeding if necessary.

**ACUTE SUBCUTANEOUS EMPHYSEMA AS A COMPLICATION OF ATTEMPTED NASAL INTUBATION DURING AN ORAL SURGICAL PROCEDURE.**

Mansoor Madani, DMD, MD, Alex Pažoki, DDS, and Nicholas Hill, DDS.

**Objective.** Subcutaneous emphysemas of the head and neck region following endotracheal intubations are rare. They occasionally occur from penetrating injuries of the endotracheal tube into the nasal, pharyngeal or the tracheal mucosa. Lacerations of the mucosal tissues occur as a result of repeated attempts at a difficult intubation, especially if a stylet is used.

**Methods.** A 39-year-old man presented with severe facial swelling as a result of multiple infected teeth. The infection originated from the right molar and bis cuspid area and extended into the buccal, masseteric, submandibular, and submental spaces. The patient was also experiencing mild dysphasia and had moderate trismus. He was taken to the operating room for removal of multiple teeth and incision and drainage of the various spaces. Multiple attempts to intubate the patient nasally were unsuccessful and created significant bleeding from the nasal and pharyngeal area. This resulted in conversion to an oral endotracheal tube. After the surgical procedure, the patient had an uneventful extubation and was taken to postanesthesia recovery in stable condition.

Postoperative computerized tomographic (CT) scan was taken the following day for further evaluation. The CT scan demonstrated massive soft tissue emphysema on the side (left) opposite from the facial swelling. The emphysema was noted to extend from the area just below the inferior turbinates to the medial as well as lateral aspect of the left mandible. This area had also extended upward toward the lateral pharyngeal walls and the buccal and masticator space anterior to the left pterygoid muscle, then traveling downward from the left parapharyngeal space and along the left jugular vein and ending in an area posterior to the left sternocleidomastoid space and supraclavicular space. The gas also had dissected into the facial planes of the left strap muscle. The puncture laceration of the posterior nasopharynx was noted on fibro-optic evaluation and clearly visible on the CT images taken from the patient the day after his surgery. The interruption in upper respiratory mucosa was the entry site for subcutaneous gas. Mucosal trauma may have occurred at any point during airway management and the initial blind nasal intubation attempt, nasal airway placement and manipulation.

**Results.** During the procedure a surgical handpiece was used with copious irrigation bilaterally, and the teeth were divided and elevated with minimal manipulation. Although the CT scan demonstrated significant subcutaneous emphysema after surgery, the patient was kept in the hospital for intravenous antibiotic treatment and airway monitoring for an additional 3 days and discharged in stable condition.

**Conclusions.** In this article we reviewed the anatomy of the upper airway, discussed the pathogenesis and clinical and radiographic presentation of subcutaneous emphysema, and reported the delayed detection of subcutaneous emphysema after routine oral and nasal endotracheal intubation.

**ACCIDENTAL NASOTRANSPALATAL-ENDOTRACHEAL INTUBATION: A CASE REPORT AND REVIEW OF MANAGEMENT.**

Ali E. Mohammad, DDS, Gary Jones, DDS, Brian M. Smith, DMD, MD, and Allen Fielding, DMD, MD.

**Objective.** Nasoendotracheal intubation is a necessary tool for the oral and maxillofacial surgeon. This
anesthetic technique comes with increased challenges and complications compared with orotracheal intubation. Among these is an underreported injury to the soft palate. We report a rare complication of nasoendotracheal intubation: an accidental penetrating injury to the soft palate that led to a nasotranspalatal-endotracheal route for the endotracheal tube (ETT).

Methods. Nasoendotracheal intubation was requested by the primary team in oral and maxillofacial surgery. This was a planned-out patient surgical procedure under general anesthesia with nasoendotracheal intubation. Difficulty was faced by the anesthesia team in passing the ETT. A GlideScope was used, and intense nasal bleeding was encountered. The ETT was directed through the right nare down to the level of the hypopharynx and was visualized again with a blood clot at the end of the stylet inside the ETT. This was disregarded and suctioned, and the remainder of the intubation was uneventful. The surgeon placed a throat pack, and surgical intervention progressed. Once the surgeon removed the throat pack, liver clots were noticed and suctioned and revealed a transpalatal path of the ETT. The soft palate presented with a tear from the nasopharyngeal side through to the oropharyngeal side.

Results. Due to difficulty in intubating the patient, the anesthesia team decided to leave the patient intubated overnight owing to airway edema, which presented another challenge for repair of this palatal injury.

Conclusions. We report a case of accidental transpalatal intubation and its perioperative management. We also present and review the complications and management of nasoendotracheal intubation compared with orotracheal and laryngeal mask airway for securing the airway in the oromaxillofacial surgical setting.