mandibular fractures. The purpose of the study is to compare the time for placement and removal, effect on the gingiva, and operator safety.

Methods: The authors designed a parallel-group, randomized controlled trial to compare the 2 types of arch bars. Patients with mandibular fractures presenting to the authors' institution were enrolled in the study and randomized into 2 groups: (1) the Erich arch bar group secured with circumdental stainless steel wires and (2) the Hybrid arch bar group secured with bone-borne self-drilling locking screws. The primary outcome variable was arch bar placement time. Secondary outcomes were glove tears or penetrations during application, gingival appearance score at removal, loose hardware at removal, removal time, and glove tears or penetrations at removal. The groups were compared by using the Student *t* test.

Results: A total of 90 patients were enrolled in the study. There were 43 patients randomized to the Erich arch bar group and 47 patients randomized to the Hybrid arch bar group. The mean time for application of Erich arch bars was 31.3 Â ± 9.3 minutes and 6.9 Â ± 3.1 for the Hybrid arch bars ($P <$ 0.0001). There were significantly more glove tears or penetrations during application in the Erich Arch Bar group (0.56 Â ± 0.91 per application) compared with the Hybrid group (0.11 Â ± 0.32 per application) ($P = .0025$). At removal, there was no difference in overall gingival appearance or amount of loose hardware. The time for removal was significantly less for the Hybrid arch bar group (10.5 Â ± 5.1 minutes) than for the Erich arch bar group (17.9 Â ± 10.7 minutes) ($P = .0007$).

Conclusions: Hybrid arch bars with bone-borne locking screws offer a number of advantages, including faster placement, shorter removal time, and a greater margin of safety for the operating surgeons, as demonstrated by significantly fewer glove tears and penetrations.

SUBJECTIVE CHANGES IN MOOD AND CHRONIC PAIN STATUS-POST INTRAVENOUS KETAMINE FOR ORAL AND FACIAL SURGERY

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Purpose: The aim of this study was to determine whether subjects who received intravenous ketamine for outpatient procedures, under intravenous sedation (IVS), show changes in mood and chronic pain.

Methods: Inclusion criteria were oral-maxillofacial surgery subjects age >18 years; presence of chronic pain and/or depression; eligibility for IVS. Exclusion criteria included age less than 18 years. Eligible subjects were educated about the purpose and potential risks and benefits of the study; consent was obtained if they chose to participate. Chronic pain was surveyed pre- and post-operatively. Beck's Depression Inventory (Modified) surveyed patient's mood postoperatively. Data was reviewed to determine correlation between IVS with ketamine and effects on chronic pain and mood.

Results: The total study population was 23 patients (average age 36 years; 57% males and 43% females). Average chronic pain score was lower postoperatively for subjects who received ketamine. Subjects who received ketamine used significantly less opioids postoperatively compared with those who did not. Subjects who received ketamine exhibited significant improvement in mood postoperatively compared with those who did not.

Conclusions: Ketamine appears to have value to patients beyond just its anesthetic properties. Chronic pain and mood appear to be positively altered by the use of ketamine in outpatient surgical procedures. Ketamine use should be considered as a first-line anesthetic agent, unless contraindicated, in patients with chronic pain and depression. However, the growing opioid and mental health epidemic may allow a secondary impact of ketamine. Future studies may derive appropriate ketamine dose regimens or titrations when aiding patients suffering with depression or chronic pain patients.

IMMEDIATE RECONSTRUCTION OF SEGMENTAL MANDIBULAR DEFECTS WITH NON-VASCULARIZED BONE GRAFTS

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Purpose: There is long-standing evidence that a segmental mandibular defect greater than 6cm needs to be reconstructed with a vascularized graft, which significantly increases patient morbidity. We challenge this notion. In this study, we determined maximum defect size that can be predictably reconstructed with nonvascularized bone grafts immediately after resection.

Methods: A retrospective chart review of 34 patients that had mandibular resections for benign pathologies that were immediately reconstructed with particulate marrow grafts were reviewed. The same senior surgeon at a university medical center oversaw all cases. Cohort demographic and descriptive data were obtained, resection size was determined, and statistics were calculated.

Results: The patient cohort had a mean age of 49 years (standard deviation [SD] = 12.2), and consisted of 16 males and 18 females. Mean follow-up time was 18 months. Diagnoses included 15 (44%) cases of osteomyelitis, 13 (38%) ameloblastomas, 5 (15%) ossifying fibromas, and 1 (3%) histiocytoma. Average resection size of all cases was 8.7 cm (SD = 4.1). Average resection size of successful grafts was 8.1 cm (SD = 3.2). Graft failures measured 12.1 cm (SD = 2.8). When comparing graft success versus failure there is statistical significance ($P < .05$) using 2-sample *t* test. Thirty of 34 (88%) patients went on to achieve mandibular bony union after 1 surgery.

Conclusions: Taken together, these data demonstrate that segmental mandibular resections for benign pathology can be predictably reconstructed using non-vascular grafts up to 8.1Â ± 3.1cm. The morbidity and time of surgery of particulate marrow grafts is significantly less compared with free-flap reconstruction. Furthermore, the course of treatment in these patients is significantly decreased. This facilitates expedited convalescent care and an earlier return to normal form and function.

MANAGEMENT OF MANDIBLE FRACTURES BY THE ORAL MAXILLOFACIAL SURGERY DEPARTMENT AT UNIVERSITY OF MARYLAND: A QUALITY ASSESSMENT INITIATIVE

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Purpose: Repair of isolated mandibular trauma has been well documented in the literature. Outcomes based on methods

of fixation, tooth extraction in the line of fracture, and treatment complications have been well documented. At the University of Maryland Oral and Maxillofacial Surgery (OMFS) unit, isolated mandibular factures are treated immediately, and rigid fixation is preferred. We performed a quality assessment of our treatment protocol for treated isolated mandible fractures, focusing on postoperative complications, such as surgical site infections (SSIs), nonunion, and malocclusion.

Methods: A retrospective chart review of patients who received intervention for mandibular fractures was conducted from December 2013 to July 2017 at the University of Maryland OMFS unit. All included patients were treated in an operating room (OR) setting. Demographics (age, gender, and race), mechanism of injury, location of fracture(s), type of fixation/number of plates used, tooth in line of fracture, length of maxillomandibular fixation, and time to OR were recorded. Complications, such as SSIs, wound dehiscence, dental mobility/sensitivity, malocclusion, and nonunion, were recorded. Primary outcome measured was mandibular union.

Results: One hundred and sixty-eight patients with a total of 301 fractures were identified. 80% were males, and 61.3% were African Americans. Homelessness, substance abuse, and incarceration were highly prevalent in our patient population. Assault was the most common cause of mandibular trauma (58%). Individuals in their third (35%) and fourth (22%) decades of life were most commonly affected. Symphysis and parasymphysis (32%) were the most commonly affected sites, followed by mandibular angle (29%). Sixty-six percent of individuals had 2 or more fractures. Seventy-seven percent of patients underwent definitive repair within 48 hours of presentation. Overall rate of postoperative complications was 10%; SSI (4%) was the most common, followed by wound dehiscence (2%), dental pain or dental mobility at the line of fracture (1.6%), malocclusion (1%), and nonunion (1%).

Conclusions: In our study, the primary goal of union was achieved in 98.6% patients. Four patients with nonunion were treated secondarily, with good results. An overall complication rate of 10% was noted with an SSI rate of 4%. These are both lower than those reported in literature. In conclusion, it is essential to tailor treatment in accordance with the challenges posed by the individual patient.

BIOMECHANICAL INDUCTION OF MANDIBULAR ALVEOLAR GROWTH IN EDENTULOUS GROWING CHILDREN

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Purpose: It has been traditionally believed that alveolar bone growth and development are dependent upon dental development. The occurrence of alveolar bone development after placement of osseointegrated mandibular implants in 2 edentulous children is reported here. The fact that alveolar bone development occurred in the absence of natural teeth suggests that its growth and preservation is dependent upon biomechanical forces rather than the presence of teeth, as traditionally thought.

Methods: Serial panoramic and clinical evaluations were carried out on 2 children, ages 7 and 9 years old, for 5 years after placement of osseointegrated implants and their prosthetic rehabilitation.

Results: Both children showed impressive alveolar bone growth, which occurred to such an extent that it had to be surgically reduced to permit proper hygiene around their fixed hybrid prosthesis.

Conclusions: It is proposed that a biomechanical "message," instead of a biochemical−biologic one, controls alveolar bone growth and that the implants permit biomechanical loading that controls alveolar bone growth to exist in the mandible.

ARE SOLID ORGAN TRANSPLANT PATIENTS THE NEW UNSUSPECTING OSTEONECROSIS VICTIMS?

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Purpose: Bone disease is common in organ transplant recipients. Immunosuppressive regimens with glucocorticoids have shown to improve patient and graft survival rates following transplantation. As survival rates have improved, so has awareness of long-term complications of transplantation. Pre-existing bone disease combined with immunosuppressive agents serve as primary risk factors for osteoporosis and fractures. Recently, supplementation of the traditional medical regimen with bisphosphonates and denosumab has become necessary to counteract the adverse effects of long-term steroid use. Although it does enhance bone mineral density, bisphosphonate therapy has failed to result in a significant decrease in the fracture rate. We propose an individualized approach aimed at managing bone loss and fracture rates in transplant patients.

Methods: This study, an evidence-based review, aims to provide a better understanding of the risk factors associated with osteoporosis, incorporating the bone effects of glucocorticoids and antiresorptive medications. We first developed several specific research questions, assorted questions by category, devised an approach to identify appropriate sources in the organ transplant literature, and selected a list of possible articles to review. We completed an initial review to limit the set to 55 articles and then conducted a thorough review, including the current guidelines provided by the American College of Rheumatology for management of bone disease, and the American Association of Oral and Maxillofacial Surgeons for prevention and treatment of osteonecrosis of the jaw. Furthermore, we have summarized our findings to synthesize an improved patient-centered protocol to help limit the indiscriminate use of antiresorptive medications, and strategies for appropriate dental management pre- and post-transplantation.

Results: Bisphosphonates and other antiresorptive medications reduce excessive turnover of bone, resulting in enhanced bone mineral density (BMD). These medications have become part of the typical treatment regimen for patients in the post-transplantation period to counteract the negative effects of high-dose steroids, despite the lack of evidence that preservation in BMD translates to decreased fracture risk. Although the risk of medication-related osteonecrosis of the jaw (MRONJ) is low, the diagnosis and the sequelae can be devastating and difficult to treat in advanced stages.

Conclusions: The best method of prevention lies in an evidence-based multidisciplinary approach to ensure that the solid organ transplant patients administered these medications do not become the new MRONJ victims. This should include, but not be limited to, evaluation by a dental professional familiar