

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 fractures 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? SHACHIKA KHANNA, DMD,

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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

with antiresorptive medications and bisphosphonates and their adverse effects on the craniofacial skeletal tissues, minimizing steroid use, adequate supplementation of vitamin D in patients with vitamin D deficiency, and careful targeted use of

bisphosphonates and denosumab only in those patients where it is mandatory. Although the prevalence of MRONJ among transplant recipients remains to be studied, it behooves providers to help protect these patients from unnecessary harm.