Researchers at the University of South Florida have recently developed a custom reduction device for edentulous and partially edentulous patients to be used with mandibular and maxillary fractures.

Currently, there is no universally accepted method for maxillary and mandibular fracture stabilization of edentulous or partially edentulous patients, and there is no technique that maintains the pre-injury occlusal pattern to allow eventual return to pre-injury dentures. Additionally, many proposed methods rely on significant fixation hardware, which is unreliable in these patients due to the variable weakening and thinning of the bone following tooth loss. These same bone changes increase the risk of fracture by 1.5 times that of a patient with normal dentition.

Our inventors have developed a novel device for edentulous and partially edentulous patients, of both the adult and pediatric age groups. The device assists in reduction of the mandibular and maxillary fracture segments, maintains reduction, and protects the pre-injury mandibular height and occlusal pattern. The device minimizes operative time and equipment, offering a substantial cost savings to the facility and patient compared to internal hardware placement. Surgical dissection and bone trauma is reduced to promote fracture healing. It also offers the ability to transition the patient from rigid fixation to elastic-guided motion postoperatively, and then seamlessly back into pre-injury dentures. In addition, the innovative device is custom-designed for each patient’s degree of decreased bone size, ensuring a high quality and effective product.

This technology is directly applicable to the surgical and biotechnology industries that are involved the treatment of facial fractures.

**ADVANTAGES:**

- Reduction and maintenance of reduction in mandible
- Reduction and maintenance of reduction maxilla fractures
- Cost effective
- Minimizes operative time and morbidity
- Transitions with patient to elastic-guided occlusion and back to pre-injury dentures
- Patients specific option for the correction of jaw fractures

**3D Printing of the Model**

**Custom reduction splint for edentulous and partially edentulous patients**

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