



## CASE REPORT

# Gunning Splint for Intermaxillary Fixation in an Edentulous Patient – A Case Report

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**ABSTRACT:** Management of most of the facial fractures especially those of maxilla and mandible rely on proper intermaxillary fixation. Intermaxillary fixation allows immobilization of the reduced and fixed fragments of bone during the healing period. Intermaxillary fixation with or without osteosynthesis can be carried out by using various techniques. The procedure for an edentulous patient demands special considerations since the absence of teeth makes the stabilization much more difficult. This case report explains the steps in fabrication of a gunning splint used for intermaxillary fixation in an edentulous patient.

**Key words:** *Gunning splint, intermaxillary fixation, immobilization of jaws*

The presence of teeth in a dentate patient helps to guide the occlusion and serve as anchorage for the intermaxillary fixation devices in jaw bone fracture. The situation becomes complicated in an edentulous patient due to lack of those anchoring units<sup>[1,2]</sup>. Dr. Thomas Brian Gunning (1813-1899) of New York, a Union Confederate dentist developed an interdental splint (1866-67) during the American civil war. The splint was created to treat a fracture of edentulous mandible. His splint allowed openings for salivary flow, nourishment and speech<sup>[3]</sup>.

Gunning splint is defined as a device fabricated from casts of edentulous maxillary and mandibular arches to aid in reduction and fixation of a fracture<sup>[4]</sup>. It can be used either separately or combined with other methods of fixation<sup>5</sup>. The types include one piece gunning splint, two piece gunning splint and modified splint<sup>[6,7]</sup>. This article describes the method of construction of a two piece gunning splint for an edentulous patient with undisplaced fracture of mandible.

## CASE REPORT

A forty nine year-old female patient with undisplaced fracture of left mandibular condyle was referred from Department of Oral & maxillofacial surgery to Department of Prosthodontics, RMDCH, Annamalai University, Chidambaram, India, for construction of a

splint to aid in immobilization. The patient had restricted mouth opening following the trauma (Fig-1). But, since both the arches were completely edentulous, there was only a little difficulty in making impression with stock trays. There was no need for sectional impressions.

Maxillary and mandibular impressions were made with irreversible hydrocolloid and casts were poured with dental stone (Fig-2). Trial denture bases were constructed with auto polymerizing acrylic denture base resin and occlusal rims were made with wax. Apart from the use as an aid for intermaxillary fixation, the splint should maintain the vertical dimension of the patient since there are chances for it to collapse post operatively.

Maxillo-mandibular relation was recorded with correct vertical dimension and centric relation. The anterior canine to canine portions of the maxillary and mandibular occlusal rims were cut and removed using wax carver. This creates opening for feeding the patient (Fig-3).

The trial denture bases with wax blocks without any teeth arrangement on it were acrylized with heat activated denture polymerizing resin. Border extension was checked in both the jaws to avoid food accumulation beneath the splint. The acrylized gunning splint was polished to high degree of luster to minimize plaque accumulation and also tried in the patient.

The next step is to create a provision for intermaxillary

Received : 08.07.12

Accepted : 15.07.12



**Fig 1: Preoperative restricted mouth opening**



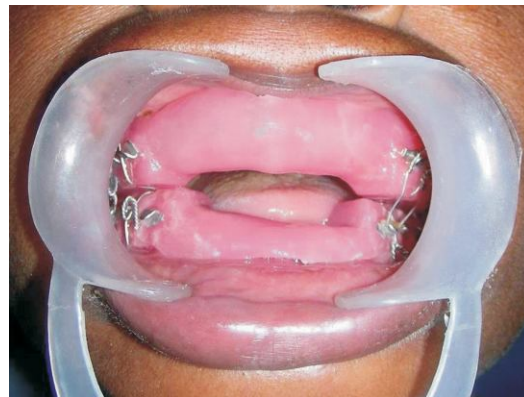
**Fig 2: Maxillary and mandibular impressions and casts**



**Fig 3: Jaw relation recorded and anterior opening created**



**Fig 4: Processed gunning splint with arch bars fixed**



**Fig 5: Intermaxillary fixation done with gunning splint**

fixation using the gunning splint. Arch bar was cut for the required length and attached on the buccal aspects of the maxillary and mandibular portion of the gunning splint using auto polymerizing acrylic resin. The attached areas also were finished smoothly (Fig-4). The splint was immersed in a disinfectant solution and handed over to the surgery team to fix it post operatively.

The gunning splint was attached to maxilla and mandible using trans-alveolar wiring and circum-mandibular wiring respectively for which holes were drilled in the

flange area for the surgeon's convenience. Both pieces of the splint were united by interconnecting the arch bars using wiring (Fig-5).

Anterior opening in the splint facilitated feeding and post anesthesia vomiting. It also helped the patient to tolerate the splint better without the feeling of overstuffed. Thus, an interdisciplinary approach proved successful both for the dental team as well as the patient.

## DISCUSSION

Fabrication of splints for intermaxillary fixation is a routine procedure in trauma cases. Method of fabrication

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**How to cite this article:**

Syed Asharaf Ali , Shivasakthy M . Gunning splint for intermaxillary fixation in an edentulous patient – A Case Report  
Journal of Scientific Dentistry 2012;2(1):28-30

**Source of Support:** Nil, **Conflict of Interest:** None declared