



Maxillomandibular Fixation in Edentulous Patients: A Novel Technique

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Abstract

Achieving maxillomandibular fixation in edentulous patients is difficult. Various factors including diminished blood supply, atrophic ridges, decreased healing potential and loss of vertical height makes it a challenging task. Various modalities have been used in the past for obtaining maxillomandibular fixation in edentulous patients. These techniques have their own merits and demerits. We here with present a novel technique to achieve maxillomandibular fixation in edentulous patients.

Keywords: Maxillomandibular Fixation; Edentulous; Denture; Splint

Introduction

Due to its prominence, mandible is one of the most common bones to be fractured in the maxillofacial skeleton, the chances increases with increasing age and edentulousness. Un displaced and minimally displaced fractures of the mandible in geriatric patients are usually managed by closed reduction, requiring Maxillomandibular Fixation (MMF).

MMF becomes a difficult task in the absence of dentition. It becomes more challenging and complex in geriatric patients due to diminished blood supply, atrophic ridges, decreased healing potential and loss of vertical height. The difficulty further increases if only single jaw is edentulous. Systemic diseases like diabetes mellitus and osteoporosis further add up to the degree of difficulty in achieving MMF in elderly patients [1].

In order to create an occlusal guidance and to achieve intraoral reduction of fractured segments in an edentulous jaw, intraoral splints or existing dentures are commonly used [2]. Stabilization of gunning splints or existing denture can be performed by techniques such as circum mandibular wiring, per alveolar wiring, circum zygomatic wiring, or with MMF screws [3]. Furthermore, MMF can be achieved by directly passing wires through MMF screws or by incorporating arch bars in the splints [3,4].

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Figure 1: Denture secured to Maxilla using cortical screws.



Figure 2: Wire passed through the holes drilled in the interdental areas of the denture.

Table 1: Disadvantages of other techniques.

Techniques for securing splint/denture with jaw	Disadvantages
Circum-mandibular wiring	Risk of injury to the facial artery, the lingual nerve, the submandibular duct, and other vital structures
Per alveolar wiring	Risk of puncturing and contamination of maxillary sinus, and injuring the palatal vessels.
MMF Screws	Irritation to buccal mucosa of patients as its head lies above the surface Expensive
Techniques for achieving MMF	Disadvantages
MMF Screws	Results in tipping/bending/loosening of screws when excessive force is applied for MMF
Arch Bar	It has to be incorporated while fabrication. Hence, cannot be used in cases with already existing dentures.

**Figure 3:** Stable MMF achieved.

Case Presentation

The patient had unilateral condylar head fracture. Patients had completely edentulous maxilla and partially edentulous mandible. Patient was a denture wearer and the existing denture was used to achieve closed reduction as the denture was intact after the injury. Holes were drilled on the denture to secure it with the maxilla using cortical screws. Also holes were drilled in the inter dental areas of denture for passage of wires to achieve MMF. Denture was placed and holes were drilled in the bone through the already drilled holes in

the denture flanges. A 2 mm titanium screw (4 in number) of length 8 mm were used to secure the denture to maxilla (Figure 1). Once the maxillary denture was secured, a 24 gauge stainless steel wire was passed through the mesial and distal holes of first molar in the bucco palatal direction (Figure 2). These ends are then passed through the mesial and distal embrasures of mandibular molar in linguobuccal direction and are tied together. The similar procedure is repeated on the contra lateral side (Figure 3). High lights various disadvantages of other techniques which are eliminated by our technique (Table 1).

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