

## Short Communication

## Role of Intermaxillary Fixation Screws in Present Scenario of Maxillofacial Trauma

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**Abstract:** Inter-maxillary fixation (IMF) is commonly used for management of jaw fracture and in orthognathic surgery to achieve the occlusion. Some of the commonly used techniques of IMF include arch bar and various dental wirings. However IMF may not be efficiently attained in patients who are edentulous, partially dentulous or have compromised dentition using these traditional techniques. The purpose of this short communication is to describe disadvantages of conventional arch bars and to highlight merits and demerits of IMF screws.

**Keywords:** IMF Screws; Arch Bar, Mandibular Fracture, Interdental wirings

### SHORT COMMUNICATION

A basic and fundamental principle in the management of maxillofacial trauma and in orthognathic surgery is inter-maxillary fixation (IMF). Traditionally, IMF has been achieved through an arch bar and various dental wirings [1]. In modern practice, however, arch bars are considered the standard. Although arch bars provide an effective and versatile means for IMF, their use include certain consequences like [2]:

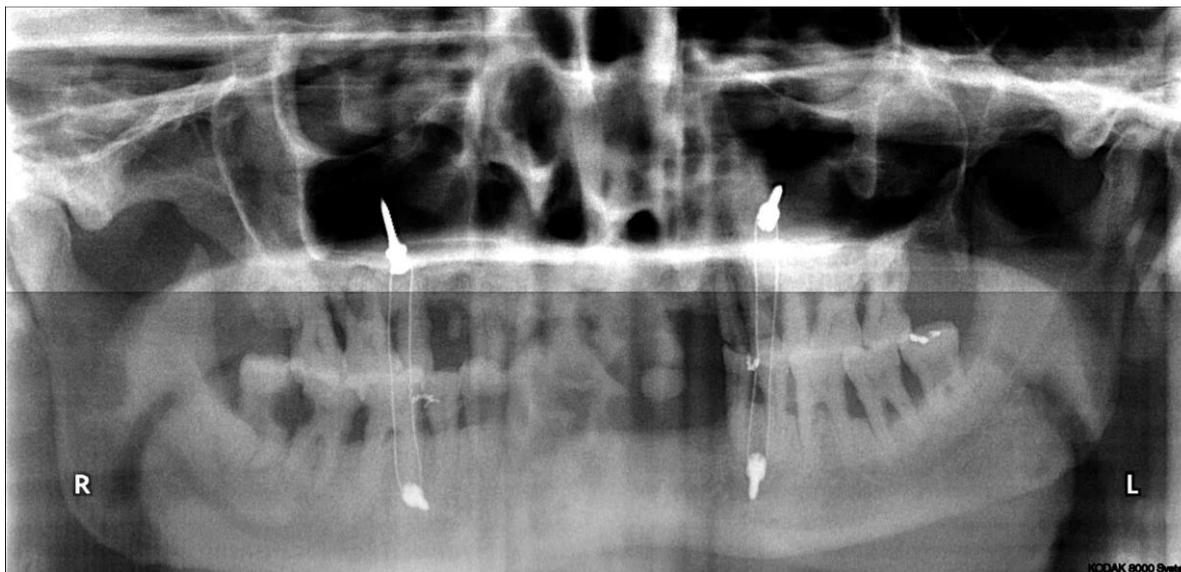
- 1) Higher risk of penetration injury to the surgeon and assistant; thus increased risk of transmitting the infections
- 2) Increased operative time in placement and removal
- 3) Soft tissue trauma to the periodontium, gingiva and buccal mucosa
- 4) Compromised oral hygiene
- 5) Requires usual component of healthy teeth for its placement
- 6) Greater discomfort for the patient

However IMF may not be efficiently attained in patients who are edentulous, partially dentulous or

have compromised dentition using these traditional techniques. Many of these issues were addressed when the technique of IMF with bone screws was introduced by Arthur G and Bernando N in 1989 [3]. The conventional IMF screw (1st generation) used are simply modified monocortical self-tapping screws. They require preparation of drilled holes before their placement. Domenick and Andrew reported use of second generation self-drilling IMF Screws. Advantage with second generation screw includes:

- 1) Power equipment not needed for preparation of drill holes. Hence the system can be used out-side operating room; eg, in ICU or emergency department.
- 2) Self-drilling feature provides a greater degree of tactile feedback during placement, allowing operator to change insertion location before root damage occurs.

The overall advantages of IMF screws include quick, easy, and safe insertion; compatibility with all plating systems; patient comfort; and easy painless removal in outpatient departments without anesthesia [4].



**Fig. 1:** Image showing inter-maxillary fixation achieved in simple manner using IMF screws.

On the other hand, iatrogenic injury to dental roots is the most important complication with this procedure, but it can be minimized by an experienced surgeon. Other complications include fracture of the screws upon insertion, iatrogenic damage to teeth causing root fracture & tooth loss, bony sequestra around the area of screw placement, screw coverage by oral mucosa, screw shearing and screw loosening [3-7].

Complications associated with placement of IMF screws were divided into 2 groups by Hashemi & Parhiz [4]: dental and nondental. Dental complications were defined as those requiring no treatment, those requiring only dental treatments, or those making the tooth hopeless. Other complications were defined as nondental complications – entrance in the inferior dental canal, incisive canal, maxillary sinus and screw loosening, soft tissue coverage.

Because dental injury is a common finding among most studies on IMF screws, some researchers have tried to show how and where we can insert screws safely. For example, Poggio *et al* indicated that a 1-mm thickness of alveolar bone around the screw is sufficient for good periodontal health [8]. Hernández *et al* also showed that 2 possible places for IMF screw insertion in the mandible are the incisal area and the molar area [9].

## CONCLUSION

Various studies indicated that although about one third of screws resulted in complications, most of these complications can be avoided by inserting screws carefully. The decision to use IMF screws instead of an arch bar is certainly dependent on the surgeon's interest and skill. Clearly, the use of IMF screws is increasing, and the ease of IMF screw placement may be the most important factor in this trend. Moreover, their benefits

of faster insertion and less overall trauma outweigh their disadvantages.

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