



## TECHNICAL NOTE

### The pearl steel wire: a simplified appliance for maxillomandibular fixation

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#### INTRODUCTION

The aim of treatment of maxillomandibular fractures is to reconstruct normal occlusion. Although rigid internal fixation has now become the method of choice for most maxillofacial surgeons,<sup>1</sup> maxillo-mandibular fixation (MMF) can still be necessary to achieve good occlusion and stability for osteosynthesis. Historically, many different appliances have been used to accomplish MMF:<sup>2–7</sup> external bandages, wires, arch bars, Ivy loops, pins, and screws. These techniques present various drawbacks. Insertion can require up to 45 min. Steel wiring raises the risk for the surgeon of human immunodeficiency virus infection after inadvertent skin puncture. Use of bone screws<sup>2</sup> in the maxilla and mandible is fast and easy but expensive. Lead beaded steel wire<sup>5</sup> is not only toxic for mucosa but also technically difficult to use since the wire must be twisted, thereby increasing the overall diameter and hindering insertion into narrow interdental space. The purpose of this paper is to present an easy, safe, rapid and cheap MMF appliance called the pearl steel wire.

#### TECHNIQUE

The pearl steel wire consists of a 26-gauge steel wire with a small necklace-like pearl attached to one end using resin (Fig. 1). The surgical technique is

illustrated in Figure 2. Before MMF, 4–12 pearl steel wires are passed into the interdental space from the lingual side to the vestibular side. MMF is performed

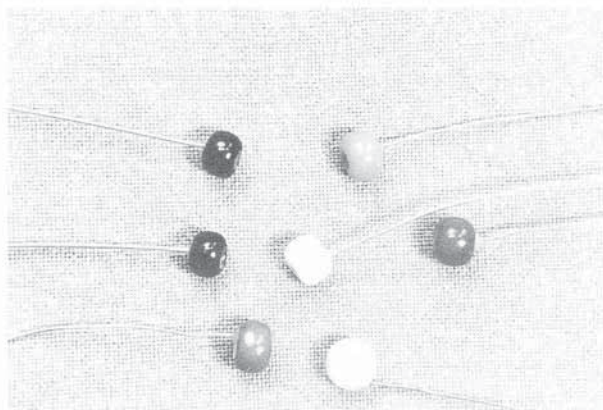
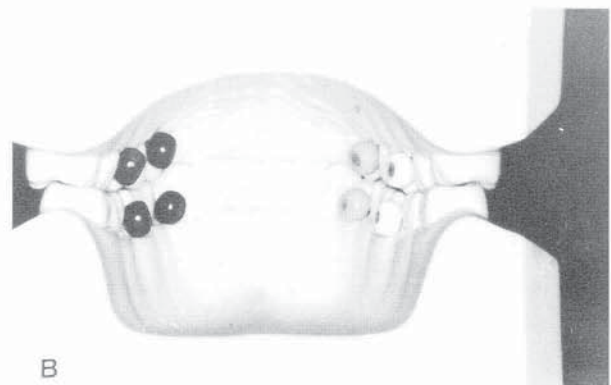
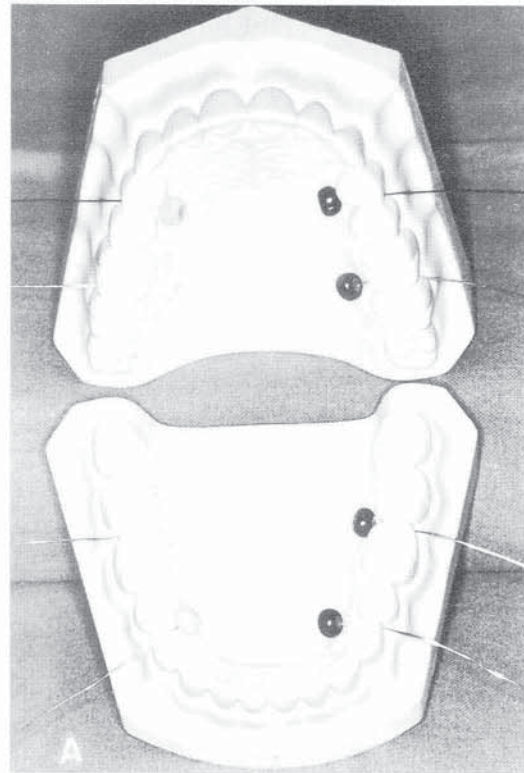


Fig. 1 – The pearl steel wire.

Fig. 2 – Surgical technique: (A) a sufficient number of pearl steel wires are first passed in the interdental space; (B) posterior view of the maxillomandibular fixation.

by connecting the opposite ends of the maxillar and mandibular pearl steel wires. This step must be performed carefully to avoid breaking any of the wires. This wiring technique requires less than 5 min and removal after osteosynthesis is also rapid.

## DISCUSSION

The best indications for pearl steel wiring are cases in which MMF is not required after rigid osteosynthesis or involving patients whose general condition necessitates early restoration of normal masticatory function<sup>1</sup> (epilepsy, psychiatric disorders, alcohol or drug abuse, and poor co-operation). The technique is best employed in patients with a full complement of teeth. The presence of an interdental gap is an absolute contraindication. Unlike arch bars, the pearl steel wire can be safely used for the parodontum. Although not effective for the treatment of all maxillofacial fractures, the pearl steel wire provides a simple, fast, safe and cheap method of MMF in many cases. It has been successfully used for mandibular fractures (especially monofocal fractures), in Le Fort I or II fractures without mandibular fractures, and in dentoalveolar fractures.

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