Technical note

Operative use of a vacuum-formed splint in the reduction of displaced mandibular fractures

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We report a simple and effective way of reducing a grossly-displaced, bilaterally-fractured mandible with a vacuum-formed thermoplastic splint. This allowed simple and precise reduction and enabled plating of the fracture sites extraorally.

The use of the dental occlusion as a guide is one of the most basic concepts in the management of mandibular fractures, and operative maxillomandibular fixation (MMF) is vital to the surgeon during reduction and immobilisation. Methods include MMF with cortical bone screws, arch bars, and thermoforming plates.

Severely displaced mandibular fractures can be difficult to reduce effectively, particularly in patients with several fractures and missing teeth, with or without poor periodontal health, and options for MMF are limited.

Lloyd et al described the management of a unilateral fracture of the mandibular condyle with a vacuum-formed splint. We altered this and applied it to the operative MMF of a patient with a grossly displaced, bilateral mandibular fracture.

A 31-year-old woman was kicked in the face by a racehorse. She presented with grossly displaced fractures of her right mandibular angle and left mandibular parasymphysis. Her oral hygiene was poor, and she had acute ulcerative gingivitis. Her medical history was not relevant.

An orthopantogram and posteroanterior mandibular radiographs were taken followed by a computed tomogram with 3-dimensional reconstruction (Fig. 1). The fractures were immediately stabilised with miniplates and screws. Several bad teeth were extracted, and alginate impressions taken.

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She attended a week later for the definitive reduction of her fractures. The alginate impressions had been made into stone working models and articulated in centric occlusion, and a splint made from a 3 mm, dual laminate material by Erkodent© (Pfalzgrafenweiler, Germany) was formed from the stone models (Figs. 2 and 3). Once access to the mandible had been gained from a single extraoral incision, we placed the upper and lower teeth into the splint to reduce the fractures, and to allow fixation with a premanipulated AO reconstruction plate. A 4-hole miniplate was placed at the parasymphyseal site at the lower border, the splint was removed, and her occlusion was satisfactory. Two drains were inserted, and the incision closed.

This method was effective for this fracture pattern caused by a high impact injury. The splinting method resulted in excellent reduction, and the procedure also had good functional and aesthetic outcomes. It is also cheap, simple, and quick (Fig. 4).

We accept that the technique may not be suitable for most mandibular fractures that are minimally or moderately displaced, and we have used it only once, but would do so again for a similar case.

Conflict of Interest

We have no conflicts of interest.

Ethics statement/confirmation of patient permission

No patient permission has been obtained as all radiographs are anonymised.

References


