INTRODUCTION

The overall complication rate for all mandibular fractures is reported to be 9-56% in multiple studies.1 Common complications described are facial deformity, disturbance of facial sensation, temporomandibular joint pain, malocclusion, wound infection, osteosynthesis failure, malunion, nonunion, and pseudarthrosis. 1,6 Of these, nonunion is often the most challenging to treat.

A number of contributory factors for the development of mandibular malunion or nonunion have been proposed, including repeat trauma after fixation, failure to provide antibiotics, presence of teeth in the fracture line, alcohol and drug abuse, inexperience of the surgeon, lack of patient compliance, compromised fractures, and anatomic location.2,6,7 Inadequate union may also directly result from poor mechanical environment due to a large gap between the fractured ends or mobilization of fractured ends, and poor biological environment at the fracture site.6

For primary open reduction internal fixation (ORIF) of mandibular fractures, arch bars can be used for placing the patient in temporary maxillomandibular fixation (MMF) to ensure proper occlusion before fracture reduction.4 Intraoral cortical bone screw fixation (ICBSF) may also be employed as a temporary method of obtaining occlusion.6 The application of arch bars with the requisite passage of circumdental wires, increases the chance of skin punctures and blood-borne disease transmission and increases operative time.6

Maintaining occlusion and stability can be difficult during repair of complicated mandibular fractures due to poor or missing dentition, missing bone, or severe comminution. During revision mandible ORIF, which is commonly required for patients with malunion and/or nonunion, the original reconstruction plate must be removed and replaced with a new internal or external fixation device. This study describes a technique for intraoperative stabilization using a temporary reconstruction plate placed at the inferior border of the mandible. This plate serves to hold the mandible in proper occlusion while the original reconstruction plate is removed and the new fixation device is replaced. This avoids the need for temporary arch bars or ICBSF eliminating the previously described risks of arch bar placement and blood-borne disease transmission and may decrease operative time.

METHODS AND MATERIALS

This is a retrospective study which includes consecutive subjects with mandibular malunion or nonunion who underwent repair with temporary stabilization with a 2.4mm locking reconstruction plate at the inferior border of the mandible from September 2010 to June 2011.

RESULTS

Three patients with a mean age of 41.0 (± 12.0) years underwent a total of four surgeries for nonunion of the mandible. All three patients were known IV drug users. Average time from initial surgery to revision was 65.0 ± 19.4 days. For two of the surgeries, placement of a temporary reconstruction plate on the inferior border was indicated to stabilize the mandibular segments during ORIF as an alternative to intraoperative maxillo-mandibular fixation. For the other two surgeries, a temporary reconstruction plate was used in conjunction with intraoperative MMF to allow for improved stabilization of complex mandibular fractures; iliac crest bone grafting was performed during both of these revisions.

CONCLUSIONS:

Temporary stabilization with a reconstruction plate at the inferior border of the mandible is a viable technique for mandibular stabilization as an alternative to MMF and intraoral cortical bone screw fixation (ICBSF)

- The temporary stabilization plate eliminates the need for arch bar placement with associated risk of wire puncture
- In select cases, the inferior border reconstruction plate offers the ability to maintain mandibular stability while placing the fixation plate. This technique is superior to ICBSF and MMF, especially during revision ORIF with poor or loose dentition, severely comminuted fractures or fractures with bony defects.

REFERENCES


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