Elbow Bridge Plating is an Effective Adjunct Treatment for Selected Complex Elbow Instability

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INTRODUCTION:

Persistent elbow instability and subacute or chronic elbow dislocations are difficult to manage. Open reduction, ligament repair/reconstruction, and stable fracture fixation may require supplementary fixation to maintain joint reduction until soft tissue and bony healing has occurred. External fixation is an option, but complications are common, particularly in non-compliant and obese patients. In this study, we evaluated the outcomes and complications of elbow bridge plating as an alternative to external fixation in patients with complex elbow instability.

METHODS:

A retrospective study was performed of patients who had elbow bridge plating as part of the management of an elbow fracture-dislocation at a single upper extremity referral center. Data collected included age, sex, type of injury, treatments prior to bridge plate application, time from injury to bridge plating, and the duration of bridge plating. Outcome variables included elbow range of motion, additional procedures, and complications.

RESULTS:

The average age (± standard deviation) was 53±14 years and there were 5 women and 6 men. Bridge plating was used for a spectrum of complex elbow injuries that were associated with recurrent or chronic instability (n=8), non-compliance (n=2), or brachial plexus injury (n=1). The average time from injury to bridge plating in acute cases was 29±19 days (range, 2 to 60 days) and 344±381 days (range,114±784 days) in chronic cases. The average duration of bridge plating was 121 ± 72 days (range, 40 to 261 days). Brachial plexus or nerve injury was a reason for the extended duration of application. Average length of follow up was 80 ± 68 weeks (range, 32 weeks to 3.8 years). At the time of plate removal, mean elbow motion was extension 58±12°, flexion 107±14°, supination 66±23°, and pronation 60±26°. At the latest follow-up visit, average elbow ROM was extension 37±22°, flexion 127± 17°, supination 72±15° and pronation 63±18°, functional elbow rang of motion was achieved. There was a total of 5 complications; heterotopic ossification, ulnar neuropathy, an ulnar shaft peri-prosthetic fracture due to a seizure induced fall, and elbow subluxation despite bridge plate fixation. Finally, one patient sustained a fracture of a 3.5mm locking bridging plate. Total percent of complication was 45% .

DISCUSSION AND CONCLUSION: Elbow bridge plating is an effective adjunct treatment for selected patients with complex elbow instability. Patients with bridge plating often require multiple surgical procedures, eventual plate removal, and have a higher rate of complications. When considering this technique, we recommend the use of a 4.5 mm locking plate to maintain joint reduction and avoid bridge plate fracture.