

Original Research

Outcomes of plating Fracture Lateral End Clavicle with AC Hook Plate: Functional and Radiological aspect

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ABSTRACT:

Introduction: Clavicle fractures are commonly seen in the young population following road traffic accidents, fall from bike and contact sports injuries. While 80-85% of clavicle fractures are seen in the midshaft of the clavicle, distal third fractures account for 15-20% and are seen in young with high-velocity trauma and in the elderly from falls. This study aims to assess functional and radiological outcomes of hook plate in fracture lateral end clavicle. **Methods:** This is a prospective study conducted at a tertiary hospital, 24 patients were selected for the study diagnosed as fracture lateral third clavicle Neer type-2. The patients with a complete follow up of one year were included. **Results:** In Our study on 24 subjects, 50% had trauma due to motor vehicle accidents. The average Oxford shoulder score was 31 with a good outcome. Six patients complained of impingement and two had acromial osteolysis. **Conclusion:** Fixation with a subacromial hook plate can be a reliable option in fractures of distal clavicle yielding a high union rate and must be preferred over the conservative mode of fixation and transacromial K-wire or tension band wiring.

Keywords: Hook plate, Lateral clavicle fractures, Fixation, Outcome.

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INTRODUCTION

Traditionally, clavicle fractures have been treated conservatively with good union rates but recent studies have questioned the functional recovery and morbidity of malunions. Clavicle fractures are among the most common injuries resulting from a direct blow or fall on an outstretched hand. Distal clavicle injuries show a bimodal distribution and are seen in the young population due to falls from bikes, road traffic accidents and contact sports injuries, while in the elderly due to fall and associated osteoporosis can result in comminution. Distal clavicle injuries account for 15-20% of the clavicle fractures and are notorious for nonunions³, pseudoarthrosis associated with conservative management. In the subacromial hook plate, a hook is placed in the subacromial space and is preferred for distal clavicular fractures (Neer Type II) as well as acromioclavicular joint dislocations (Rockwood type III to V). The loss of the coracoclavicular ligament attachment to the medial fragment in type 2 fractures, results in the

displacement of medial fragment and high (30%) rates of nonunion and delayed union with conservative management, which may be symptomatic and resulting instability of the AC joint can lead to shoulder girdle instability. The present study aims to assess the functional and radiological outcomes with the use of hook plates in lateral clavicle injuries.

MATERIALS AND METHODS

This is a prospective interventional study done in a tertiary care hospital in which twenty-four patients with fracture lateral end clavicle Neer type-2 were selected for fixation with hook plate. The fractures were classified as per the Neer classification³ that divides these into five classes. The patients were admitted from casualty and those presenting at the outpatient department. After admission, a general physical examination was done along with a baseline lab examination. Plain radiographs are useful to (1) confirm the diagnosis, (2) evaluate fragment position and alignment, (3) classify the fracture, and (4) assess

the extent of healing on follow-up examinations. In general, a trauma shoulder series consists of a true anteroposterior (AP) view of the scapula with the humerus in internal rotation and another radiograph with the humerus in external rotation; an axillary lateral view; and a true scapulolateral view (scapular Y-view) should be ordered.

RESULTS

There were 24 patients with Neer type 2 fractures, 25% were females and 75% were males. 50% of patients had sustained trauma due to motor vehicle accidents, 33.33 % had sustained trauma due to fall on the ground and 16.67% had sustained an injury while playing. The average Oxford shoulder score was 31 in our studies. 3 patients complained of difficulty in overhead abduction which improved with successive physiotherapy, 2 had a superficial infection of the suture line which healed with antibiotics and wound care. We had impingement complaints in 25% and subacromial osteolysis in 2 of our patients. The subjects had fewer complaints of some discomfort and all patients completed their rehabilitation. None of these patients required early plate removal.



Radiograph showing displaced fracture lateral end clavicle.



Postoperative fixation with a subacromial hook plate

DISCUSSION

Neer type-2 distal clavicle fractures pose a treatment dilemma given various available fixation methods. The goal is to achieve adequate fixation and thus operative intervention is favoured over the conservative method. Flinkkila et al⁵ compared K-wire fixation to hook plate fixation and advised hook plates because of increased incidence of infection in the K-wire group. Good et al⁶ concluded in their study that hook plates were effective and the results could be best if implant removal is done six months post-operatively. Oh JH et al⁷ in their study showed good clinical outcomes with the use of hook plate in fractures distal end clavicle and AC joint dislocation. Excellent outcomes have been reported in the literature with the use of hook plate by Koukakis A et al⁸. For a Type II distal clavicle fracture that has been treated surgically, healing takes about 8-12 weeks. Postoperatively, assisted range of motion is usually began at 2 weeks, followed by slow increments of active range of motion and as tolerated by the patient. For athletes treated operatively, Housner J⁹ recommends that return to play must be individualized depending on the healing of fracture and type of sport (contact or non-contact)

CONCLUSION

Most clavicle fractures heal without any functional impairment. With appropriate rehabilitation, return to full competition with strenuous and demanding use of the upper extremities is the rule. The decision as to when an athlete can return to sporting activities should be based on a surgeon's clinical judgment. The AC hook plate is useful for treating an unstable distal clavicular fracture. Compared with conventional methods, this plate provides stable postoperative outcomes with fewer complications which can further be reduced by careful operative planning and placing the hook at the appropriate subacromial position. This can avoid complications such as subacromial impingement, rotator cuff damage. Adequate postoperative rehabilitation is required before removal of the plate, and it is best to remove the plate as soon as the bony union is achieved. Although Hook plates have high union rates, the associated complications make the removal of hardware necessary requiring a second operation. Though there are other methods of fixation, still there is a lack of consensus among surgeons regarding the best method.

NO CONFLICT OF INTEREST

We declare no conflict of interest.

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