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**Case Report**

# Management of Fracture Lateral end of Clavicle

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## ABSTRACT

Clavicle fractures account for a significant proportion of shoulder girdle injuries, with an estimated annual incidence of approximately 29 per 100,000 population. Distal (lateral-end) clavicle fractures represent a clinically important subgroup because disruption of the coracoclavicular ligament complex frequently results in fracture instability and displacement. Consequently, these injuries have a higher incidence of delayed union and non-union than fractures involving the middle third of the clavicle.

The usual mechanism of injury is a direct impact to the lateral aspect of the shoulder or a fall onto the shoulder, commonly occurring during sports activities, falls, or road traffic accidents. Patients typically present with shoulder pain, swelling, tenderness, restricted range of motion, and, in displaced fractures, a visible deformity over the lateral clavicle.

Although non-operative treatment may be appropriate for selected stable fractures, displaced unstable distal clavicle fractures often require surgical stabilization to restore anatomical alignment, promote fracture union, and facilitate early functional recovery. Various operative techniques have been described, including locking plate fixation, hook plate fixation, coracoclavicular screw fixation, Kirschner (K)-wire fixation, tension-band wiring, intramedullary fixation, and coracoclavicular suture augmentation.

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We report the case of a displaced lateral-end clavicle fracture treated with open reduction and internal fixation using two 2.0-mm Kirschner wires combined with coracoclavicular stabilization using No. 5 FiberWire. Early supervised shoulder mobilization was initiated three weeks postoperatively, resulting in satisfactory fracture union and a good functional outcome.

**KEYWORDS**

• Hook Plate • Tension Band Wiring • K Wires

## INTRODUCTION

Distal clavicle fractures most commonly result from impact to the shoulder over lateral side following a fall, particularly in adults. The diagnosis is established through clinical examination and confirmed with standard anteroposterior shoulder radiographs, supplemented by a 15° cephalic tilt (Zanca) view to better visualize the distal clavicle and acromioclavicular region.

Lateral one third fracture account for approximately 10–25% of clavicle fractures. Management is determined by the degree of fracture displacement and the integrity of the coracoclavicular ligament complex, which provide the primary restraint against superior displacement of the medial clavicular fragment. Stable, minimally displaced fractures can often be managed conservatively, whereas unstable displaced fractures generally require operative stabilization to achieve fracture union and restore shoulder function.

Distal clavicle fractures have been classified according to several systems, with fracture morphology, ligament integrity, patient age, and associated injuries influencing treatment decisions. Concomitant injuries, including rib fractures, pneumothorax, floating shoulder, scapulothoracic dissociation, and neurovascular compromise, should be carefully evaluated as they may affect management and prognosis.

The present case report aims to assess the functional outcome of a displaced distal clavicle fracture treated with open reduction and internal fixation using two Kirschner (K) wires, supplemented with coracoclavicular stabilization using a No. 5 FiberWire sling passed between the coracoid process and the clavicle.

## CASE REPORT

Patient aged 45 year presented to the emergency department with a displaced fracture of the lateral end of the clavicle following trauma. After clinical evaluation, radiographic assessment, and pre-anesthetic clearance, the patient underwent open reduction and internal fixation. Anatomical reduction of the fracture was achieved and stabilized using two 2.0-mm Kirschner (K) wires. Additional coracoclavicular stabilization was performed using a No. 5 FiberWire sling, The suture tape was passed around the coracoid base and underneath the clavicle. The FiberWire was secured over a two-hole titanium plate to distribute the load and minimize the risk of suture cut-through, thereby enhancing fracture stability and preventing superior displacement of the clavicle.


**Figure 1:** Pre Intervention

The operated shoulder was immobilized in an arm sling for four weeks. A supervised rehabilitation protocol was then initiated, beginning with active range-of-motion exercises followed by progressive passive mobilization. By two months postoperatively, the patient had regained a full, painless range of motion of the shoulder with satisfactory functional recovery and maintained radiographic alignment.

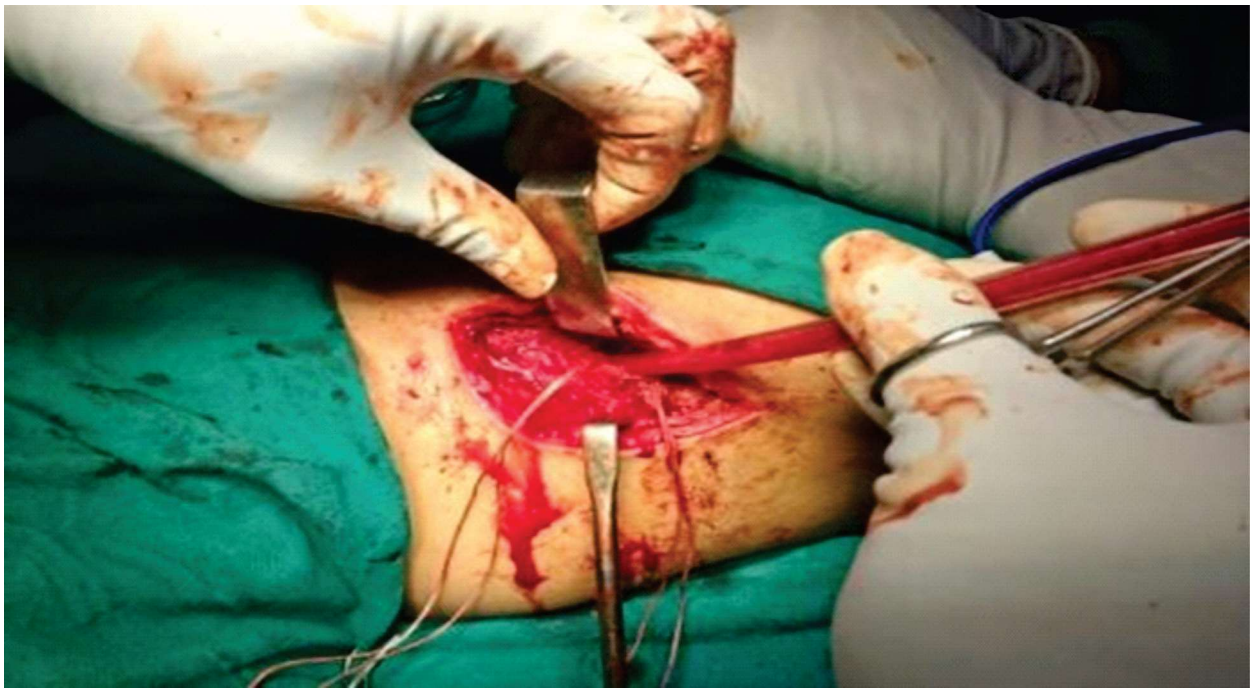

**Figure 2:** Procedure phase

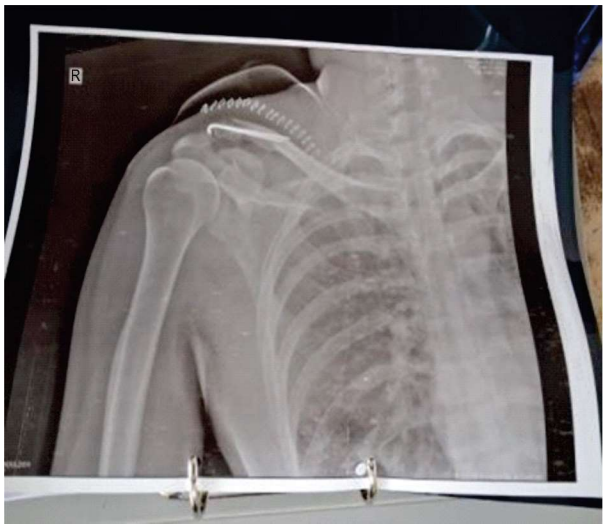

**Figure 3:** Post Surgery

## DISCUSSION

Distal (lateral-end) clavicle fractures are commonly caused by impact to the shoulder. Diagnosis is derived from a detailed examination of the patient and confirmed with plain imaging, which help determine the fracture pattern, degree of displacement, and stability. If it is Stable it can be managed conservatively with sling immobilization for approximately 4–6 weeks, whereas unstable displaced fractures generally require surgical intervention.

Several operative techniques have been described for unstable distal clavicle fractures, including hook plate fixation, locking plate fixation, coracoclavicular screw fixation, Kirschner (K)-wire fixation, tension-band wiring, suture anchor fixation, and coracoclavicular ligament reconstruction or augmentation.

According to the Neer classification, Type I fractures occur lateral to the coracoclavicular ligaments with intact ligamentous attachments and are typically stable. Type IIA fractures occur medial to the coracoclavicular ligaments with both the conoid and trapezoid ligaments remaining attached to the distal fragment, resulting in instability due to superior igration of the medial fragment. Type IIB fractures involve disruption of the conoid ligament, with or without an associated fracture between the conoid and trapezoid ligaments, leading to marked instability. Type III fractures are intra-articular fractures extending into the acromioclavicular joint while maintaining intact coracoclavicular ligaments. Type IV fractures injuries seen in pediatric patients, with the periosteal sleeve and coracoclavicular ligaments generally remaining intact. Type V fractures are associated with disruption of the ligamentous attachments and significant displacement, making them highly unstable.

Potential complications include delayed union or non-union, post-traumatic acromioclavicular joint arthritis, symptomatic hardware prominence or irritation, fixation failure, neurovascular injury, pneumothorax, shoulder stiffness, and adhesive capsulitis.

Careful surgical planning, stable fixation, and structured postoperative rehabilitation are essential to optimize fracture healing and functional outcomes.

## CONCLUSION

Although no single surgical technique are the gold standard for the management of unstable distal clavicle fractures, satisfactory results can be achieved with appropriate fracture stabilization. In the present case, anatomical ORIF using two Kirschner (K) wires, supplemented with coracoclavicular augmentation using a No. 5 FiberWire sling secured over a two-hole titanium plate, provided stable fixation, maintained fracture reduction, and facilitated successful fracture union with excellent functional recovery.

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