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Case Report

Minimally invasive percutaneous fixation of an Ideberg type III glenoid fracture: a case report

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ABSTRACT

Glenoid fractures are rare and represent a therapeutic challenge, especially when involving the superior portion of the articular surface. The case of a 24-year-old female patient with an Ideberg type III glenoid fracture successfully treated by a fluoroscopy-guided percutaneous technique. This reproducible and straightforward method uses standard orthopedic instrumentation and avoids the morbidity associated with open surgery. At six-month follow-up, both clinical and radiological outcomes were favorable, suggesting this technique is a reliable alternative in selected, non-comminuted fracture patterns.

Keywords: Glenoid fracture, Ideberg III, Percutaneous fixation, Scapular trauma, Fluoroscopy-guided surgery

INTRODUCTION

Glenoid fractures are uncommon, accounting for only 0.1% of all fractures.[1] They typically result from high-energy trauma in young, active individuals. Approximately 30% of scapular fractures are intra-articular.[2]

According to the Ideberg classification, type III corresponds to a transverse fracture involving the superior glenoid segment, which offers a favorable configuration for percutaneous fixation.[3]

Open reduction and internal fixation (ORIF) are the standard treatment for displaced fractures but carries significant soft-tissue morbidity.[4] Minimally invasive techniques, such as fluoroscopic or arthroscopic-assisted fixation, have emerged as effective alternatives with reduced complication rates and comparable functional outcomes.[5,6]

In particular, Ideberg III fractures may be well-suited for percutaneous management due to favorable screw trajectory.[7] We present a case of an Ideberg III glenoid fracture treated by a simplified fluoroscopy-guided percutaneous technique using standard instruments.

CASE REPORT

A 24-year-old right-handed female with no medical history presented after a direct impact to the left shoulder from a horseback fall. Clinical examination showed painful functional limitation without neurological deficit.

Radiographs and computed tomography (CT) scan confirmed a transverse intra-articular Ideberg type III glenoid fracture involving the superior third of the articular surface and a low-grade acromioclavicular joint disruption (Figures 1 and 2). Given the fracture pattern, a minimally invasive fluoroscopy-guided percutaneous fixation was planned.

Surgical technique

Under general anesthesia, the patient was positioned in the beach-chair posture. Using fluoroscopy, the coracoid process was identified. Two Kirschner wires (K-wires) were introduced percutaneously to manipulate and reduce

the glenoid fragment. Anatomical reduction was achieved using one wire as a joystick (Figures 3 and 4).

A 3.5 mm cannulated screw was inserted over the second wire, oriented perpendicularly to the fracture line and parallel to the joint surface. Intraoperative fluoroscopy confirmed proper reduction and hardware placement (Figures 5).

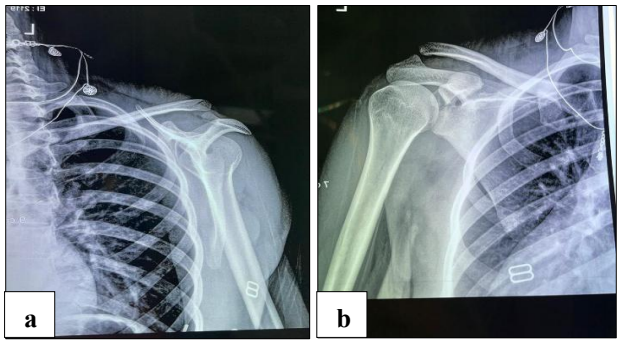

Figure 1 (a and b): Radiographic image.

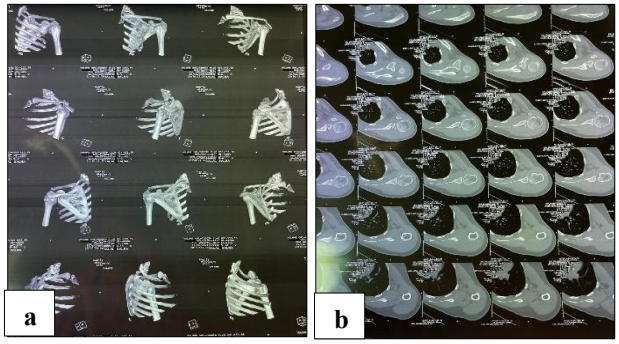

Figure 2 (a and b): CT images.

Figure 3: Pre-operative image.

Postoperatively, the shoulder was immobilized in a sling for three weeks, followed by a structured rehabilitation program: pain control, passive mobilization, then active range-of-motion exercises.

At six months, the patient showed complete fracture union and near-total recovery of mobility and strength. The disabilities of the arm, shoulder and hand (DASH) score improved from 40 to 3 (Figure 6).

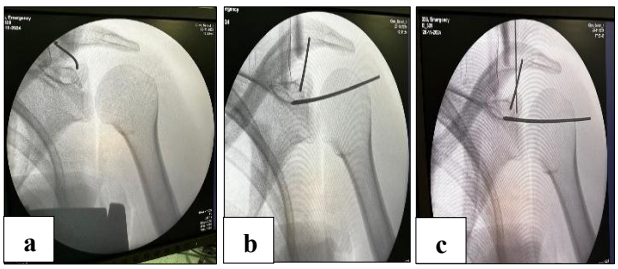

Figure 4 (a-c): Introduction of the two Kirschner wires.

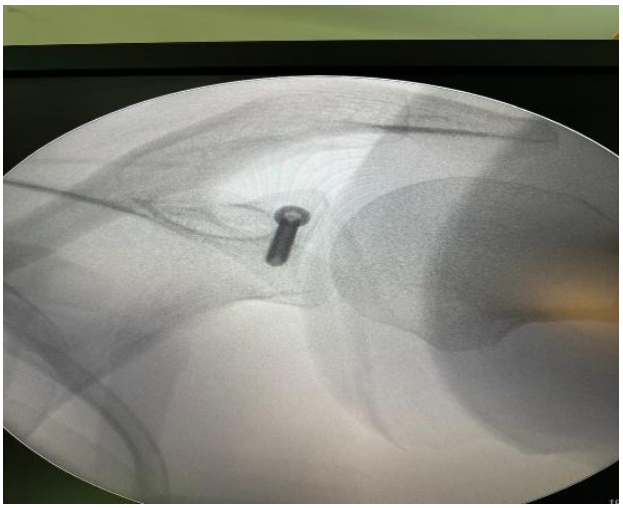

Figure 5: Insertion a 3.5 mm cannulated screw.

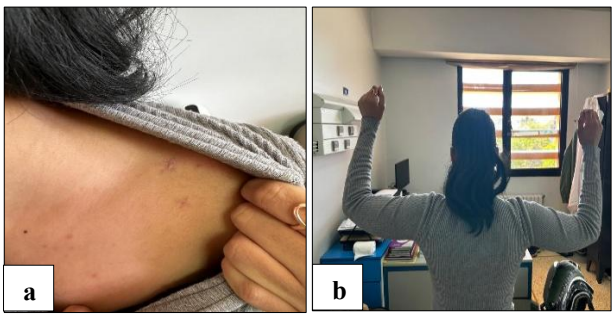

Figure 6 (a and b): After 6 months post treatment.

DISCUSSION

Glenoid fractures pose both anatomical and technical challenges due to the scapular morphology and proximity to neurovascular structures.[1,8] Surgery is recommended when articular displacement is ≥5 mm or when glenohumeral instability is present.[6,9]

Our technique aligns with the growing interest in fluoroscopy-guided percutaneous osteosynthesis, which reduces soft tissue disruption, surgical morbidity, and infection risk. In well-selected Ideberg III fractures, it offers outcomes comparable to open surgery.[4,10]

The horizontal orientation of the type III fracture allows direct access to the superior fragment with minimal iatrogenic risk. Joyce et al confirmed the anatomical safety of this approach in a cadaveric study.[7]

Limitations include its unsuitability for comminuted or complex patterns (types IV/V) or anterior fractures (types I/II), where open surgery remains necessary. Newer implants such as pre-contoured plates (e.g., Acu-Loc®) are being explored for extended lesions.[11]

CONCLUSION

This percutaneous fixation technique offers a low-morbidity, reproducible solution for Ideberg type III glenoid fractures. It achieves stable fixation using routine equipment and demonstrates good functional outcomes when appropriately indicated. Further comparative studies are needed to refine the indications and validate its long-term efficacy.

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