

Percutaneous Ilio-Pubic Screw in Acetabulum Fractures

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1. Abstract

Acetabulum fractures are a common lesion in emergency, that occur usually in adults following a high energy trauma or falls from a height altitude. They involve the articular surface of the hip joint and may include one or two columns, one or two walls. Unfortunately, they can be associated with sciatic nerve injuries essentially in transverse and posterior wall fracture patterns and complicated by post traumatic osteoarthritis.

2. Introduction

Acetabulum fractures result from a force transmitted through the femoral head. Injuries depend on the point of impact (greater trochanter or femoral condyles), the direction of the force and the position of the head at the time of impact.

Pelvic X-ray is essential but CT-scan is a gold standard exploration for acetabulum fracture studying; therefore, management is very difficult most of the time, needing open reduction and osteosynthesis in displaced fractures. However, we can propose a percutaneous screw fixation in some classes such as transverse or T-type acetabulum fracture avoiding large open surgery or a long-time skeletal traction as shown in our case.

3. Case Report

We have admitted in our ED a 42-years-old female, involved in a car accident. She had a pelvic closed trauma not complicated by any vascular or neurologic disorders. Radiologically, we found a left transverse acetabular fracture associated with obturator foramen fracture in the other side (Figure 1). The acetabulum fracture underwent percutaneous screw fixation after five days of skeletal traction and medical surveillance. Patient was positioned in supine position under the guidance of fluoroscopy, multiple incidences were used; obturator oblique, iliac oblique, outlet and inlet views. A starting point of k-wire was between the tip of the greater trochanter and thick part of the iliac crest about 5 cm posterior to ASIS. Then the wire was introduced into the superior ramus and reamed, finally a 6,5 mm diameter and 80mm length cannulated screw partially threaded (16 mm) was inserted anterogradely with a washer (Figure 2).

Immediate postoperative follow-up was simple, without any neurological deficit. Intermediate follow-up at 6 months was good with complete bone consolidation and functional recovery.



Figure 1: Pelvic X-ray showing a left transverse acetabular fracture with right obturator foramen fracture.



Figure 2: Post operative view.

4. Discussion

Judet and Letournel classification system divided acetabulum fractures in 5 elementary and 5 associated fracture patterns; elementary patterns comprise posterior wall, posterior column, anterior wall, anterior column and transverse fracture. However, associated patterns includes posterior column and posterior wall, transverse and posterior wall, anterior column/wall and posterior hemi-transverse, T-type and both columns [1]. The majority of acetabular fractures require open reduction and internal fixation, Through variety of approaches such as Kocher-Lagenbeck, ilioinguinal, Stoppa and iliofemoral approach. Their selection is based on fracture type and location of maximal fracture displacement.

Timing for surgery is usually between 4 and 7 days after injury, once the patient is stabilized and bleeding has stopped. However, emergency surgery is indicated in unstable hip after reduction, irreducible hip dislocation, progressive sciatic nerve deficit, vascular injury, open fractures or ipsilateral femoral neck fractures [2]. However, percutaneous fixation is gaining popularity, it is used alone or as an adjunct to ORIF, especially in non-displaced or slightly displaced transverse or T-type acetabulum fracture and in elderly patient with associated comorbidity or obese patients where extensive approaches are not suitable. Percutaneous ilio-pubic screw fixation can be antegrade from iliac wing to ramus, or retrograde from ramus to iliac wing. The main fluoroscopic in-

cidences are obturator outlet view that rule out joint penetration, iliac inlet view to determine anteroposterior position of screw within the pubic ramus and obturator oblique view best to determine position of a supra-acetabular screw within tables of the ilium [3].

Reductions are achieved by manual traction of the affected bones, in addition a hook or a Steinmann pin can be used as a joystick to rotate the fracture. The main disadvantage of this technique is radiation exposure for both the patient and the surgeon. therefore, computer-assisted surgery has been used to decrease radiographic exposure time and improve the accuracy of percutaneous acetabular screws placement [4].

5. Conclusion

Acetabular fractures are very common injury, their treatment and management are very difficult requiring a well-trained trauma service. Percutaneous intramedullary screwing is a minimally invasive procedure with low morbidity, can be used in single non-displaced acetabular fractures. Post-traumatic arthritis and osteonecrosis are prevented by maximal fracture gap reduction within 1 mm.

6. Acknowledgments

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7. Conflict of Interest

The authors declare that they have no conflict of interest.

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