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Case Report

Percutaneous fixation of bilateral anterior column acetabular fractures: A case report

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ABSTRACT

We report a rare case of a multiple fractures with bilateral anterior column acetabular fractures treated with percutaneous screw fixation for both acetabular fractures under fluoroscopy guidance. It is a demanding procedure due to the complex anatomy of the pelvis and the varying narrow safe bony corridors. But it is a safe option in patients with multiple medical co-morbidities (which may be hazardous to long surgical procedures and extensile surgery) and in minimally displaced fractures.

1. Introduction

The treatment of displaced acetabular fractures with open reduction and internal fixation has gained general acceptance.[1] This is done either by anterior, posterior or combined approaches depending on the location of these fractures. These procedures may be associated with various complications like significant blood loss, infection, lengthy operative times, heterotopic ossification and neurovascular complications.[2]

There are clinical situations where open reduction is either not feasible (due to associated medical problems) or when the fractures are not significantly displaced, then minimal invasive means of internal fixation of these fractures seems to be an attractive option. Percutaneous screw fixation of the anterior column of the acetabulum has been a challenging task because of its unique anatomy (narrow corridor of bone) and risk of intra-articular penetration.[3]

2. Case report

A 63-year-gentleman was presented with a history of pain in pelvic region and unable to bear weight after he sustained an injury due to fall from a staircase of about 12 feet height, 5 days ago. He also had complaints of pain, swelling and deformity of right wrist. Patient was a known case of CAD, HTN and obesity for which he was under various medications.

On examination, the patient was anxious with mild dyspnea, supported with oxygen inhalation. He has had a bruise around pelvic and buttock region with right hip flexed &

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internally rotated. Movements of both hips were painful. Urinary catheter was in situ. There was swelling and deformity of right wrist.

Investigations revealed anemia (Hb – 9.4 gm%), icterus (Total billirubin – 3.2 dl/mg & Direct billirubin – 1.1 dl/mg). His ECG showed prolonged QT suggestive of an old myocardial infarct. However, his dobutamine stress echocardiography was negative for reversible ischemia, but there was pre existing LV wall motion abnormality at the pre existing LV wall motion abnormality at the LV apex, distal ½ of the IVS as well as the distal LV anterolateral was present. There was increase in LVEF from 35% in the basal condition to 42% after dobutamine infusion.

Plain radiographs of the pelvis (AP view) showed bilateral superior & inferior pubic rami fractures with involvement of both anterior columns of the acetabulum (Fig. 1). This was further confirmed by CT scan (Fig. 2). *3-D CT scans* showed anterior column fracture of acetabulum (bilateral) and inferior pubic rami fractures (bilateral) and fracture of right sacral ala. Fracture displacement was more on right side than left side.

The wrist X-rays showed comminuted, intra-articular fracture of the right distal radius (Figs. 3 and 4).

2.1. *Procedure details*

The fracture fixation of the pelvis & right distal radius was done under general anesthesia. The pelvic fractures were fixed by a minimally invasive method of stabilization, using 7.3-mm cannulated screws (Fig. 5), under intra-operative fluoroscopic imaging. Following fracture reduction, a percutaneous guide wire aided by a C-arm was placed in the anterior column of the acetabulum & upper pubic ramus in an anterograde mode in supine position (Fig. 6).

The starting point of guide wire was 4–5 cm posterior to the ASIS (Fig. 7). The guide wire was driven down into the superior ramus using the inlet-iliac oblique (to ensure that the guide wire does not penetrate the inner pubic ramus cortex) and the inlet-obturator oblique view (to ensure that the guide pin does not penetrate into the hip). The guide wire was over drilled by cannulated drill. Subsequently, a partially threaded cannulated screw was inserted. The quality of fracture reduction and the placement of screw were evaluated by C-arm. The same process was repeated on another side to fix anterior column of acetabulum. The right sacral fracture was also fixed percutaneously by a 7.0 mm cannulated cancelous screw, under image intensification (Fig. 8).

The total operative time was 75 min, (including turning of patient into prone position for sacral screw fixation). Post-operative period was uneventful. Sutures were removed after 10 days. The patient was pain free 1 week after the operation

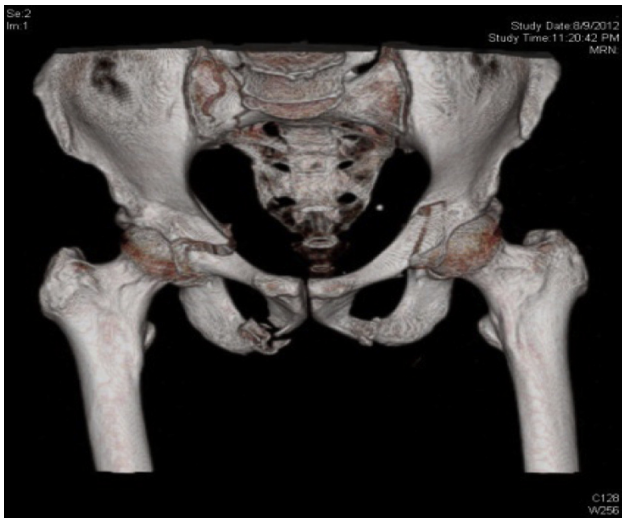

Fig. 2 – 3-D CT scan of pelvis, showing bilateral anterior column fractures & right sacral fracture.

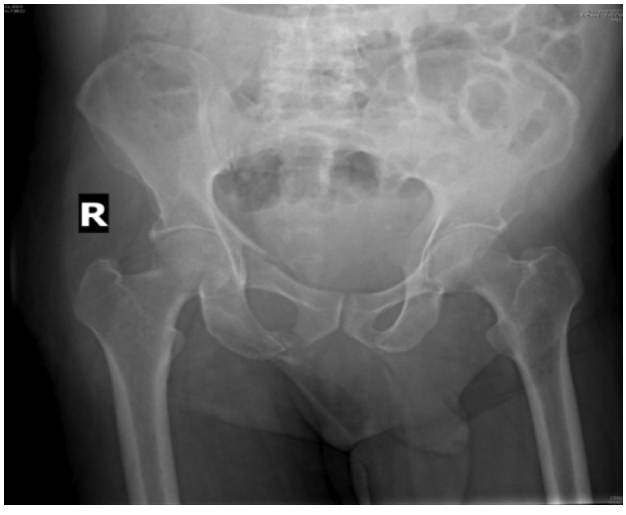

Fig. 1 – Pre-op. X-ray pelvis (AP view), showing bilateral pubic rami fractures.

Fig. 3 – Pre-op. X-ray of right wrist (AP view), showing distal radial fracture.