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Clinical Outcome Of Posterior Wall And Column Of Acetabular Fractures Treated With Reconstruction Plates.

K Senthilkumar^{1*}, A Siva Senthil², and M Dhanagopal³.

¹Dept of Orthopaedics, Thanjavur Medical college Hospital Thanjavur, Tamil Nadu, India

²Dept of Orthopaedics, Thanjavur Medical college Hospital Thanjavur, Tamil Nadu, India

³Dept of Orthopaedics, Thanjavur Medical college Hospital Thanjavur, Tamil Nadu, India

ABSTRACT

Acetabular fractures being the most complex orthopaedic fracture to manage ,proper pre operative imaging and planning with early fixation gives good functional outcome and lessens the late complications like AVN and osteoarthritis of hip. In this study we have included 15 cases of posterior wall including posterior column fractures with post operative evaluation using Harris hip score (HHS).

Keywords: Acetabular posterior wall/column, AVN, Osteoarthritis, HHS.

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**Corresponding author*

INTRODUCTION

The management of acetabular fractures is one of the most and complex aspect of orthopaedic trauma. The acetabulum is composed of six components: (1) anterior column, (2) posterior column, (3) anterior wall, (4) posterior wall, (5) acetabular dome/roof, and (6) medial wall or quadrilateral plate. Acetabulum fracture is classified based on Letournel and Judet two column concept. Fractures classified as simple/elementary and associated/complex patterns. Of acetabulum fractures 18% are associated with posterior hip dislocations. Only 30% of posterior-wall acetabular fractures involve a single large fragment and majority are multi-fragmentary [1]. Operative management usually offers the best chance of preserving long-term joint function provided only when the fractures are anatomically reduced and fixed with plates. The key is maintaining the viability of the fracture fragments and head itself and buttressing the fracture fragments giving acetabulum its normal contour. Complications associated with posterior column involvement includes sciatic nerve injury, excessive bleeding, infection, heterotopic ossification, osteonecrosis of the femoral head, late osteoarthritis, loss of fixation in osteoporotic fractures [1]. Proper preoperative evaluation with Judet view xrays and 3D CT, meticulous surgical approaches and early fixation of the fracture will prevent these complications.

MATERIALS AND METHODS

The prospective study was carried out in the Department of Orthopaedics, Medical college hospital Thanjavur, India from March 2022 to January 2022. In the study 15 patients with isolated posterior wall and column fractures are included. All patients were evaluated clinically and radiologically using plain radiographs and computed tomography with 3D reconstruction [2] to evaluate the fracture patterns. There were 10 males and 5 females in the study. 2 patients presented with posterior hip dislocations with sciatic nerve palsy and they were reduced and put on traction. Anterior column/wall and medial wall fractures with central dislocations were excluded from the study. All patients were treated with open reduction and internal fixation with reconstruction plates by Kocher-Langenbeck approach. Post operatively outcome of the surgery was assessed in all the patients clinically using Harris hip score and Radiologically with x-rays.

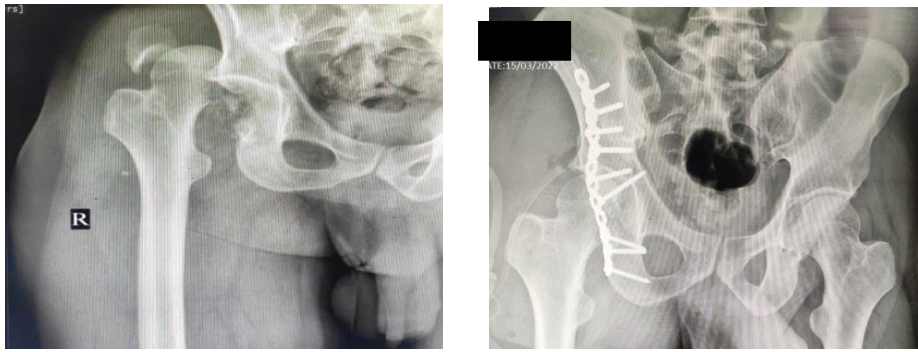
Table 1: Fracture Distribution

FRACTURE PATTERN	NUMBER OF PATIENTS(%)
Posterior wall	6 (40%)
Posterior wall with column	9 (60%)

Surgical Technique

Patients were taken up for surgery after anaesthetic fitness under spinal-epidural anaesthesia with proper IV antibiotics coverage. Average time period from injury to surgery was 4 days. Patients were placed in lateral decubitus position and fracture visualized under C-arm. Fracture was approached through Kocher-Langenbeck approach [3], meticulous dissection of soft tissues done protecting the sciatic nerve by flexing the knee and extending the hip with the help of one assistant, thereby avoiding the sciatic nerve stretching and injury. Fracture was identified, joint visualized for any retained bony fragments. Fracture fragments reduced with its soft tissue attachments and provisionally fixed with k-wires followed by lag screws placement and then augmented with contoured reconstruction plates with 3.5mm cortical screws to further buttress the fracture under fluoroscopy guidance [4]. Post operatively patients were assessed for any neurological deficits. IV antibiotics were continued for 48 hours and all patients were put on thrombo-embolic prophylaxis in the post operative period. Non weight bearing hip and knee mobilization was done as tolerated by the patient from the first post-op day. Patients were discharged on 7th post operative day on average. Post operative assessment with Harris hip score and radiology was done. Patients were followed up at monthly interval with radiological evaluation using plain radiographs. Patients were allowed for touchdown weight bearing at 6 weeks and full weight bearing at 8-10 weeks.

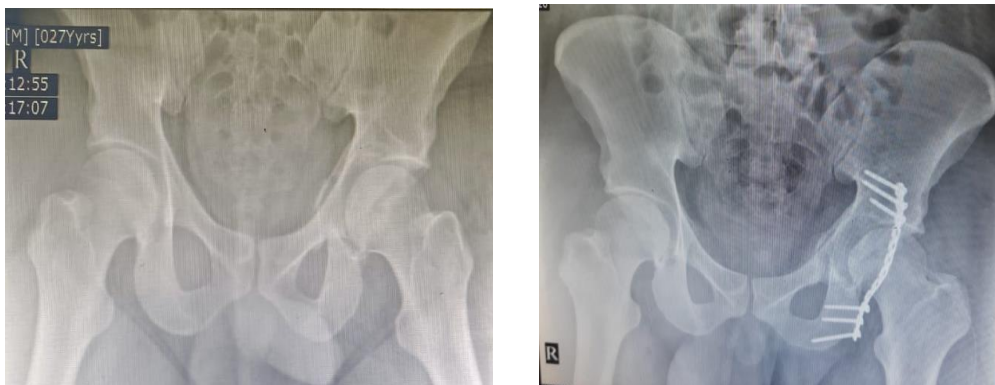
Case 1



Case 2



Case 3



RESULTS

There were 10 males which accounted for 66% and 5 females which accounts 34 % and average age of 42.5 years. Patients were followed up for a minimum of 4 months and maximum of 11 months period. At the end of follow up period all patients had achieved union radiologically and clinically had an improved harris hip score. In our study excellent to good outcomes are seen in 86 % of patients [5], poor outcome associated with 14% of the patients. The poor outcome was associated with comminution of the fracture, chondral injury of the acetabulum leading to osteoarthritis, dislocation of the hip leading to AVN and a case of superficial infection [6].

Table 2: Harris Hip Score

RESULT	NUMBER OF PATIENTS(%)
EXCELLENT	9 (60%)
GOOD	3 (20%)
POOR	3 (20%)

DISCUSSION

Patients with posterior acetabular wall and column fractures if treated early by surgical methods improves the clinical outcome and quality of life by early ambulation. Anatomical reduction and meticulous surgical procedure lessens the post operative complications along with thrombo-embolic prophylaxis. In our study we got excellent to good outcome in 80% of the cases according to harris hip score evaluation. The poor outcomes were due to the development of AVN and osteoarthritis of hip. With improved surgical techniques and internal fixation methods patient can resume their work as early as possible.

CONCLUSION

Posterior acetabular wall fractures, necessitates pre-operative 3D CT imaging for accurate planning and performing the internal fixation in addition to judet view radiographs. It is difficult to assess the avascular necrosis of the femoral head and development of late osteoarthritis in the early stage of the follow up period, but fixation of the posterior wall with or without posterior column fractures gives good functional outcome and also preserving the bone stock of the acetabulum for late total hip replacement procedures if AVN or osteoarthritis of the hip sets in. The limitation of this study is less duration of follow up.

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