



**TOTAL HIP REPLACEMENT USING ACETABULAR METAL AUGMENT AND BONE GRAFT IN PAPROSKY TYPE 3B ACETABULAR DEFECT: A CASE REPORT**

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**ABSTRACT**

Old unreduced and untreated fracture of the acetabulum is seen more commonly in developing countries and can be due to various reasons. Various methods can be used in the management of such cases which in general includes arthrodesis in young and total hip replacement in elderly patients. Acetabular fractures associated with acetabular defect pose challenge to the treating surgeon and the management of such defects plays an important role in the final outcome of the surgery.

We are here reporting a case of a 36 years old male patient who presented with 1 year 6 months old fracture of posterior wall of the acetabulum who is treated with THR with acetabular reconstruction using bone graft and acetabular augment. The patient was under regular follow up and now after 6 months of surgery patient is having good functional improvements with painless range of motions at index hip.

**KEYWORDS :** Total hip replacement, arthrodesis, acetabular fracture, acetabular augment, bone graft, acetabular reconstruction.

**INTRODUCTION:**

Old unreduced and untreated acetabular fractures are seen in many developing countries like in India. It can be due to various reasons but most common being polytrauma with associated injury to head, chest and abdomen or other major bone fractures due to which the attention is drawn away from a less obvious acetabular fractures. Such chronic fractures when associated with acetabular defects are often difficult to treat and the patient is at high risk of developing hip arthritis in future. Various methods are in use to treat such cases and all of them do focus on management of acetabular defects to obtain optimal results. Among them total hip replacement with acetabular reconstruction using cage and bone graft has given good results in various studies. [1,4,6]

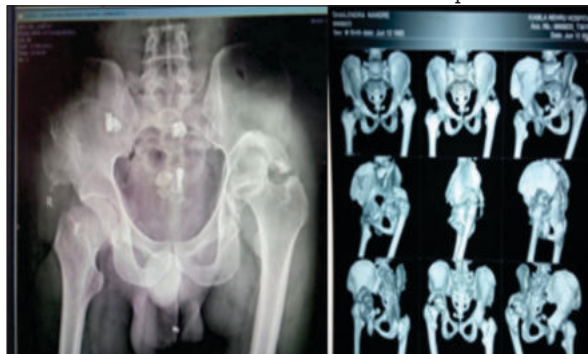
**Case:**

A 36 years old male presented with the history of RTA in March 2020 leading to trauma to head, left hip and left tibia. The patient was diagnosed with compound fracture of proximal tibia left side with fracture of posterior wall of acetabulum left side. The compound fracture of tibia was managed with external fixation and the acetabular fracture was managed conservatively. Patient was in ICU for 3 months due to head injury. At the time of presentation patient had complaints of pain in the left hip, which is insidious in onset and is gradually progressive. Pain is associated with stiffness in the hip which is progressively increasing. Patient complains of pain on weight bearing.

There is no history of steroid intake or any other medications. Patient gives history of daily consumption of alcohol and tobacco prior to RTA. He has no other comorbidities. Now he is on tablet eptoin after he sustained head injury in March 2020.

On examination of left hip, there was fixed flexion deformity of 20 degrees, adduction and external rotation deformity of 10 degrees each. Patient had shortening of 3 cm and had short limb gait. Assisted Trendelenberg test was positive and

telescopy test was positive. Tests for sacroiliac joints were normal. There was no distal neurovascular compromise.



**Fig.1:** Pre op X ray

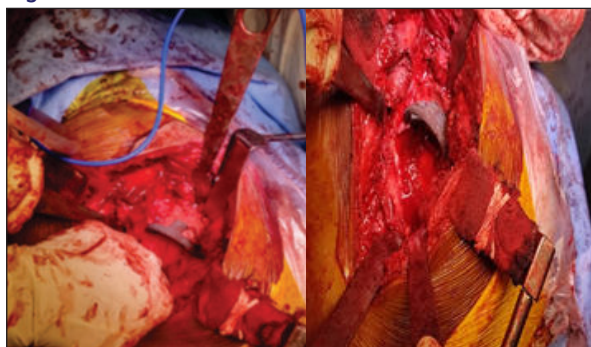
**Fig. 2:** 3D CT evaluation

All lab investigations including ESR and CRP were within normal limits. CT [fig.2] and MRI of pelvis with both hips was done in addition to x-ray [fig.1] for detailed hip evaluation. The above mentioned diagnosis was confirmed using imaging studies.

The patient was taken for surgery under spinal and epidural anesthesia. With patient in lateral position the hip was approached through the posterior approach. The short external rotators were identified and released from their insertion. Hip capsule incised in T shaped manner and hip dislocated by flexion and internal rotation. Femoral neck cut was taken and then acetabular exposure was done. The true and false acetabulum was identified under C-arm [fig.3]. The acetabular defect was filled with autogenous bone graft and reconstruction was done using metal augment and fixed using screws [Fig.4,5]. Then the preparation of the true acetabulum was done and cemented acetabular cup is inserted. For femur, uncemented femoral component was used with stem size and head size. Shortening corrected. Hip reduced and on table stability was checked for all the movements.



**Fig. 3:** Identification Of True Acetabulum Under C Arm.



**Fig. 4,5:** Intra Op Photo Showing Acetabular Defect Filled With Bone Graft And Augment Fixed With Screws.



**Fig. 6:** Post op X ray

#### Physiotherapy:

Patient was kept non weight bearing for 4 weeks for bone graft consolidation and mobilized using walker. Static quadriceps ,ankle toe movements, hip range of motion and deep breathing exercises done for 4 weeks.

#### Follow Up:

Patient routinely followed up for 1 year.

No complains or discomfort noted from patient .  
No limb length discrepancy seen.

#### DISCUSSION:

Old unreduced fractures of the acetabulum pose a challenge to the treating surgeon particularly when they are associated with acetabular defects. Conservative management is not possible in almost all such cases and thus operative treatment becomes an absolute requirement. However, it has been seen that even the operative management has got equivocal results. Various investigators have used different methods like THR, arthrodesis, Girdlestone arthroplasty and endoprosthesis replacement. The choice and outcome of such surgeries depends on various factors like avascular necrosis of femoral head, arthritis of hip, age and occupation of the patient.

Kashif Mahmood Khan et al., [1] have shown good results with THR with acetabular augmentation in their study on management of chronic unreduced fracture dislocation of hip. Various other studies [2,3] have also shown good results with THR for chronic unreduced fractures of acetabulum and have recommended acetabulum reconstruction prior to acetabulum cup fixation if posterior wall deficiency is present. Hansen E and colleagues [4] used cemented cage with allograft for reconstruction of acetabular defect, and they found favourable results in total hip arthroplasty. Krbec M and colleagues [5] used cortical bone graft and augmentation devices for acetabular augmentation in THR and have shown good results.

Similar to above studies in our case also the chronic acetabular fracture was managed with acetabular reconstruction using autogenous bone graft with cemented cup with metal augment.

The patient recovered with excellent functional results with stable pain free hip. The follow up of the patient showed good functional results and thus we recommend augmentation of the acetabular defect as a very important step in THR when there is associated acetabular defect.

#### CONCLUSION:

THR with reconstruction of acetabulum in a chronic untreated acetabular fractures with acetabular defects can drastically improve the functional outcome in such patients and augmentation of the acetabular defect is one of the crucial steps for such favourable outcome. It provides painless, improved range of motion of the hip and improves the quality of life of the patient.

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