

## Posterior Dislocation of Hip With Posterior Acetabular Wall Fracture (Thompson and Epstein - II) With Lipohearthrosis

St Sanikop<sup>1</sup>, Rajendra Basappa Uppin<sup>2</sup>, Ravi S Jatti<sup>3</sup>, Sahil Kale<sup>4</sup>, Raunak Pareek<sup>5</sup>

**Author Affiliation:** <sup>1</sup>Professor, <sup>3</sup>Professor and Head, <sup>4</sup>Assistant Professor, <sup>5</sup>Post Graduate, Department of Orthopedics, Jawaharlal Nehru Medical College, Kaher, Belagavi, Karnataka 590010, India.

**Corresponding Author: Rajendra Basappa Uppin**, Professor, Department of Orthopedics, Jawaharlal Nehru Medical College, Kaher, Belagavi, Karnataka 590010, India.

**E-mail:** [uppinrajendra@redifmail.com](mailto:uppinrajendra@redifmail.com)

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### Abstract

Hip joint is naturally a very stable joint and tends to require a significant amount of force to dislocate. Dislocation of hips usually occur in young individuals. Traumatic hip dislocations are common in high-energy automobile accidents. The amount of energy, position of hip at the time of trauma and its morphology determines the type of dislocation, its direction and the associated fractures. These factors are to be taken into consideration while assessing the case of hip dislocation in emergency. Such patients require a standard trauma evaluation, a thorough musculoskeletal and neurological examination and detailed radiographic evaluation. Here we present a case of 40-year-old man who sustained posterior hip dislocation with posterior wall acetabular fracture with lipo-hemarthrosis. Urgent open reduction and internal fixation of the posterior acetabular wall was done with recon plate and screws were done. To our knowledge, such injuries occur less often in the literature with such findings. Possible mechanism of injury and operative procedures are discussed.

**Keywords:** Possible mechanism of injury and operative procedures are discussed.

### Introduction

For hip dislocation of hip to occur, disruption of ligamentum teres and at least a portion of the capsule is must. Labral tears or avulsions and muscular injury are common. In a cadaveric study examining soft injuries it was found that capsule may be stripped off as a cuff from either the acetabulum or femur by rotational force or be split by direct pressure. A combination of these capsular injuries may take place resulting in an L-shaped

lesion. Posterior fracture dislocation the attitude of hip joint is partial flexion, less adduction and internal rotation. Posterior dislocation outnumbers the anterior dislocations by approximately nine to one. The typical mechanism for a posterior dislocation is a deceleration accident in which the occupant's knee strikes the dashboard with both the knee and hip flexed. The position of the hip, the force vector applied, and the individual's anatomy all affect the direction of the dislocation whether a

fracture-dislocation or pure dislocation occurs.

According to vector analysis which explains that the more flexion and adduction the hip is in when a longitudinal force is applied through the femur, the more is likely a pure dislocation will occur.

The Thompson and Epstein classification system is used for posterior dislocation of the hip:

- I With or without a minor fracture.
- II With a large single fracture of the posterior acetabular rim.
- III With comminution of the acetabular ring.
- IV With a fracture of the acetabular floor.
- V With a fracture of the femoral head.

Type V dislocations were sub-classified according to Pipkin.<sup>27</sup>

- I Fracture below the fovea; not involving weight-bearing surface of the head.
- II Fracture above the fovea; involving weight-bearing surface of the head.
- III Type I or II fracture with associated femoral neck fracture.
- IV Type I or II fracture with associated acetabulum fracture.

## Case Report

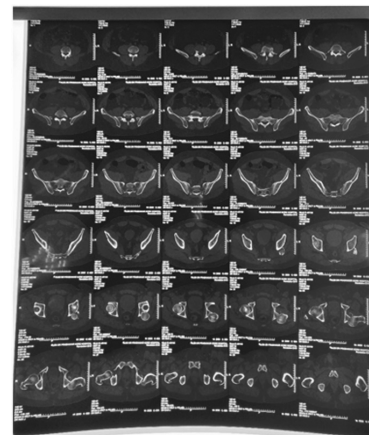
Patient came to casualty with the alleged history of road traffic accident at around 3:00 PM near Hubli on highway while overtaking a heavy load vehicle. His car got disbalanced and went off road over the slope hitting a tree. He was brought in ambulance to the casualty around 6:30 PM. On examination, patient was conscious and oriented to time, place and person and was hemodynamically stable. No signs of injury over the head were seen and his GCS was 15. Patient was lying in supine position with the partial flexion at the left hip joint, shortening and internal rotation of the left lower limb. ROM at hip joint was painful and restricted with distal pulsation felt bilaterally and equal, with intact peripheral sensations and active toe movements. After the evaluation, plain radiograph pelvis with both hips AP view showed posterior dislocation of left hip. Owing to the severity of the clinical findings, CT Scan was advised to detect any acetabular wall fracture or femur head or neck fracture and it revealed posterior acetabular fracture with lipohearthrosis. Considering dislocation and fracture type, no attempt was made for closed reduction. Patient was shifted to Operation theatre after all due investigations. The patient was placed in left

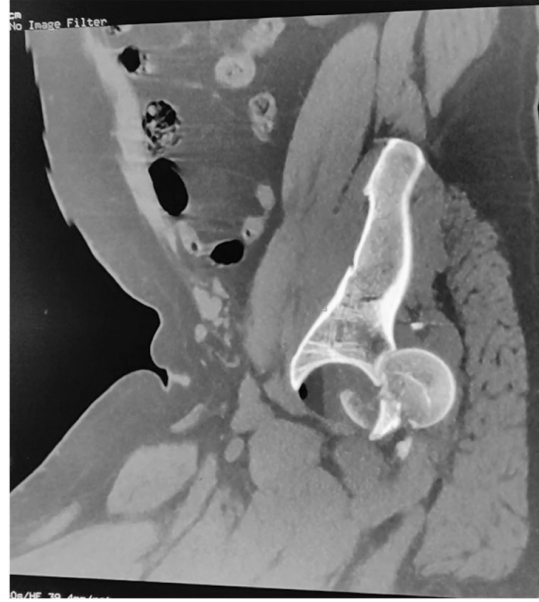
lateral position under combined spinal epidural anesthesia. Standard Kocher Langenbeck approach was used to reach the capsule. Intraoperatively, the sciatic nerve was intact and not compressed by the fragment of bone and the hip capsule was ruptured posteriorly. Femoral head was identified, lipohearthrosis present in the hip joint was removed. After confirming that no loose body or soft tissue in the acetabular region the dislocated femoral head was reduced by flexion and traction at the hip joint, which was confirmed under C-arm. Posterior acetabular wall fracture fragment was identified and reduced using 6 holes Recon plates by bending and aligning over the acetabular wall. 2 screws were placed over the either side of the posterior acetabular wall and the fracture site was buttressed. The joint capsule was sutured and sequential closure of layers was done and sterile dressing was applied. The patient then was diagnosed as a case of COVID-19 positive after which he was shifted to isolation wards and was managed under all strict precautions. The sutures were removed on 11th Postoperative day and was advised strict non-bearing and was asked to follow-up weekly.

## PRE-OP Xray

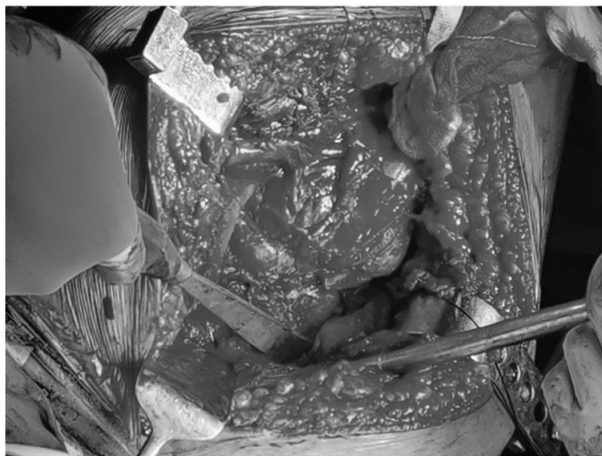


## CT Pelvis with both Hips





Clinical Images



## Post-OP Xray



## Result

The left lower limb was immobilized for 4 weeks and physiotherapy was started including range of motion exercises. Gradually strengthening of the hip muscles were started and increased in a step-wise manner.

## Discussion

The most sensitive and main outcome predicting factor is early joint reduction. In cases of technically impossible reduction the time of surgery should thus ideally be below the 6-hour threshold if comorbidities and concomitant injuries permit. Most hip dislocations occur from high-energy motor vehicle trauma. The position of the hip, the force vector applied and the individual's anatomy all affect the direction of dislocation and whether a fracture-dislocation or pure dislocation occurs. When deciding suitable treatment for a posterior hip fracture-dislocation the knowledge of: the location of the fracture, number, and size of bony fragments makes the procedure more predictable. In all dislocations, the congruence of reduction is assessed.

Posterior dislocations account for approximately 90% of hip dislocations (1). Position of the hip at the moment of impact and vectors and intensity of the forces affect the direction of the dislocation and whether a fracture-dislocation or a pure dislocation occurs (2). During a motor vehicle accident, if the axial forces are applied through the femur while the hip is flexed and adducted, posterior hip dislocation

usually occurs. Slight degrees of hip adduction at the time of collision, also leads to posterior wall fracture of the acetabulum. In our patient, we believe that the mechanism was axial force during the collision while the hip was in adduction and caused hip fracture-dislocation.

A successfully reduced hip requires rest, ice, anti-inflammatory, and narcotic medications during the post-reduction acute phase. Weight-bearing is advised based on the type of dislocation. In type I posterior dislocations, patients are allowed to weight bear as early as pain allows. In type II to V dislocations, protected weight-bearing for 4 - 6 weeks is recommended. Complex dislocations with associated fractures and/or instability may require an abduction brace postoperatively. Abduction brace keeps the hip in abduction and slight external rotation, whilst allowing controlled flexion and extension. One week after reduction, patient can start pendulum exercises and passive range of motion exercises. This should be followed by more advanced exercises e.g.; upright knee raises and resistive hip abduction. More detailed instructions should be provided by the physiotherapist

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