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A case of central hip dislocation and acetabular fracture: surgical treatment and functional recovery

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Abstract

Background: Central hip dislocation with associated acetabular fracture is a complex injury resulting from high-energy trauma, requiring prompt diagnosis and appropriate surgical management for optimal recovery.

Case Presentation: A 40-year-old male sustained a central dislocation of the right hip with an associated acetabular fracture following a bike-jeep collision. On presentation, he had severe right hip pain, limb shortening, and the hip was fixed in an abnormal position. Imaging confirmed a central hip dislocation and acetabular fracture.

Interventions: Emergency reduction of the hip was performed on arrival. Subsequent CT scan identified a T-type acetabular fracture (Judet and Letournel classification). Elective open reduction and internal fixation were performed using the extended Kocher-Langenbeck approach with fracture fixation using a reconstruction plate. Postoperatively, the patient was immobilized with a Thomas splint for two weeks followed by gradual mobilization over ten weeks.

Outcomes: At 1 year post-surgery, the patient achieved full functional recovery with no complications, no neurovascular deficits, and no signs of femoral head avascular necrosis.

Keywords: Central hip dislocation, Acetabular fracture, Emergency reduction, Kocher-Langenbeck approach, post-operative rehabilitation

Introduction

Central hip dislocations are uncommon but severe injuries often result from high-energy trauma, such as road traffic accidents. These dislocations entail complete displacement of the femoral head from the acetabulum, frequently combined with complex acetabular fractures. Prompt reduction and fracture fixation are essential for restoring joint stability and preventing long-term complications like femoral head avascular necrosis or post-traumatic arthritis. This case report focuses on the management of a central hip dislocation with an associated acetabular fracture, emphasizing the surgical approach, post-operative care, and recovery^[1].

Case Report

A 40-year-old male was admitted to the emergency department of our hospital following a traumatic bike-jeep collision. The patient, a motorcyclist, experienced significant trauma to his right hip in a high-energy road traffic accident (RTA). The patient had severe right hip pain, with noticeable shortening of the affected limb. The hip was fixed in flexion, adduction, and internal rotation, and the patient was unable to move the leg. Neurovascular assessment revealed no deficits in the affected limb.

The patient was managed according to the Advanced Trauma Life Support (ATLS) protocol, with no other life-threatening injuries identified. X-rays confirmed a central hip dislocation and an acetabular fracture (Figure 1 a).

The patient underwent an emergency closed reduction under general anesthesia. Fluoroscopic guidance (C-arm) was used to reposition the femoral head into the acetabulum with a series of maneuvers, traction in line with deformity, flexion, internal rotation, adduction, and extension (Figure 1 b). Post-reduction clinical instability was noted when the hip was flexed, adducted, and internally rotated, indicating posterior insufficiency of the acetabulum. Following the reduction, a CT scan was done which confirmed the presence of a T-type acetabular fracture (Judet and Letournel) and it was also found that the acetabulum and femoral head were congruent (Figure 2). No loose bodies were found in the hip joint^[2]. An elective surgery was planned to address the posterior insufficiency. The surgery was

performed under epidural spinal anesthesia in a lateral position, with the extended Kocher-Langenbeck approach chosen for optimal access to the posterior acetabulum [3]. This approach provided excellent exposure for the reduction and stabilization of the fracture. The sciatic nerve was identified and protected, and a capsular tear was noted intraoperatively. The acetabular fracture was reduced and

temporarily fixed with Kirschner (K)-wires, followed by stabilization with a six-holed reconstruction plate contoured for the posterior column. Intraoperatively after fixation hip was found stable. The torn capsule was repaired and all dissections were closed in layers. A drain was placed and removed 48 hours after surgery. The total duration of the surgery was 2 hours, with a blood loss of 700ml.

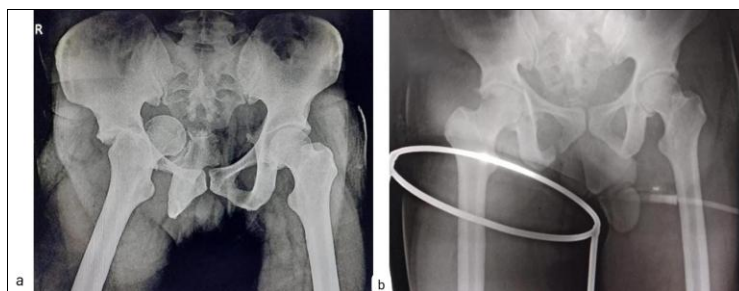


Fig 1: X-rays: (a) At presentation (b) After closed reduction



Fig 2: CT showing T-type acetabular fracture and congruent hip

Postoperatively, the limb was supported with a Thomas splint for two weeks to allow soft tissue healing (Figure 4a). Isometric quadriceps strengthening exercises were started during this period. The total duration of the hospital stay was 17 days. After discharge, the patient began a rehabilitation program that included active hip movements, progressing from partial to full weight-bearing over the next

10 weeks. By 12 weeks postoperatively, the patient regained 90% of the active hip range of motion compared to the opposite side. X-rays also confirmed fracture union. At the 12-month follow-up, the patient had a near-normal range of motion without pain (Figure 3), with no clinical or radiological signs of avascular necrosis or neurovascular deficits found (Figure 4b).

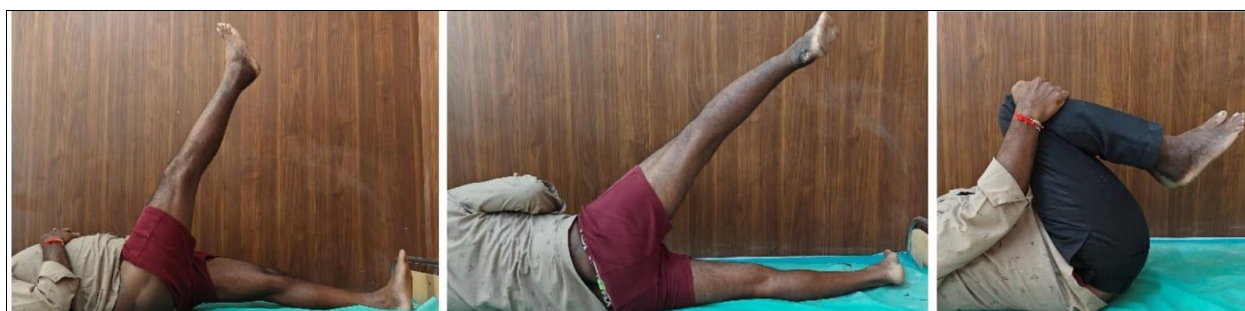


Fig 3: Movements at 12 months



Fig 4: X-rays: (a) Immediate post-surgery (b) 12 months post-surgery

Discussion

Central hip dislocations are rare injuries, typically caused by significant trauma, such as motor vehicle accidents or falls from heights. These dislocations result in the complete displacement of the femoral head from the acetabulum and are often accompanied by complex acetabular fractures. Managing these injuries requires prompt reduction and fracture fixation to avoid complications like femoral head avascular necrosis or post-traumatic arthritis^[1].

The extended Kocher-Langenbeck approach is commonly used for optimal exposure of the posterior column in acetabular fractures. For T-type acetabular fractures, functional reduction is necessary to restore the normal acetabular anatomy and ensure stable hip joint function.

Postoperative rehabilitation is essential for recovery. Early immobilization is necessary to stabilize the fracture and allow soft tissue healing. A structured rehabilitation program, including gradual weight-bearing and strengthening exercises, helps prevent joint stiffness, muscle atrophy, and function loss. Close follow-up care is vital to monitor for complications, including infection, nonunion, or avascular necrosis of the femoral head^[2, 4].

A key concern in central hip dislocations is the potential for femoral head avascular necrosis, which can occur due to disruption of the blood supply to the femoral head. Timely reduction of the dislocation is crucial in minimizing the risk of this complication^[5].

Conclusion

This case illustrates the successful management of central hip dislocation with an associated acetabular fracture, emphasizing the importance of timely surgical intervention and careful post-operative rehabilitation. The extended Kocher-Langenbeck approach facilitated the effective reduction and stabilization of the acetabular fracture, preventing complications such as femoral head avascular necrosis. Meticulous selection and use of implants should be tailored to the specific needs of each patient. For instance, in this case, only posterior column plating was required, despite the fracture being classified as a T-type. Following post-operative immobilization and gradual rehabilitation, the patient achieved full functional recovery without any long-term complications^[1, 5].

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Nil

Conflict of Interest

The authors declared no potential conflicts of interest with regards to the submitted article. Each author certifies that he or she has no commercial associations that might pose a conflict of interest in connection with the submitted article.

Ethical standards

Institutional ethics committee approved the study.

Informed consent was obtained from the participant included in the study.

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