

Posterior Hip Dislocation with Ipsilateral Subtrochanteric Femur Fracture: A Rare Case Report

Amrit Goyal¹, Vishal Kumar Lakhera¹, Sudhanshu Agarwal¹

Learning Point of the Article:

Posterior hip dislocation with ipsilateral subtrochanteric fracture is rare; early diagnosis, joystick-assisted open reduction, hematoma evacuation, and stable proximal femoral nailing optimize outcomes.

Abstract

Introduction: Posterior dislocation of the hip associated with an ipsilateral subtrochanteric femur fracture is a rare and technically challenging injury pattern, most commonly seen after high-energy trauma such as road traffic accidents. The associated proximal femoral fracture disrupts the normal femoral lever arm, making closed reduction difficult or impossible and often necessitating open reduction. Delay in diagnosis or treatment may result in complications such as avascular necrosis of the femoral head, post-traumatic arthritis, sciatic nerve injury, and poor functional outcomes.

Case Report: We report the case of a 35-year-old male who sustained posterior hip dislocation with an ipsilateral subtrochanteric femur fracture following a road traffic accident. The patient presented with pain, deformity, and inability to bear weight on the affected limb. As he was hemodynamically unstable at presentation, definitive surgery was delayed until adequate resuscitation and stabilization were achieved. Surgery was performed within 72 h and included open reduction of the hip through a posterior approach using a Steinmann pin as a joystick for reduction, followed by fixation of the subtrochanteric fracture using a proximal femoral nail (PFN). At 15 days follow-up, the wound had healed well, implant position was satisfactory, and no early post-operative complications were noted.

Conclusion: Posterior hip dislocation with ipsilateral subtrochanteric femur fracture is an uncommon injury that requires early diagnosis, careful surgical planning, and stable fixation. Open reduction is often necessary because closed reduction may not be feasible due to loss of the proximal femoral lever arm. Joystick-assisted reduction with a Steinmann pin and fixation with PFN can provide satisfactory early outcomes. Long-term follow-up remains essential to monitor for complications such as avascular necrosis and post-traumatic arthritis.

Keywords: Posterior hip dislocation, subtrochanteric femur fracture, ipsilateral injury, proximal femoral nail, case report.

Introduction

Traumatic hip dislocation is considered an orthopedic emergency and requires urgent reduction to reduce the risk of avascular necrosis of the femoral head and long-term disability. Posterior hip dislocations account for nearly 85–90% of all traumatic hip dislocations and are commonly caused by

dashboard injuries during road traffic accidents [1,2]. They are often associated with acetabular fractures, femoral head fractures, or femoral shaft fractures. However, association with an ipsilateral subtrochanteric femur fracture is extremely uncommon [3,4].

When a subtrochanteric fracture is present, management

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Dr. Amrit Goyal



Dr. Vishal Kumar Lakhera



Dr. Sudhanshu Agarwal

¹Department of Orthopaedics, Sarojini Naidu Medical College, Agra, Uttar Pradesh, India.

Address of Correspondence:

Dr. Vishal Kumar Lakhera,
Department of Orthopaedics, Sarojini Naidu Medical College, Agra, Uttar Pradesh, India.
E-mail: kumar973v@gmail.com

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Figure 1: Pre-operative X-ray.

becomes more difficult because the continuity of the proximal femur is disrupted. This makes closed reduction of the dislocated hip difficult or impossible, and open reduction is often necessary [5]. Delay in reduction beyond 6 h is known to increase the risk of avascular necrosis and poorer long-term outcomes [6].

Only a few such cases have been reported in the literature, and most involve femoral shaft or intertrochanteric fractures rather than true subtrochanteric fractures [7,8,9,10]. We report one such rare case managed with open reduction and proximal femoral nail (PFN).

Case Report

A 35-year-old male was brought to the emergency department after a high-velocity road traffic accident involving a motorcycle collision. He complained of severe pain in the left hip and thigh and was unable to stand or bear weight on the affected limb. There was a history of head injury; however, there was no evidence of chest trauma, abdominal injury, or other major associated injuries.

On examination, the patient was hemodynamically unstable and required initial resuscitation and monitoring by the trauma team. Examination of the left lower limb showed shortening, flexion, adduction, and internal rotation, which suggested posterior dislocation of the hip. There was swelling, deformity, and marked tenderness over the proximal thigh. Distal pulses were palpable, and there was no sensory or motor deficit suggestive of sciatic

nerve involvement.

Plain radiographs of the pelvis and left femur showed posterior dislocation of the left hip with an ipsilateral subtrochanteric fracture of the femur. No associated acetabular fracture was seen on X-ray (Fig. 1). Computed tomography of the pelvis and left femur confirmed posterior dislocation of the left femoral head with an ipsilateral subtrochanteric femoral fracture. The femoral head and acetabulum were intact, with no associated acetabular fracture or intra-articular osseous fragment.

Although urgent reduction of the hip dislocation is generally recommended, definitive surgical intervention was initially deferred because the patient was not medically fit for anesthesia and surgery at presentation. The associated head injury necessitated further neurological evaluation and delayed anesthetic clearance. Following adequate resuscitation, stabilization, and optimization of the patient's general condition, definitive surgical management was undertaken within 72 h of the trauma.

Surgical technique

The patient was taken to the operating room after anesthesia clearance. Under spinal anesthesia, he was placed in the lateral decubitus position on a radiolucent table. All pressure points were padded properly, and the entire limb was prepared and draped.

Because of the associated subtrochanteric fracture, standard closed reduction of the hip was not possible due to loss of the proximal femoral lever arm. Initially, we attempted to stabilize the subtrochanteric fracture first so that the dislocated femoral head could be reduced later in the usual manner after restoration of femoral continuity. However, because of the unstable fracture pattern and poor control of the proximal

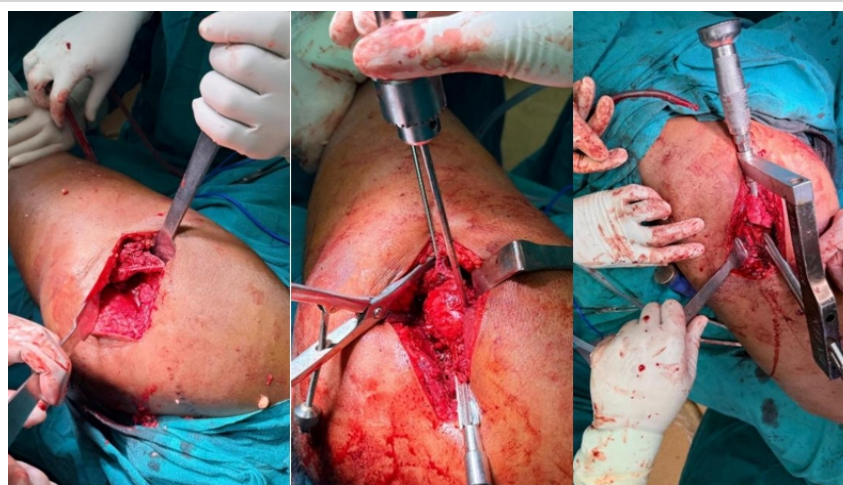


Figure 2: Intraoperative pictures.



Figure 3: Fluoroscopic images.

fragment, this could not be achieved.

A decision was then made to reduce the hip first through an open posterior approach. A standard Kocher–Langenbeck approach was used. After skin incision and fascial exposure, the gluteus maximus was split in line with its fibers to expose the posterior aspect of the hip (Fig. 2).

The femoral head was found displaced posteriorly outside the acetabulum. Since the hip had remained dislocated for some time, the acetabulum was filled with hematoma and clots. These were thoroughly evacuated before reduction. This was important not only for achieving proper concentric reduction but also for reducing the chances of post-operative infection.

Because direct manipulation through the fractured femur was difficult, a Steinmann pin was inserted into the proximal fragment and used as a joystick. Gentle traction and controlled rotation helped guide the femoral head back into the acetabulum under direct vision. Reduction was confirmed clinically and under fluoroscopy (Fig. 3).

After reduction of the hip, fixation of the subtrochanteric fracture was carried out in the same lateral position, although the original plan had been to shift to the supine position after hip reduction. The entry point for the PFN was made through the piriformis fossa under direct vision.

During entry preparation, it was noted that the greater trochanter was also fractured and became further comminuted. The fragments were reconstructed and tied together using strong Ethibond sutures to restore continuity and maintain the abductor mechanism.

Because the fracture was highly unstable, sequential reaming was done carefully to avoid further displacement. A PFN was then inserted under fluoroscopic guidance. Proximal and distal locking was completed, and alignment, limb length, and rotational stability were checked.

Final fluoroscopic images confirmed satisfactory reduction of the hip joint, proper fracture alignment, and good implant position. The wound was washed thoroughly and closed in layers over a suction drain.

Post-operative rehabilitation and follow-up

After surgery, the patient was kept non-weight-bearing with walker support. Ankle pump exercises, quadriceps strengthening, and bedside hip and knee range-of-motion exercises were started as tolerated. Strict non-weight-bearing walking was advised for the first 6 weeks.

Post-operative radiographs showed maintained reduction of the hip joint, good alignment of the subtrochanteric fracture, and satisfactory implant position without any early implant-related problems (Fig. 4).

At 15 days follow-up, the surgical wound was healthy, and sutures were removed. The patient had mild pain, which was gradually improving, and was mobilizing comfortably with walker support. There was no wound infection, neurovascular deficit, implant failure, redislocation, or any other early post-operative complication.

As the follow-up period is still short, assessment of fracture union, avascular necrosis, post-traumatic arthritis, and long-term functional outcome is ongoing. The patient remains under regular follow-up.

Discussion

Posterior hip dislocation with an ipsilateral subtrochanteric femur fracture is an uncommon injury caused by high-energy trauma. The usual mechanism is force transmission through a flexed hip and knee, which pushes the femoral head posteriorly out of the acetabulum while also producing a fracture in the proximal femur [1,3].

In isolated posterior hip dislocation, closed reduction is usually



Figure 4: Post-operative X-ray.

Previously reported similar cases

Author	Year	Injury pattern	Reduction type	Timing of surgery	Definitive management	Final outcome
Iftekharet al .	2020	Posterior hip dislocation with ipsilateral femoral shaft fracture	Closed reduction	Early intervention	Closed reduction+interlocking intramedullary nailing	Good functional recovery
Su et al .	2020	Posterior hip dislocation with femoral neck and intertrochanteric fracture	Open reduction	Early intervention	Open reduction+internal fixation	Satisfactory fracture union
Nohmi S et al .	2022	Posterior hip fracture-dislocation with acetabular posterior wall fracture and trochanteric fracture	Open reduction	Early intervention	ORIF of acetabulum+proximal femur fixation	Good radiological and clinical outcome
Zarei et al .	2023	Posterior hip dislocation with posterior wall acetabular fracture and femoral shaft fracture	Open reduction	Early intervention	Open reduction+fracture fixation	Good post-operative recovery
Wuhib et al .	2024	Obturator (anterior) hip dislocation with ipsilateral subtrochanteric femur fracture	Open reduction	Early intervention	Open reduction+antegrade intramedullary nailing	Good clinical outcome
Present case	2026	Posterior hip dislocation with ipsilateral subtrochanteric femur fracture	Open reduction	Within 72 h of trauma	Open reduction using Steinmann pin joystick+PFN fixation	Early post-operative recovery satisfactory
ORIF: Open reduction internal fixation, PFN: Proximal femoral nail						

possible. However, when a subtrochanteric fracture is present, the proximal femoral continuity is lost, and the normal lever arm required for reduction is absent. This makes closed reduction difficult and often requires open reduction [5]. In our case, a Steinmann pin was used as a joystick to control the proximal fragment and help reduce the femoral head safely.

Timing of reduction is important because delayed reduction increases the risk of avascular necrosis. Ideally, reduction should be done within 6 h [6]. In our patient, surgery was delayed because of hemodynamic instability, but it was completed within 72 h after proper stabilization.

The order of treatment in such injuries is still debated. Some authors recommend reducing the hip first, while others prefer fracture fixation first to restore femoral continuity [7,8]. In our case, fracture fixation was attempted first, but because of instability, this was not possible. Therefore, the hip was reduced first, and fracture fixation was completed afterward in the same lateral position.

PFN was chosen because it provides good biomechanical stability in subtrochanteric fractures. It acts as a load-sharing implant, requires less soft tissue dissection, preserves fracture biology, and allows earlier rehabilitation compared to plate fixation [11]. Greater trochanteric comminution can make nail entry difficult, as seen in our case, and Ethibond reconstruction helped maintain stability.

Another important step was evacuation of the hematoma from the acetabulum. A retained hematoma can interfere with proper reduction and may also increase the risk of post-operative infection. Careful post-operative wound care is therefore necessary.

To the best of our knowledge, very few cases of true posterior hip dislocation associated specifically with ipsilateral subtrochanteric femur fracture have been reported. Most available reports involve femoral shaft, femoral neck, or intertrochanteric fractures rather than true subtrochanteric fractures [8,9,10,12]. This makes the present case rare and technically challenging. Previously reported similar cases are summarized in Table 1.

Limitation

The main limitation of this report is the short follow-up period of only 15 days. Because of this, long-term complications such as avascular necrosis of the femoral head, post-traumatic arthritis, fracture healing, and final functional outcome cannot yet be assessed. Continued follow-up is necessary.

Conclusion

Posterior hip dislocation with ipsilateral subtrochanteric femur fracture is a rare and difficult injury that requires early recognition and proper surgical planning. Closed reduction is often not possible because of the disrupted femoral lever arm. Open reduction using a Steinmann pin as a joystick, careful evacuation of acetabular hematoma, and stable fixation with PFN can provide good early results. Long-term follow-up remains important to assess final outcome and complications.

Clinical Message

Timely reduction is crucial; Steinmann-pin joystick-assisted open reduction facilitates hip reduction, followed by stable PFN fixation for early mobilization in complex ipsilateral subtrochanteric fractures.

Declaration of patient consent: The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given the consent for his/ her images and other clinical information to be reported in the journal. The patient understands that his/ her names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Conflict of interest: Nil **Source of support:** None

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