

Anterior Dislocation with Inter Trochanteric Fracture with Review of Literature

Satish Nesari¹, Vivek Karangi², Krishnan Unni J S³, Manjunath A Diggai⁴

¹Associate Professor, Dept. of Orthopaedic, Belagavi Institute of Medical Sciences

²Senior Resident, Dept. of Orthopaedic, Belagavi Institute of Medical Sciences

^{3,4}Post Graduate, Dept. of Orthopaedic, Belagavi Institute of Medical Sciences

Received: 02-10-2024 / Revised: 16-10-2024 / Accepted: 07-11-2024

Corresponding Author: Dr. Manjunath A Diggai

Conflict of interest: Nil

Abstract:

Dislocations of the hip usually occur following high energy trauma, the coxo-femoral joint being inherently stable, and can be associated with acetabular fractures or fractures of the head, neck or shaft of femur. However, the combination between the anterior hip dislocation and the ipsilateral intertrochanteric fracture is extremely rare.

We present the case of a patient, aged 71, victim of a trauma by fall from height, with complaints of pain over right groin area associated with swelling and restriction of movements. The patient was unable to bear weight since the fall. Later on further investigation, he was diagnosed with right hip anterior dislocation along with intertrochanteric fracture of the ipsilateral femur. Under general anaesthesia, the hip dislocation was reduced and the intertrochanteric fracture was internally fixed with a dynamic hip screw. Radiological and functional evaluation was done at 4 months after surgery, using the modified Merle D'Aubigne hip score showed good result. The clinical outcome of such a case depends on the quick evaluation and treatment. Providing a stable reduction of the dislocation and a stable internal fixation of the fracture as soon as possible (within the first 6 hours) will allow an early physical rehabilitation and decrease the risk of complications.

This is an Open Access article that uses a funding model which does not charge readers or their institutions for access and distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>) and the Budapest Open Access Initiative (<http://www.budapestopenaccessinitiative.org/read>), which permit unrestricted use, distribution, and reproduction in any medium, provided original work is properly credited.

Introduction

The anatomic features of the coxo-femoral joint imply a high degree of stability. That is why dislocations of the hip usually occur following a high energy trauma, such as road traffic accidents, industrial accidents, sport injuries (e.g. soccer, rugby, and wrestling) or falls from a height [1] and it may be associated with acetabular fractures or fractures of the head, neck or shaft of femur. Posterior hip dislocation is approximately 9 times more frequent than the anterior type [2,3]. The combination between the anterior hip dislocation and the ipsilateral intertrochanteric fracture, with the femoral head remaining intact, is extremely rare, only a few cases being reported in the literature.

Clinical Case

A 71-year-old male is admitted in the Emergency Room after he suffered a trauma by precipitation from height 2 metres. On examination the patient is conscious, cooperative, hemodynamically stable, complaining of severe pain in the right groin associated with swelling and restriction of movements along with unable to stand or bear weight on the right lower limb. On inspection right lower limb appear abducted and externally rotated, with apparent shortening and no signs of any peripheral neurovascular injury. On palpation of the

right hip joint, a globular mass of hard in consistency is felt. Further clinical and laboratory examinations excluded other coexisting abdominal, thoracic, neurological or musculoskeletal lesions.

Radiograph of the pelvis (Fig. 1) confirm the diagnosis of Right Type IB Epstein anterior-superior hip dislocation associated with displaced intertrochanteric fracture of the femur.

Operative Procedure

Under general anaesthesia the hip dislocation was reduced and the intertrochanteric fracture reduction done and internally fixed with a dynamic hip screw (DHS). Under spinal anaesthesia, a lateral approach of the hip was used, extended proximally and slightly anterior. After the superficial layers are incised, the femoral head is identified and reduced into the acetabulum. Under C Arm guidance, the intertrochanteric fracture was also reduced and internally fixed with DHS attached to a side plate with 5 screws. At the end of surgery, the stability of the hip is checked by performing all range of movements of the hip joint.

Postoperatively, the physiotherapy was started 24 hours after the surgery by predominantly isometric exercises for toning the muscles. At 4 weeks hip

joint mobilization exercises were commenced, later at 6 weeks walking without weight bearing on the right lower limb is started. Progressive weight bearing of the operated limb is started at 3 months

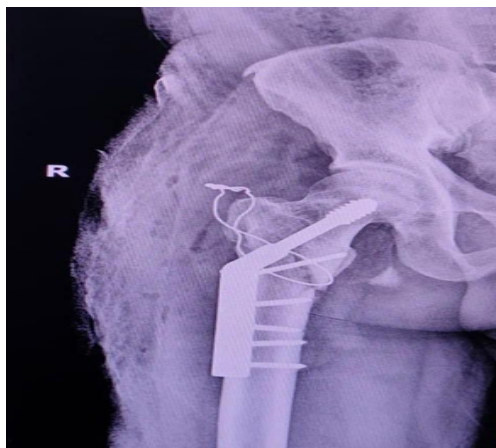
post operatively. Post-operative follow-up was assessed by radiological and functional outcome. Radiographic assessment was performed immediately after surgery, at 6 weeks, at 3 months.



Figure1: Anterior Dislocation in Intertrochanteric Fracture



Figure 2: Postoperative antero-posterior X-ray view revealing fracture and dislocation reduction and fixation with dynamic hip screw.



Antero Posterior view

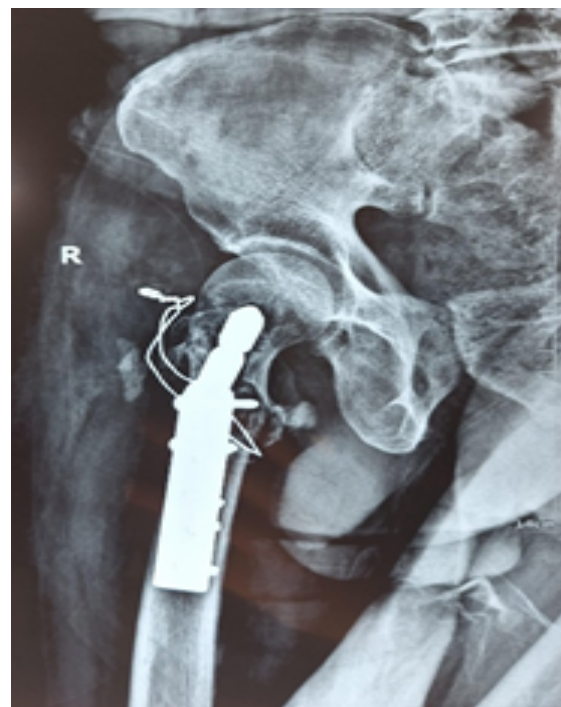


Lateral view

Figure 3: Post Operative Xray after 3 months showing good fracture healing.



Anteroposterior view



Lateral View

Functional evaluation was carried out at 4 months after surgery, according to Merle d'Aubigné score modified by Matta JM[4], which takes into account the presence of pain, ability to walk and joint range of motion. The measured functional score was 16 points out of a maximum of 18.

Points*	Pain	Walking	Range of Motion **
6	None	Normal	95-100%
5	Slight or Intermittent	No cane but slight limp	80-94%
4	After walking but resolves	Long distance with cane or crutch	70-79%
3	Moderately severe but patient able to walk	Limited even with support	60-69%
2	Severe, prevents walking	Very Limited	50-59%
1	Unable to walk		<50%

*Clinical grade: • 18 – Excellent • 15-17 – Good • 13, 14 – Fair • <13 – Poor.

**The range of motion is expressed as the percentage of the value for the normal hip. This is calculated by obtaining a total of all the ranges of movements of the operated hip and dividing it by the total of all the range of movements of the normal hip in degrees.

Discussion

The hip is a spheroidal type of joint with a good congruence between the femoral head and the acetabulum and reinforced by a thick articular capsule and strong ligaments. All these anatomical features make the hip joint very stable. That is why, hip dislocations usually occur following significant trauma. Hip dislocations can be posterior (most frequent) and anterior (10-15%). The anterior dislocations are described by the Epstein Classification [5].

Epstein Classification:

- Type I - Superior dislocations

- IA: no associated fractures
- IB: associated fracture or impaction of the femoral head
- IC: associated fracture of the acetabulum
- Type II - Inferior dislocations
- IIA: no associated fractures
- IIB: associated fracture or impaction of the femoral head
- IIC: associated fracture of the acetabulum

Anterior dislocations usually result after a high energy trauma, which determines forced abduction and external rotation and of the hip. Depending on the position of the hip at the time of the impact, dislocations may be anterior-inferior (if the hip is in flexion) or anterior-superior (If the hip is in extension). The main peculiarity of the presented case is the association of an anterior-superior

dislocation of the hip along with ipsilateral intertrochanteric fracture. The latter can be explained by the developing of powerful forces that acted on the lateral aspect of the greater trochanter or by the impact of the greater trochanter against the iliac bone in a forced abduction and external rotation position of the hip.

Another rare aspect of this case is the lack of acetabulum fractures. Forces acting on the femoral head of the femur put high pressure on the walls of the acetabulum, exceeding their strength, breaking them, thus creating new spaces for the dislocation. Although the forces that acted during the trauma were strong enough to lead to dislocation of the hip and fracture of the femur, they did not produce any significant bony injury to the acetabulum. Due to high energy trauma forces involved in the process, abdominal and thoracic visceral injuries, neurological or other musculoskeletal lesions can frequently occur but overwhelmed by the dominant hip symptoms. Consequently, a careful general examination of the patient is mandatory in order to accomplish a complete diagnosis. [6]

Hip dislocation is an orthopaedic emergency that must be addressed at the earliest and the reduction must be accomplished in order to avoid further complications. Few of the main complications that can occur following hip dislocation are by avascular necrosis of the femoral head, secondary hip joint osteoarthritis, heterotopic ossification around the joint and injury to the sciatic nerve.

The most feared late complication of hip dislocation is avascular necrosis of the femoral head. A delay of more than 6 hours increases the risk of avascular necrosis from 10 to 40%. This complication is thought to be multifactorial; on one hand, during dislocation, the vascular network emerging from the trochanteric area is damaged together with the joint capsule and the round ligament artery together with the ligament. On the other hand, Duncan and Shim [5] demonstrated a functional disruption of cephalic circulation by a spasm of the large artery or of the cervical branches, with no organic lesion itself. If we take into consideration this mechanism, the early reduction of the dislocated hip decreases the risk of avascular necrosis. A delay of more than 6 hours increases the risk of avascular necrosis from 10 to 40% [7].

In time, avascular necrosis of the femoral head leads to osteoarthritis of the hip. This is seen more frequently in posterior dislocations associated with fractures of the posterior wall of the acetabulum than in anterior dislocations, the main reason referring to the subchondral lesions due to the impact of the femoral head with the acetabulum. Incidence of osteoarthritis can be minimized by early anatomical reduction of the dislocation and fixation of the associated fractures, thus restoring articular congruence.

Conclusion

The clinical outcome of such a case depends on a rapid evaluation and treatment. Usually, these cases require multidisciplinary teams which can evaluate the patient's status and vital functions, determine the type of injury and identify any associated injuries, ensure a good anaesthesia during surgery and supportive intensive care measures. Providing a stable reduction of the dislocation and a firm internal fixation of the fracture as soon as possible (within the first 6 hours) which will allow an early physical rehabilitation and decrease the risk of complications.

References

1. Canale T, Beaty JH. Acute Dislocations in: Campbell's Operative Orthopaedics, Volume III, Chap. 60, 12th ed. 2013.
2. Brav EA. Traumatic dislocation of the hip. J Bone Joint Surg Am. 1962; 44:1115–1134.
3. Dreinhofer KE, Schwarzkopf SR. Isolated traumatic dislocation of the hip. J Bone Joint Surg Br. 1994; 76:6–12.
4. Matta JM. Fractures of the acetabulum: accuracy of reduction and results in patients managed operatively within three weeks after the injury. J Bone Joint Surg Am. 1996; 78:1632–1645.
5. Epstein HC, Wiss DA. Traumatic anterior dislocation of the hip. Orthopaedics. 1985:130–134.
6. Duncan CP, Shim SS. Blood supply of the head of the femur in traumatic hip dislocation. Surg Gynecol Obstet. 1977; 144:185–191.
7. Solomon L, Warwick D, compilers. In: Injuries of the hip and femur in: Apley's system of orthopaedics and fractures, 8th ed. London: Anold; 2001; 681–683.