ANTERIOR SUPERIOR DISLOCATION OF THE HIP JOINT: A REPORT OF 3 CASES AND REVIEW OF THE LITERATURE

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ABSTRACT

Traumatic anterior dislocation of the hip forms approximately 11% of hip dislocations and is divided into superior and inferior types. Anterior superior hip dislocation accounts for 10% of anterior hip dislocations. The clinical appearance of anterior superior hip dislocation resembles that of a fracture of the femoral neck, whereas the radiological appearance resembles that of posterior hip dislocation.

The objective of this article is to use three cases to describe the management of this condition and highlight pitfalls in the same. The article also points out unusual mechanisms causing this injury.

Key words: Anterior dislocation, Hip joint, Open reduction, Iliofemoral ligament

INTRODUCTION

Traumatic anterior dislocation of the hip is a relatively rare condition, especially when compared to the more encountered posterior dislocation of the hip joint. This is largely because of the very different mechanisms required to produce injury in either instance. Anterior superior dislocation is even less commonly encountered because of the mechanism of extreme abduction, extension and external rotation required to produce the dislocation.

Owing to the ligamentous and muscle forces around the hip, it is only rarely possible to successfullyperform a closed reduction of an anterior superior dislocation of the hip joint.

The authors are presenting 3 cases of anterior superior hip dislocation. This is to highlight the importance of early diagnosis and to illustrate that, rarely, it may be possible to achieve closed reduction.

CASE REPORT

NM a 42 year old male presented to casualty department of Meru Level 5 Hospital. His primary complain was of severe hip joint pain and deformity after a large log fell on his right thigh.

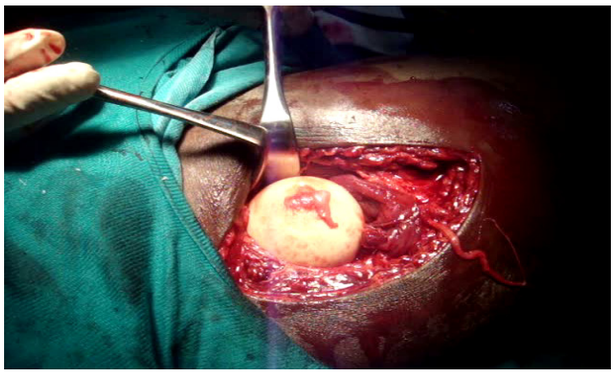
On examination, the findings included shortening and external rotation of the right lower limb. The femoral head was palpable just below the inguinal ligament. Distal neurovascular function was intact. A plain AP radiograph of the pelvis showed the femoral head superimposed on the acetabulum and slightly superior to it. The lesser trochanter appeared prominent. In keeping with the clinical and radiological findings, a diagnosis was made of an anterior superior dislocation of the right hip joint (Figure 1).

Attempted reduction under sedation in casualty was unsuccessful.

Figure 1
Preoperative AP radiograph

A single closed reduction attempt under GA employing Allis maneuver failed and open reduction was performed. With the patient supine on a normal operating table, the femoral head was exposed via an anterior approach and found just below the sartorius muscle. The ligamentum teres was found avulsed, and the iliopubic ligament found to obstruct the relocation of the head into the socket (Figure 2). Inferior retraction of the ligament facilitated easy relocation of the femoral head into the acetabulum, and closure done in layers.

Figure 2
Intraoperative picture showing the dislocated head of femur



A postoperative radiograph of the pelvis showed adequate reduction and the patient was placed on skin traction for a period of three weeks thereafter.

Photographs of the patient taken while on traction in the ward are shown (Figure 3). Normal anatomical attitude and limb length was achieved. Superficial surgical site sepsis was treated with oral flucloxacillin. The wound healed uneventfully thereafter.

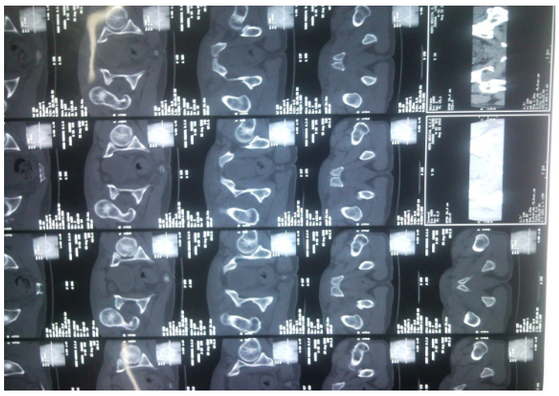
Figure 3
Postoperative picture showing the patient immobilised

The patient was mobilized PWB after three weeks on traction and followed up on a monthly basis.

JK a 50 year old male presented with severe hip joint pain and deformity. The patient was tending to his cows when an irate cow attempted to run away, entrapping the patient's leg on a loose rope trailing from the neck of the cow. The resultant pull on his leg caused the injury. Plain radiology (Figure 4) and a CT scan (Figure 5) confirmed the anterior superior dislocation of the hip joint.

Figure 4
Radiograph of the palvis showing a dislocatedright hip joint

Figure 5
CT scan showing an empty a cetabulum and dislocated hip



The patient was taken to theatre where, under GA, closed reduction employing Allis maneuver was unsuccessful. Open reduction was done by the anterior approach. This time, the ligamentum teres and iliofemoral ligament were found ruptured. Reduction under direct vision was successful and closure was done in layers. The ligaments were not repaired.

Check X-rays of the pelvis are shown (Figure 6). A close look at the greater trochanter shows an avulsion fracture of the same (Figure 7). The fracture of the greater trochanter was managed conservatively.

Figure 6
Postoperative radiographs showing concentric reduction of the removal head

Figure 7
A close examination reveals an evulsion fracture of the greater trochanter

MK a 65 year old female, was carrying animal feeds on her back. She slipped in the mud and suffered unnatural abduction of both lower limbs, one in front and one behind. The trailing right leg suffered the dislocated hip joint as seen in the radiographs.

The clinical picture was that of an externally rotated limb, with slight shortening (Figures 8 and 9). The femoral head was palpable along the inguinal ligament. She was taken to theatre where, under spinal anaesthesia, a single attempt at closed reduction was successful. A modified Allis maneuver was employed. With the patient supine, the pelvis was stabilized, and with the hip and knee in flexion, an abduction force was also applied. An assistant then pushed the head of the femur back into place. Post reduction check radiographs were satisfactory (Figure 10).

Figure 8
Plain radiograph of the pelvis showing a dislocated hip joint

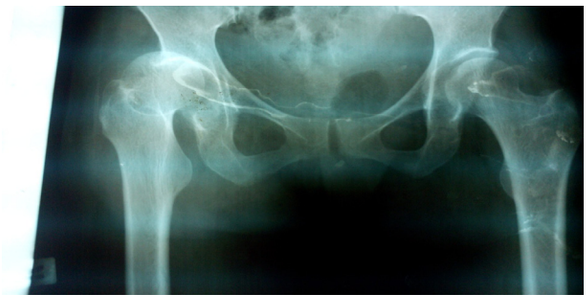


Figure 9
Lateral views confirming the anterior dislocation

Figure 10
Intraoperative flouroscopy showing concentric reduction of the hip joint

DISCUSSION

The hip joint is anatomically the most stable joint in the body. It consists of a ball; the femoral head, and a socket; the acetabulum. The acetabulum is further deepened by the labrum, which is a strong fibrocartilaginous ring around it. The acetabulum and labrum together form 5/8 of a sphere. Ligaments include the Y-shaped iliofemoral ligament of Bigelow, the ischiofemoral ligament, and pubofemoral ligament. The ligament of the head of teres is an intraarticular ligament which has no significant stability function in normal activity, but prevents dislocation after all other stability factors have been overcome. The large muscle envelope around the hip joint also acts as a dynamic stabilizer of the joint.

Anterior dislocations of the hip are uncommon, forming approximately 10-15% of hip dislocations. They were classified by Epstein (1,2) in his classic study on hip dislocations into superior and inferior types (Table 1).

Table 1

Types and subtypes of anterior dislocation of the hip joint as described by Epstein

Type	Subtype	Dislocation
I		Superior dislocations (includes pubic and subspinous dislocations)
	A	No associated fracture (simple dislocation)
	B	Associated fracture of the head (transchondral or indentation type) and/or neck of the femur
	C	Associated fracture of the acetabulum
II		Inferior (includes obturator, thyroid, and perineal dislocations)
	A	No associated fracture (simple dislocation)
	B	Associated fracture of the head (transchondral or indentation type) and/or neck of the femur
	C	Associated fracture of the acetabulum

Of these, most are of the inferior variety, with the classical history of a violent abduction force at the hip having caused the insult. The limb in an anteroinferior dislocation of the hip is abducted, apparently longer and externally rotated. Anterosuperior dislocations of the hip joint are quite rare. The commonly reported mechanism of injury is that of extreme extension and external rotation of an abducted hip joint as is classically seen in a football player who pivots on one limb to kick the ball with the other (3,4).

Anterior superior dislocations of the hip are further divided into two; the iliac and pubic variety. In the iliac variety of dislocation, the femoral head is levered out of the socket tearing the iliofemoral ligament in the process, or avulsing the anterior inferior iliac spine. In the pubic variety, the head is levered out between the iliofemoral and pubofemoral ligaments. As a result, the femoral head appears lateral to the acetabulum in the iliac variety, and medial to the acetabulum in the pubic variety. In the author's opinion, the first case reported would fall into the pubic whereas the second and third cases would fall into the iliac variety (5).

The mechanism of injury in the reported cases is different from that commonly encountered in the literature. In the case of the first patient, a log fell on him. It is unclear how this led to the anterior hip dislocation.

In the second case, the pulling of the limb by a rope might explain the forces that went into producing the dislocation. A pull on the lower limb would lead to abduction, which is the most important event in production of an anterior dislocation of the hip.

In the third case, the abduction leading to dislocation of the hip suffered by a slip in mud can be understood.

The clinical appearance of anterior superior displaced hip dislocation is that of shortening and external rotation. The palpable femoral head in the groin helps to make the distinction from a fracture of the neck of the femur, and so does the review of the radiographs. It is also easy to make a misdiagnosis of a posterior hip dislocation based on radiological findings alone.

Ease of closed relocation of this injury depends on the subtype. In iliac dislocations it would be easy to relocate the dislocated head. In pubic dislocations the head is buttonholed between the iliofemoral ligament and pubofemoral ligament. To relocate the head will therefore require an open approach.

Complication rates in hip dislocations are quite high, with osteonecrosis rates of 4% reported for anterior dislocations (5) compared with rates of 52.9% in posterior dislocations. This is explained by the pattern of blood supply to the hip. In patients with anterior dislocation of the hip, osteoarthritis rates of 24% to 37.5% have been reported at 14 year follow up. In patients with posterior dislocations of the hip, arthritis of the hip has been reported at 33% at 10 years and 75% at 30 years following trauma.

Animal studies had shown the importance of early reduction of the hip joint- within 24 hours- to improve results, but recent studies have shown best results if reduction is done within a 6 hour period (6).

Less common complications in anterior dislocations of the hip include vascular injury- the femoral artery and vein being involved- and nerve injury- the femoral nerve being involved.

Rare complications and associated injuries include recurrent dislocation (7), avulsion fractures of the anterior superior and inferior spine (8), and bilateral dislocations of the hip joint (9).

CONCLUSION

Anterior dislocations of the hip are uncommon and are easily mistaken for posterior dislocations and fractures of the femoral neck. A high index of suspicion is required to make an early diagnosis. Thereafter, emergent reduction- open if needed- is required to reduce complication rates.

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