

# Open Perineal Dislocation of the Hip With Fracture of the Femoral Head and Greater Trochanter: A Case Report

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**Introduction:** Traumatic anterior dislocation of the hip is not common and open perineal variant of the inferior type of anterior dislocation is an even rare event.

**Case Presentation:** We report a case of open perineal variant of the inferior type of anterior hip dislocation, with concomitant fracture of the femoral head and greater trochanter, in a 17-year-old male patient. Closed reduction of dislocation and later open reduction and fixation of the greater trochanter were performed. Eighteen months after the injury, the femoral head resorption, due to infection and avascular necrosis, led to a poor functional outcome.

**Conclusions:** Open perineal variant of anterior hip dislocation can lead to very poor outcome when performed with closed reduction.

**Keywords:** Hip dislocation; Femur head; Fracture

## 1. Introduction

The hip is a ball-and-socket joint, in which the femoral head is covered by the bony acetabulum. Strong capsulo-ligamentous structures, such as the iliofemoral ligament, anteriorly, and the ischiofemoral ligament and short external rotators, posteriorly, resist hip dislocation forces and a significant force is required to disrupt this robust capsulo-ligamentous structure of the most stable joint in the body (1). Anterior hip dislocation is uncommon and constitutes only 10 - 15% of all hip dislocations (1, 2). Traumatic open anterior perineal hip dislocation with concomitant femoral head fracture is a very rare event (3-6). The present case discusses the causes of its poor prognosis.

## 2. Case Presentation

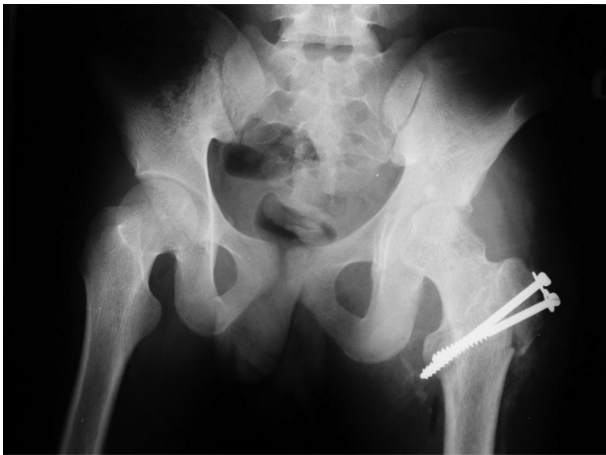
Our patient was a 17-year-old male brought to our hospital after a motorcycle accident, with left lower limb deformity. In physical examination there were abdominal tenderness, left hip flexion, abduction and external rotation deformity, swelling and deformity of left leg. Left leg pulses were not detectable and there were weak toe flexor and absent toe extensor, and hypoesthesia of left foot. Capillary refill time was 4 seconds. The femoral head was broken and extruded near the anus (Figure 1). Radiography showed perineal dislocation of the left hip, tibia and fibula fracture (Figure 2).



**Figure 1.** Preoperative Photograph of Patient With Open Perineal Anterior Dislocation of the Left Hip



**Figure 2.** Anteroposterior X-Ray With Left Hip Perineal Anterior Dislocation



**Figure 3.** Anteroposterior Pelvic X-Ray After Fixation Of Greater Trochanter and X-ray of Pelvis 18 Months After Accident

In less than 3 hours from accident time, in coordination with the general surgeon, the patient was transferred to the operating room due to the open hip fracture dislocation

and acute abdomen of splenic rupture. Femoral neck was lacking soft tissue attachment. The femoral head had multiple osteochondral fractures. Wound debrided and extended for irrigation. The femoral head reduced closely after exhaustive irrigation and debridement. Anal sphincter repair, laparotomy and splenectomy were done at the same time by general surgeon. Left lower limb pulses were not palpable and severe edema was present at the injured lower limb. Angiography revealed patent arteries in spite of absent distal pulses. The pulses were palpable 5 days later. One week later, after stabilization of patient's general condition, through a lateral incision open reduction and fixation of greater trochanter were done by two screws, we noticed that the hip joint capsule and retinaculum were damaged severely. Five days after operation, signs of infection appeared in lateral incision. In multiple sessions, irrigation and debridement of the necrotic tissues and excision of loosed femoral head fragments were done through the same approach, without hip dislocation. Discharge from incision continued to 3 months after operation. X-ray and magnetic resonance imaging (MRI) of hip revealed avascular necrosis and resorption of femoral head.

Eighteen months after dislocation, there was severe limitation of hip motion (flexion 70 degree, internal and external rotation 10 degree, abduction and adduction 10 degree, extension 10 degree), 4 centimeters shortening, severe limping with minor pain (Figure 3).

### 3. Discussion

In Epstein classification, depending on the position of the femoral head, anterior dislocations have been divided into two types, superior (pubic) and inferior (obturator) type (1). De-Lee et al. adds perineal dislocation to the low type of anterior dislocation, in which the head lies more inferior to the usual obturator type (2). Traumatic open anterior perineal hip dislocation, with associated fracture of femoral head and greater trochanter, is a rare entity and research in database revealed only 11 cases of this kind of injury reported in the literature (3-6).

High energy motor vehicle trauma is main cause of hip dislocation. Pringle was the initially proposed mechanism of anterior inferior (perineal) dislocation of the hip (7). It consists of forced abduction and external rotation of the flexed hip causing the femoral head to tear through anterior inferior capsule. Shear fracture of anterosuperior aspect of femoral head is the result of force produced between femoral head and anterior inferior acetabular margin during dislocation. In cases of anterior dislocation, with fracture of femoral head, the results were unfavorable. The patients with fracture had a worse prognosis than those with simple dislocations. Scham treated his case by cup arthroplasty, 9 weeks after injury (8). In addition to traumatic arthritis, other potential complications are avascular necrosis of the femoral head and myositis ossificans. In open anterior dislocation, neurovascular injury and infection are other serious complications (9).

**Table 1.** Epstein Clinical Criteria for Evaluating Results of Traumatic hip Dislocation

	<b>Excellent</b>	<b>Good</b>	<b>Fair</b>	<b>Poor</b>
	All of the following	All of the following	Any one or more of the following	Any one or more of the following
<b>Pain</b>	No pain	No pain	Pain but not disabling	Disabling pain
<b>Motion</b>	Full range of hip motion	Free motion (75% of normal hip)	Limited motion of the hip, no adduction deformity	Marked limitation of motion or adduction deformity
<b>Limp</b>	No limp	No more than slight limp	Moderate limp	Redislocation
<b>Roentgenographic</b>	No roentgenographic evidence of progressive changes	Minimum roentgenographic changes	Moderately severe roentgenographic changes	Progressive roentgenographic changes

In closed anterior dislocation of the hip, the risk of avascular necrosis varies from 1.7 to 40% (10). This complication is more frequent in open dislocations (3-6). In 11 reported open anterior dislocation of the hip, there were five cases of avascular necrosis. Three cases of these five had concomitant infection. Schicho and Riepl reported a femoral head dislocation to the scrotum in a 33 year old man, recently (11). They treated the patient with open reduction and internal fixation and, after 14 months, the follow up of the femoral head was vital and without avascular necrosis (11).

Factors correlated to the poor prognosis are severity of injury (open dislocation), associated fractures and delayed reduction. In the case in which he had open perineal dislocation of the hip, poor prognosis could be due to infection and avascular necrosis, as a result of severe retinaculum injury during the primary trauma or numerous irrigations and debridements.

Epstein classified clinical results of patients after hip dislocation (1) (Table 1).

According to this classification, the functional result of our patient was poor; infection and avascular necrosis are the two main causes of our poor result. Contamination of femoral head in perineal region and severe injury to vascular supply of femoral head are its causes.

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