Open Anterior Hip Fracture Dislocation in a Young Adult with Exposed Femoral Head: A Case Report

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Abstract

Anterior hip dislocations are seen infrequently as compared to posterior dislocations, comprising 12-18% of all hip dislocations. Anterior hip dislocation is commoner in younger adults and is due to high energy trauma such as high-velocity motor vehicle accidents or falls from great heights. Of these, open anterior hip dislocations are extremely rare and occur due to high energy trauma and are usually associated with other soft tissue and bony injuries. These dislocations have been reported just twice previously in literature in the adult age group. We report a case of an open anterior-superior hip fracture dislocation and associated acetabular fracture with normal neurovascular status.

Introduction

Traumatic hip dislocations result from high-energy trauma. These dislocations are usually posterior in direction and have severe associated injuries [1, 2]. The less common anterior dislocation is usually of the inferior type [2-5]. We report a case of an open anterior-superior hip fracture dislocation secondary to a mining accident. Anterior dislocations of hip are rare as compared to posterior dislocations and of these, open anterior dislocation is so infrequent that it has been reported only eight times previously in literature. Thus open anterior fracture dislocation of the hip is an extremely rare injury. This rarity is because the of the anatomical stability of the hip which is deeply placed within the pelvis, has adequate coverage of the ball made by the femoral head by the socket (acetabulum) which is further stabilized by strong ligaments and bulky muscles on all sides. Till date, only eight such cases (including technically open) have been reported in the literature [6-13]. Five of them have described in children aged 5-10 years, one in an adolescent aged 15 and two in adults. In adults, Grundy and Kumar [11] reported a case of an open anterior-superior hip dislocation. A 26-year-old man sustained the injury with a hyperextension and external rotation force to the hip when he was forced through a fence by a vehicle. The femoral head came to rest anterior and superior to the acetabulum over the pectineal eminence. The open wound was 10 cm in length in line with the inguinal ligament. At the 1-year follow-up, he had no evidence of infection or avascular necrosis. Lamberti and Rabin [12] reported a right anterior-inferior hip dislocation following a road traffic accident. There was no associated fracture of the femoral head or acetabulum. The patient sustained multiple other fractures, including an ipsilateral talar neck and pilon fractures, a contralateral floating knee with an open tibia fracture, a pelvic ring disruption, and a humerus fracture. Soft tissue injuries included multiple small lacerations as well as a 9-cm transverse right groin wound 10 cm inferior to the pubis which communicated with the hip joint. Reduction with meticulous debridement resulted in good wound healing and there was no clinical or radiographic evidence of infection or osteonecrosis at the 9-month follow-up. We report here the 9th case in an adult, who had other adjacent bony injuries also. A concomitant open trochanteric fracture with fracture of the ilium and pubis with contralateral femoral fracture were complicated by a liver laceration and hemoperitoneum which led to decompensated hemodynamic shock and the fracture after being stabilized by a pelvic fixator was followed by a laparotomy but the patient could not be resuscitated despite all efforts and died in the immediate post operative period.

Case Report(s)

A young 35 year old male, mining labourer by occupation, was involved in a mining accident and sustained injury to his abdomen, right hip and left leg. He was brought to the casualty section of this hospital and was preliminarily assessed as having an open anterior-superior fracture dislocation of the hip with the femoral head clearly visible in the inguinal region (Fig 1) and a contralateral fracture of the femur. The patient was in severe shock but the neurovascular status was intact. The hip radiograph showed an anterior-superior fracture dislocation of the hip with associated trochanteric, ilium and pubis fracture with no other associated bony injury (Fig 2). The patient was immediately shifted to the operating room where the femoral head was relocated under anesthesia and the inguinal wound was debrided and the fracture was stabilized with an external fixator. The wound was 8x7
cm in dimension, the femoral head visible just above the inguinal ligament and the surrounding tissues were contused but the femoral vessels and nerve were intact. The trochanteric fracture was associated with pubic rami and ilial fracture and subsequent to external fixation, the patient was operated for hemoperitoneum and expired in the post operative period.

Discussion

The hip joint is inherently one of the most stable joints in the body and considerable force is needed to dislocate it. In today’s hectic life, traumatic hip dislocations are not uncommon, especially in the developing countries with ever rising vehicular traffic and poor infrastructure. But open hip dislocation is rare. The deeply seated hip joint covered by strong ligaments and a bulky muscle envelope ensures this. In a large series of hip dislocations, no open dislocations have been mentioned [1, 2]. The majority of hip dislocations comprise posterior ones [2-5]; the incidence of anterior dislocations being 2% to 11% of all dislocations. Anterior hip dislocations can be associated with femoral neurovascular injury, femoral head fractures, and acetabular fractures [2,5,6]. These injuries have been associated with a worse prognosis as well as with a delay in reduction of the joint. Open anterior hip dislocation has been reported five times in children [6-10] and only twice in adults and once in an adolescent [11,12,13]. In 1982, Grundy and Kumar reported a case of an open anterior-superior hip dislocation [11] wherein a 26-year-old man sustained the injury with a hyperextension and external rotation force to the hip when he was forced through a fence by a vehicle. The femoral head came to rest anterior and superior to the acetabulum over the pectineal eminence. The open wound was 10 cm in length in line with the inguinal ligament. At the 1-year follow-up, he had no evidence of infection or avascular necrosis. In 2003, Lamberti and Rabin [12] reported an open anterior-inferior dislocation due to a road traffic accident having a 9 cm long wound 10 cm distal to the pubis communicating with the hip joint. The wound was due to progressive medial soft tissue injury secondary to the extreme rotation and displacement of the hip. This progression started with inferior capsular disruption and joint dislocation and continued to muscle and upper-medial thigh skin rupture. There was no evidence of infection or osteonecrosis at 12 month follow up.

A review of literature implies that the prognosis of open hip dislocation becomes worse with the increasing severity of the injury, the degree of compounding, the associated soft tissue (including vascular) injuries, the age of the patient and the delay in reduction [6,8,9,12,13].

In our case, the wound seemed to be due to a progressive medial soft tissue injury secondary to the extreme external rotation and dislocation of the hip. This progression started with medial capsule disruption and joint dislocation and continued till the muscle and perineal skin gave way. The neurovascular structures were unharmed as the zone of injury passed between the femoral vessels and the sciatic nerve.

Conclusion

Eventual outcome of this rare injury depends on many factors like initial cartilage damage, injury to the femoral head vasculature, and sometimes infection which are variables beyond the surgeon’s control. Factors like timing and accuracy of the reduction are variables that can be positively affected by recognizing and treating the injury as an acute emergency.

References

Illustrations

Illustration 1

Initial appearance of the groin wound with the femoral head visible anteriorly.
Illustration 2

Initial radiograph showing anterior hip dislocation at admission.
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