

# Bilateral Asymmetric Hip Dislocation With Segmental Fracture Femur : An Unusual Case Report And Literature Review

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## Abstract

Bilateral traumatic hip dislocation is rarely seen. A unique case is presented, consisting of bilateral asymmetric hip dislocation with associated segmental fracture femur, resulting from fall from train. This case represents an unusual, severe combination of injuries resulting from the fall from train under influence of alcohol. Traumatic hip dislocation represents a true orthopaedic emergency. Given the severity of associated complications, every effort should be made to ensure prompt diagnosis and immediate therapy. We report our experience in the management of this complex injury pattern and review the pertinent literature on this subject.

## INTRODUCTION

Hip dislocation occur infrequently and almost always after traumatic injury. It accounts for 2 TO 5% of all dislocation (1,2). 85 to 90% are posterior dislocation (3). Bilateral traumatic dislocation is a rare injury but 55 such cases have been reported in literature. Asymmetric bilateral hip dislocation is even rarer injury, with only 16 cases reported in English literature (2,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18).

We report a unique case, simultaneous bilateral asymmetric dislocation with segmental fracture of femur caused by fall from train. Only two cases of bilateral asymmetric hip dislocation with associated femur fracture have been reported (8, 16), however there is no case of asymmetric bilateral hip dislocation associated with segmental fracture of femur in the English literature. Considering mode of trauma, no where among previous reports, fall from train as a cause of injury has been described.

## CASE REPORT

A 60 year old male who was weighing around 120kg was admitted to our centre after fall from train. He was standing next to door and fell down under influence of alcohol. Other than history of alcoholism, he had no history of past pelvic trauma, hip abnormality or ligamentous laxity. The patient arrived within 2 hours of injury and was slightly disoriented

with smell of alcohol. There was no history suggestive of head injury.

He was found to be hemodynamically stable with a Glasgow coma scale of 15 during initial evaluation. Chest, abdominal examination was normal and pelvis was found stable on compression. Multiple extremity abrasions were present and there were obvious deformities of both lower extremities and deformity of right thigh indicating femoral fracture. His left hip was abducted, flexed and externally rotated while his right hip was in flexion, adduction and internal rotation. There was gross swelling, tenderness of right thigh with crept, abnormal mobility at two sites; one at upper 3<sup>rd</sup> of thigh and another at lower 3<sup>rd</sup> of thigh. There was no distal neurovascular deficit in either of lower limbs. (Figure-1)

**Figure 1**

Fig1:



After initial resuscitation, radiographs revealed anterior - inferior dislocation of left hip and posterior dislocation of right hip with segmental fracture of right femur (Figure-2)

**Figure 2**

Fig2:



There were two transverse fracture lines, one at upper 3<sup>rd</sup> - mid 3<sup>rd</sup> junction and second fracture line at distal 3<sup>rd</sup> of femur (Figure-3) .

**Figure 3**

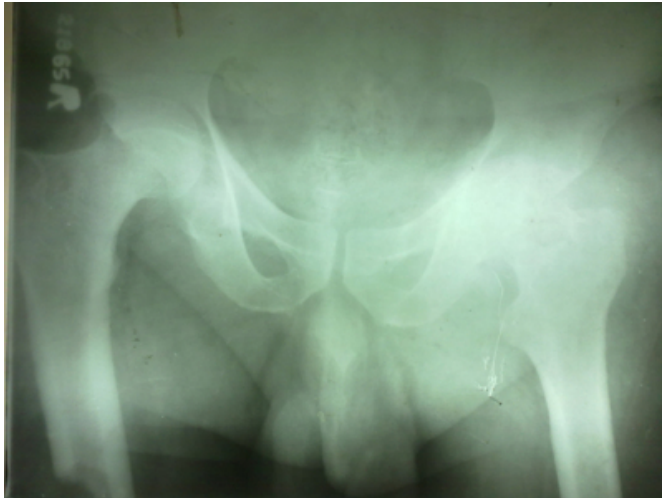
Fig3:



Immediate manipulative reduction of both hips was carried out in operating room under general anaesthesia. Reduction manoeuvre was painstaking as patient was overweight . Reduction of right hip was further difficult due to loss of leverage because of femoral fracture but manipulative reduction could be achieved by passing Steinmann pin in femoral shaft proximal to fracture line and applying manual traction through Steinmann pin. Post reduction check xray showed both hip in reduced position (Figure-4)

**Figure 4**

Fig4:



Post reduction CT didn't show any concomitant acetabular fracture or intra articular bony fragment (Figure-5&6).

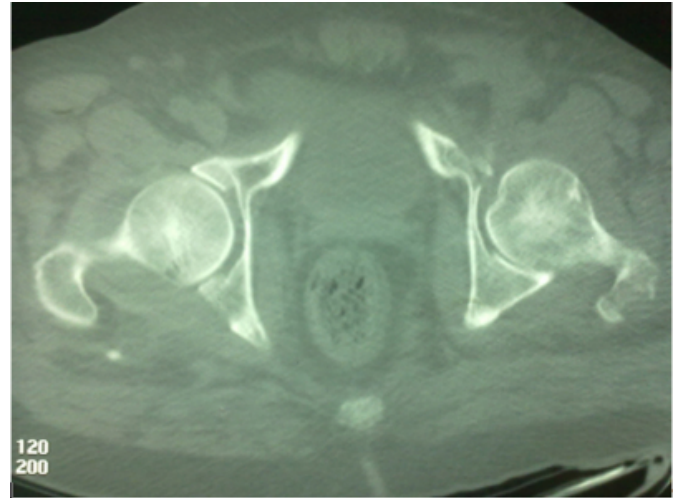
**Figure 5**

Fig5:



**Figure 6**

Fig6:



Skin traction was applied on both the sides. Patient was evaluated and battery of other investigations (ECG, hematology and biochemistry) was performed. Patient suffered from delirium for next few days, for which help of psychiatry service was sought. He was diagnosed to be having alcohol withdrawal, for which he was given drugs and all features of withdrawal subsided in one week.

Once his general condition improved, patient was again taken to operating room on post injury day 10 and closed reduction and internal fixation of segmental femoral shaft fracture was performed with placement of anterograde intra medullary nail (Figure-7&8).

**Figure 7**

Fig7:



**Figure 8**

Fig8:



Skin traction was applied on both lower limb for 6 weeks and patient was shifted to rehabilitation facility. During this period the patient remained non ambulatory, so DVT prophylaxis was added. He did knee mobilisation exercises / isometric quadriceps exercises for 6 weeks. The patient was allowed to bear full weight on left side and partial weight on right side after 6 weeks and was made ambulatory with crutches. Full weight bearing on right side was delayed until

12 weeks.

One year after the injury patient had full range of pain free movement at both hip and knee joints without any radiographic evidence of avascular necrosis in either femoral head. Due to financial constraint, patient didn't consent to an MRI of the hips to evaluate any change of AVN.

### DISCUSSION

Traumatic hip dislocation comprises about 2 to 5% of all dislocations (3). Bilateral hip dislocation is a rare injury, the incidence being 1.25% of all hip dislocations and about 0.025 – 0.05% of all dislocations (3,15). Asymmetric bilateral dislocation is very uncommon with only few case report (2,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18).

Concomitant femoral shaft fracture in such asymmetric dislocation are very rare with only 2 cases previously reported (8,16). Segmental femoral fracture as seen in this case, is first to be described to the best of our knowledge. All previously reported cases have motor vehicle accident as most common mode of trauma as seen in 13 out of 15 case reports. One patient had fall from height and another patient sustained injury during plane crash (2,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18). In our case unique mode of trauma was fall from train under influence of alcohol which has not been reported previously.

Hip dislocation resulting from high energy trauma. For bilateral asymmetric hip dislocation to occur, forces must be applied in two different directions simultaneously, which results in one hip dislocation posteriorly and one anteriorly (1,2).

Posterior wall acetabular fracture and knee injuries are frequent with posterior hip dislocation (15). Fracture of the acetabulum are uncommon with anterior – inferior hip dislocations, but impaction fracture of femoral head is often present (20). Central dislocation represents a fracture of acetabulum with protrusion of hip into pelvis (3). Fracture of femoral shaft may also occur in association with hip dislocation (8,16).

Screening pelvic radiographs in all polytrauma patients and in patients with clinical findings of hip dislocation should be performed in the initial evaluation. Posterior hip dislocation may initially go unrecognised in the setting of acetabular fractures, particularly with transverse and T type fractures. Judet or lateral views may allow early recognition and treatment of the dislocation in this setting as acetabular

reconstruction may be delayed (20, 21). In patients with uncomplicated dislocations, clinical assessment and standard radiographs may constitute a satisfactory evaluation (22).

CT is usually not necessary prior to reduction, as it delays reduction and is frequently unnecessary for initial management. CT is initially useful when closed reduction fails or in patients with multiple injuries in whom Judet views is technically difficult. CT is very important in the planning of definitive surgery for complex acetabular fractures, the evaluation for intra articular osteo chondral fragments, and in the assessment of pelvic hematoma (20,21,23)

Early diagnosis and reduction of dislocation hip is essential, as the risk of AVN of femoral head may be affected by the time elapsed prior to reduction of the hip. The current recommendations are for reduction within 6 hours which has been termed as golden time (23, 24, 25, 26, 27). AVN has been reported in 6 to 27 percent of patients after hip dislocation (20, 28). In one series AVN occurred in 5 % of hip dislocations reduced within 6 hours, in 8% of hips reduced after 6-24 hours, and in 16% cases reduced on 2<sup>nd</sup> or 3<sup>rd</sup> day. AVN has been reported to occur in 7.5% of posterior hip dislocations, 1.5% of anterior dislocations and 1.6% of central dislocations (29).

Post traumatic arthritis is a frequent complication of hip dislocation, reported to occur in 16% of uncomplicated hip dislocations and in up to 88% of patients with severe acetabular fractures (22,30, 31). Factors associated with development of arthritis include non congruent reduction, acetabular fractures, femoral fractures (impaction or trans chondral fractures), time delay between injury and reduction, and osteonecrosis (22).

Neuro vascular injuries may accompany hip dislocation. Injury to femoral neuro vasculature rarely occurs as a result of anterior dislocation (3). The sciatic nerve is the most commonly injured nerve with 10% association with posterior dislocation of hip in adult, the peroneal branch is most commonly affected. Reduction of the femoral head and displaced fracture fragments is important in treatment, as is early rehabilitation approximately.

This case presented represents an unusual, severe combination of injuries resulting from severe trauma. These kind of injuries require careful trauma evaluation to rule out concomitant injuries, early reduction within 6 hrs and close follow up, including CT scan and MRI. As the incidence of

high velocity road accident is increasing in the absence of stringent enforcement of road safety rules, especially in third world countries, such rare injury may not remain so uncommon in near future. Given the severity of associated complications, every effort should be made to ensure prompt diagnosis and therapy. It is also essential to educate the patient for evidence and possibilities of osteonecrosis and post traumatic arthritis.

## CONSENT

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the editor in chief of the journal.

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