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Traumatic asymmetrical bilateral hip dislocation: a case report and literature review

Travmatik asimetrik iki taraflı kalça çıkığı: Olgu sunumu ve literatür incelemesi

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Traumatic asymmetrical bilateral dislocation of the hip joint is a rare occurrence. Herein we report a case of traumatic asymmetrical bilateral dislocation of the hip caused by a falling object. A 31-year-old healthy male was injured by a falling wall of weighing approximately 100 kg from behind in the lumbosacral area. The patient sustained a pelvic fracture, posterior dislocation of the right hip joint associated with a comminuted fracture of the right acetabulum, and anterior dislocation of the left hip joint. Manual reduction of both hip dislocations was performed in the Emergency Department. The posterior wall fracture of the right acetabulum was treated with open reduction and internal fixation by plate and screw. Reduction of both hips was successful and no femur necrosis or arthrosis were found during the four year follow-up. Heterotopic ossification was found but it did not affect joint function. Prompt reduction of hip dislocations in the Emergency Department can reduce the incidence of avascular necrosis of the femoral head.

Key words: Injury; pelvic fracture; trauma; traumatic asymmetrical bilateral hip dislocation.

Kalça ekleminin travmatik asimetrik iki taraflı çıkığı nadir bir durumdur. Bu yazıda düşen bir obje nedeniyle meydana gelmiş olan bir travmatik asimetrik iki taraflı kalça çıkığı olgusu bildirmekteyiz. Otuz bir yaşında sağlıklı bir erkek arka taraftan lumbosakral bölgesine yaklaşık 100 kg ağırlığında bir duvar düşmesi nedeniyle yaralanmıştı. Hastada bir pelvik kırık, sağ kalça ekleminde sağ asetabulumun parçalı kırığıyla ilişkili posteriyor çıkık ve sol kalça ekleminde anteriyor çıkık vardı. Her iki kalça çıkığının manuel redüksiyonu Acil Serviste gerçekleştirildi. Sağ asetabulumdaki posteriyor duvar kırığı açık redüksiyon ve plak ve vida ile internal tespit yoluyla tedavi edildi. Her iki kalçanın redüksiyonu başarılıydı ve dört yıllık takip boyunca femur nekrozu ya da artroz tespit edilmedi. Heterotopik ossifikasyon saptandı ancak bu durum eklem fonksiyonunu etkilemedi. Kalça çıkıklarının Acil Serviste mümkün olan en kısa süre içinde redükte edilmesi femur başında avasküler nekroz oluşması insidansını düşürebilir.

Anahtar sözcükler: Yaralanma; pelvik kırık; travma; travmatik asimetrik iki taraflı kalça çıkığı.

Bilateral hip dislocation is relatively rare and accounts for approximately 1.25% of all hip dislocations.[1] Traumatic asymmetrical bilateral hip dislocation is extremely rare, with only 24 cases reported in the English literature. In this article we describe an unusual case of asymmetrical, bilateral hip dislocation occurring when the patient was hit from behind by a large falling object. The patient provided informed consent to have the details of the case and images published.

CASE REPORT

A 31-year-old healthy male with no significant medical history was admitted to our Emergency Department (ED) with bilateral hip pain four hours after being injured by a falling object. An earth wall approximately 5 meters high and weighing approximately 100 kg fell and hit the man from behind in the lumbosacral area. The patient fell down, felt pain in both hips and could not move his lower extremities. Physical examination revealed a blood pressure (BP) of 120/75 mmHg; heart rate of 127 beats/min; respiratory rate of 23/min and body temperature of 36.3 °C. His abdominal muscles were slightly tense with mild tenderness in the lower abdomen, and a pelvic separation and compression test was positive. Abduction and external rotation deformity were present in the left lower extremity, the left inguinal region was full, the dislocated femur

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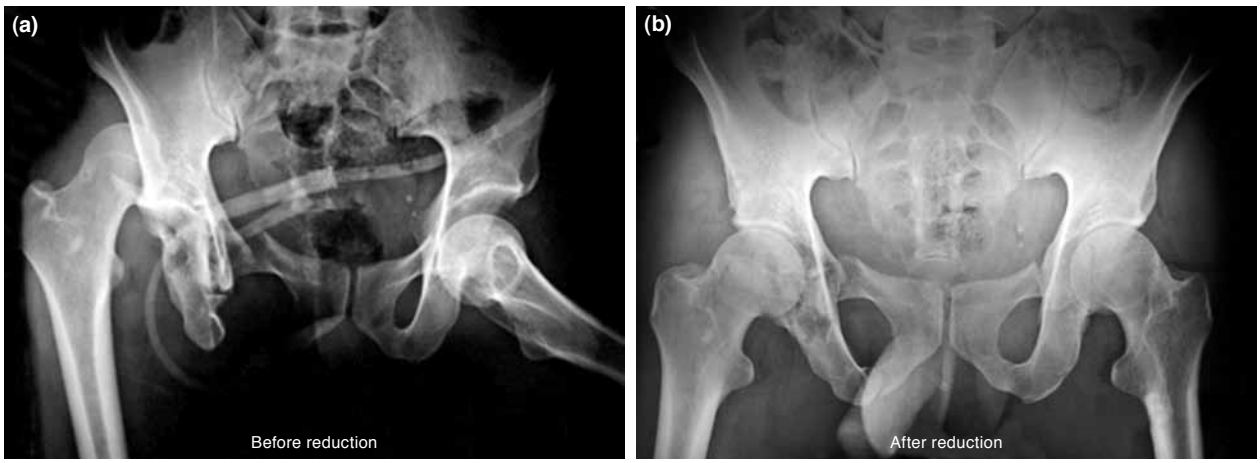

Figure 1. (a) Radiograph in the Emergency Department demonstrated a right-sided comminuted fracture of the acetabulum, fractures of the superior and inferior pubic rami, and posterior dislocation of the hip joint and a left-sided fracture of the superior pubic ramus and anterior dislocation of the hip joint. **(b)** Satisfactory reduction of both hip joints is noted.

head was palpable in the left inguinal region, and mild cyanosis was seen in the left lower extremity. Mild adduction and internal rotation deformity were seen in the right lower extremity. Active and passive movements could not be performed in both hips. Pelvic radiographs (Figure 1a) revealed the following: on the right side, a comminuted fracture of the right acetabulum, fractures of the right superior and inferior pubic rami, and posterior dislocation of the right hip joint; on the left side, fracture of the left superior pubic ramus, and anterior dislocation of the left hip joint. The patient was diagnosed with a pelvic fracture (right superior and inferior pubic rami and left superior pubic ramus), posterior dislocation of the right hip joint associated with a comminuted fracture of the right, and anterior dislocation of the left hip joint. Head and abdominal computed tomography revealed no evidence of traumatic brain injury or closed abdominal injury.

Manual reduction of both hip dislocations was performed in the ED under general anesthesia (Figure 1b). Then, bilateral tibial tubercle traction was carried out. Ten days after the injury, the posterior wall fracture of the right acetabulum was treated with open reduction and internal fixation by plate and screws.

At the latest follow-up four years postoperatively, radiographs revealed heterotopic bone formation but no avascular necrosis of the femoral head (Figure 2). The patient was symptom-free and performed normal daily activities.

DISCUSSION

Traumatic asymmetrical hip dislocation is a rare injury. In our review of PubMed and the CNKI databases we found 51 cases of traumatic asymmetrical bilateral hip dislocations with complete data on injury and treatment. Twenty-four cases were reported between March 1953 and July 2009 in PubMed and 27 cases reported between March 1983 and July 2009 in the Chinese National Knowledge Infrastructure (CNKI). A striking difference between the two populations was seen in the cause of injury. More than half (55%) of the dislocations reported in the CNKI database and none of the dislocations reported in the PubMed database were caused by the impact of heavy objects on the lumbosacral area of an individual who was bending over. In addition, 83% of the cases in the PubMed database, but only 40% of those in the CNKI were caused by motor vehicle collisions.

When a car collides with another object and sudden deceleration occurs, the hip is typically flexed and the angle of the knee joint is <90°; thus the

Figure 2. Radiographs at four years postoperatively revealed the presence of heterotopic bone, but no avascular necrosis of the femoral head.

conducted force results in the posterior dislocation of the femoral head.[2-5] If the other hip joint is in a position of external rotation and abduction at this time, then the medial side of the knee joint may collide with the dashboard to result in the anterior dislocation of the femoral head.[2-5] If a heavy object falls on the lumbosacral region of a person who is bending down, the lower extremity is in a posture of hip and knee flexion, the pressure on the lumbosacral area increases and causes the head of the femur head to move backward, causing posterior dislocation. Meanwhile, the hip joint that is further back is in extension, and the increased force in the lumbosacral area causes anterior dislocation of the hip joint. This kind of dislocation also may occur if one of the hip joints is flexed and adducted, and the other abducted and flexed during the process of the injury.

Once associated injuries have been ruled out, reduction should be performed as soon as possible under general anesthesia or conscious sedation.[6] Hip joint reduction can be carried out immediately for patients with associated fractures, and fracture treatment can be performed at a later date. Early reduction has been shown to reduce the risk of avascular necrosis of the femoral head.[7] Şahin et al.[8] reviewed 62 dislocation cases, of which 50 were treated with closed reduction, and 12 were treated by open methods. Only 35 (56%) were reduced within 12 hours. Five cases developed avascular necrosis of the femoral head. The authors concluded that time between injury and reduction, and associated injuries were the most important factors in hip dislocation prognosis. Goddard[9] reported that the risk of avascular necrosis occurring after a hip dislocation is related to the length of the time the hip remains dislocated. The rate of osteonecrosis varies from 5% if the hip is reduced in less than six hours after injury to 50% if the hip is reduced more than six hours after injury.[10] Thus, early and accurate reduction in the ED may reduce complications associated with hip dislocation.

In our case there was no evidence of avascular necrosis of the femoral head on follow-up four years after injury. This may be related to prompt reduction in the ED.

Declaration of conflicting interests

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