



Locked posterior dislocation of the hip: a case report

Kilitli posterior travmatik kalça çıkığı: Olgu sunumu

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Öne veya arkaya kalça çıkıklarında femur başında görülen çarpmaya ve vurmaya bağlı kırıklar oldukça iyi tanımlanmıştır. Ancak, asetabulum arka kenarının femur başı içerisine gömülmesiyle sonuçlanan kilitli arkaya kalça çıkığı daha önce tanımlanmamıştır. İki hafta önce araç içi trafik kazası geçiren 26 yaşında erkek hasta, sol kasık bölgesindeki sürekli ağrı ve sol kalça hareketlerinde belirgin hareket kısıtlılığı nedeniyle başvurdu. Hasta, koltuk değnekleri yardımıyla yürüyebiliyordu. Hasta, yaralanmadan hemen sonra başka bir merkezde fizik muayene ve düz grafilerle değerlendirilmiş, yatak istirahati önerisiyle ve analjezik verilerek evine gönderilmişti. Bilgisayarlı tomografide, asetabulum arka kenarının femur başına çarpmasıyla oluşan kilitlenme görüldü. Cerrahi girişim sırasında asetabulum arka kenarının femur başı ön-iç yüzeyinde kama şeklinde ve 12 mm derinliğinde bir çukur açarak gömüldüğü görüldü. Hastaya, kırıkta yüzeyde oluşan geniş harabiyet nedeniyle çimentosuz double-cup (bipolar) parsiyel protez uygulandı. Yirmi sekiz ay sonraki kontrolünde, hastanın yakınması yoktu ve kalça hareketleri ağrısız, hareket açıklığı tam idi.

Anahtar sözcükler: Asetabulum/yaralanma; femur başı/yaralanma/radyografi; kalça çıkığı/komplikasyon; bilgisayarlı tomografi.

Impaction fractures of the femoral head occurring after anterior or posterior hip dislocations are well described. However, locked posterior hip dislocation resulting in sinking of the posterior acetabular rim into the femoral head has hitherto been undescribed. A 26-year-old male patient presented with complaints of severe pain in the left thigh and marked limitation in the movements of the left hip two weeks after an in-car crash. He could only walk with crutches. Shortly after the accident, he was examined at another center with physical examination and plain radiographies and was given bed rest and medications for pain relief. Computed tomography demonstrated the locked posterior hip by the impact of the posterior acetabular rim against the femoral head. At surgery, the posterior acetabular rim was embedded in the anteromedial surface of the femoral head resulting in an osteochondral impaction fracture with a penetration depth of 12 mm. Due to wide destruction to the cartilage surface, an uncemented bipolar hemiarthroplasty was performed. After 28 months of follow-up, he had no complaints and hip movements were painless with full range of motion.

Key words: Acetabulum/injuries; femur head/injuries/radiography; hip dislocation/complications; tomography, x-ray computed.

Fractures of the femoral head associated with traumatic anterior or posterior dislocation of the hip are unusual and very serious injuries. The majority of patients with dislocated hip have been involved in motor vehicle accidents.^[1-12] Posterior dislocation of the hip frequently results from a dashboard injury in which the flexed hip is pushed posteriorly by an impact of the knee on the car dashboard.^[9,12] Type V

dislocations, which include femoral head fractures, have a low percentage of successful results, regardless of the method or type of treatment.^[2] Indentation or impaction fracture of the femoral head after anterior or posterior dislocation of the hip also has been reported and is fairly well known.^[1,3-5,9,11,12] However, posterior locked hip occurring as a result of the posterior acetabular rim being embedded in the femoral

head has not been described before in the literature. After its computed tomography (CT) scan images it is diagnosed as “missed locked posterior dislocation of the hip” and selection of the treatment type as uncemented bipolar hemiarthroplasty are described and illustrated in this case report.

Case report

In October 2003, 26 year-old male patient applied to our department for persisting pain in the left groin and marked limitation of movement of his left hip joint. He was able partial weight bearing on the affected extremity walking with supporting crutch when he presented to our department. He had been involved in an automobile accident two weeks before. He had sat near the driver in front of the car without wearing a seatbelt during the accident. After the accident, he had gone to hospital and had walked in with a limp. He had been examined in the emergency room by an orthopaedic surgeon. After taking the plain radiographs, he had been offered bed rest and medication. He found no improvement, so he came to our department two weeks after the initial accident. On examination, his left hip was slightly flexed and had minimal internal rotation. His range of motion was limited with 60° (range from 30° to 90°) flexion, 5° internal rotation and 0° external rotation by severe pain primarily in the groin and hip regions. Neurovascular status was intact. Anteroposterior radiograph of his pelvis demonstrated incongruity between the femoral head and acetabulum. The left hip joint had slight asymmetry in comparison with the right hip joint and bony flattening in superior portion of the the femoral head (Fig. 1). A CT scan demonstrated that the posterior locked hip occurred as a result of impaction of the femoral head on the posterior acetabular rim. The femoral head had a wedge-shaped defect in antero-medial surface of femoral head and the posterior acetabular rim had been embedded in anteromedial surface of femoral head (Fig. 2). There was no history of previous injury of musculoskeletal abnormality before the automobile accident. The patient had no any additional injury after the automobile accident when he had rested at home.

Surgical intervention of the left hip was performed through a posterior approach. The femoral head was dislocated at the level of the posterior acetabular rim and the posterior acetabular rim was



Figure 1. Anteroposterior radiograph of the pelvis demonstrating joint incongruity and asymmetry of the left hip joint and flattened area of superolateral aspect of left femoral head.

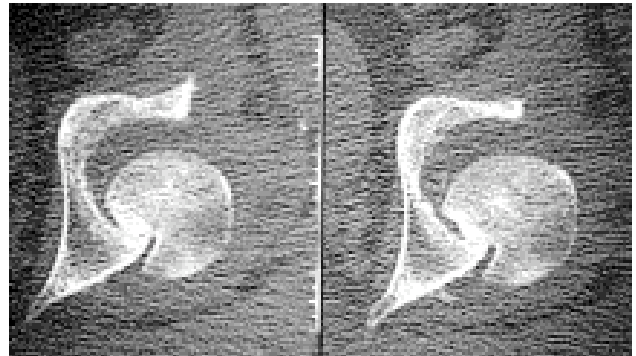


Figure 2. Computed tomography scan images at the level of the left hip joint demonstrating the wedge-shaped defect in the anteromedial aspect of the femoral head caused by impaction on the posterior acetabular rim.

embedded on the anteromedial surface of the femoral head under the rotator muscles. Once the hip had been dislocated, inspection of the femoral head



Figure 3. Intraoperative photograph of retrieved femoral head “over the top view”. A 12 mm deep impaction fracture of the femoral head can be seen.

revealed the presence of a 12 mm deep osteochondral impaction (impression/depression) fracture involving its anteromedial surface (Fig. 3). We therefore performed an uncemented double-cup hemiarthroplasty (bipolar prosthesis) (Fig. 4). 28 months after surgery, he remained asymptomatic and had a full and painless range of left hip motion.

Discussion

Indentation or chondral/osteochondral impaction fracture (impression fracture, depression fracture) of the femoral head may occur during both anterior and posterior hip dislocations.^[1,3-5,9,11,12] These fractures of the femoral head commonly complicate anterior hip dislocation and this condition had been adequately described.^[1,3-5,11] Impaction or indentation fractures of the femoral head that have been reported range from 35 to 55% of patients after anterior hip dislocation.^[1,3] These fractures result from impaction of the femoral head on the anteroinferior rim of the acetabulum after the femoral head exits the acetabulum. Impaction injuries are located in the superolateral or posterolateral aspect of the femoral head and may appear radiographically as a depressed fracture similar to a Hill-Sachs deformity of the humerus^[13], or simply as a mild flattening of the femoral head.^[3,11] Femoral head fractures and chondral defects may also result from impaction of the femoral head

against the anterior rim of the acetabulum as the femur exits the acetabulum.^[3] In general, patients with anterior hip dislocation associated with femoral head fractures have a higher prevalence of traumatic arthritis and a poorer diagnosis.^[1,3] DeLee et al.^[1] noted that poor clinical prognosis associated with the development of early coxarthrosis when the indentation fracture was deeper than 4 mm.

Impaction fracture of the anterosuperior surface of the femoral head in association with posterior hip dislocation is similar to a “trough line” fracture of the humeral head in posterior shoulder dislocation.^[11] Urist^[12] explained in 1948 that “Almost every case showed some damage to the articular surface of the head, but these lesions were small and not visible roentgenographically”. He described lunate-shaped indentations and circular flat depression (subchondral compression fracture) on the anterior aspect of the head of the femur in posterior dislocation of the hip. Tehranzadeh et al.^[11] showed that 20 (63%) of 32 cases of posterior hip dislocation had osteochondral impaction fractures of the femoral head. Richardson et al.^[9] mentioned that impacted fracture were seen in 21 (13%) of 164 posterior fracture dislocations.

The mechanism of this injury is thought to be forceful impingement of the anterior aspect of the femoral head on the posterior acetabular rim during fracture/dislocations of the femoral head,^[9,11,12] much as occurs in Hill-Sachs lesion of the shoulder.^[13] The degree of the impaction and the site and the size of the fracture of the femoral head and posterior wall of the acetabulum may be directly related to the degree of abduction of the femur and the flexion of the hip.^[11] In our case, this type of injury was seen in an automobile accident, where the left knee forcefully impacted against the dashboard of the car with knees and hips are flexed. This gave rise to posterior dislocation of the femoral head, allowing impaction of the posterior rim of the acetabulum against the anteromedial part (anteromedial surface) of the femoral head, the acetabular rim was embedded in anteromedial surface of femoral head resulting in an osteochondral impaction fracture with a penetration depth of 12 mm.

It is often difficult to evaluate the condition of the femoral head and the acetabulum using conventional radiography after a severe injury to the hip.



Figure 4. Postoperative radiograph of the left hip performed press-fit bipolar prosthesis.

Computerised tomography (CT) scan provide additional information. Impaction fractures may be visible on plain radiographs but the diagnosis may initially be missed. Computed tomography is more accurate in diagnosing indentation or impaction fractures as well as complete femoral head fractures.^[3,9-11] In our case, the diagnosis had been missed by the initial specialist. When we took radiograph of the patient in our department, anteroposterior radiographs of the left hip demonstrated joint incongruity and asymmetry of the left hip joint and flattened area of superolateral aspect of femoral head. Computed tomography scan images at the level of the left hip joint demonstrated the defect in the anteromedial surface of the femoral head caused by impaction on the posterior acetabular rim (Fig.2).

Some of the authors (physicians) have offered prosthetic replacement when there was fracture both femoral head and femoral neck.^[4-6] Because of the severity of the hip trauma in the patient of this present study resulted in an important ratio articular defect in a major weight-bearing surface of the femoral head, prosthetic replacement was the logical operative intervention. A press-fit bipolar hemiarthroplasty was selected and performed with an optimally functional implant option for this young patient (Fig. 4).

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