

Asymmetric Bilateral Hip Fracture-Dislocation: A Case Report and Literature Review

Seyed Mohammad Javad Mortazavi^{1,*}, Hamed Mazzochoy², Mohammad Ali Ghasemi³,
Furqan Mohammed Yaseen Khan⁴

¹ Professor, Department of Orthopedics, Adult Joint Reconstruction Fellowship, Joint Reconstruction Research Center, Tehran University of Medical Sciences, Tehran, Iran

² Assistant Professor, Department of Orthopedic Surgery, Shahid Modares Hospital, Saveh University of Medical Sciences, Saveh, Iran

³ Fellowship of Hip and Pelvic Surgery, Department of Orthopedic Surgery, Joint Reconstruction Research Center, Tehran University of Medical Sciences, Tehran, Iran

⁴ Resident, Department of Orthopedic Surgery, Joint Reconstruction Research Center, Tehran University of Medical Sciences, Tehran, Iran

*Corresponding author: Seyed Mohammad Javad Mortazavi; Department of Orthopedics, Adult Joint Reconstruction Fellowship, Joint Reconstruction Research Center, Tehran University of Medical Sciences, Tehran, Iran. Tel: +98-021-66581586, Email: smjmort@yahoo.com

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Abstract

Background: Asymmetric bilateral hip dislocation is a rare condition, especially when it is accompanied by a bilateral femoral head fracture.

Case Report: A 28-year-old man who sustained a motor vehicle accident, was presented to our center (Imam Khomeini Hospital Complex) with asymmetric bilateral hip fracture-dislocation. In the initial step, closed reduction was performed, followed by bilateral open reduction and fixation of the femoral head fragment by screws. The results were satisfactory after 5 years of follow-up.

Conclusion: Although rare, paradoxical femoral head fracture should be considered in patients with hip dislocation. We recommend our therapeutic approach in a similar situation.

Keywords: Hip Dislocation; Femoral Fractures; Fracture Dislocation; Open Fracture Reduction; Case Reports

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Background

Asymmetrical bilateral hip dislocation (BHD) is rarely reported, with a prevalence of about 0.01-0.02 percent among all joint dislocations (1). Asymmetrical BHD with simultaneous bilateral femoral head fracture is even more uncommon (2).

Although closed reduction is agreed to be the initial step for any dislocation, there is no consensus regarding the therapeutic approach to the femoral head fragment and post-operative management of these patients (3). Here, we report a case of asymmetric BHD with bilateral femoral head fracture and relevant review of the literature.

Case Report

A 28-year-old male was referred to our center (Imam Khomeini Hospital Complex) due to bilateral hip pain and deformity of both lower extremities as a result of a motor vehicle accident. Initial trauma care and evaluations were performed.

The right lower extremity was shorter than the other side and the hip was in flexion and internal rotation. The left lower extremity was in neutral rotation. The hip motion was completely limited. There were bilateral abrasions on the anterior aspects of both knees. The neurovascular evaluation was normal, as well as other physical examinations. Pelvic radiography showed a posterior superior hip dislocation in the right and an anterior hip dislocation in the left (Figure 1). In both hips, dislocations were accompanied by a fracture in the femoral head.

The patient was transferred to the operation room. Under deep sedation, he underwent closed reduction of both hips. The right hip was unstable at 60° flexion and 20° abduction. The left hip was stable in all directions. Bilateral skeletal traction was placed.

The pain was reduced significantly, and the limb deformity and length were corrected. The neurovascular examinations remained normal after the surgery.

Post-reduction control radiographs and a computed tomography (CT) Scan were obtained.

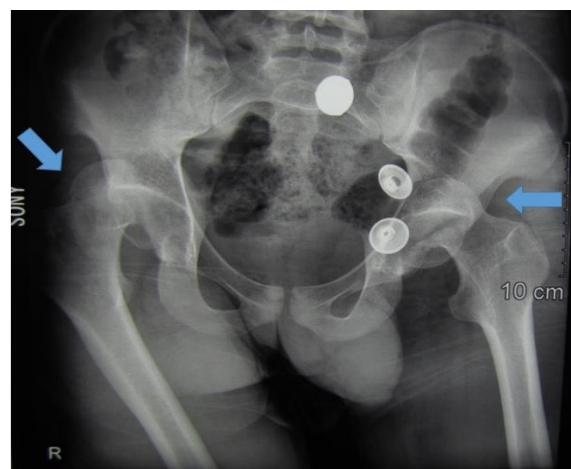


Figure 1. Pre-reduction pelvic radiograph: Anteroposterior (AP) view of the pelvis, showing posterosuperior dislocation in the right hip and anterior dislocation in the left side (arrows)

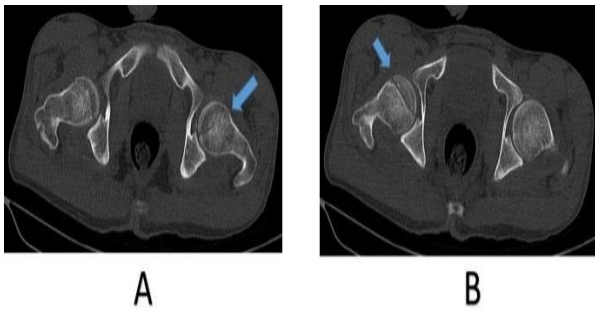


Figure 2. Post-reduction computed tomography (CT) scan: Fracture of the femoral head on both sides in axial view of the pelvis (arrows)

Hip joints were reduced and bilateral non-displaced fracture of the femoral head was detected; Pipkin type 1 on the left femur and type 2 on the right side (Figures 2 and 3).



Figure 3. Post-reduction computed tomography (CT) scan: Fragments of fractured femoral head inside the joint in sagittal view (A, arrows). The 3D sagittal view shows bilateral femoral head fracture (B, arrows).

On the following day, open debridement of both joints was performed, followed by internal fixation (Figure 4). Through bilateral direct anterior hip approach and T-shaped capsulotomy, the open reduction of the femoral head fragment was performed. The fixation was carried out by two 3.5-mm cortical screws for each side. The fixation was stable under direct observation and fluoroscopic control during hip motion in all directions.

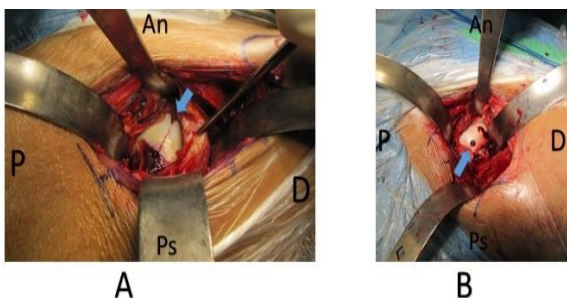


Figure 4. Intraoperative images: Fracture line of the femoral head (A). Reduction and insertion points of screw fixation (B). An: Anterior, Ps: Posterior, P: Proximal, D: Distal

One day after surgery, the patient was ambulated by wheelchair without any weight-bearing activities. The physiotherapist initiated passive range of motion (ROM) exercises for hip, as far as the patient's pain tolerance permitted. The patient was discharged on a wheelchair 2 days after surgery, with nonsteroidal anti-inflammatory

drugs (NSAIDs) for pain control and 325 mg acetylsalicylic acid (ASA) tablet twice a day as a prophylaxis for deep vein thrombosis (DVT). No other medication such as heterotopic ossification (HO) prophylaxis was prescribed. He was permitted to walk with two canes after 6 weeks. He was allowed to have weight-bearing activities without canes only after 3 months. He returned to his previous job 6 months after surgery.

After 18 months, he had no pain or limping. Both lower extremities had a normal function. Follow-up radiographs were obtained at 1, 3, 6, 18 months, and 5 years after surgery. The radiography in the 3-month follow-up revealed bilateral union of the proximal femurs. After 18 months, the radiographs showed no evidence of avascular necrosis (AVN), collapse, heterotopic ossification, or hip joint degenerative changes (Figure 5).

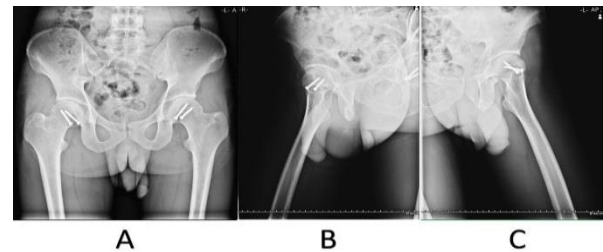


Figure 5. Post-operative radiograph (18-month follow-up): Complete union of bilateral femoral head fractures in anteroposterior (AP) view of the pelvis with no signs of avascular necrosis (AVN) (A). Lateral view of the right hip (B), Lateral view of the left hip (C)

The last follow-up in 5 years showed near-normal ROM in both hips (Figure 6).

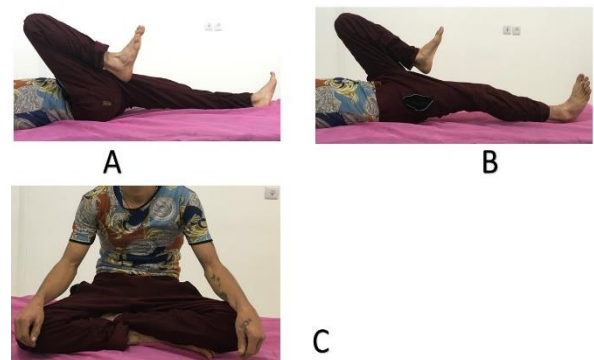


Figure 6. Hip range of motion (ROM)

Discussion

Hip dislocation accounts for about 1.25% of total joint dislocations. It usually occurs unilaterally and is dislocated posteriorly in approximately 90% of the cases (4). BHD is a rare condition. There are some reports about missed hip dislocations in bilateral cases (1). The trauma mechanism is usually similar in both hips; therefore, we expect symmetrical dislocation to occur (5). Asymmetrical BHD is indeed rare and only a handful of cases have been ever reported in the literature (6).

In appearance, an extremity suffering from posterior hip dislocation is shorter, with a flexed, adducted and internally rotated hip. On the other hand, in an anterior hip dislocation, the extremity is in external rotation with some degrees of hip flexion and abduction (7). Radiologically, there are some differences between these two types of dislocations. In the posterior hip dislocation,

the femoral head usually moves superiorly and laterally, however in the anterior hip dislocation, a larger femoral head is seen in a more inferior and medial position (8). All of these typical clinical and radiological patterns were present in our case as well.

As presented here, this condition has been reported more often in males (81%) and with motor vehicle accidents (59%) (9). According to previous studies, the average age of hip dislocation is 32 years. Associated injuries are common in BHD and have been reported in more than half of the cases (9). Associated fractures were reported in approximately 40% of the cases, 75% and 25% of which were respectively acetabular and proximal femoral fractures (9, 10).

The prognosis of hip dislocation is relatively poor. The risk of AVN after hip dislocation is 8-15%. Additionally, there is a risk of posttraumatic arthritis in approximately one out of four patients with a history of hip dislocation (11, 12). These complications increase if the dislocation is associated with femoral head fractures (12, 13).

Thus, our patient could have had a very poor prognosis. Although our follow-up was not relatively long, our management including immediate closed reduction, subsequent open reduction, and internal fixation through anterior approach seem to be an appropriate treatment in similar conditions.

Conflict of Interest

The authors declare no conflict of interest in this study.

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