CASE REPORT

Trauma-related simultaneous asymmetric bilateral hip dislocation: A case report

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ABSTRACT

Trauma-related simultaneous asymmetric bilateral hip dislocations (SABHDs) are extremely rare cases. High-energy trauma plays a role in their etiology. Traumatic hip dislocations account for 2–5% of all dislocations. Of all hip dislocations, 90% are posterior and 10% anterior. Bilateral traumatic hip dislocation is exceedingly rare. Asymmetric dislocations are even rarer, accounting for approximately 0.01–0.02% of all joint dislocations. This study aimed to evaluate a patient with trauma-related SABHD through a case presentation and discuss therapeutic options. A 27-year-old male patient was diagnosed with dislocation of both hips (left hip anterior and right hip posterior) following high-energy trauma. The patient was prepared for general anesthesia under emergency conditions and was taken to the operating room 2 h after admission to the emergency department without waiting for the fasting period. Under general anesthesia, left anterior and right posterior hip dislocations were reduced using the Allis and Boehler maneuvers. Direct radiography, computed tomography, and spiral tomography performed after the procedure demonstrated a successful reduction in both hips. While no bony pathology was observed in the right hip, a small fracture of the anterior acetabular wall and a non-displaced fissure line in the subcapital region of the femoral head were detected in the left hip; however, surgical intervention was not considered for either pathology. Since SABHD is caused by high-energy trauma, patients should be managed with a multidisciplinary approach. To prevent or minimize potential complications, the dislocations must be reduced as soon as possible.

Keywords: Femoral head; fractures; hip dislocation; hip osteoarthritis; trauma.

INTRODUCTION

The hip joint is the strongest and most stable joint in the human body. The stability of the hip joint is maintained by the joint capsule, the strong ligamentous structures and muscles surrounding the capsule, and the deep acetabular socket. Any trauma that disrupts the stability of the hip joint is consistently a high-energy trauma.[1,2] The most common injury mechanism leading to hip dislocation is posterior dislocation, caused by force transmitted proximally along the femoral shaft from the knee to the hip when the hip is flexed, adducted, and internally rotated. Anterior hip dislocations occur when the hip is forced into external rotation while in abduction or adduction.[3,4] Traumatic hip dislocations account for 2–5% of all dislocations. Of all hip dislocations, 90% are posterior and 10% anterior. Bilateral traumatic hip dislocation is exceedingly rare. Asymmetric dislocations are even rarer, accounting for approximately 0.01–0.02% of all joint dislocations. These injuries are frequently associated with other pathologies, including acetabular fractures, femoral fractures (5% of patients), knee ligament injuries, patellar or proximal tibial fractures (20%), femoral artery injury, venous thrombo-

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sis, and sciatic nerve injury (9–18%).[4-6] Traumatic hip dislocation is more common in young male patients. The rarity of asymmetric dislocation arises from the fact that the forces required to produce an anterior hip dislocation are the opposite of those necessary to produce a posterior dislocation, which makes the likelihood of an individual being exposed to both mechanisms simultaneously exceedingly uncommon. Most reported cases, especially those associated with motor vehicle accidents, are high-energy injuries.[5,6] Direct radiographs and physical examination findings are decisive in the preliminary diagnosis. Computed tomography (CT) and three-dimensional spiral tomography reveal the extent of trauma in detail and serve as critical tools for diagnosis and treatment planning. The common principle is that reduction must be performed as soon as possible to prevent complications.[6,7] Ideally, reduction should always be performed under general anesthesia. For posterior dislocations, the Boehler maneuver is applied, whereas for anterior dislocations, the Allis maneuver is preferred. In general, the risk of avascular necrosis of the femoral head after anterior or posterior hip dislocation ranges from 8% to 15%, whereas this rate may rise to 40% following open surgical reduction.

CASE REPORT

A 27-year-old male patient presented to the emergency department with severe pain in both hips and deformity of the lower extremities following a high-energy trauma caused by drunk driving. Radiographs taken in the emergency department revealed dislocations in both hips, and pelvic CT was requested for further evaluation (Fig. 1). However, due to the lower extremity and pelvic deformity caused by the dislocation, CT imaging of the hip region could not be obtained. Based on the pelvic anteroposterior radiographs, the patient was diagnosed with bilateral asymmetric (left hip anterior and right hip posterior) hip dislocation. Except for a mild hematoma in the lungs, no additional fractures or pathologies were

Figure 1. Radiographic image taken before reduction.

Figure 2. Three-dimensional spiral tomography images taken after reduction.

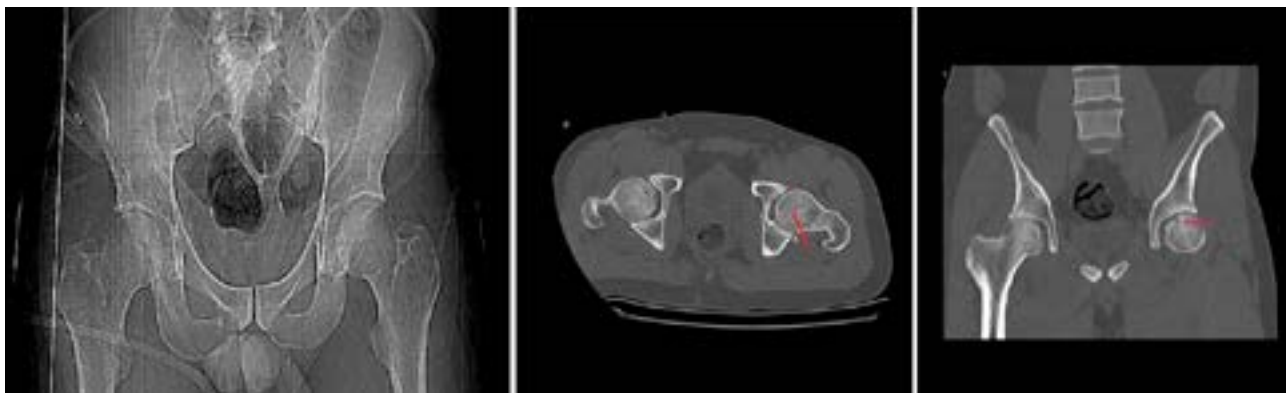

Figure 3. Computed tomography image taken after reduction.

detected on radiographs or physical examination. The severely intoxicated patient was prepared for general anesthesia under emergency conditions and was taken to the operating room 2 h after admission to the emergency department without waiting for the fasting period. Under general anesthesia, the left anterior and right posterior hip dislocations were reduced using the Allis and Boehler maneuvers. Direct radiographs, CT, and spiral tomography performed after the procedure demonstrated a successful reduction in both hips (Fig. 2). While no bony pathology was observed in the right hip, a small fracture of the anterior acetabular wall and a non-displaced fissure line in the subcapital region of the femoral head were detected in the left hip; however, surgical intervention was not considered for either pathology (Fig. 3). Since there was no fracture compromising acetabular stability, neither skin nor skeletal traction was applied. During follow-up, the patient was prescribed 3 weeks of bed rest. From the 2nd week, bed-based passive exercises were initiated. At the end of the 4th week, active exercises were started, and by the 6th week, the patient was mobilized through bedside sit-to-stand exercises. Full weight-bearing was allowed at the end of the 8 weeks. At the 6-month follow-up, complete hip joint range of motion was observed without neurovascular deficits. The patient continues to attend follow-up visits. The patient was informed of the details of her case, and consent was obtained for its presentation.

DISCUSSION

Cases of trauma-related simultaneous asymmetric bilateral hip dislocations (SABHDs) are extremely rare. Since high-energy trauma plays a role in their etiology, other organ and skeletal pathologies are frequently encountered. They are generally observed in young male individuals.[6-8] In such cases, early diagnosis and treatment are crucial to prevent complications that may arise in the future. Therefore, traumatic hip dislocation cases must be reduced as soon as possible. In our case, consistent with the literature, the patient was a 27-year-old young male. A rapid diagnosis was established through examinations, and within 2 h of admission to the emergency department, the patient was stabilized by performing bilateral reduction under general anesthesia.

There are very few published articles in the literature on this subject, and nearly all of those available are in the form of case reports. In their study, Buckwalter et al.[8] conducted a detailed review of trauma-related asymmetric bilateral hip dislocation. They reported that, from the first case described by Singowitz in 1830 up to 2015, approximately 104 case reports had been published. Meena et al.[9] reported that between 2015 and 2021, a total of 16 cases, including their own three cases, had been documented. Thus, from the initial report in 1830 until 2021, the cumulative number of reported cases of SABHD is 120. The fact that only 120 cases have been reported over a span of nearly 200 years demonstrates the rarity of this injury. In their case report, Hachicha et al.[10] emphasized that asymmetric bilateral hip dislocation is a rare injury, that hip osteoarthritis might be inevitable in the long term, and that, to optimize prognosis, reduction must invariably be performed within the first 6 h following trauma. Huang et al.[11] noted that asymmetric bilateral hip dislocation might be accompanied by hemodynamic instability and destabilization of the pelvic ring, which significantly increased the patient's life-threatening risks. Lo stated that such traumas were exceedingly rare and that a prompt attempt at closed reduction should be made, with open reduction pursued only if the initial attempt failed. The author further highlighted that delayed reduction increased the risk of avascular necrosis of the femoral head as well as major nerve injuries, such as sciatic or peroneal nerve damage.[12]

CONCLUSION

Since SABHDs result from high-energy trauma, patients should be managed with a multidisciplinary approach. To prevent or minimize potential complications, dislocations must be reduced as soon as possible. We hope that this case report will guide future studies on SABHD treatment. Further research with larger patient cohorts and additional parameters is needed.

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Informed Consent: The patient was informed of the details of her case, and consent was obtained for its presentation.

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OLGU SUNUMU - *ÖZ*

Travmaya bağlı eşzamanlı bilateral asimetrik kalça çıkığı: Olgu sunumu

Travmaya bağlı eşzamanlı bilateral asimetrik kalça çıkıkları (EBAKÇ) son derece nadir görülen vakalardır. Etiyolojilerinde yüksek enerjili travmalar rol oynamaktadır. Travmatik kalça çıkıkları tüm çıkıkların %2-5'ini oluşturur. Tüm kalça çıkıklarının ise %90'ını posterior çıkıklar, %10'unu anterior çıkıklar oluşturur. Bilateral travmatik kalça çıkığı son derece nadir görülen bir durumdur. Asimetrik çıkıklar ise daha da nadirdir ve tüm eklem çıkıklarının yaklaşık %0.01-0.02'sini oluşturur. Çalışmamızın amacı, travma sonucu gelişen EBAKÇ olgusunu ve tedavi seçeneklerini olgu sunumu eşliğinde değerlendirmektir. Yirmi yedi yaşında erkek hastaya, yüksek enerjili travma sonucu her iki kalçasında (sol kalça anterior, sağ kalça posterior) çıkık tanısı kondu. Hasta, acil şartlarda genel anesteziye hazırlanarak açlık süresi beklenmeden acile başvurusundan 2 saat sonra ameliyathaneye alındı. Genel anestezi altında sol anterior ve sağ posterior kalça çıkıkları Allis ve Boehler manevraları ile redükte edildi. İşlem sonrası çekilen direkt grafi, bilgisayarlı tomografi ve spiral tomografide her iki kalçada redüksiyonun sağlandığı görüldü. Sağ kalçada herhangi bir kemiksel patoloji görülmezken, sol kalçada asetabulum anterior duvarında küçük bir kemik segmentinde fraktür ve sol femur başının subkapital bölgesinde nondeplase fissür hattı tespit edildi; ancak her iki patoloji için de cerrahi düşünülmedi. EBAKÇ yüksek enerjili travma ile oluştuğundan hastalara multidisipliner bir yaklaşım uygulanmalıdır. İleride oluşabilecek komplikasyonların önlenmesi veya minimuma indirilebilmesi için çıkıklar mümkün olan en kısa sürede redükte edilmelidir.
Anahtar sözcükler: Femoral baş; fraktür; kalça çıkığı; kalça osteoartrit; travma.

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