

Asymmetrical Bilateral Traumatic Hip Dislocation with Segmental Femur Fracture

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Abstract

Introduction: Hip dislocations are extremely rare, but they are orthopedic emergencies that need to be immediately intervened. Traumatic hip dislocations are usually unilateral and occur toward the posterior region. Bilateral traumatic hip dislocations, on the other hand, are rarer. Asymmetric occurrence of bilateral traumatic hip dislocations is even rarer. The possibility of spontaneous hip dislocation in a healthy person is very unlikely. This is because ligaments wrapping the hip joint make it quite stable. Thus, hip dislocation usually occurs due to a high-energy trauma.

Case Report: In this paper we report a unique female patient with asymmetric bilateral traumatic hip dislocation accompanied by a segmental fracture of the femur due to a traffic accident. The patient's right hip was reduced under sedoanalgesia at the emergency department and the left hip was reduced under anesthesia at operating room. Avascular necrosis did not develop at her 2-year follow-up; however, she has been re-operated after developing non-union in the left femoral segmental fracture.

Conclusion: In conclusion, hip dislocations should be treated in first six hours due to the risk of avascular necrosis. Uncomplicated hip dislocations without accompanied fractures can be treated with sedoanalgesia in emergency service settings. However hip dislocations which are complicated with accompanied fractures should be reduced in operation rooms without delay.

Key Words: Asymmetric, bilateral, hip dislocation, segmental fracture, traffic accident

Introduction

Traumatic hip dislocations are orthopedic emergencies that require early intervention, causing chronic complications unless timely managed^{1,2}. The possibility of spontaneous hip dislocation in a healthy person is very unlikely. This is because ligaments wrapping the hip joint make it quite stable. Thus, hip dislocation requires a high-energy trauma. The current trend of an increase in traffic accidents has caused hip dislocations to occur more commonly². Of all traumatic hip dislocations, 62-93% occur in traffic accidents, of which motor vehicle accidents are the most common type².

Traumatic hip dislocations constitute 2-5% of all joint dislocations¹⁻³. Traumatic hip dislocations are mostly unilateral and in the posterior direction. Bilateral traumatic hip dislocations are quite rare, accounting for 1.25% of all traumatic hip dislocations².

Literature reports named femoral head fracture as the most common accompanying finding in bilateral traumatic hip dislocation. Additional complications including sciatic nerve injury, acetabulum or patella fracture, and unilateral or bilateral femur shaft fractures may also coexist². In this paper we report a case of asymmetric bilateral traumatic hip

dislocation accompanied by segmental fracture femur secondary to trauma in a 36-year-old woman.

Case Report

A 36-year-old woman was admitted to our emergency department by an ambulance service after being injured in an in-vehicle traffic accident. Her past history revealed no pelvic trauma induced or congenital hip deformity. It was learned that she was traveling at the rear seat of a car without her seatbelt fastened on a highway. A car collided her car from the rear, and the patient was stuck inside the car. On emergency admission she did not recall the time of accident. Her overall condition was moderately severe, but she was conscious, cooperated, and had a Glasgow coma scale (GCS) of 15. Her vital signs were as follows: arterial pressure: 140/80 mmHg; pulse rate: 92/min; body temperature: 37.2 °C; and oxygen saturation (O₂ SAT): %97. On her physical examination she had a 5-cm subdermal cut in the scalp of the parietal region but had no abnormal sign in cervical, thoracic, and abdominal examinations. Her bilateral hip joint movements were restricted and painful. Both lower extremities were different

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Received: 08.07.2021 • **Accepted:** 09.08.2021

DOI: 10.33706/jemcr.966370

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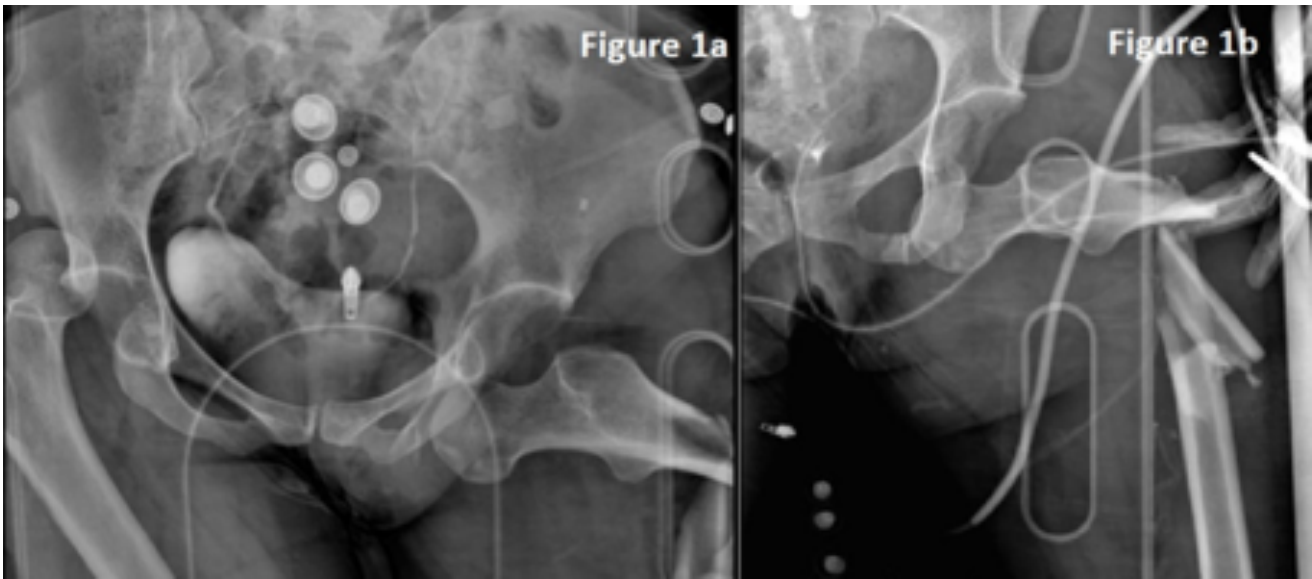


Figure 1a and Figure 1b

in length. The left hip was in flexion, abduction, and external rotation while the right hip adduction, and internal rotation. Hip examination was extremely painful. There was extreme tenderness in the lower parts of both hips, and the proximal part of the left femur was edematous and deformed in appearance. A pelvic X-Ray demonstrated bilateral femoral head dislocation (Figure 1a) and left femoral sub-trochanteric fracture (Figure 1b). A computerized tomography also revealed bilateral asymmetrical dislocations and a non-displaced fracture in the left pelvic pubic arm. The right femoral head was dislocated posteriorly and the left femoral head anteriorly.

An orthopedics consultation was requested, and the right hip dislocation was reduced with the Allis maneuver under

sedoanalgesia at the emergency department. As the left hip dislocation, on the other hand, was accompanied by a segmental femur fracture, it required open reduction at the operation room. Because patient ate a short time before the accident, a spinal anesthesia was necessary. Reduction of right hip with sedoanalgesia in the emergency service enabled spinal anesthesia at the operation room and patient was operated with spinal anesthesia.

Under spinal anesthesia in supine position the left hip was entered with Watson-Jones incision. After passage of skin, subcutaneous tissues and joint capsule, left femur was very mobile due to segmental fracture and made reduction more difficult; however, slim body structure and female



Figure 2



Figure 3

gender provided advantage for reduction. The hip joint was primarily reduced, followed by reduction of sub-trochanteric segmental fracture and fixation with proximal anatomic plate + screw (Figure 2). Post-operative evaluation was done with X-ray imaging. The patient didn't require any traction after the operation and patient was discharged at the 5th day because she wanted to carry on her treatment in her hometown. We recommended not to bear her weight on her right lower extremity which only had hip dislocation until 6th week and on her left lower extremity which had hip dislocation plus femur fracture until 12th week. A follow-up under supervision of a physical therapy doctor was also recommended. We contacted the patient at 1-year of her follow-up period after the surgery and questioned her recovery. The patient undergone a re-operation in another center due to non-union secondary to the left femoral fracture, where an intramedullary nail was implanted after removal of the previous femur plate and screws (Figure 3). After 2-years of follow-up, no complication was observed about bilateral hip dislocation. Rare reports of asymmetric bilateral hip dislocation accompanied by segmental femur fracture in the literature, makes this case valuable.

The patient and her family were informed that data from the case would be submitted for publication, and gave their consent.

Discussion

Traumatic bilateral hip dislocations are quite rare. Asymmetrical bilateral traumatic hip dislocations are even rarer and constitute 0.01- 0.02% of all joint dislocations¹. Buckwalter et al¹, in 2015, reported that only 104 cases of bilateral asymmetrical hip dislocation had been reported until that time worldwide. They reported that among asymmetrical hip dislocation cases, 76 were men and 18 were women, and the gender of the remaining 10 cases was unspecified. What makes this case rare is coexistence of asymmetric hip dislocation accompanied by segmental femoral fracture and only 3 such cases were reported in the literature until now^{4,5}. These 3 cases with segmental fracture were all male, while our case was female. A review of Huang et al., published in 2018⁶, identified that 33 asymmetrical bilateral traumatic hip dislocation cases were reported in English language with all data accessible and only 7 of these cases were females. Among these female cases, 3 had acetabulum fracture, 1 had pubic fracture and 3 had no fractures; while our case is the only reported female case of bilateral asymmetrical hip dislocation with segmental femur fracture.

Degirmenci et al [7] reported that asymmetrical bilateral dislocations affected 17% of bilateral dislocations, and a dislocation occurred in the obturator direction in only 9% of bilateral cases. In our case, left femur head was dislocated towards obturator.

Hip dislocations should be reduced as early as possible. Reduction in the first 6 hours reportedly lowers the incidence of avascular necrosis in a significant manner whereas reductions performed beyond 24 hours increase the risk of avascular necrosis. Literature reports have provided avascular necrosis rates of 6-27% for early reduced dislocations and 48% for delayed cases². Acetabulum and proximal femoral head fractures also adversely affect prognosis. Değirmenci et al.⁷ reported that proximal femur fractures concur with hip dislocations at a rate of 17%, with the most common type of fracture being fracture of the femoral head, which necessitated urgent surgical intervention. They added that the rate of avascular necrosis in hip dislocations with concurrent proximal femur fracture remained high even at the end of 2 years⁷. As our patient was intervened within the first 6 hours, avascular necrosis was not observed, as reported in the literature. Even though computerized tomography is the golden standard for checking occult fractures and other complications after reduction¹, we evaluated the patient with X-ray because pre-reduction computerized tomography revealed no other findings.

However, the patient was re-operated with nail + graft application after the development of non-union following plate + screw application for segmental sub-trochanteric femur fracture.

The early complications of hip dislocations are failed concentric reduction and recurrence of dislocation; we evaluated our patient for early complications and found no signs of complication, while late complications were evaluated in another center because patient was referred to said center. The late complications include nerve palsy being the most observed in the literature, recurrent dislocation, myositis ossificans, avascular necrosis, and trauma-induced osteoarthritis. We contacted our patient and found out that none of these complications occurred^{1,3}. A re-operation of the patient was necessary due to nonunion development of segmented fracture in the first year. If we had used intramedullary nailing instead of anatomical plate, possibility of non-union might have been lower; but we believe it was difficult to foresee this outcome.

The prognosis of anteriorly directed hip dislocations is better than that of the posteriorly directed ones. Osteonecrosis is observed in %7.5 of posterior dislocations, while this ratio falls down to %1.5 in anterior dislocations⁸. Other factors influencing diagnosis include accompanying proximal femur fracture, trauma intensity, and performance of open or closed reduction [9]. Avascular necrosis, a complication of hip dislocation, has been reported to occur more commonly after Thompson-Epstein type 4 [10]. Whereas traumatic unilateral hip dislocations can be easily reduced under sedoanalgesia at the emergency department, dislocations with concurrent femur fracture are better reduced under analgesia at the operating room. It is of utmost importance to perform a control examination and a computerized tomography to check the adequateness of reduction⁸.

Conclusion

Hip dislocations are orthopedic conditions that require urgent reduction. In order to prevent potentially severe complications, it is of vital importance to make a rapid diagnosis and to perform reduction as soon as possible in the emergency department.

This case was reported as oral presentation in 9th Asian Emergency Medicine Congress and 13th Turkey Emergency Medicine Congress.

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