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Inferior Hip Dislocation: The Uncommon Case of Hip Dislocation

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ABSTRACT

Introduction: Inferior hip dislocation or commonly called as luxatio erecta femoris is an inferior dislocation of the femoral head and inversion of the femoral shaft that caused by traumatic event.
Case Description: This article reports a 42-year-old male with inferior hip dislocation. He came to our hospital with continuous, sharp pain in right hip since 2 hours prior to admission. There swelling, tenderness, and deformity in the right hip region. ROM is also limited due to pain in that area. We did an X-Ray and laboratory examination, then a diagnosis of inferior hip dislocation was made. Pain relievers, closed reduction, and immobilization with skin traction of 5 kg loads have been given to the patient.
Discussion: Inferior hip dislocation is the rarest hip dislocation with only around 2-5% of all cases. Compared to other types of hip dislocation, it has a non-specific characteristic, so thoroughness is needed to diagnose the case. The mechanism of injury from inferior hip dislocation is still not fully understood, but it is generally the result of high energy trauma such as sports events and traffic accidents. When an inferior hip dislocation occurred, the distal end of the femur rises above the horizontal plane of the pelvis at the level of the acetabular fossae, and it flexes the hip to that extent. In this case, closed reduction management was performed by Allis maneuver technique. This method could be used when gentle traction method is failed with two maximum attempts for closed reduction. It is more frequently used in posterior hip dislocation but in our case, it was performed successfully. Post reduction radiograph is required to rule for completed reduction, and if there is any joint enlargement, a CT or MRI should be performed next.
Conclusion: Hip dislocation has become more common as high-energy traffic accidents have escalated. Inferior hip dislocation is the rarest type of hip dislocation. Although it is uncommon, we could be able to identify and treat this case with great clinical results.

Keywords: Inferior Hip Dislocation, Acetabulum, Allis Maneuver

INTRODUCTION

Inferior dislocation of the hip, also known as luxatio erecta femoris or infracotyloid dislocation, is an uncommon injury caused by abrupt and severe hip flexion, resulting in caudal displacement of the femur and dislocation of the acetabulum.(1–4) There are two types of injury mechanisms: the obturator type, which involves a force applied to an abducted hip, flexed, and externally rotated to dislocate the femoral

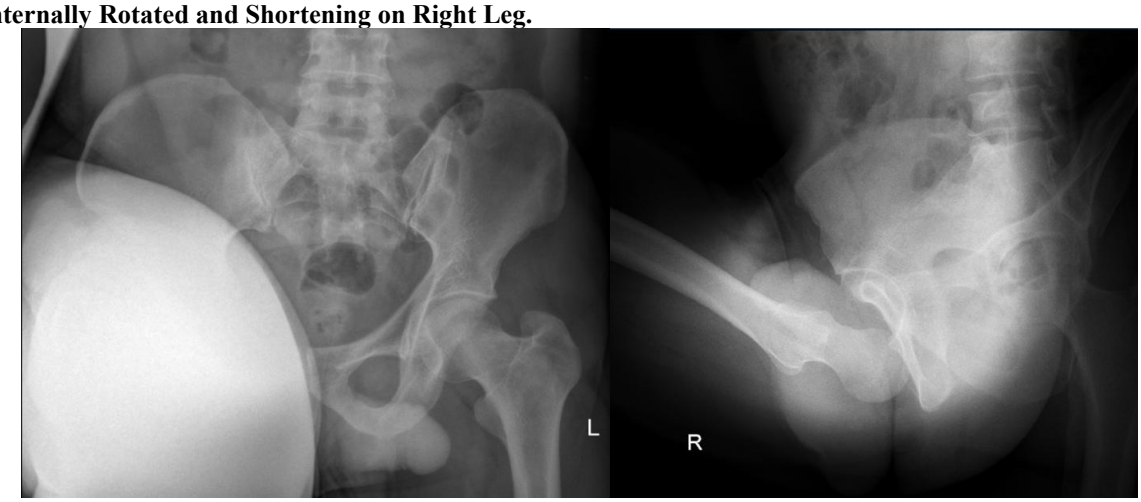
head anteriorly and inferiorly to the obturator foramen; and the ischial type, where a force is applied to the flexed hip and knee, causing the femur to be in extreme flexion with little or no abduction or external rotation of the thigh, resulting in the femoral head dislocating inferiorly next to the ischium. The ischial type is more common than the obturator type. (1,5,6) Closed reduction under sedation or general anesthesia with axial traction while progressively extending the thigh and using internal rotation techniques is standard treatment, followed by immobilization for 2 to 6 weeks and then a gradual restoration to normal weightbearing. (1,7–9)

Here, we reported a 42-year-old male with inferior hip dislocation undergoing closed reduction management using Allis maneuver technique. This case report aims to explain and discuses about management on inferior hip dislocation.

CASE PRESENTATION

A 42-year-old male presented with pain on his right side of the hip after being involved in a traffic accident where he fell off the motorbike onto the right side of his body and his right hip hit the asphalt first after trying to avoid a car that stopped suddenly in front of him. On physical examination, we found no leg length discrepancy, swelling and tenderness around the lateral aspect of the right hip region, internal rotation and adduction of the right leg, with instability on standing and he could not walk properly related pain on right hip. The patient had a history of implant installation surgery on the right leg due to being hit by a motorbike in 2008 in Lombok but able to walk without any assistive devices. We decided to performed imaging examination such as hip x-ray with a radiology report stating, “right inferior hip dislocation” (Fig. 1).

Figure 1. Pelvis AP And Oblique Views Radiographs Pre-Reduction, Displaying Inferior Dislocation of The Right Hip Without Any Sign of Fracture and Typical Presentation of Adducted Limb, Flexed, Internally Rotated and Shortening on Right Leg.



The patient came to the emergency room (ER) with chief complain of pain on the right hip 2 hours before admission with no history of unconsciousness, nausea, or vomiting. Pain felt increased with movement and relieved with rest. The patient was hemodynamically stable, with no neurological impairment. On inspection, there appeared swelling around the lateral aspect, flexed, adduction, and internal rotation of le right leg with tenderness on proximal femur (Fig.2). Dorsalis pedis artery is palpable with limited active range of motion (ROM) of the hip and knee due to pain and swelling. The laboratory findings were within normal limits, and infection had been found to be negative. Radiography and computed tomography showed inferior dislocation of the right hip without any sign of fractures of the right femoral head and neck.

Figure 2. Clinical Picture of Pelvic with Inferior Dislocation of The Right Hip

The patient was given analgetic, ketorolac injection 30 mg/1 ml pre-reduction. The patient was given the understanding of the purpose of closed reduction surgery as an immediate option to reposition the head of the femur to the acetabulum. Additionally, we obtained approval from an institutional reviewing board from the hospital. The patient provided signed informed consent for the publishing of this case report and associated photographs.

Closed reduction under general anesthesia (fentanyl 100 mcg/2 mL IV, midazolam 5 mg/5 mL IV, and propofol 200 mg/20mL IV) and immobilization with skin traction 5 kg loads was performed on the patient. Reduction was done using Allis Maneuver with inline longitudinal traction, hip adduction, internal rotation, & flexion followed by hip adduction, external rotation, & extension then the femur head is reduced towards the acetabulum). The whole procedures took 20 minutes and 25 seconds as recorded in the medical report of the patient from the hospital.

Figure 3. (A) Pelvic X-Ray AP View Postoperative; (B) Pelvic X-Ray Allar/Obturator View Postoperative; displaying a well-placed femoral head in acetabulum with symmetric Shenton's line, no feasible fracture, and soft tissue swelling in right hip region

DISCUSSION

Hip dislocations typically require a significant force to disrupt the stability of the hip joint. True inferior hip dislocations are rare and often occur after ligament damage, nerve or blood vessel injury, or concurrent fractures in the same area of the pelvis. In this article, we describe a unique case of inferior hip dislocation without accompanying fractures, treated with closed reduction in our emergency department, and the patient was able to walk the next day. (10,11) Previously, it was thought that inferior dislocations were mainly seen in children due to their more flexible ligaments, but recent research shows that adolescents and adults can also be affected, as our study confirms. There are two main mechanisms for inferior hip dislocations: in the more common one, the obturator type where the femoral head remains within the acetabulum, while in the second, less common scenario, the ischial type where the femoral head is positioned below the acetabulum or next to the ischium. (1,5,10) Our case fits into the latter, less frequent category, as evidenced by imaging (Fig. 1)

The less common ischial subtype resembles L. erecta of the shoulder, thus earning the name "L. erecta of the hip."(5,9) It is characterized by a deeply flexed thigh nearly alligned parallel to the spine's long axis, with minimal abduction or external rotation of the femur. In this subtype, the femoral head lies next to the ischial tuberosity beneath the acetabulum, typically with an inverted femur. This occurs when the torso is excessively flexed over the hip while the knee is fixated on the ground, transferring the fall's energy up the shaft to the hip joint and allowing the femoral head to dislocate through the acetabulum's comparatively rimless inferior border. On the contrary, the more common obturator subtype, which is sometimes confused with L. erecta of the shoulder joint, results from an abducting and externally rotating force applied to a flexed hip joint. The femoral head is displaced from the acetabulum, and the psoas muscle serves as a fulcrum for dislocation, causing it to settle near the obturator foramen. When the femoral head shifts further laterally to a para-ischial location, it may resemble the less common ischial subtype, causing the femur's axis to shift from parallel to approximately 90° off the spine's axis, as seen in clinical practice. (5,9,10)

Closed reduction, usually under mild sedation or general anesthesia, is the primary treatment option for this problem. (7–9) For the obturator subtype, reduction involves exaggerating the deformity with further hyper-abduction and external rotation of the femur, along with distal traction. Once the femoral head has cleared the obturator foramen, adduction and internal rotation can help with full reduction. The ischial subtype, on the other hand, can be treated by keeping traction on the head while progressively extending the thigh, with extra internal rotation as needed. A successful closed reduction requires not only the primary surgeon's careful manipulation of the dislocated hip into a reduced position, but also the strong stabilization of the pelvis and torso by helpers (counter-traction). The literature study reveals that open reduction is seldom necessary, except in cases of open dislocation requiring debridement. In this case closed reduction using the allis maneuver, whereas the patient is positioned on the bed in a supine position, with the physician positioned either on the bed or standing beside them. Meanwhile, an assistant stabilizes the pelvis. The physician proceeds by gripping the leg on the same side just below the knee, bending it to a 90-degree angle, and then applying traction along the femur's axis. As the hip joint begins to decrease in size, the physician extends and externally rotates it, facilitating the femoral head to slide back into the acetabulum. (5,7,8,10)

SUMMARY

Inferior hip dislocations, though rare, often result from significant force, leading to ligament damage, nerve or blood vessel injury, or concurrent fractures. A unique case discussed here involves an inferior hip

dislocation without accompanying fractures, treated successfully with closed reduction in the emergency department, allowing the patient to walk the next day. Two main mechanisms are observed: the more common obturator subtype, where the femoral head remains within the acetabulum, and the less common ischial subtype, where the femoral head is positioned below the acetabulum or next to the ischium. Closed reduction, typically under mild sedation or general anesthesia, is the primary treatment, involving careful manipulation of the dislocated hip into a reduced position, often utilizing the Allis maneuver.

Declaration by Authors

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