

Ipsilateral Anterior Hip Dislocation and Posterior Knee Subluxation: A Case Report

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Hip and knee dislocations individually are two orthopedic emergencies. Concomitant hip and knee dislocations are extremely rare. The authors report a case of ipsilateral anterior hip and posterior knee dislocations. Firstly, closed reduction of the knee and spanning external fixation was performed and then the hip was closely reduced under general anesthesia.

Keywords : Hip, Knee, Dislocation

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Traumatic dislocation of the hip and the knee occur mainly from high-energy motor vehicle accidents⁽¹⁾. They are associated with increased morbidity, risk of associated injuries and development of complications. Posttraumatic arthritis and avascular necrosis of the femoral head are common late complications of hip dislocations. Vascular and neurological injuries are usual complications of knee dislocations⁽²⁾. Isolated hip or knee dislocation are rare orthopedic injuries but ipsilateral hip and knee dislocation is an unusual event^{(3) (4)}. The authors present a case of combined anterior hip dislocation and posterior knee subluxation in the same patient following a major trauma, reduction method and early treatment.

Case Report

A 40-year-old man fell from a motorcycle 30 hours before arriving at Maharaj Nakorn Chiangmai Hospital. He was immediately sent to a primary hospital for initial management. The patient informed that during the accident his knee struck the road with the hip in flexion and external rotation position. The diagnosis was anterior hip and posterior knee dislocations and open fracture of the left olecranon. His elbow was

treated by ORIF with standard cancellous screw fixation but reduction of the dislocated hip and knee joints failed. Then he was referred to Maharaj Hospital. On arrival at the Emergency Room, his vital signs were normal. Physical examination demonstrated a flexed, abducted, and externally rotated left hip. The left knee was noted to be dislocated posteriorly. Neurologic examination revealed active ankle dorsiflexion and plantar flexion. There was no loss of sensation along the dorsum and plantar aspect of the foot and lateral aspect of the leg. Popliteal and ankle pulses were detected on the left foot. The left foot was noted to be pink, warm, and well perfused with capillary refill less than two seconds. Movements at the left hip and knee joints were severely restricted. A clinical diagnosis was ipsilateral left anterior hip dislocation and posterior knee dislocation. Radiographic evaluation of the left lower extremity demonstrated an anterior-inferior hip dislocation and a posterolateral knee subluxation without any fracture. (Fig. 1, 2A,B)

The patient was taken up for reduction in the operating room. He was given a general endotracheal anesthesia with complete muscle relaxation. Firstly, the knee was reduced with longitudinal traction. The normal pulsation of the dorsalis pedis and posterior tibial artery were noted. The reduced knee was maintained by spanning external fixator across the knee joint in slightly flexed position of the knee. Lastly, the anterior hip dislocation was reduced in the supine

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position. The modified Allis technique was attempted. The first assistant stabilized the pelvis by applying anterior-posterior force. The surgeon applied longitudinal traction along the deforming position of the leg and controlled rotation manually through external fixator handling. The second assistant applied lateral traction on the proximal part of the thigh. The hip was reduced without much effort.

Examination of the knee under anesthesia was consistent with posterior cruciate and bicollateral ligament injuries. Lachman test demonstrated negative result. Posterior drawer test demonstrated more than 15 mm translation. Varus and Valgus stress test at 0 and 30 degree showed more than 10 mm opening of lateral and medial compartment of the knee. After reduction, radiography of the hip and knee demonstrated concentric joint reduction.(Fig. 3, 4)

After the operation, no traction was used for the hip injury. Two days later, the patient was mobilized with crutches, non-weight bearing on the left lower extremity. After three months, the physical examination of the knee was consistent with PCL, PLC and LCL tear. The MRI study showed chronic complete tear of the PCL, oblique tear at the body of left medial meniscus and chondromalacia of the patella.

Discussion

Anterior dislocation of the hip occurs less often than posterior dislocation and account for approximately 10% of hip dislocations⁽⁵⁾. Dislocation of the hip is usually related to high velocity trauma, often dashboard injuries⁽⁶⁾. If the hip is abducted, flexed, and externally rotated when a patient's kn



Fig. 1 Anterior-posterior radiograph of both hips shows an anterior dislocation of the left hip joint



Fig. 2 AP and lateral of the left knee showing posterolateral knee subluxation



Fig. 3 The radiograph showing concentric reduction of the left hip joint



Fig. 4 A, B radiographs showing the reduced knee with spanning external fixation

strikes the dashboard, anterior dislocation occurs. There are two types of anterior hip dislocation, superior and inferior dislocations⁽⁷⁾. In the present case, the patient was thrown forward by the accident. At the **impaction** of the knee on the ground, the load **pushed** the proximal tibia backward causing posterior knee **subluxation**. With the axial load through the femur, the flexed and externally rotated hip **resulted in** anteroinferior dislocation.

A common complication of hip dislocations is avascular necrosis, which is reported to occur in 26% of traumatic hip dislocations and is uncommon after anterior hip dislocations⁽⁸⁾. There are many factors related to avascular necrotic complication such as repeated reduction and the time of the hip remains dislocated⁽⁹⁾. Delay in reduction carries an increased risk of a vascular necrosis of the femoral head and degeneration of the joint⁽¹⁰⁾. Hougaard and Thomsen presented that reduction within 6 hours of injury significantly decreased the incidence of aseptic necrosis⁽¹¹⁾. Tornetta P III reported X-ray findings of **a vascular necrosis** are usually present within 2 years, but have been seen to occur as late as 5 years postinjury⁽¹²⁾. In the presented case, the reduction of the hip was delayed more than 24 hours after the injury. The patient has a risk of avascular necrosis **and must be** regularly evaluated for the clinical signs and symptoms and radiograph of the avascular necrosis for at least two years.

There are multiple methods of reducing anterior hip dislocations. Each includes traction and countertraction. For inferior type of anterior hip dislocation, Walker described a modified Allis technique. Traction is continuously applied in line with the femur with gentle flexion. A lateral push on the inner thigh, internal rotation and adduction are used to reduce the hip⁽¹³⁾. In the presented case, the anterior hip dislocation was reduced following the reduction of the knee. Continuous traction on the spanning external fixator was applied inline of the femur by the first surgeon. Countertraction force, anterior to posterior direction on the pelvis was done by **an assistant**. Lateral traction force on proximal thigh was applied by **another assistant**. Then the first surgeon internally rotated and adducted the leg to reduce the hip.

Dislocation of the knee is also a true orthopedic emergency following a high-energy trauma. Knee dislocation is associated with two or more of four major ligament rupture with extensive soft tissue injuries⁽¹⁴⁾. Reported series have emphasized the extensive ligamentous damage and potential for vas-

cular complications. Damage to the popliteal artery is common. The incidence of vascular injuries in knee dislocations varies from 0% to 40%, as reported by Conwell and Alldredge and Shield's et al.⁽¹⁵⁾ Nerve injuries **complicated in** knee dislocations occur in 16–43%⁽¹⁶⁾. The peroneal nerve is injured **more** often and the prognosis for **recovery** of function after injury is guarded⁽¹⁷⁾. In the presented case the knee dislocation was reduced satisfactorily by closed method with gentle longitudinal traction. After reduction, physical examination of the knee showed a tear of the **PCL** and bicollateral ligaments. The circulation was not impaired including serial examination for one week.

Ipsilateral hip and knee dislocation following high energy trauma is rare⁽¹⁸⁾ Concomitant ipsilateral anterior hip dislocation and posterior knee subluxation has never been reported in the English literature. Emergency reduction of both dislocations is imperative. The knee dislocation must be **firstly** reduced and immobilized with spanning external fixation to **hold** the thigh and leg as a unit, to facilitate reduction of the hip, to prevent unexpected complications of the knee during reduction of the hip, and to **be** initially **treatment of** the medial and lateral collateral ligaments of the knee. Delayed diagnosis and treatment may lead to a poor final outcome in the sequelae phase.

Conclusions

The diagnosis of the presented case is ipsilateral anterior hip dislocation and posterior knee subluxation. Emergency reduction of both dislocations is important. The authors propose that the presented method, the reduction of the knee dislocation and immobilization with spanning external fixator must be performed before reduction of the hip dislocation, is an effective technique.

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ภาวะข้อสะโพกหลุดไปด้านหน้าและข้อเข่าหลุดไปด้านหลังในรายค้ำข้างเดียวกัน : รายงานผู้ป่วย

ธนวัฒน์ วะสินนท์, ประสิทธิ์ วงศ์วีรัตน์ชัย, อนุพงษ์ เลหาพูนรังษี

ภาวะข้อสะโพกและข้อเข่าหลุดเป็นภาวะที่พบได้^{ได้}ในกรณีฉุกเฉินทางออร์โธปิดิกส์ แต่ภาวะข้อสะโพกและข้อเข่าหลุดพร้อมกันในระยางค์ข้างเดียวกันมีโอกาสเกิดขึ้นได้ไม่บ่อยและมักจะเป็นชนิดหลุดไปด้านหลังทั้งคู่ เรายานผู้ป่วยชายที่มีภาวะข้อสะโพกหลุดไปด้านหน้าและข้อเข่าหลุดไปด้านหลังในรายค้ำข้างเดียวกันหลังประสบอุบัติเหตุรถจักรยานยนต์ชนซึ่งมีโอกาสเกิดขึ้นน้อยมาก และนำเสนอวิธีการดูแลรักษาโดยการทำการดึงข้อเข่าที่หลุดไปด้านหลังเข้าที่ก่อนแล้วยึดข้อเข่าด้วยเครื่องยึดตรึงกระดูกชนิดยึดภายนอก จากนั้นค่อยดึงข้อสะโพกที่หลุดไป ด้านหน้าเข้าที่ในขณะที่ทำการดมยาสลบผู้ป่วย