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Hip dislocation with ipsilateral femoral shaft fracture (closed treatment of both injuries in a single setting): Case report and literature review

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Abstract

Hip dislocation with concomitant femur shaft fracture is a rare and complex injury that results from high velocity trauma. There is lack of literature regarding pattern and management guidelines of these complex injuries. Here we report such rare case of posterior dislocation of hip associated with an ipsilateral fracture shaft of femur in a 21 year old male patient. Both the injuries were treated with closed reduction in a single anesthesia. The femoral head was first reduced with help of temporary external fixator and then closed antegrade femoral interlocking nailing was done for femoral shaft fracture. This resulted with a good functional outcome (Harris hip score-95) at one year follow up.

Keywords: Hip dislocation with concomitant femur fracture, close reduction of hip dislocation

Introduction

With the increasing use of automobile, complex mechanisms of injuries have come into play leading to some rare fracture patterns. Hip dislocation with concomitant femur shaft fracture is such complex injury. There are few reports of such patterns but there are no clear-cut guidelines regarding their management ^[1, 2, 3]. Here we report such unusual case of posterior dislocation of hip associated with an ipsilateral fracture shaft of femur in a 21 years old male due to road traffic accident. Both the injuries were treated with closed reduction with a good functional outcome at one year follow up.

Case report

A 21 years old male involved in a road traffic accident suffered injury to his right hip and thigh and was brought to the emergency department. On subsequent clinical examination, the right hip was in adduction and the proximal fragment of the femoral shaft could be palpated causing tenting of the skin on anterior thigh. There was no distal neurovascular deficit. Patient was immobilized on boehler-braun splint to elevate the distal fracture fragment and reduce the skin tenting. On radiographs, posterior dislocation of hip along with a fracture of the ipsilateral femoral shaft was found. Patient was hemodynamically stable with all the vital functions normal. He was taken to Operating room and under spinal anesthesia; a uniplanar 2 pin external fixator was applied in the proximal fragment. With linear traction on the fixator in the line of the deformity, femoral head was reduced gently in the acetabulum without any complications. Intra-operative C-arm fluoroscopy was used to confirm congruent reduction. Femoral shaft fracture was then reduced in traction over a fracture table under C-arm guidance and intramedullary femoral nailing was done. He was discharged after one week with partial walker assisted weight bearing as tolerated. After a one year follow up, he has a good functional outcome with no restriction of activities (Harris hip score=95, excellent). The follow up x ray shows no signs of avascular necrosis and a united femoral shaft fracture.

Discussion

Posterior hip dislocation is an emergency situation and a prompt reduction should be achieved once the patient is hemodynamically stable. With the increase in passing time since presentation, the rate of femoral head avascular necrosis increases ^[4, 5]. In these scenarios where there is associated femoral shaft fracture, it is difficult to achieve closed reduction as the traction force is not transmitted to the proximal femur due the intervening fracture. So, it is safer to use an external device in the form a fixator applied in the proximal fragment to reduce the hip.

In other such cases mentioned in the literature, there is also an associated femoral head fracture which might make close reduction difficult, but in our case, there was no femoral head fracture leading to an easy reduction once the force was applied with the fixator in place. Open reduction of the dislocated hip might become necessary if there is an associated fracture of the acetabulum, femoral neck, inter-trochanteric region or a

femoral head fracture with a large fragment which needs fixation. It is well established that the complication rate associated with open reduction is higher than that with closed reduction (Nerve palsy, infection, avascular necrosis etc.) [6, 7, 8]. An emergency CT scan with 3D reconstruction is a very helpful tool in pre-operative planning and an intra-operative fluoroscopy is must to check for the stability or any loose fragment in the joint.

Table 1: Literature review of Posterior hip dislocation with ipsilateral fracture shaft of femur.

Author	Pattern of injury	Intervention	Outcome
Barquet A, Mussio A (1983) [6]	Fracture dislocation of femoral head with trochanteric and shaft fracture	OR of hip dislocation and plate fixation of trochanteric and femur shaft fracture	Good functional outcome at 27 months follow up with no evidence of avascular necrosis
Tiedeken NC, Saldanha V, Handal J, Raphael J (2013) [7]	Posterior hip dislocation with posterior wall acetabular fracture with femoral shaft fracture	OR of hip and fixation of acetabular fracture and open retrograde nailing of femur	Early arthritic changes at 11 months follow up and heterotrophic ossification
Sharma G, Chadha M, Pankaj A (2014) [8]	Posterior dislocation of hip with femoral neck fracture with femoral shaft fracture	OR of hip and fixation of femoral neck with screws with DFN for fracture shaft of femur	Good functional outcome without avascular necrosis at 2 years follow up
Qi BC, Zhao Y, Wang CX, Wang TJ, Zhang JT, Ju WN, Sun DH (2016) [9]	Posterior dislocation of hip with acetabular transverse and posterior wall fracture with bilateral fracture femoral shaft	OR of hip and fixation of acetabular fracture	Good functional outcome 4 months post-surgery
Alhammad A, Alnouri M, Arbash MA, Baco AM (2016) [10]	Posterior dislocation with femoral head Pipkin type 1 with fracture of femoral shaft	CR of hip and CR and intramedullary nailing of femur shaft	Lost to follow up



Fig 1: X-ray at the time of presentation showing posterior hip dislocation with ipsilateral femoral shaft fracture.



Fig 3: Intra-operative fluoroscopic lateral view showing concentric reduction of femoral head in acetabulum



Fig 2: Intra-operative Fluoroscopic image showing the pins of external fixator and closed reduction of femoral head in acetabulum



Fig 4: Immediate Post-Operative X ray showing reduced hip joint and intramedullary femoral nail in situ



Fig 5: One year follow up X-ray showing union of the femoral shaft fracture and no signs of avascular necrosis in femoral head.

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Statement of Informed Consent: We ensure that a valid written consent was taken from the patient for the purpose of treatment as well as for the purpose of publication of the data and photographs.

Conclusion

When attending such patients with complex injuries, surgeon should prefer a closed reduction attempt with the help of external tools rather than straight away opting for open reduction. This saves the patient from unnecessary complications and allows for an early rehabilitation. However, if other associated injuries are suspected like acetabulum and femoral head fractures, then one can go for open reduction in emergency. To conclude, in cases of hip dislocation, if time is saved then femoral head is saved.

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