

Case Report

One Stage Total Hip Arthroplasty in Acetabular with Ipsilateral Femoral Neck Fracture and Posterior Traumatic Hip Dislocation: A Case Report and Brief Review

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Abstract

Traumatic acetabular and ipsilateral femoral neck fracture combined with posterior traumatic hip dislocation is a rare presentation. Here, we described such a difficult case treated with one stage total hip arthroplasty (THA) with open reduction and internal fixation. The patient returned to his previous job with good function after 5 months postoperatively. The plain radiograph showed a well-seated prosthesis position with no evidence of subsidence. This present article shows our experience with good results, and makes a literature review.

Keywords: Femoral neck fracture, ipsilateral, one stage, posterior traumatic hip dislocation

INTRODUCTION

“Floating hip” injury is to describe a rare presentation from high-energy trauma, including the pelvis or acetabulum fracture combined with ipsilateral femoral neck or shaft fracture simultaneously. The reported incidence is just 1:10,000 fractures.^[1] To our knowledge, little is known about the management of such cases.

Here, we present a rare case of a 63-year-old man who had acetabular and ipsilateral femoral neck fracture combined with posterior traumatic hip dislocation following a traffic accident treated with one-stage hip arthroplasty (THA) with open reduction and internal fixation (ORIF).

CASE REPORT

A 63-year-old male cyclist had an injury to his left hip following a traffic accident. The left leg was shortened

with a sign of internally rotated. No neurological deficit or craniocerebral injury was found.

The initial plain anteroposterior film and three-dimensional reconstructed computed tomography (CT) scan of the pelvis revealed the presence of a displaced fracture of the posterior column, ipsilateral femoral neck fracture combined with posterior traumatic hip dislocation [Figure 1a-c]. After assessing the details, we planned to undergo a one-stage THA with ORIF.

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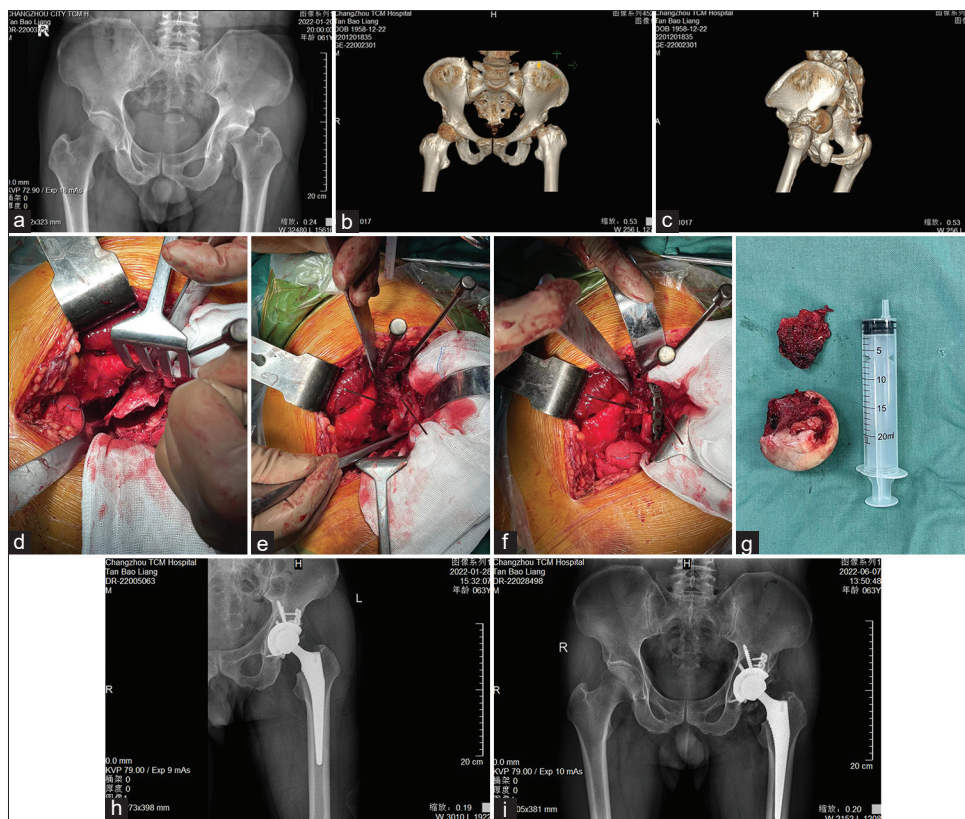


Figure 1: A 63-year-old male cyclist had an injury to his left hip following a traffic accident. (a-c) The AP film and 3D reconstructed CT of the pelvis preoperatively revealed the presence of a displaced fracture of the posterior column, ipsilateral femoral neck fracture combined with posterior traumatic hip dislocation, (d) Intraoperative photos showed the existence of displaced fracture of the posterior column, (e) Temporary fixation of the posterior column, (f) Final fixation of the posterior column with locking plate, (g) The femoral head showed severe chondral defect and bone compression, (h) Postoperative plain film showed a well reduction and prosthesis position, (i) The latest follow-up plain film showed a well-seated prosthesis position with no evidence of subsidence. 3D: Three-dimensional, CT: Computed tomography

The operation was performed through posterolateral approach with a lateral position under general anesthesia. The sizes of the cup and femoral neck were measured by template preoperatively based on the contralateral joint.

We prepared the femur first and performed the osteotomy of the femoral neck. The isolated displaced femoral head was buried beneath the gluteus maximus and fascia. The femoral head showed severe chondral defect and bone compression [Figure 1d-g].

The whole of the posterior comminuted acetabulum was exposed, reduced, and fixed with a locking plate firstly. Intraoperative C-arm fluoroscopy confirmed that the acetabular fracture was reduced and fixed well. The primary stability was obtained, and then, we performed an uncemented total hip arthroplasty.

The acetabulum was reaming till the subchondral bone with extensive bleeding. The cavitory defects and fracture gaps were filled with impacting the autograft cancellous chips from the femoral head. The trial cup was used to assess the final size of the acetabular cup. A final cup of 52 mm was implanted with three screws used to fix the cup.

Then, a femoral stem was inserted. The postoperative plain film showed a well reduction and prosthesis position. No

neurovascular deficit occurred postoperatively [Figure 1h]. Low-molecular-weight heparin sodium (Sanofi Winthrop Industrie, France, 0.6 ml: 6000AxaIU) was used for deep venous thrombosis prophylaxis once daily after the operation.

The passive activity exercises started on the 1st day after the operation. Nonweight bearing with the walker was encouraged if the pain was tolerable. Partial weight loading was permitted about 3 weeks after the operation, and gradually transitioned to full weight bearing. The patient was followed up at 1.5, 3, and 6 months [Figure 1i]. The patient lived a free life after 3 months.

DISCUSSION

The acetabular and ipsilateral femoral neck fracture is a rare fracture pattern. Little is found about such injuries in literature. In 1964, Klasen and Binnendijk reported two cases with acetabular and ipsilateral femoral neck fractures, while in 1977, Salacz described another patient. A sudden sustained force leads to acetabular fracture when the hip in abduction or adduction. The dislocation occurs firstly by a sudden longitudinal force when the hip in abduction or adduction. The increased longitudinal force causes the fractures of the acetabular and femoral neck.^[2] Stewart described central

acetabular dislocation combined with fracture of the head or neck of the femurs as Grade-IV but reported only one patient.^[3]

No consensus on treatment standards has been achieved so far. The initial plain film revealed the presence of a displaced fracture of the posterior column. However, the three-dimensional reconstruction of CT was needed to assess detailed fracture.

The complication rate in floating hip is significantly related to the severity and instability of the pelvic.^[4] The acetabular fracture fixation is advocated firstly to avoid further damage and achieve better hip function.^[5] Siavashi *et al.* also advocated the stability of the pelvic ring should be firstly considered in the patient with a floating hip.^[6] In the present case, we tried to achieve the initial stable fixation of the acetabular fracture with a locking plate, as a key step for following total hip arthroplasty.

Early stable reduction and fixation play an important role in the incidence of avascular necrosis (AVN) of the femoral head. A relatively higher incidence of AVN after the operation is found from 7% to 11.1%.^[7] Any additional surgical procedures potentially lead to iatrogenic injury or even disastrous results.^[8] The displaced fracture of the posterior column makes the management even more challenging to achieve the initial stability of the acetabulum. When the posterior dislocation of the hip occurs, the acetabular rim compresses extra-capsular vessels (especially the deep branch of the medial circumflex artery) and leads to necrosis of the femoral head.^[9] Wei *et al.* reviewed 502 acetabular fractures from 1990 to 2008 and found only eight patients had ipsilateral femoral neck fractures. Five out of the eight patients had dislocation of the femoral head and all got femoral head necrosis after operations, even if excellent or good reduction. They advocated acute total hip arthroplasty in patients with femoral head dislocation.^[10] Considering the age of the patient and the high risk of AVN, we preferred one-stage hip arthroplasty after initial stable fixation. One-stage surgery avoided more bleeding and harm, and accelerated the rehabilitation process. The early functional exercise was encouraged if the regional pain was tolerable.

CONCLUSION

Acetabular and ipsilateral femoral neck fracture combined with posterior traumatic hip dislocation is a rare and challenging

case. One-stage hip arthroplasty with ORIF may be a preferable option.

Declaration of patient consent

The authors certify that we have obtained all appropriate patient consent forms. In the form, the patient has given his consent for his images and other clinical information to be reported in the journal. The patient understands that his name and initials will not be published and due efforts will be made to conceal his identity.

Data availability

All data generated or analyzed during this study are included in this published article and are available from the corresponding author on reasonable request.

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Conflicts of interest

There are no conflicts of interest.

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