

Irreducible fracture dislocation of femoral head: necessity of ganz trochanteric osteotomy

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Abstract

We are reporting a case of 27 male presented with postero-superior fracture dislocation of femoral head. To minimize damage to femoral blood supply while surgical procedure we employed ganz trochanteric osteotomy. It allowed maximum exposure and least amount of injury to femoral blood supply and cartilage injury.

Keywords: femoral head dislocation, Irreducible, Osteotomy

Introduction

The incidence of femoral head fracture-dislocations (FHFD) is between 8 and 26% [1]. This entity is rare, and dislocations that cannot be reduced are even less frequent, with possible serious effects to future hip function in these cases [2,3].

Avascular necrosis of the femoral head is the most serious complication after surgically treated dislocation. Ganz et al [4] described technique to preserve blood supply of femoral head after studying 213 cases. Here we are reporting case of femoral head fracture dislocation.

Case Report

27 years of Male, daily labourer reported to our hospital after being involved in motor vehicle accident. Motor vehicle slipped off the road and weight of the vehicle burdened his rt lower limb which resulted in twisting type of injury. Patient reported with pain in his right hip along with inability to move his right

lower limb. His rt Leg was flexed, externally rotated and shortened. Plain radiograph performed which showed fracture dislocation of femoral head (fig 1). Patient underwent computed tomography (CT) which showed Pipkin type II of Femoral head fracture along with posterior dislocation of rt hip (Fig 2).

The trochanteric flip osteotomy described by Ganz et al [4] provides safe access to the femoral head and acetabulum.

In this case patient was operated in lateral decubitus position on a standard flat radiolucent table. Kocher Logenbach approach was used to facilitate good exposure. In this approach fascia is incised in line with skin incision in the distal part of the incision while gluteus maximus is split in the proximal part. The trochanteric bursa was incised and reflected to expose the surface of the greater trochanter. The leg was internally rotated to view the posterior border of gluteus medius and postero-superior edge of the greater trochanter.

The osteotomy site was marked with the cautery, starting proximally from the posterosuperior edge of the greater trochanter to the posterior border

of the vastus lateralis ridge distally. Then, with a thin oscillating saw, osteotomy is done, with its plane in line with the direction of external rotators. External rotators identified and tagged with 1-0 vicryl suture. Postero-superior dislocation was noted. Reintegration of the femoral head was extremely difficult due to a buttonhole effect from the capsulolabral incarceration. suprafoveal Femoral head fragment was deep inside acetabulum with intact ligamentum teres. Capsulotomy was employed and femoral head identified. Ligamentum teres had to release to facilitate fixation of femoral head. Cartilage was seen intact on both the fracture fragment of femoral head and weight bearing area was seen unaffected.

Fractured femoral head was then fixed with 5 titanium headless screws (Herbert) (Fig 3). First guide wires were inserted under C-Arm intensifier. Drilling was done over guide wire till proximal end of second fragment. While drilling oozing of fresh blood was noted this was indicator of viability of femoral head. Out of 5 screws 2 screws were fixed near to fracture fragment and in perpendicular to fracture line to accomplish maximum compression (Fig 4). Capsulotomy sutured with absorbable sutures. Trochanteric

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Figure1: Preoperative Radiograph showing fracture dislocation of Rt femoral Head

ostectomy was fixed with 2 titanium cannulated cancellous screws under C-arm intensifier.

Post operatively long knee brace was given to avoid flexion and internal rotation in rt. hip joint. Patient was allowed to ambulate without bearing weight on affected side.

Discussion

Hip dislocation is a rare injury, requiring a massive force to occur. The incidence of long-term complications such as avascular necrosis (AVN) following dislocation of the hip varies from 6% to more than 40%. In cases of unsuccessful closed reduction, with fragments trapped in the joint after reduction, or associated fractures of the femur, open reduction is required [5].

The femoral head receives its blood supply primarily from the medial femoral



Figure2: Computed Tomography (CT) showing with femoral head in acetabulum cavity

circumflex artery (MFCA). Of all of the branches of this artery, the deep branch is the most important⁶. During posterior dislocation of the hip, arteries supplying the femoral head can be injured when the deep branch passes posterior to the obturator externus muscle and anterior to the quadratus femoris muscle [4]. The deep branch of the MFCA penetrates the capsule of the joint in the posterior aspect of the trochanteric region and can be kinked or stretched by the dislocated femoral head [6-8]. Damage to the deep branch after traumatic posterior dislocation leads to avascular necrosis of the femoral head, is in between 5% and 60% of patients. It depends on delay in hip relocation and severity of fracture/dislocation [9-14].

Reduction of femoral head can be carried out through an anterior, lateral or posterior approach. Epstein [15,16] favoured primary open reduction by the posterior approach for traumatic dislocations. After incising the short external rotators, and releasing the gluteus medius muscle at the greater trochanter, if needed. He reported an incidence of avascular necrosis of 5.3%, as opposed to 18% with the anterior approach.

In the treatment of Pipkin fractures, Swiontkowski et al [17] compared the



Figure3: Fracture fixation with Headless cancellous screws (Herbert)

anterior and posterior approaches with regard to the blood supply of the femoral head and concluded that with the anterior approach there was no iatrogenic vascular necrosis, a shorter operating time, less estimated blood loss, and better visualization of the femoral head. There was, however, an increased incidence of heterotopic ossification.

The technique of surgical dislocation presented in our study allows visualization of the femoral head of almost 360° and complete access to the acetabulum. With more experience, subluxation of the head, preserving the round ligament, is sufficient for many pathological conditions [18].

Iatrogenic injury to the cartilaginous surfaces of the femoral head and acetabulum is minimised. All external rotator muscles are left intact and, therefore, protect the MFCA. Intraoperative monitoring of perfusion of the femoral head is possible.

Conclusions:

Ganz osteotomy is procedure of choice in irreducible fracture dislocation of femoral head. It allows maximum exposure of acetabulum with least amount of trauma to the blood supply of femoral head.



Figure4: Post operative radiograph showing fixation

References

1. Vielpeau C, Lanoe E, Delbarre JC, Hulet C. Fracture-luxation de la tête fémorale Ann Orthop Ouest 2000 ; 32 : 61-65
2. Duquennoy A., Decoux J., Capron J.C., Torabi D.J. Les luxations traumatiques de la hanche avec fracture de la tête fémorale. À propos de 28 observations Rev Chir Orthop 1975 ; 61 : 209-219
3. Roeder L.F., Delee J.C. Femoral head fractures associated with posterior hip dislocations Clin Orthop 1980 ; 147 : 121-130
4. Ganz R, Gill TJ, Gautier E, Ganz K, Krügel N, Berlemann U. Surgical dislocation of the adult hip a technique with full access to the femoral head and acetabulum without the risk of avascular necrosis. J Bone Joint Surg Br 2001;83:1119–24
5. Levine RG, Kauffman CP, Reilly MC, Behrens FF. 'Floating pelvis' A COMBINATION OF BILATERAL HIP DISLOCATION WITH A LUMBAR LIGAMENTOUS DISRUPTION. The Journal of bone and joint surgery. British volume. 1999 Mar;81(2):309-11.
6. Zlotowicz M, Szczodry M, Czubak J, Ciszek B. Anatomy of the medial femoral circumflex artery with respect to the vascularity of the femoral head. J Bone Joint Surg [Br] 2011;93-B:1471–1474. 2.
7. Tucker FR. Arterial supply to the femoral head and its clinical importance. J Bone Joint Surg [Br] 1949;31-B:82–93.
8. Kalhor M, Horowitz K, Gharehdaghi J, Beck M, Ganz R. Anatomic variations in femoral head circulation. Hip Int 2012;22:307–312
9. Sen R, Tripathy S, Gill S, et al. Prediction of posttraumatic femoral head osteonecrosis by quantitative intraosseous aspirate and core biopsy analysis: a prospective study. Acta Orthop Belg 2010;76:486–492.
10. Dwyer A, John B, Singh S, Mam M. Complications after posterior dislocation of the hip Int Orthop 2006;30:224–227.
11. Yue J, Sontich J, Miron S, et al. Blood flow changes to the femoral head after acetabular fracture or dislocation in the acute injury and perioperative periods. J Orthop Trauma 2001;15:170–176.
12. McKee M, Garay M, Schemitsch E, Kreder H, Stephen D. Irreducible fracturedislocation of the hip: a severe injury with a poor prognosis. J Orthop Trauma 1998;12:223–229.
13. Hougaard K, Thomsen P. Coxarthrosis following traumatic posterior dislocation of the hip. J Bone Joint Surg [Am] 1987;69-A:679–683.
14. Hougaard K, Thomsen P. Traumatic posterior dislocation of the hip: prognostic factors influencing the incidence of avascular necrosis of the femoral head. Arch Orthop Trauma Surg 1986;106:32–35.
15. Epstein HC. Traumatic dislocations of the hip. Clin Orthop 1973;92:116-42.
16. Epstein HC. Posterior fracture-dislocations of the hip: long-term follow up. J Bone Joint Surg [Am] 1974;56-A:1103-27.
17. Swiontkowski MF, Thorpe M, Seiler JG, Hansen ST. Operative management of displaced femoral head fractures: case matched comparison of anterior versus posterior approaches for Pipkin I and Pipkin II fractures. J Orthop Trauma 1992;6:437-42.
18. Gautier E, Ganz K, Krügel N, Gill T, Ganz R. Anatomy of the medial femoral circumflex artery and its surgical implications. J Bone Joint Surg [Br] 2000;82-B:679-83

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