

Total hip arthroplasty in a 6-month-old acetabulum fracture-dislocation of the hip: an 8-year follow-up

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Abstract

Old unreduced acetabulum fracture-dislocation is common in developing countries due to various factors. Different options including arthrodesis, Girdlestone arthroplasty and total hip replacement (THR) are used for its treatment. THR with reconstruction of the acetabulum is recommended, but not much work has been reported so far in our country. Till date, arthrodesis in youngsters and resection arthroplasty in the elders has been the treatment of choice. THR, however, is being done by a few, but the experience has not been published. We are reporting a case of a middle-aged woman, who had a 6-month-old acetabulum dislocation of the hip with fracture of the posterior wall of the acetabulum. It was treated by THR and acetabulum reconstruction and had good functional result 8 years after the surgery.

Keywords: Acetabulum fracture, Arthrodesis, Unreduced dislocation, Hip reconstruction, Total hip replacement.

Introduction

Old unreduced dislocations of the hip are relatively uncommon in adults. However, in developing countries, unreduced traumatic dislocations are not uncommon. They are usually the result of a motor vehicle accident that also causes head injury, fracture of the ipsilateral femur, or dislocation or fracture of the opposite hip, which draws away attention from the dislocation.¹ Chronic hip dislocations occur in situations when the patient does not or cannot seek adequate medical care. As such, chronic dislocations may be observed in patients with an extremely high tolerance of pain, patients with decreased cognitive ability to recognise or verbalise their pain, and patients with additional injuries that are more obvious or life-threatening.²

Chronic dislocations are sometimes accompanied with mal-united or non-united fractures of the acetabular floor or rim and fracture of the femoral head. Total hip arthroplasty (THR) is recommended for hip dislocations more than 3 months old accompanied by the above

mentioned fractures.³ These types of fracture-dislocations have unfavourable results even with early reduction. Best results have been obtained by total hip arthroplasty compared to other forms of treatment in fracture-dislocations of the hip. Other treatment options are closed reduction, open reduction, heavy traction and abduction, subtrochanteric osteotomy, Girdlestone arthroplasty, arthrodesis, endoprosthetic replacement and total hip replacement.³

Total hip replacement in fracture-dislocation requires reconstruction of the acetabular fracture for placement of acetabular component or use of cage and bone graft for support of the acetabular component.

Case Report

A 52-year-old, physically active woman had a fall from 6



Figure-1: Dislocation of the hip posterosuperiorly, fracture of the posterosuperior acetabular wall (classical seagull sign) and false acetabulum formation before surgery in May 2004.

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Figure-2 (A-B): Reconstruction of the posterosuperior acetabular wall with iliac crest graft and cemented Charnley total hip replacement implant in May 2004.



Figure-3 (A-B): Satisfactory well-fitted THR component at an 8-year follow-up in September 2011.

feet height after a slip on the stairs, resulting in the fracture of the left hip in November 2003. She was treated by Potter, but it remained painful and was unable to bear weight. She reported back on May 19, 2004, six months after the initial treatment. She was in pain and unable to bear weight on the left lower limb, with decreased range of motion of hip, shortening of 2 inches in the left lower limb and frontal femoral component (FFC) of 35 degrees in the left hip. Limb was in adduction and internal rotation. Greater trochanter was above the level compared to the other side. Hip movements were severely restricted and painful. On roentgenogram, the hip was found to be dislocated posterosuperiorly and had formed a false acetabulum in the left supra-acetabular region. The acetabular wall was deficient posterosuperiorly. Roentgenogram showed classical seagull sign of posterior acetabular wall fracture (Figure-1). She was operated upon on May 26, 2004 by

reconstruction of the posterosuperior acetabular wall with iliac crest graft and cemented Charnley THR implant (Figure-2.A-B). Post-operative recovery was uneventful. Her physiotherapy was started soon post-operatively, which continued for 1 month in the hospital even after her discharge. She used a crutch for walking for 5 months and then gradually moved to independent walker. She was regularly followed-up in the outpatient department (OPD). Her functional status improved on every successive follow-up visit. Her last follow-up was on September 5, 2011, almost 8 years after the hip replacement surgery. She had no pain, a mild limp, excellent function, and maintained the squatting position for some time. Her quality of life had improved over the preceding 8 years. Roentgenograms showed satisfactory position and fitting of THR components (Figure-3.A-B).

Discussion

Unreduced fracture-dislocation of the hip for more than 3 months is considered an old neglected dislocation. Conservative treatment becomes impossible to achieve stable concentric reduction³ due to unreduced wall fracture leading to instability and fibrous tissue covering the fracture. The operative treatment too shows equivocal results due to irregular and persistent pain. Hence, the operative treatment remains the only chance to reduce the hip or reconstruct with arthroplasty. Various investigators use different methods for operative treatment of old unreduced fracture-dislocations including subtrochanteric osteotomy, Girdlestone procedure, arthrodesis, endoprosthetic replacement, and total hip replacement.³ All these procedures have their merits and demerits and give different outcomes. The result can be further altered by avascular necrosis of the femoral head which occurs in more than 50 % of the cases. Garrett et al³ and Zippel et al⁴ have recommended total hip arthroplasty for hips with posterior dislocations categorised as type IV (fracture of the acetabular rim and floor) or type V (fracture of the femoral head with or without other fractures) that have remained dislocated for more than 3 months. Malkin et al,⁵ Ilyas et al⁶ and others have shown good functional outcome with THR for old unreduced fracture-dislocation of the hip. Similar to our case with posterosuperior acetabulum wall deficiency due to old unreduced dislocation, the investigators recommend acetabulum reconstruction prior to acetabulum cup fixation. They used either bone graft augmentation for the deficient wall or a cage for stability. Hansen E and colleagues used cemented cage with allograft for reconstruction of acetabular defect, and they found favourable results in total hip arthroplasty.⁷

The acetabular augmentation in our case was with a

tricortical graft from the iliac crest fixed with a screw to reconstruct the posterosuperior deficient wall followed by fixation of the THR component. The patient soon recovered with excellent functional results (Harris Hip Score 90). Her hip remained stable and pain-free till the last follow-up four months back. Fernandez-Palazzi F et al⁸ used cortical bone grafts for acetabular augmentation and were satisfied with the results. Krbec M and colleagues⁹ used cortical bone grafts and augmentation devices for acetabular augmentation in THR and found improvement in results, which is similar to our case. The investigators found acetabular augmentation with bone graft to be an important step in THR for acetabular wall defects.

Conclusion

Different options are present for treating old unreduced acetabulum fracture-dislocations. Total hip replacement with reconstruction of the acetabulum has good functional results, as also seen from our case.

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