



## SERIES OF COMPLICATIONS AFTER TOTAL HIP ARTHROPLASTY IN POST-TRAUMATIC ARTHRITIS WITH SYMPHYSIS PUBIS DIASTASIS: A CASE REPORT

<b>Dr Bikram Keshari Kar</b>	Associate Professor, Department of Orthopaedics, All India Institute of Medical Sciences (AIIMS), Raipur.
<b>Dr Anand Kumar Singh*</b>	Senior Resident, Department of Orthopaedics, All India Institute of Medical Sciences (AIIMS), Raipur. *Corresponding Author
<b>Dr Debashish Sarkar</b>	Junior Resident, Department of Orthopaedics, All India Institute of Medical Sciences (AIIMS), Raipur.

### ABSTRACT Introduction:

Complications following acetabular fractures are common and defined by the occurrence of posttraumatic arthritis (PTA), chondrolysis, and osteonecrosis of the femoral head. PTA may be crippling sequelae after acetabular fracture, and total hip arthroplasty (THA) is often necessary to correct problems.

#### Case report:

A 70 year/male patient Hindu by religion was presented in OPD with diagnosis of left hip arthritis with pubic symphysis diastasis. He had history of trauma followed by open book pelvic injury and acetabulum fracture in the year of 2009. Cemented THA of left hip done in 2019. 1 year later presented with infection and managed with implant removal, debridement and antibiotic cement spacer placement in the year of 2021. Revision THA was done with resection of proximal femur and mega prosthesis. Accidental spillage of cement in the knee joint, which was managed by arthrotomy and cement removal. Again, patient got dislocation of hip and managed with open reduction.

#### Conclusion:

As patient has pubic diastasis the geometry of acetabulum changed to become relative retroverted because of external rotation of hemipelvis. In this patient after total hip arthroplasty there is increased chance of complications, so we need to evaluate properly during THA to decrease risk of complications.

**KEYWORDS :** Hip arthritis, acetabulum, total hip arthroplasty, mega-prosthesis, hip dislocation

### INTRODUCTION:

Complications following acetabular fractures are common and defined by the occurrence of posttraumatic arthritis (PTA), chondrolysis, osteonecrosis of the femoral head, and iatrogenic nerve palsies<sup>(1)</sup>. PTA may be a crippling sequelae after acetabular fracture, and total hip arthroplasty (THA) is often necessary to correct the clinical progression of symptoms<sup>(2)</sup>. The complications of total hip arthroplasty are Postoperative dislocation, femoral fracture, deep infection, heterotopic ossification, aseptic loosening of components, and deep vein thrombosis and/or pulmonary embolism.

#### Case report:

A 70 year/male patient Hindu by religion was presented in our OPD with diagnosis of left hip arthritis with pubic symphysis diastasis (Figure 1). He had history of trauma followed by open book pelvic injury and acetabulum fracture in the year of 2009. Cemented total hip arthroplasty of left hip done in 2019 (figure 2). 1 year after that patient again presented with pain at left hip with pus discharging sinus and both the femoral and acetabular component found loosened and managed with implant removal, debridement and antibiotic cement spacer placement in the year of 2021. During cement removal GT got fractured and managed by TBW (figure 3). Sinus healed but exchange of cement spacer done because of raised ESR and CRP. Postoperatively intravenous antibiotics were given as per culture report. After subsidence of infection cement spacer removed but failed to remove cement from femur. Also tried retrograde but did not succeed and revision total hip arthroplasty was done with resection of proximal femur and mega-prosthesis. During mega-prosthesis placement acetabular cavity was found to be widened like a wandering acetabulum we reconstructed the cavity with iliac crest bone graft and uncemented cup applied (Figure 4). During cementing of mega prosthesis accidental spillage of cement in the knee joint happened which was managed by arthrotomy and cement removal (Figure 5). Post-operatively there was 1cm shortening of operated limb but patient was able to walk with walker support comfortably and got discharged. Again, patient got a dislocation of hip while he was riding a bike and got a head on collision significant enough to get a dashboard like injury and presented in OPD after 15 days of dislocation. Attempt of closed reduction failed and open reduction done (Figure 6). Post reduction hip and vitals stable. Patient discharged and on follow up visit he was walking comfortably with support.



Figure 1: Posttraumatic arthritis left hip with pubic diastasis



Figure 2: X ray After cemented THA with infection



Figure 3: Cement spacer application and Tension Band Wiring of accidental Greater Trochanter fracture



Figure 4: Revision THA with megaprosthesis and accidental spillage of cement in knee joint



**Figure 5: Knee arthroscopy and cement removal**



**Figure 6: Pre and post reduction image of left hip dislocation**

## DISCUSSION:

Posttraumatic arthritis (PTA) may develop years after acetabular fracture, hindering joint function and causing significant chronic musculoskeletal pain. Given the delayed onset of PTA,<sup>(3)</sup>

Punnoose et al. stated that in patients with symphysis pubis diastasis, the surgeon should be prepared to place the cup in less than normal anteversion. This relative retroversion, which is an unusual position, is due to the external rotation of the whole hemipelvis including the femur. The degree of version of the cup should be guided by intraoperative stability checks and to ensure an impingement free range of motion<sup>(4)</sup>.

Stibolt et al. cited that the most prevalent postoperative complications following THA were heterotopic ossification (28%e63%), implant loosening (1%-24%), and infection (0%-16%). The minimum 5-year survival of implants ranged from 70% to 100%. Revision rates ranged from 2% to 32%<sup>(3)</sup>.

According to Morison et al. the 10-year survivorship after THA was lower in patients with a previous acetabular fracture than in the matched cohort (70%, 95% confidence interval [CI], 64%-78%, versus 90%, 95% CI, 86-95%;  $p < 0.001$ ). patients with previous acetabular fracture had a higher likelihood of developing infection (7% [five of 74] versus 0% [zero of 74]; odds ratio [OR], 11.79;  $p = 0.028$ ), dislocation (11% [eight of 74] versus 3% [two of 74]; OR, 4.36;  $p = 0.048$ ), or heterotopic ossification (43% [32 of 74] versus 16% [12 of 74]; OR, 3.93;  $p < 0.001$ ).<sup>(9)</sup> In this case-control study, patients with a prior acetabular fracture had markedly inferior 10-year survivorship and more frequent serious complications when compared with patients undergoing THA for primary osteoarthritis or AVN.

Thirty-two patients underwent THA for posttraumatic arthritis after acetabular fracture; 24 were treated with open reduction internal fixation, and 8 were managed conservatively. Time from fracture to THA was 36 months (6-227 months). Average follow-up was 4.7 years (2.0-9.7 years). Harris Hip score increased from 28 (0-56) to 82 points (20-100). Six patients required revision. Five-year survival with revision, loosening, dislocation, or infection as an end point was 79%. Survival for aseptic acetabular loosening was 97%. Revision surgery correlated with nonanatomic restoration of the hip center and a history of infection ( $P < .05$ ). Despite obvious challenges, advances in fracture management and cementless acetabular fixation in THA demonstrate improved results for posttraumatic arthritis following acetabular fracture<sup>(6)</sup>.

Heo et al. found that following THA, 39.7% of patients had experienced at least one major (9.5%) or minor (34.0%) complication by six months. The most reported minor complications included stiffness (8.8%) and unexpected pain (5.5%), whereas the most common major complications were arthroplasty-related readmission (3.9%), and reoperation (2.0%). The most common reasons for readmission were SSI (1.5%), dislocation (0.5%) and pulmonary embolism (0.2%), while the most common reasons for reoperation were SSI (0.7%), SSI requiring prosthesis removal (0.4%) and dislocation (0.3%). The mortality rate was 0.2%.<sup>(7)</sup>

In our case study we found following complications after THA: Periprosthetic infection, loosening of implant, periprosthetic fracture, improper cement removal, revision surgery, spillage of cement in knee joint, dislocation, limb length discrepancy.

## CONCLUSION:

As patient has pubic diastasis the geometry of acetabulum changed to become relative retroverted because of external rotation of hemipelvis. In this patient after total hip arthroplasty there is increased chance of complications. Since THA is the best option for management of PTA, So we need to evaluate properly during total hip arthroplasty to decrease the risk of complications.

## Conflicts of Interest:

The authors declare that they have no conflicts of interest.

## REFERENCES:

1. Matta JM, Mehne DK, Roffi R. Fractures of the acetabulum. Early results of a prospective study. *Clin Orthop*. 1986 Apr;(205):241-50.
2. Romness DW, Lewallen DG. Total hip arthroplasty after fracture of the acetabulum. Long-term results. *J Bone Joint Surg Br*. 1990 Sep;72(5):761-4.
3. Stibolt RD, Patel HA, Huntley SR, Lehtonen EJ, Shah AB, Naranje SM. Total hip arthroplasty for posttraumatic osteoarthritis following acetabular fracture: A systematic review of characteristics, outcomes, and complications. *Chin J Traumatol Zhonghua Chuang Shang Za Zhi*. 2018 Jun;21(3):176-81.
4. Punnoose DJ, N N, A N S, Kandathil JC, Theruvil B. Total Hip Arthroplasty in Post-traumatic Acetabular Nonunion with Symphysis Pubis Diastasis: A Case Report. *JBJS Case Connect*. 2021 Jul 12;11(3).
5. Morison Z, Moojen DJF, Nauth A, Hall J, McKee MD, Waddell JP, et al. Total Hip Arthroplasty After Acetabular Fracture Is Associated With Lower Survivorship and More Complications. *Clin Orthop*. 2016 Feb;474(2):392-8.
6. Ranawat A, Zelken J, Helfet D, Buly R. Total hip arthroplasty for posttraumatic arthritis after acetabular fracture. *J Arthroplasty*. 2009 Aug;24(5):759-67.
7. Heo SM, Harris I, Naylor J, Lewin AM. Complications to 6 months following total hip or knee arthroplasty: observations from an Australian clinical outcomes registry. *BMC Musculoskelet Disord*. 2020 Sep 10;21(1):602.