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Case Report

An Acetabular Fracture with a Series of Complications and Their Solutions: A Notable Case Report

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Abstract

Acetabular fractures are associated with various complications such as neurovascular injuries, post-traumatic arthritis, osteonecrosis of the femoral head, difficulty in arthroplasty, etc.

Total Hip Arthroplasty (THA) is one of the most successful surgeries done for post-traumatic arthritis of hip joint. THA itself is associated with numerous complications such as intraoperative haemorrhage, infection, deep vein thrombosis, malpositioning of implants, instability, dislocation, and aseptic loosening.

We herein report a case of post-traumatic arthritis of hip following acetabular fracture ten years back, who was operated on with total hip arthroplasty. Various complications were encountered during the management of the patient. The patient developed prosthetic joint infection and was operated with implant removal and antibiotics cement spacer application followed by revision arthroplasty with mega prosthesis, which dislocated following a dashboard injury and had undergone open reduction.

Keywords

Acetabular Fractures; Complications in Acetabular Fracture; Complication after Hip Arthroplasty; Megaprosthesis

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Introduction

Total Hip Arthroplasty (THA) is one of the most successful procedures worldwide. THA is considered the operation of the century; however, we should not forget that it may involve unexpected disappointment.

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 [1]. PTA may be crippling sequelae after acetabular fracture and Total Hip Arthroplasty (THA) is often necessary to correct the clinical progression of symptoms [2].

Total hip arthroplasty itself is associated with various complications occurring in intra-operative, peri-operative, and post-operative periods. The common complications following total hip arthroplasty are blood loss, infection, deep vein thrombosis, iatrogenic fracture, malpositioning of implants, limb length discrepancy, instability, and dislocation with delayed complications such as osteolysis, aseptic loosening, and implant failure [3].

In this case report, we present a patient of post traumatic arthritis of hip, managed with total hip arthroplasty who encountered various complications and was managed accordingly.

Case Report

A 70 years old male was admitted in 2019 with painful arthritic hip who had sustained pelvis and acetabular fracture following a road traffic accident 10 years back in 2009. Patient was evaluated preoperatively for medical conditions, functional status of hip and routine investigations were done. After complete evaluation total hip arthroplasty was planned. Consent was obtained and the patient was operated with cemented total hip arthroplasty. No peri-operative and post-operative complications were observed and the patient was discharged after rehabilitation and was advised to take standard precautions following THA. Patient was asked to maintain abduction pillow and walker assisted ambulation was advised after four days of surgery (Fig. 1).



Figure 1: Posttraumatic arthritis left hip followed by uncemented THA.

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Patient again presented in 2021 with infection and discharging sinus. Implants with cement were removed, and debridement was done. During cement removal, trochanteric fracture occurred for which tension band wiring was done. Antibiotic impregnated cement spacer was inserted. Post-operative antibiotics were continued.

After two weeks the patient was again planned for surgery due to the presence of persistent elevated acute phase reactants i.e. Erythrocyte Sedimentation Rate (ESR) and C-Reactive Protein (CRP). Exchange of cement spacer was done with a new antibiotic-impregnated cement spacer (Fig. 2-4).



Figure 2: Cement spacer application and tension band wiring of greater trochanter fracture.

After 8 weeks the patient was planned for definitive surgery. Haematological investigations were done in form of ESR, CRP, Procalcitonin, ferritin levels and alpha-defensin were done. ESR, CRP, procalcitonin and ferritin levels were in normal range while alpha defensin was tested negative.

Removal of cement spacer was not successful so resection of the proximal femur was done and megaprosthesis done with acetabular reconstruction using iliac crest bone graft and uncemented acetabular cup. During megaprosthesis cement spillage occurred in knee for which knee arthrotomy and debridement with cement removal done. Patient was able to walk without pain and support and was discharged with advice to follow standard precautions.



Figure 3: Revision THA with megaprosthesis (A,B), accidental spillage of cement (C) and following Knee arthrotomy and cement removal (D).

In September 2021 patient again presented with dislocated hip following a dashboard injury in a road traffic accident 15 days back. Closed reduction was tried under anaesthesia but failed. So open reduction was done. The hip was stable postoperatively. The patient was discharged with stable vitals and advised to follow standard precautions.



Figure 4: Pre and post reduction image of left hip dislocation.

Discussion

Complications and adverse events are associated with all medical and surgical treatments. By identifying and timely managing the complications and adverse events associated with THA, the quality and safety for THA can be improved [3]. Despite clinical success of Total Hip Arthroplasty (THA), complications can be expected despite reasonable and safe care [3].

Posttraumatic Arthritis (PTA) may develop years after acetabular fracture, hindering joint function and causing significant chronic musculoskeletal pain given the delayed onset of PTA [4].

Patients undergoing total hip arthroplasty for PTA present more operative challenges and post-operative complications compared with patients with primary THA [5].

Despite the difficulties associated with performing THA in patients with PTA from previous acetabular fracture and the relatively high complication rates, THA in patients with PTA following prior acetabular fracture leads to significant improvement in pain and function at long term follow up [4].

Stibolt, et al., cited that the most prevalent postoperative complications following THA were heterotopic ossification (28%-63%), 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% [4].

A combination of an abnormal erythrocyte sedimentation rate and C-Reactive Protein (CRP) provides best combination of sensitivity and specificity in diagnosis of prosthetic joint infection [6].

Two staged revision arthroplasty is considered gold standard in management of prosthetic joint infections. In first stage all implants and cement is removed and antibiotic impregnated cement spacer is placed and in second stage re-implantation is done [7].

Proximal femoral bone loss is a major challenge in revision arthroplasty. On the basis of amount of bone loss and bone quality, it has been managed variably with impaction allografting, allograft prosthesis composite and tumour megaprosthesis [8].

Dislocation is one of the major complications following total hip arthroplasty, for which closed reduction can be done depending upon the type of dislocation. If closed reduction is failed open reduction is considered [9].

Conclusion

Our case report demonstrates a series of complications in a patient with post- traumatic arthritis of hip following pelvic acetabular injuries. This case highlights the complications and their management, associated with total hip arthroplasty. Prosthetic joint infection can be managed with local application of antibiotic impregnated cement spacers along with systemic antibiotics till the eradication of infection. Proximal femur bone loss can be managed with reconstruction with megaprosthesis.

Conflict of Interest

The authors declare no conflict of interest.

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