International Journal of Research in Orthopaedics
Sachdeva C et al. Int J Res Orthop. 2026 Jul;12(4):1187-1189
https://www.ijoro.org

Case Report

DOI: https://dx.doi.org/10.18203/issn.2455-4510.IntJResOrthop20262065

Salvage conversion to total hip arthroplasty after dissociation of a cemented fixed bipolar hemiarthroplasty following failed closed reduction

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Received: 21 March 2026
Revised: 04 May 2026
Accepted: 26 May 2026

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ABSTRACT

Dislocation after bipolar hemiarthroplasty is a known complication, but dissociation of a fixed (non-modular) cemented bipolar prosthesis during attempted closed reduction is extremely rare. Standard management usually requires stem removal and revision total hip arthroplasty (THA), often necessitating extended trochanteric osteotomy (ETO), which increases morbidity in elderly patients. A 78-year-old male underwent cemented bipolar hemiarthroplasty for fracture neck of femur. Following a fall, he presented with painful hip deformity and inability to bear weight. Closed reduction attempted elsewhere failed and resulted in dissociation of the bipolar prosthesis, with separation of the outer cup from the femoral head. Radiographs confirmed dissociation with the stem well fixed in cement mantle. Considering advanced age and stable cemented stem, a stem-retaining conversion THA was planned. Previous operative records revealed a 32-mm head on a 10–12 mm taper. The acetabulum was prepared and a cemented polyethylene acetabular component implanted. Without removing the cemented stem or performing extended trochanteric osteotomy, the hip was reduced using a compatible femoral head. Stable reduction and satisfactory range of motion were achieved intraoperatively. Post-operative radiographs showed well-positioned acetabular component and stable hip joint. The patient was mobilized with walker support. At follow-up, the patient was ambulatory, pain significantly reduced, and no redislocation occurred. Stem-retaining conversion THA is a viable and less invasive salvage option in selected elderly patients with dissociated bipolar hemiarthroplasty when the cemented femoral stem is stable. This technique avoids extended trochanteric osteotomy and reduces surgical morbidity.

Keywords: Bipolar hemiarthroplasty, Prosthesis dissociation, Hip dislocation, Conversion total hip arthroplasty, Cemented stem, Elderly hip fracture

INTRODUCTION

Bipolar hemiarthroplasty is a widely accepted treatment for displaced intracapsular fracture neck of femur in elderly patients due to shorter operative time, early mobilization, and lower dislocation rate compared with unipolar prostheses.[1]

Common complications include dislocation, infection, periprosthetic fracture, acetabular erosion, and loosening. However, dissociation of a fixed bipolar prosthesis following attempted closed reduction is extremely uncommon and scarcely reported in literature.[2]

In most reported cases, treatment involves removal of the femoral stem and conversion to total hip arthroplasty. In cemented stems, extraction often requires extended trochanteric osteotomy (ETO), increasing operative time, blood loss, and risk of complications, especially in geriatric patients.[3]

We present a rare case where a dissociated cemented fixed bipolar hemiarthroplasty was successfully salvaged by

conversion to total hip arthroplasty without removing the femoral stem.

CASE REPORT

A 78-year-old male presented with severe pain in the right hip and inability to stand or walk following a trivial fall at home. He had undergone cemented bipolar hemiarthroplasty for fracture neck of femur approximately one year earlier and was ambulatory prior to the fall. After injury, he visited a government hospital emergency department where closed reduction under sedation was attempted. Reduction failed and immediately afterward the hip became more painful and unstable.

Clinical examination

Limb shortened and externally rotated. Painful restriction of hip movements. Unable to bear weight. No neurovascular deficit.

Figure 1 shows the X-ray of dislocated bipolar with normal cup.

Figure 1: AP radiograph obtained 1 year earlier after primary cemented bipolar hemiarthroplasty, showing satisfactory implant positioning.

Radiological findings

Post attempted closed reduction (elsewhere) radiograph shows dislocated bipolar with dissociated cup (bottle opener effect) (Figure 2).

Pelvic radiograph revealed dislocation of bipolar hemiarthroplasty with dissociation of bipolar components. The outer metal cup was lying in acetabulum and the femoral head attached to the stem was displaced. The cemented femoral stem was well fixed with no periprosthetic fracture.

Surgical planning

The standard recommended management was revision total hip arthroplasty with removal of the cemented femoral stem. However, the stem was well fixed and removal would require extended trochanteric osteotomy with high surgical morbidity due to advanced age.

Figure 2: AP radiograph following failed closed reduction done elsewhere, demonstrating dissociation of bipolar prosthesis (bottle-opener effect).

Surgical technique

Old operative records were obtained showing femoral head size 32 mm and taper 10–12 mm. Therefore, a stem-retaining conversion THA was planned.

Patient positioned in lateral decubitus position and previous posterior approach incision utilized. Dissociated bipolar cup removed from acetabulum. Cemented femoral stem assessed and found stable, hence retained.

Acetabulum exposed and sequentially reamed, and a cemented polyethylene acetabular cup implanted. A compatible 32-mm femoral head mounted on existing taper and hip reduced. Stability, impingement, limb length equality and range of motion were satisfactory intraoperatively.

Because compatible 32-mm head was available only in cemented system while uncemented options were 36-mm, a cemented acetabular component was selected.

Postoperative management

Intravenous antibiotics for 5 days, DVT prophylaxis, quadriceps and ankle pump exercises from day 1. Sitting on postoperative day 2 and walker-assisted ambulation started on day 3 with hip precautions.

Figure 3: Postoperative AP radiograph following stem retaining conversion to total hip arthroplasty demonstrating stable implant position and concentric reduction.

Post-operative salvage procedure radiograph showed stable prosthesis (Figure 3).

Outcome and follow-up

Postoperative radiographs showed well-seated acetabular component and stable hip joint. At follow-up, pain was markedly reduced, no redislocation occurred and the patient was ambulatory with walker support.

DISCUSSION

Dissociation of bipolar hemiarthroplasty is a rare complication, reported in approximately 0.7–2.6% of bipolar hemiarthroplasties, most commonly occurring during attempted closed reduction of a dislocated prosthesis.[1]

Most reported cases of bipolar cup dissociation occur following posterior dislocation and forceful closed reduction, where the acetabular rim acts as a fulcrum leading to separation of the inner head from the polyethylene liner.[2]

The mechanism is commonly described as the "bottle-opener effect," in which the outer metal shell is caught at the acetabular margin while traction on the limb disengages the femoral head component.[3]

Closed reduction should be attempted cautiously because forceful manipulation may lead to dissociation of modular components, necessitating open surgical management.[4]

Dislocation after bipolar hemiarthroplasty occurs in approximately 1–5% of cases, while dissociation during closed reduction is extremely rare. During forceful reduction, the outer cup may get trapped against the acetabular rim while traction pulls the femoral head, causing separation between components.

Conventional revision requires stem extraction and often extended trochanteric osteotomy, increasing blood loss, operative time and complications in elderly patients. Stem-retaining conversion reduces surgical trauma and complication risk when the stem is well fixed and compatible head is available.

CONCLUSION

Dissociation of a fixed bipolar hemiarthroplasty following failed closed reduction is a rare complication. In elderly patients with a stable cemented femoral stem, stem-retaining conversion to total hip arthroplasty is a safe and effective salvage option that avoids extended trochanteric osteotomy and decreases operative morbidity.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

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Cite this article as: Sachdeva C, Arora K. Salvage conversion to total hip arthroplasty after dissociation of a cemented fixed bipolar hemiarthroplasty following failed closed reduction. Int J Res Orthop 2026;12:1187-9.