

## Coned Hemipelvis and Total Hip Replacement in Osteoporotic Acetabular Fractures of the Elderly

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**Purpose:** Acetabular fractures in the elderly are a complex problem associated with high levels of morbidity and mortality. One treatment option is to fix and then perform an acute total hip arthroplasty to allow early mobilization and reduce the risks of immobility. This is a prolonged procedure, often requiring dual approaches, and commonly followed by a period of limited weight bearing. The coned hemipelvis, traditionally used in tumor surgery, can be used in these patients via a single posterior approach, reducing operative time and allowing immediate full weight bearing. It is hypothesized that these advantages may reduce 1-year mortality and provide a safe surgical option for patients with acetabular fractures that were deemed too frail for standard fix and replace techniques. This paper represents the first published series of this technique and the results of the first 18 cases at a minimum 1-year follow-up.

**Methods:** 17 patients (18 cases), who had a coned hemipelvic reconstruction and total hip replacement with dual mobility acetabular component for a complex osteoporotic acetabular fracture, were prospectively followed for the radiographic and clinical outcomes. All patients had a minimum 1-year follow-up (mean 26 months; range, 14-48).

**Results:** The mean patient age was 79 years (range, 65-87), and mean ASA [American Society of Anesthesiologists] score 3.3 (3-5). There were (OTA/Letournel classification) 11 anterior column posterior hemitransverse, 4 associated both column, and 3 transverse with posterior wall fractures. Mean operative time was 93 minutes (67-114). There were 8 minor postoperative complications. 16 of 17 patients were full weight bearing day 1 postoperatively. Median length of acute hospital stay was 11 days (5-27). Preoperative mobility status was maintained in 9 patients, and 14 patients returned to their premorbid living status. Mortality was 6% at 1 year. There have been no thromboembolic events, deep infections, or cases of prosthesis migration. There has been 1 late dislocation in an immobile patient, which was treated conservatively. The mean Oxford Hip Score is 39.8 (24-44), mean EQ-5D-5L [EuroQol-5 Dimensions 5 Levels] index score 0.59 (-0.24 to 0.84) and the mean EQ-5D-5L overall health score 72.7 (30-92).

**Conclusion:** This technique provides a paradigm shift in the management of these challenging patients by emphasizing immediate full weight bearing and a reduced surgical insult giving a low complication rate, good rate of return to premorbid status, and reduced 1-year mortality rate, when compared to existing treatment modalities. The coned hemipelvis and total hip replacement is safe and effective, and may represent the new treatment of choice in the elderly, medically frail patient who sustains a complex acetabular fracture.