



## Conversion Hip Arthroplasty Prospective Study of 2 Cases

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### ABSTRACT

Conversion of hemiarthroplasty to Total hip arthroplasty  
In developing countries incidence of hemiarthroplasty is still high,because of this and improved survival rate hemiarthroplasty patients needs revision to THA due to pain. In this back ground we analyse our results of 2 csaes of conversion of hemiarthroplasty to THA.

Materials and methods:

Case 1:70 yr old male done hemiarthroplasty 7 yrs back,C/O pain in groin and thigh,limping since 6 yrs.X RAY old bipolar prosthesis,subluxation+,femoral stem tip erosion ,subsidence

Case 2: 60 yr old male hemiarthroplasty done 3 yrs back C/O groin pain,limping,X Ray –AustinMoore prosthesis,prosthesis loosening,Acetabular erosion

Both cases are converted to total hip arthroplasty case 1:uncemented cup,cemented long femoral stem with calcar replacement.case 2 :cemented cup,cemented long stem .

Results:

Both cases are followed at 6 wks,pain free crutch walking,no shortening.Harris hip score improved in post op period.

Conclusion:

Conversion of symptomatic hemiarthroplasty to total hip arthroplasty is a safe option that gives good functional results, with marginally higher rates of intra-operative complications. The patients should be warned of the possibility of incomplete relief of groin pain postoperatively.

### KEYWORDS

Conversion, hemiarthroplasty, total hip arthroplasty

### Introduction

Hemiarthroplasty (unipolar or bipolar) of the hip is a commonly performed procedure in elderly patients with intracapsular displaced fractures of the neck of the femur with good short-term results with regard to pain relief, return to activity, morbidity and mortality.<sup>1-3</sup> Although bipolar hemiarthroplasty has been advocated by some for treatment of various arthritic conditions of the hip joint the results have not been very gratifying and it has largely been given up in favor of total hip arthroplasty (THA).<sup>4</sup> Long-term problems associated with hemiarthroplasty include progressive acetabular cartilage degeneration and concomitant groin pain, protrusio, stem loosening and subsidence; and very poor results have been reported in active patients.

Bipolar arthroplasty was considered to improve the long-term outcome of hemiarthroplasty as a result of less wear of the metal-cartilage interface by providing another interface (metal-polyethylene) inside the bipolar head. However, recent studies comparing bipolar to unipolar hemiarthroplasty show little difference between the two with regard to morbidity, mortality, or functional outcome.<sup>5</sup> Current evidence is emerging that THA may be a better choice for patients of intracapsular fractures of the neck of the femur in elderly age group (60-75 years) who are mentally competent, relatively healthy, active, capable of living independently and have a long life expectancy.<sup>6,7</sup>

The indications for conversion of hemiarthroplasty to THA include acetabular erosions and protrusio causing groin pain, femoral loosening and subsidence causing thigh pain and the typical "start-up" pain, dislocation, breakage of implant leading to loss of function, peri-prosthetic fracture and infection. Conversion of hemiarthroplasty is associated with high complication rates and loosening rates as against primary total hip arthroplasty.<sup>8-11</sup> The purpose of the present study was to evaluate the functional outcome, survivorship at short to mid-term follow-up, and complication rates of conversion of hemiarthroplasty to THA in a tertiary care referral hospital.

### Materials and methods;

Case 1:70 yr old male done hemiarthroplasty 7 yrs back,C/O pain in groin and thigh,limping since 6 yrs.X RAY old bipolar prosthesis,subluxation+,femoral stem tip erosion ,subsidence

Case 2: 60 yr old male hemiarthroplasty done 3 yrs back C/O groin pain,limping,X Ray –AustinMoore prosthesis,prosthesis loosening,Acetabular erosion

Both patients are evaluated adequately especially for evidence of infection with E.S.R and C.R.P and taken up for surgery done by 2 different surgeons.under spinal anesthesia pt. in lateral position through previous scar sciatic nerve protected and dislocation done,prosthesis reterival is difficult needing patience no intra op # developed.acetabular erosion present

in both cases though we have acetabular reinforcement arnamentorium we never needed those things both case managed with regular acetabular cup one cemented and one cemented.femoral preparation done with reamers taking special care to avoid iatrogenic cortical perforations,case 1 we used cemented long stem calcar replacing femoral stem,case 2 long stem uncemented femoral stem reduction is difficult because of soft tissue contractures,intra op hip movements satisfactory and hip stable.wound closed routinely with drain.

Patient mobilized on 2 P.O. D with walker full wt.bearing.no shortening noticed ,discharged in 12 P.O.D

Followed up at 6 wks with clinical examination and x rays .post op harris hip score improved both have pain free walking. Results:

Both cases are followed at 6 wks,pain free crutch walking,no shortening.Harris hip score improved in post op period.

## DISCUSSION

Hemiarthroplasty (unipolar and bipolar) of the hip is a commonly performed procedure for the treatment of displaced intraarticular fractures of the neck of the femur in the elderly. The goal of treatment of displaced fractures of the neck of the femur is to return the patients to their pre-injury mobility status as early as possible and to minimize the risk of further operation.<sup>15</sup> Austin Moore and Thompson prostheses have fulfilled these criteria for decades but have been associated with a poor quality of life in the long term with a very high incidence of groin and thigh pain in physically active elderly patients, largely a consequence of acetabular cartilage degeneration and stem loosening respectively.<sup>6,16,17</sup> In our study group of failed hemiarthroplasty 41% patients complained of groin pain, 25% of thigh pain and 14% had both. Bipolar arthroplasty was introduced to improve the long-term outcome of hemiarthroplasty as a result of less wear of the metal-cartilage interface by providing another interface (metal-polyethylene) inside the bipolar head. However, recent studies comparing bipolar to unipolar hemiarthroplasty show little difference between the two with regard to morbidity, mortality, or functional outcome.<sup>5</sup>

Pain following hemiarthroplasty is usually due to one of two pathological processes: articular cartilage degeneration in the acetabulum or loosening of the prosthesis. These pathological processes are exacerbated by many factors including incongruence between the femoral head and the acetabulum, excessive neck length, impaction at the time of injury, cementation of the prosthesis, physiologically young active patients and shear forces between the prosthesis and the cartilage.<sup>16,18,19</sup> In view of these observations current evidence is emerging that favors THA over hemiarthroplasty for treatment of displaced fractures of the neck of the femur in patients who are elderly but have an active physical life.<sup>6,7</sup> The treatment of symptomatic hemiarthroplasty involves removal of the prosthesis and conversion to a total hip replacement and Cossey and Goodwin noted that conversion to THA would give satisfactory results.<sup>20</sup> Other investigators, however, have reported that conversion of hemiarthroplasty to THA is associated with high complication and loosening rates as against primary total hip arthroplasty.<sup>8-11,21</sup>

Groin pain, which has been cited as the most common reason for conversion, does not seem to be relieved completely in every patient after conversion to THA. Sharkey *et al.*, while reporting the results of conversion of hemiarthroplasty to THA in 45 patients observed that 20% of the patients continued to have groin or buttock pain after THA and they could not identify a factor that would predict an unsuccessful result.<sup>11</sup> In our study group 15

out of 18 (83%) patients who had isolated groin pain preoperatively experienced no pain postoperatively while three patients (17%) reported only partial improvement. Thigh pain, however, was relieved in all patients. Six patients who

had both groin and thigh pain were relieved of both postoperatively. Sharkey *et al.*, suggested that patients should be warned of this contingency before the surgery, that they could experience some groin pain postoperatively.

One of the earliest studies on conversion arthroplasty, by Amstutz and Smith, noted very high incidence of intra as well as postoperative complications.<sup>21</sup> They reported results of 41 patients with conversion arthroplasty. They had five intra-operative proximal femoral fractures, two perforations of the medial cortex with stem protrusion, two cases with instability, two cases with infection, three patients with deep venous thrombosis and six patients (14.6%) with progressive loosening. Three patients had required revision by the end of follow-up (mean of 36 months). Sierra and Cabanela<sup>8</sup> in a larger series of 132 hemiarthroplasties that were converted to THA reported a 10% rate of loosening after a mean follow-up of 7.1 years and major complications in 45%, including 12 intra-operative femoral fractures (9%) and 13 dislocations (9.8%). They concluded that conversion of endoprostheses to THAs after femoral neck fractures is fraught with high complication and loosening rates and careful selection of patients for each type of arthroplasty (hemiarthroplasty versus THA) may help ameliorate the outcome of arthroplasty for this group of patients. We also observed a high rate of intra-operative complications with iatrogenic fracture of the femur in two, femoral perforation in two, partial trochanteric avulsion in two and fracture of the acetabular floor in three hips although none of these complications resulted in a poor long-term outcome. The rate of loosening in our series was 2.3% (one out of 44) after a mean follow-up of 6.4 years. Hammad and Abdel-Aal reported no loosening in their series of conversion arthroplasty in 47 patients after an average follow-up of 44 months.<sup>9</sup> The reason for lower loosening rate in their series as against earlier studies<sup>8,21</sup> as stated by them may have been as a result of better cementing technique and stem design. In addition, failure on the femoral side may be due to extensive resorption of the endosteal bone while the stem of the hemiarthroplasty was loose, or due to damage of the endosteal bone during revision.<sup>22</sup>

Furthermore, toggling of the stem may produce a thick fibrous membrane that is adherent and might not be completely removed at revision, with its remnants compromising the subsequent cemented fixation. Also, it had been suggested that fragments of such a fibrous membrane are metabolically very active, producing Prostaglandin E2, collagenase and Interleukin1b, all of which may contribute to resorption of adjacent bone.<sup>23,24</sup> Our series differs from these studies in one respect i.e. all acetabular components and the majority (86.5%) of femoral components used in our series were uncemented and this was probably the reason for lower loosening rates.

The incidence of dislocation after conversion arthroplasty has been reported as varying from 0 to 50% in different series.<sup>9,25</sup> We had one dislocation in the early postoperative period and we believe that occurrence of

Conversion of painful hemiarthroplasty gives good results with regard to the pain relief and functional scores.<sup>9</sup> Our functional results were very encouraging with an average HHS of 86 at final follow-up and 22 (50%) patients were community ambulators without support while 17 (38%) patients could walk more than five blocks using minimal support.

We conclude that conversion of symptomatic hemiarthroplasty to THA is a safe option that gives good functional results, with marginally higher rates of intra-operative complications; and patients should be warned of the possibility of incomplete relief of groin pain postoperatively.



## REFERENCES

1. Yau WP, Chiu KY. Critical radiological analysis after Austin Moore hemiarthroplasty. *Injury*. 2004;35:1020-4. [PubMed]
2. Wachtl SW, Jacob RP, Gautier E. Ten-year patient and prosthesis survival after unipolar hip hemiarthroplasty in female patients over 70 years old. *J Arthroplasty*. 2003;18:587-91. [PubMed]
3. Clayer M, Bruckner J. The outcome of Austin-Moore hemiarthroplasty for fracture of the femoral neck. *Am J Orthop*. 1997;26:681-4. [PubMed]
4. Pellegrini VD, Jr, Heiges BA, Bixler B, Lehman EB, Davis CM., 3rd Minimum ten-year results of primary bipolar hip arthroplasty for degenerative arthritis of the hip. *J Bone Joint Surg Am*. 2006;88:1817-25. [PubMed]
5. Raia FJ, Chapman CB, Herrera MF, Schweppe MW, Michelsen CB, Rosenwasser MP. Unipolar or bipolar hemiarthroplasty for femoral neck fractures in the elderly? *Clin Orthop Relat Res*. 2003;414:259-65. [PubMed]
6. Squires B, Bannister G. Displaced intracapsular neck of femur fracture in mobile independent patients: Total hip replacement or hemiarthroplasty. *Injury*. 1999;30:345-8. [PubMed]
7. Hunter GA. Should we abandon primary prosthetic replacement for fresh displaced fractures of the neck of the femur? *Clin Orthop Relat Res*. 1980;152:158-61. [PubMed]
8. Sierra RJ, Cabanela ME. Conversion of failed hip hemiarthroplasties after femoral neck fractures. *Clin Orthop Relat Res*. 2002;399:129-39. [PubMed]
9. Hammad A, Abdel-Aal A. Conversion total hip arthroplasty: Functional outcome in Egyptian population. *Acta Orthop Belg*. 2006;72:549-54. [PubMed]
10. Bilgen O, Karaeminogullari O, Kulecioglu A. Results of conversion total hip prosthesis performed following painful hemiarthroplasty. *J Int Med Res*. 2000;28:307-12. [PubMed]
11. Sharkey PF, Rao R, Hozack WJ, Rothman RH, Carey C. Conversion of hemiarthroplasty to total hip arthroplasty: Can groin pain be eliminated? *J Arthroplasty*. 1998;13:627-30. [PubMed]
12. Engh CA, Massin P, Suthers KE. Roentgenographic assessment of the biologic fixation of porous-surfaced femoral components. *Clin Orthop Relat Res*. 1990;257:107-28. [PubMed]
13. Brooker AF, Bowerman JW, Robinson RA, Riley LH., Jr Ectopic ossification following total hip replacement: Incidence and a method of classification. *J Bone Joint Surg Am*. 1973;55:1629-32. [PubMed]
14. D'Antonio JA, Capello WN, Borden LS. Classification and management of acetabular abnormalities in total hip arthroplasty. *Clin Orthop Relat Res*. 1989;243:127. [PubMed]
15. Dorr LD, Glousman R, Hoy AL, Vanis R, Chandler R. Treatment of femoral neck fractures with total hip replacement versus cemented and noncemented hemiarthroplasty. *J Arthroplasty*. 1986;1:21-8. [PubMed]
16. Gingras M, Clarke J, Everts CM. Prosthesis replacement in femoral neck fracture. *Clin Orthop Relat Res*. 1980;152:147-52. [PubMed]