Bipolar hemiarthroplasty for intracapsular fracture neck of femur in elderly

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ABSTRACT

Introduction: The treatment of choice for a displaced intracapsularfemoral neck fracture in elderly patients is hemiarthroplasty. The optimal design, unipolar or bipolar head, remains unclear. Better range of motion and less acetabular wear are the advantages of a bipolar hemiarthroplasty. The aim of this study is to evaluate the efficacy of bipolar hemiarthroplasty in fracture neck of femur in elderly in terms of quality of life, surgical outcome and complications.

Materials & Methods: This study was conducted at Prathima Institute of Medical Sciences, Karimnagar from July 2015 to December 2017. 30 patients with intracapsular fracture neck of femur were included in this study. All patients underwent uncemented hemiarthroplasty with Talwalkar's Bipolar Prosthesis. Harris hip score was used to assess the functional outcome of surgery.

Results : Out of 30 patients, 23(76.6%) had excellent results with Harris hip score more than 90. Six patients (24%) had good result with Harris hip score between 80 and 90and only one patient had fair result with Harris hip score 70 to 80. Average Harris Hip Score for all the patients in the study is 90.36.

Conclusion: We recommend uncemented bipolar hemiarthroplasty for displaced intracapsular fracture neck of the femur in elderly age. Easier surgical technique, low complication rate, early rehabilitation, near normal mobility and durability are the advantages over other modalities of treatment of intracapsular fracture neck of femur in elderly.

Key words : Intracapsular fracture neck of femur,Bipolar hemiarthroplasty

INTRODUCTION

According to Swedish Register, intracapsular fracture neck of femur constitutes 53% of all hip fractures, out of which 33% undisplaced and 67% displaced. Internal fixation is performed to prevent displacement in undisplaced fractures, to achieve and maintain reduction in displaced fractures. Most common causes of failure of internal fixation are avascular necrosis and nonunion. Re operation in internally fixed femur neck fractures is 35%. To avoid complications of internal fixation in elderly, replacement of head and neck of femur is an alternative. No standard guidelines were established for treatment of displaced fracture neck of femur in patients between age of 60 and 80 years. Austin Moore prosthesis was routinely used for displaced fractures in this age group. Acetabular erosion and protrusion were common long-term complications following AMP hemiarthroplasty. Bipolar hemiarthroplasty was developed to avoid these complications.[1-4]

The aim of this study is to evaluate the efficacy of bipolar hemiarthroplasty in fracture neck of femur where replacement of head and neck of the femur offers the advantage of rapid return of joint function.

MATERIAL AND METHODS

This study was conducted at Prathima Institute of Medical Sciences, Karimnagar from July 2015 to December 2017. 30 patients with fracture neck of femur were included in this study. All patients underwent uncemented hemiarthroplasty with Talwalkar's Bipolar Prosthesis. Southern approach was used in all cases. All the patients were examined clinically and radiologically. Routine preop work up was performed for all cases. From postoperative day one, all patients were mobilized out of bed with weight bearing as tolerated. All patients were screened postoperatively for sepsis, loosening, calcar erosion, acetabular erosion and protrusion, anterior thigh pain, heterotopic ossification, dislocation. Harris hip score was used to assess the functional outcome of surgery. [5,6]

All patients were followed at six weeks, six months and one year with the longest interval being one and half years.

RESULTS

All 30 patients in the study presented for clinical and radiological examination at regular intervals. Out of 30, 13 are male patients and 17 are female patients. 9 patients were in the age group of 41-50 years, 14 between 51-60 years, 6 between 61-70 years and 1 patient over 70 years. Mechanism of injury is trivial trauma in 24 cases and high velocity trauma in 5 cases. One patient had pathological fracture secondary to steroid induced osteoporosis, due to prolonged use of steroids

in bronchial asthma. High velocity injuries were observed in relatively younger patients. Duration of follow up was up to 6 weeks in 11 patients, 6 to 12 weeks in 6 patients, 12 to 24 weeks in 5 patients and 24 to 52 weeks in 8 patients.

The average follow up in our study was 13.43 weeks (ranges from 3 to 78 wks). Post-operative range of motion was less than 200^0 in one patient, between 200^0 to 210^0 in 23 patients and more than 210^0 in 6 patients. The average postoperative range of motion in this study after surgery was 208.40^0.There was one incidenceof superficial infection, which subsided with oralantibiotics. No deep infections, no dislocations/dissociations, no protrusion acetabuli observed. None of the patients had persistent thigh pain after the surgery.

Out of 30 patients, 23(76.6%) had excellent results with Harris hip score more than 90. Six patients (24%) had good result with Harris hip score between 80 and 90and only one patient had fair result with Harris hip score 70 to 80. Average Harris Hip Score for all the patients in the study is 90.36.

DISCUSSION

We have evaluated outcome of uncemented bipolar hemiarthroplasty in 30 cases of intracapsular fracture neck of femur in our study over a period of two and half years.

The concept of Dual Bearing Surfaces offers considerable advantages. It results in sharing of motion at the two surfaces and hence reduction of net wear and tear at either surface, thus reducing acetabular erosion. In addition, the total range of movement at the joint is increased.[7]

In Nottage et al study, mean Harris hip score with Bateman's bipolar prosthesis is 83 and 61 with unipolar prosthesis. Mean Harris hip score in our study is 90.36. We have used uncemented bipolar prosthesis for all the cases in our study. Bochner et al proved that there was no deterioration of results of the Bipolar Hemiarthroplasties overtime in the short term. Our study reiterates the results of this study. In Merlo et al[8] study, although protrusion was present radiologicallythere was no clinically significant correlation. In our patients, wehave found no incidence of protrusion over the period of this study.

According to Lausten et al acetabular protrusion and erosion have been reduced in Bipolar arthroplasties, which is hence the suitable alternative to the Unipolar prosthesis for fracture of the neck of the femur in the elderly. [9,10]

Results of Bipolar prosthesis in most series are such that most patients return to preinjury level of function or used only cane which they had not needed before3. The proportion of good to excellent results of 96% in our study testimony to the efficacy of Bipolar Hemiarthroplasty.[11,12]

Out of 30 cases studied 23 had excellent result 6 good and 1 fair result.

The survival of the Bipolar implant and the acetabular cartilage was proved by Dr. James Ennis Bateman,the originator of the Bipolar Prosthesis. In his study of 1213 Bipolar hip replacements (including in 760 Osteoarthritic Hips), he reported healthy acetabular bone preservation as long as 15 years after surgery in 914 cases. In addition, clinical results after as long as 15 years compare favorably with conventional 2-piece total hip replacement technique[13,14.]

According to Me Conville et al[15] anterior thigh pain attributed tofemoral component would be decreased by use of proportionately sized femoralcomponents and use of cement when indicated.In our series, we have not found any case of persistent anterior thigh pain, or evidence of loosening of the prosthesis.

Dislocation / dissociation of the Bipolar Prosthesis is a rare phenomenon. It has been reported in literature as ranging from 1% (Vazquez, Vela et al) to 2.3% (Wada et al)[10] and 2.63% (Maricevic)[13]. However, no dislocation/ dissociationhas occurred in our study.

Infection rate in other series[13] was 2.63% to 3.9% (deep infection) (Nottage)[4]. We had two cases of Superficial Infection (4%). Peri-Operative mortality was 1.31% (Maricevic)[13] to 4.6% (Nottage)[4]. There was no mortality in our series. Other complication like fracture of endoprosthetic stem, fracture of the polyethylene cup (Maricevic, et al)[13] have not occurred in our series.

CONCLUSION

Our study concludes that uncemented bipolar hemiarthroplasty offers bestsolution in elderly age with displaced intracapsular fracture neck of the femur. Less operating time, less blood loss, easy technique makes this surgery safer one. Low complication rate, early rehabilitation, near normal mobility and durability surpass the other modalities of treatment of intracapsular fracture neck of femur in elderly.

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