

ORIGINAL ARTICLE

Evaluation of bipolar hip arthroplasty in fractures of the proximal femur: Retrospective study

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ABSTRACT

Background: The theoretical advantage of a bipolar hemiarthroplasty is to decrease acetabular erosion and wear and their associated symptoms; however, there is still some debate concerning the benefits of bipolar versus the fixed-head hemiarthroplasty. Hence; under the light of above mentioned data, the present study was undertaken for evaluating bipolar hip arthroplasty in fractures of the proximal femur. **Materials & methods:** A total of 20 patients who underwent bipolar hip arthroplasty were included in the present study. All the data records and case-history files of all the patients was completely assessed. Preoperative and operative data was retrieved. Radiological data was also retrieved from hospital files. Follow-up records of all the patients were assessed. Harris hip score was used for assessing the functional outcome in all the patients. All the results were recorded in Microsoft excel sheet and were analyzed by SPSS software. **Results:** On last follow-up, pain was absent in 10 cases, while pain was mild in 5 cases. In 4 cases, severe pain as present. Stair climbing normally without use of railing was present in 12 patients, while stairs climbing normally using railing was seen in 6 patients. Mean HHS was found to be 76.82. **Conclusion:** Bipolar arthroplasty with cement is an excellent line of treatment for treating patients with intracapsular neck of femur fractures.

Key words: Bipolar hip arthroplasty, Hip disorder

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INTRODUCTION

Although relatively uncommon compared with the shoulder, hip instability can be a source of significant disability and is a commonly unrecognized injury. Hip instability can be traumatic or atraumatic in origin. Our understanding and treatment plan for hip instability due to traumatic events is well established.¹

Since displaced intracapsular femoral neck fractures have a significant risk of nonunion and avascular necrosis, prosthetic replacement is often recommended in ambulatory, elderly patients. The fixed-head hemiarthroplasty is associated with high acetabular erosion and protrusion rates, which affect the clinical results and makes revision to a total hip arthroplasty difficult.²⁻⁴

These complications have led many surgeons to choose a bipolar design. The theoretical advantage of a bipolar hemiarthroplasty is to decrease acetabular erosion and wear and their associated symptoms; however, there is still some debate concerning the benefits of bipolar versus the fixed-head hemiarthroplasty.^{5,6}

Hence; under the light of above mentioned data, the present study was undertaken for evaluating bipolar hip arthroplasty in fractures of the proximal femur.

MATERIALS & METHODS

The present study was undertaken in the department of orthopedic sciences and it included assessment of bipolar hip arthroplasty in fractures of the proximal femur. Ethical approval was obtained from institutional ethical committee after explaining in detail the entire research protocol. A total of 20 patients who underwent bipolar

hip arthroplasty were included in the present study. All the data records and case-history files of all the patients was completely assessed. Preoperative and operative data was retrieved. Radiological data was also retrieved from hospital files. Inclusion criteria for including the patients in the present study were as follows:

- Patients in which complete data record was available,
- Patients of more than 60 years of age,
- Patients with presence of non-pathologic fractures

Follow-up records of all the patients were assessed. Harris hip score was used for assessing the functional outcome in all the patients. The Harris hip score range from 0 to 100 (<70 poor; 70–79 fair; 80–89 good; 90–100 excellent).⁶ All the results were recorded in Microsoft excel sheet and were analyzed by SPSS software. Chi-square test was used for assessment of level of significance.

RESULTS

In the present study, analysis of a total of 20 patients who underwent bipolar Hip arthroplasty was done. Mean age of the patients of the present study was 66.5 years. There were 15 males and 5 females in the present study. Mean weight of the patients of the present study was 75.8 Kg. Mean duration from admission to surgery was 1.25 days. Block anaesthesia was given in majority of the cases (12 cases). Mean operative time in the present study was 96.14 minutes. Posterior approach was used in 4 cases while lateral approach was used in 16 cases.

In the present study, on last follow-up, pain was absent in 10 cases, while pain was mild in 5 cases. In 4 cases, sever pain as present. Stair climbing normally without use of railing was present in 12 patients, while stairs climbing normally using railing was seen in 6 patients. Mean HHS was found to be 76.82.

Table 1: Demographic profile of patients

Parameter	Number	
Mean age (years)	66.5	
Gender	Males	15
	Females	5
Mean weight (Kg)	75.8	

Table 2: Treatment profile

Parameter	Number	
Duration from admission to surgery (days)	1.25	
Type of anaesthesia	Block anaesthesia	12
	Spinal anaesthesia	5
	General anaesthesia	3
Approach	Posterior	4
	Lateral	16
Mean operative time (minutes)	96.14	

Table 3: Outcome on last follow-up

Parameter	Number	
Pain	None	10
	Mild	5
	Moderate	4
	Sever	1
Stairs	Normal without railing	12
	Normal using railing	6
	Unable	2
Mean HHS	76.82	

DISCUSSION

Intertrochanteric fracture in the elderly patient is a frequent problem and is becoming more common as the proportion of elderly people in the population increases. Unstable intertrochanteric fracture in the elderly patient is associated with high rate of mortality as much as 20 per cent during the first postoperative year. The treatment of such unstable intertrochanteric fracture is still controversial, despite of the publication of reports of randomized trials and comparative studies.⁷⁻⁹ There are two different types of hip arthroplasty (HA): unipolar and bipolar. The theoretical advantage of the bipolar HA is a reduction of acetabular wear due to the dual-bearing system. On the other hand, a potential disadvantage is the risk of polyethylene wear that may contribute to mechanical loosening over time and there is also a risk of inter-prosthetic dissociation in certain bipolar HAs necessitating open reduction. However, dissociation appears to be rare in modern bipolar surgical systems.⁶

⁷Hence; under the light of above mentioned data, the present study was undertaken for evaluating bipolar hip arthroplasty in fractures of the proximal femur.

In the present study, analysis of a total of 20 patients who underwent bipolar Hip arthroplasty was done. Mean age of the patients of the present study was 66.5 years. There were 15 males and 5 females in the present study. Mean weight of the patients of the present study was 75.8 Kg. Mean duration from admission to surgery was 1.25 days. Block anaesthesia was given in majority of the cases (12 cases). Mean operative time in the present study was 96.14 minutes. Posterior approach was used in 4 cases while lateral approach was used in 16 cases. The incidence of all hip fractures is approximately 80 per 100,000 persons and is expected to double over the next fifty years as the population ages. According to the criteria of the modified Evans-Jensen classification, the two-part fractures are considered stable fractures and the rest of the fractures are unstable. About 35%–40% of all intertrochanteric hip fractures are unstable three- and/or four-part configurations with displacement of the posterior-medial cortex. The failure rate of unstable intertrochanteric fractures with osteoporosis has been reported to be between 4% and 16.5%.⁵⁻⁷ To find out which treatment option can lead to the best clinical and functional outcomes, a study was conducted by Mazen Set al. Fifty one consecutive patients admitted to Makassed General Hospital with a diagnosis of a displaced fracture of the femoral neck during the year 2006 were selected. Preoperative and operative data was retrieved from inpatient hospital files. The patients then were interviewed to fill a questionnaire form. Radiological data was retrieved from inpatient hospital files and outpatient files upon latest follow up visit in clinic. Functional outcomes were assessed with use of Harris hip score. The main clinical measures were mortality and a reoperation. Postoperatively, Thirty three patients (89.2%) either returned to the functional level that they had had before the fracture or used only a cane, which they had not needed before. In their study, the bipolar hemiarthroplasty has served us well.¹⁰

In the present study, on last follow-up, pain was absent in 10 cases, while pain was mild in 5 cases. In 4 cases, sever pain as present. Stair climbing normally without use of railing was present in 12 patients, while stairs climbing normally using railing was seen in 6 patients. Mean HHS was found to be 76.82. Hedbeck CJ et al analysed the outcome regarding hip function and health-related quality of life (HRQoL) in patients randomised to either a unipolar or bipolar HA. One hundred twenty patients with a mean age of 86 years and an acute displaced fracture of the femoral neck were randomly allocated to treatment by either unipolar or bipolar HA. Outcome measurements included hip function (Harris Hip Score, HHS), HRQoL (EQ-5D) and acetabular erosion. There were no significant differences between the groups regarding complications. The HHS scores were equal at both follow-ups, but there was a trend towards better HRQoL in the bipolar HA group at four months, EQ-5D index score 0.62 vs 0.54. Unipolar HA and bipolar HA

appeared to produce equivalent clinical outcomes after one year, but the significantly higher incidence of acetabular erosion in the unipolar HA group may imply that bipolar HA should be the preferred treatment.¹¹

CONCLUSION

From the above results, it can be concluded that bipolar arthroplasty with cement is an excellent line of treatment for treating patients with intracapsular neck of femur fractures. However; further studies are recommended.

REFERENCES

1. Shindle MK1, Ranawat AS, Kelly BT. Diagnosis and management of traumatic and atraumatic hip instability in the athletic patient. *Clin Sports Med.* 2006 Apr;25(2):309-26, ix-x.
2. Phillips TW. The Bateman bipolar femoral head replacement. *J Bone Joint Surg.* 1987;69B:761.
3. Bowman AJ, Walker MW, Kilfoyle RM, O'Brien PI, McConville JF. Experience with the bipolar prosthesis in hip arthroplasty. *Orthopaedics.* 1985;8:460.
4. Lausten OS, Vedel P, Nielsen P-M. Fractures of the femoral neck treated with a bipolar endoprosthesis. *ClinOrthop.* 1987;218:63.
5. Long JW, Knight W. Bateman prosthesis in fractures of the femoral neck. *ClinOrthop.* 1980;152:198.
6. Mazen S, Julien G, Riad F. Retrospective evaluation of bipolar hip arthroplasty in fractures of the proximal femur. *N Am J Med Sci.* 2010;2(9):409-415. doi:10.4297/najms.2010.2409
7. Sexson SB, Lehner JT. Fractures Affecting Hip Fracture Mortality. *J Orthop Trauma.* 1987;1:298-305.
8. White BL, Fisher WD, Laurin CA. Rate of Mortality for Elderly Patients after Fracture of the Hip in the 1980's. *J Bone Joint Surg.* 1987;69-A:1335-1340.
9. Eiskjaer S, Otsgard SE, Jakobsen BW, Jensen J, Lucht U. Years of potential life lost after hip fracture among postmenopausal women. *ActaOrthop Scand.* 1992;63(3):293-296.
10. Mazen S, Julien G, Riad F. Retrospective evaluation of bipolar hip arthroplasty in fractures of the proximal femur. *N Am J Med Sci.* 2010;2(9):409-415. doi:10.4297/najms.2010.2409
11. Hedbeck CJ, Blomfeldt R, Lapidus G, Törnkvist H, Ponzer S, Tidermark J. Unipolar hemiarthroplasty versus bipolar hemiarthroplasty in the most elderly patients with displaced femoral neck fractures: a randomised, controlled trial. *IntOrthop.* 2011;35(11):1703-1711.