

ORIGINAL RESEARCH

A Clinical Study To Evaluate The Functional Outcome Of Fracture Of Femoral Neck With Bipolar Prosthesis

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ABSTRACT

Background: The advantages of bipolar hemiarthroplasty compared to total hip arthroplasty were that the surgical procedure was simple, the volume of blood was small, and the incidence of dislocation was low. The present study was conducted to evaluate the functional outcome of fracture of femoral neck with bipolar prosthesis.

Material & Methods: Patients who had fracture of neck of femur were selected for the study. Patient were analysed clinically and radiologically. Required investigations were done. A total of 40 cases were selected for the study. All patients were followed up for a period of 1 year at regular intervals. Diagnosis confirmed by radiograph. Harris Hip Score was recorded.

Results: The maximum patients belong to age group 50-60 years (62.5%). Females were predominant in the study (67.5%). Patients with left side being affected in 65% of the patients. The most common prosthesis used in the study was uncemented bipolar prosthesis (87.5%) and in 12.5% patients cemented prosthesis was used. In our study, the final Harris Hip Score as evaluated at one year follow-up. Overall, 7 patients (17.5%) achieved Excellent result, 24 patients (60%) achieved Good result, 7 patients (17.5%) achieved fair result and 2 patients (5%) achieved poor result.

Conclusion: The present study concluded that hemiarthroplasty with bipolar prosthesis shows better results.

Keywords: femoral neck, Harris Hip Score, Bipolar Prosthesis

INTRODUCTION

Hip fractures are located in the proximal femur and can involve the femoral neck, trochanteric and regions.¹ The number of hip fractures worldwide is expected to increase from 1.7 million subtrochanteric in 1990 to 6.3 million in 2050. Assuming that the age-related incidence will increase by only 1%/year, the number of hip fractures in the world will reach the figure of 8.2 million in 2050.² The FNF was first described by Sir Astley Cooper (1768-1841) in 1822. The definition of "femoral neck fracture" is most often used to describe an intracapsular fracture thereby excluding fractures through the lateral or basocervical region.¹ The incidence of femoral neck fractures, one of the most common traumatic injuries in the elderly increases continuously due to the aging of population on the planet and urbanization.³ Fracture neck of femur is commonly seen in old people but in India quite a good number of patients are young adults below the age of 50. It is however infrequent in children.⁴ Most patients give a history of low energy fall as the cause of injury. In 2-3% of cases there is no history of trauma and the injury may be pathologic or a stress fracture.⁵ For the treatment of these fractures, there are various options available which

include hemiarthroplasty, total hip arthroplasty, and internal fixation.⁶ Bateman in 1974 introduced the prosthesis which had mobile head element and had additional head surface to allow movement within the acetabulum.⁷ In modern days the bipolar prosthesis with cement is the best option wherein they can be more active, especially the modular bipolar prosthesis with or without cement can give a very good active life to the patients treated.⁸ The present study was conducted to evaluate the functional outcome of fracture of femoral neck with bipolar prosthesis.

MATERIAL & METHODS

Patients who had fracture of neck of femur were selected for the study. Before the initiation of the study ethical clearance was taken from the Ethical Committee of the institute and after taking the consent from the patient. Patient were analysed clinically and radiologically. Required investigations were done. A total of 40 cases were selected for the study. Patients with displaced fractures of the intra capsular part of the femoral neck, patients with age >50 years, patients with failed internal fixation, with a vascular necrosis of femoral head secondary to fracture neck of femur were included in the study. Patient who were skeletally immature, medically unfit for surgery, not willing for surgery, age of the patient <50 years were excluded from the study. All patients were followed up for a period of 1 year at regular intervals. Diagnosis confirmed by radiograph. All patients were put on high tibial skeletal traction. The involved lower limb was prepared from nipple to ankle on the day before surgery. The per-operative antibiotic used was Ceftriaxon given 1g intra-venous at the induction of anaesthesia and continued for 7 days post operatively. Implant consists of head, neck and stem. The stem allows optimal fit in the femur. Collar of femoral stem sits over the calcar femorale, the strongest portion of bone and thus prevents subsidence. Stems are Corundum blasted stem for uncemented fixation (for increased osseous integration). All cases were done under regional anaesthesia which included spinal or epidural anaesthesia or combined. Moore's posterior approach to the hip was used for surgery. Harris Hip Score was recorded.

RESULTS

In the present study 40 patients were treated with hemiarthroplasty with Bipolar prosthesis for fracture neck of femur.

Table 1: Demographic data

Variable	N(%)
Age group	
50-60	25(62.5%)
61-70	10(25%)
>70	5(12.5%)
Gender	
Male	13(32.5%)
Female	27(67.5%)

The maximum patients belong to age group 50-60 years (62.5%). Females were predominant in the study (67.5%).

Table 2: Laterality

Laterality	N(%)
Right	14(35%)
Left	26(65%)

Patients with left side being affected in 65% of the patients.

Table 3: Type of prosthesis

Type of prosthesis	N(%)
Cemented	35(87.5%)
Uncemented	5(12.5%)

The most common prosthesis used in the study was uncemented bipolar prosthesis (87.5%) and in 12.5% patients cemented prosthesis was used.

Table 4: Final Harris Hip Score And Clinical Result

Grade	Harris Hip Score	N(%)
Excellent	90-100	7(17.5%)
Good	80-89	24(60%)
Fair	70-79	7(17.5%)
Poor	<70	2(5%)

In our study, the final Harris Hip Score as evaluated at one year follow-up. Overall, 7 patients (17.5%) achieved Excellent result, 24 patients (60%) achieved Good result, 7 patients (17.5%) achieved fair result and 2 patients (5%) achieved poor result.

DISCUSSION

Femoral neck fractures are common injuries among elderly people.⁹ The common treatment for a displaced femoral neck fracture in the elderly is replacement of the femoral head.¹⁰ As per the literature and theories from the past, bipolar hemiarthroplasties were found to tackle the complications of unipolar implants such as protrusion, acetabular wear, dislocation, and loosening. Stems were reorganized, more in line with total hip replacement designs, to decrease component loosening. To initiate the reduction of acetabular wear and dislocation rates, the inner bearing motion was introduced.¹¹

The maximum patients belong to age group 50-60 years (62.5%). Females were predominant in the study (67.5%). Patients with left side being affected in 65% of the patients. The most common prosthesis used in the study was uncemented bipolar prosthesis (87.5%) and in 12.5% patients cemented prosthesis was used. In our study, the final Harris Hip Score as evaluated at one year follow-up. Overall, 7 patients (17.5%) achieved Excellent result, 24 patients (60%) achieved Good result, 7 patients (17.5%) achieved fair result and 2 patients (5%) achieved poor result.

Ponraj et al. reported an average age of 65 years in their study of 30 patients with fracture neck of femur treated with bipolar hemiarthroplasty.¹²

Ponraj et al. found similar distribution of cases amongst both genders with 63% females and 37% males in a study of 30 patients undergoing bipolar hemiarthroplasty for fracture neck of femur.¹²

In other standard studies, also had a higher number of females.^{13,14} This is due to the lower peak bone mass and postmenopausal bone loss in women.¹⁵ Women have a skeleton that adapts less well to ageing by periosteal apposition. More women have bone size and volumetric BMD reduced to below a critical level at which the loads on the bone are near to, or greater than, the bone's structural ability to tolerate them.¹⁶

Out of 107 patients, 3 (4%) had excellent results, 8 (10%) had good results, 27 (34%) had fair results, and 41 (52%) had poor results. Average HHS was 67.16.

The final Harris Hip Score as evaluated at one year follow-up averaged 83.3 with the maximum score being 96 and the minimum score being 67. Overall, 4 patients (16%) achieved Excellent result, 15 patients (60%) achieved Good result, 4 patients (16%) achieved fair result and 2 patients (8%) achieved poor result. 80% of the patients achieved an excellent or good result.¹

CONCLUSION

The present study concluded that hemiarthroplasty with bipolar prosthesis shows better results.

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