Original Research Paper

Orthopaedics

A STUDY OF CLINICAL AND BADIOLOGICAL OUTCOME OF INTRACAPSULAR NECK OF FEMUR FRACTURES TREATED WITH BIPOLAR HEMIARTHROPLASTY

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The neck of femur fracture is one of the common fractures in elderly. It has been always a challenge to the ABSTRACT orthopaedic surgeons to manage these fractures. This is a prospective study done in Santhiram Medical College, Nandyal in the Department of Orthopaedics. 20 patients who presented to us with an intracapsular neck of femur fractures and underwent bipolar hemiarthroplasty were analysed over a period of 6 months regarding the clinical and radiological outcome of bipolar prosthesis. The main theoretical advantage of a bipolar over a unipolar prosthesis is the reduction of acetabular erosion due to movement taking place within the implant rather than at the acetabular implant interface. It is thus hypothesised that bipolar prostheses lead to better long-term functional outcomes with less complications. Source of the study: Santhiram Medical College & General Hospital, Nandyal. Study design: Prospective study. Duration of study: July 2022 to December 2022. Sample size: 20 patients of either sex. Inclusion Criteria: Patients who are willing to give written informed consent. Exclusion Criteria: Patients who are NOT willing to give written informed consent.

KEYWORDS : ICNF-Intracapsular neck of femur, bipolar hemiarthroplasty,

INTRODUCTION:

The neck of femur fracture is one of the common fractures in elderly. It has always been a challenge to the orthopaedic surgeons to manage these fractures. The prevalence of neck of femur fractures has increasing with increased incidence of osteoporosis, poor vision in elderly, poor neuro muscular coordination, life style changes, sedentary habits, improvement in life expectancy. The introduction of unipolar prosthesis by Thompson in 1954 & Austin Moore in 1957 to replace the femoral head ushered in the era of hemiar throplasty as standard treatment for neck of femur fractures in elderly patients. With higher chance of non union & avascular necrosis in internal fixation, hip arthroplasty has become the best treatment choice in elderly for early mobilisation and reduce morbidity. Currently the orthopaedic surgeons can choose between unipolar, bipolar and total hip replacement in the treatment of intracapsular fractures in elderly. The problems with unipolar prosthesis are acetabular erosion and stem loosening. In 1974, bipolar prosthesis was introduced by Bateman which had mobile head element and had additional head surface to allow movement within acetabulum. This reduces the erosion in acetabulum and reduction in pain and incidence of protrusion. The motion occurs between metal head and polyethylene socket (inner bearing) as well as between metallic head and acetabulum (outer bearing).



Figure 1: Bipolar Prosthesis

Source: https://siiora.org/product/bipolar-prosthesisstandard-stem-fernestrated-sterile/

Table 1 – Size of Prosthesis

Prosthesis size	NUMBER	%
39 mm	1	5
41 mm	2	10
43 mm	5	25
45 mm	6	30
47 mm	3	15
49 mm	2	10
51 mm	1	5

Table 2-Cemented vs Uncemented:

Туре	NUMBER	%
Cemented	11	55
Uncemented	9	45

Table 3-Final Harris Hip Score:

Grade	NUMBER	%
Excellent (90-100)	7	35
Good (80-89)	10	50
Fair (70-79)	2	10
Poor (<70)	1	5

Table 4-Results based on radiological parameters :

RESULT	NUMBER	%
Excellent	15	75
Good	5	25

DISCUSSION:

The aim of replacement surgery in fracture neck femur is early return to daily activities. This is particularly applicable to the elderly age group where complications need to be prevented. The mean age of the patients in the present study was 65 years. The aim of assessing age is to estimate the patient's mean survival time and their ability to comply with rehabilitation protocol. Patients with hip fractures have an increased mortality rate during the first year after fracture but after one year the mortality rate is comparable to that of the general population. The results of our study showed that age of the patient had minimal influence on the final clinical result.

In our study males affected in higher numbers. Majority of our study patients (75%) sustained the injury due to a trivial

RESULTS:

trauma like tripping or slipping. This is a very common occurrence in elderly population where poor vision and lack of neuro-muscular coordination is a problem.

All of our study patients had a displaced fracture of the neck of femur. Majority of the patients (80%) had a transcervical fracture. The anatomical type of fracture and the displacement did not have any bearing on the final function. All patients were operated after being put into lateral decubitus position by the lateral approach or posterior approach of Moore. The lateral approach was preferred because of the familiarity of most of the surgeons at our institution with the approach.

There were no late postoperative complications like loosening, dislocation, erosion, secondary osteoarthritis, protrusio acetabuli or periprosthetic fracture in our study. All the patients who completed a 2 years year follow-up were included in the final analysis. The Harris Hip Scores, radiological parameters, fluoroscopy analysis were done in order to find out any correlation that exists between these parameters. With radiological parameters analysis, 75 percent had good results, 25 percent had excellent results. The radiological parameters which we analysed attached in the annexure. There is no correlation between the functional outcome and radiological outcome. On fluoroscopy study, in 86.66 percent of patients there were some interprosthetic patients, in 13.33 percent of patients no interprosthetic movements occurred. We found that intreprosthetic movements seen more in the rotatory movements. The interprosthetic movements seems to decrease as years passes on. There is no correlation between functional outcome and interprosthetic movements.

In our study, the final Harris Hip Score as evaluated at maximum follow-up averaged 85.68 with the maximum score being 93 and the minimum score being 65.8. Overall, 7 patients (35%) achieved Excellent result, 10 patients (50%) achieved Good result, 2 patients (10%) achieved fair result and 1 patients (5%) achieved poor result. Overall, 85% of the patients achieved an excellent or good result. Our results are comparable with other studies of bipolar hemiarthroplasty performed for fracture neck femur. Although the excellent results are comparatively less than other studies, it was found that our patients associated with comorbidities, late presentation to hospital, delay in getting the patients for surgery had influenced the outcome.

CONCLUSION:

Bipolar hemiarthroplasty for fractures of the femoral neck provides freedom from pain and more rapid return to unassisted activity with an acceptable complication rate. The end functional results depend on the associated co-morbidity and optimum post-operative rehabilitation. There is no correlation between functional outcome and interprosthetic movements also radiological outcome. In our study, patients had good radiological outcome with significant interprosthetic movements. Bipolar seems to be a cost effective prosthesis in active elderly individuals. Similar study on long term follow up would provide more affirmative findings.

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