



## FUNCTIONAL OUTCOME OF FRACTURE NECK OF FEMUR TREATED WITH UNCEMENTED BIPOLAR PROSTHESIS

<b>Dr Balagopal.K</b>	Additional Professor, Dept.orthopaedics, Govt.medical College, Thrissur
<b>Dr.Kiran.N.K</b>	Senior Resident, Dept.of Orthopaedics, Govt Medical College, Thrissur
<b>Dr. Jose Francis.C</b>	Professor and Head Of The Department, Dept.of Orthopaedics, Govt Medical College Thrissur

**ABSTRACT** Uncemented Bipolar hemiarthroplasty for neck of femur fractures in elderly patients is a viable option that can prevent the complications of a cemented system. The study was conducted to find out the functional outcome of treating a fracture neck of femur in patient uncemented bipolar prosthesis. The study is a prospective descriptive study and 29 patients meeting the inclusion and exclusion criteria were studied over a period of 18 months. The functional outcome was measured by using the modified Harris hip score. Most of these patients sustained the fracture following a fall, consistent with the fact that these fractures are more common in the osteoporotic bone following trauma. Also the mean age of the patients in the study was 69.44. The results showed that pain and limping was not a big problem to majority of the patients. Above 72% of the patients had good range of movements. There was only 1 case of post operative infection, which subsided with antibiotics given according to sensitivity of cultured organism. The mean hip score in the study was 78 which was comparable to similar studies conducted by other authors. Majority of the patients had co-morbidities and hence it was addressed adequately. Hemiarthroplasty with uncemented bipolar prosthesis is a good choice to mobilize these patients at the earliest. Most of the people here in our hospital comes from rural areas and this type hemiarthroplasty provides a cost effective surgical option for these patients.

### KEYWORDS :

#### INTRODUCTION

The life time risk of sustaining a hip fracture is 9% for a female of the age 50, increases and 18% by the age of 90 years. The figures for the men are 2%, and 8%. As life expectancy increases and the mean age of society shifts progressively towards the senior category, the incidence of hip fractures will continue to rise. The incidence of fracture neck femur occur two different population. A small group (5%) are young patients subjected to high energy trauma. The remainder in population and approximately 90% of these injuries are the result of simple fall. A reduction of bone mass at the hip of one standard deviation doubles the risk of hip fractures. It has been observed that age specific incidence of hip fracture doubles every 5 - 6 years after the age 30 in women reaching 18 fractures per 1000 per year in women over 85<sup>1</sup>. Most fractures of femoral neck are intracapsular. Basicervical femoral neck fractures are extracapsular and considered with intertrochanteric fractures.<sup>2</sup>

Unprotected blood supply to the femoral head, the intracapsular location and severe trabecular atrophy of femoral neck are the factors that inhibit fracture healing and leads to osteonecrosis.<sup>2</sup>. The calcar femorale is a dense vertical plate of bone extending from the posteromedial portion of the femoral shaft under the lesser trochanter and radiating lateral to the greater trochanter, reinforcing the neck posteromedially. The calcar femorale is thicker medially and gradually thins as it passes laterally.

People in this age group suffer from numerous illnesses such as diabetes, hypertension, COPD. That can aggravate the complications following fracture neck of femur. The treatment goal is to return the patient to their pre-fracture status of function as soon as possible. Satisfactory reduction is paramount in minimizing the complications with treatment of femoral neck fractures, including non union and osteonecrosis. Closed reduction can be attempted in every patients for whom internal fixation is planned. The Garden alignment Index can be used to evaluate femoral neck angulation and alignment. Trabecular alignment evaluated with both anteroposterior and lateral radiographs. Lowell et al. described radiographic appearance of an anatomically reduced femoral neck as 'Shallow-S- or reverse -S-shaped curves'. These curves may be more useful than Gardens index for intraoperative evaluation of alignment.

Most of femoral neck fractures require operative treatment. Patients with displaced femoral neck fractures who are older best treated with hemiarthroplasty or total hip arthroplasty. controversy exist over the use of cemented or uncemented stems. Important factors to consider in choosing any treatment modality are intrinsic, namely patient age, general medical condition, type of fracture; and extrinsic like availability of facilities and socio-economic status of the patient.

Though non-operative treatment of these fractures being limited to terminally ill patients or those who are bedridden and non-ambulatory. This prospective clinical study presents the short term results of prospective study of uncemented bipolar prosthesis in fracture neck of femur. Outcomes at 6 weeks, 3 months and 6 months and 12 months were measured by modified Harris hip score. All patients attending orthopaedics department of MCH Thrissur fulfilling inclusion criteria during the study period is taken as study group.

#### Inclusion criteria:

- Radiologically identified fracture neck of femur
- Patients who sustain neck of femur fractures with age above 18 years treated by uncemented bipolar prosthesis.
- Age: Adult patients > 18 years
- Sex: Both male and female
- Physical fitness for surgery

#### Exclusion criteria:

- Patients who have associated neuro vascular injuries.
- Patients who have associated fractures in the same limb.
- Patients with previous surgery in the fractured area.
- Patients with previous musculoskeletal diseases or conditions.
- Patients not willing or medically unfit for surgery.
- Patients managed conservatively for other medical reasons

#### OBSERVATION AND RESULT

The following observations were made from the data collected from the study of treatment of fracture neck of femur by uncemented bipolar prosthesis in patients from January 2015 to July 2016 in the department of orthopaedics, government medical college, Thrissur.

#### Age and sex incidence

In the present series the maximum age was 86 in females and 80 in case of males. The mean age in males being 74 and in females being 67. The number of females were 18 and males 11 in the present series. That shows 62% were females in this study. The female preponderance is higher compared to the males. Study conducted by Oztürkmen Y et al<sup>56</sup> showed mean age of 88 years and similar distribution of number of females and males which is 38% and 62% respectively, and that is consistent with the present study. Sks marya et al<sup>57</sup> studied 29 patients and the mean age was 82 yrs. Won sik choy et al<sup>58</sup> in their study found a similar average age obtained. In this present study the mean age was 78.8. Mean age was 77 yrs in a similar study conducted by Bezwada et al<sup>59</sup> which also consistent with the present study. The mean age of the patients in this series is similar to those in reported series of studies where hemiarthroplasty with uncemented bipolar was done. The reason most probably being due to senile osteoporosis.

### Side of fracture

In the present study most of patients were found to have a left sided fracture. Right side fractured in 48.2% of cases.

### Hospital stay

In the present case series the hospital admission ranged from 10 days to 40 days with an average stay of 21.3 days. 40 days of prolonged stay for one patient was due to development of post operative infection. It was controlled by antibiotics according to culture and sensitivity of the organism. All patients were taken up for surgery on an elective basis after admission. 73% of the patients had co-morbidities. Those with co-morbidities were taken up for surgery only after obtaining fitness from the corresponding departments. The patients who had complications during or after surgery were discharged only after they were mobilized and suture removal. Study conducted Mean duration of hospital stay was 11.9 days (7–26 days)

### Type Of Fracture

In the present study 62% of fractures were subcapital type and rest were transcervical

Two of the patients sustained a colle's fracture that was treated conservatively with cast immobilization. 2 patients had an associated comminuted intraarticular fracture distal end of radius fracture treated with JESS fixation.

### Associated Medical Illness

In the present study 73% of the patients had co morbidity. Diabetes and hypertension were the most common associated co morbidities. 34% had diabetes and 34% had hypertension.

Most common complication occurred in the study was acetabular erosion and prosthetic loosening which are 10.3% respectively. Infection rate was very minimal.

### Pain

In the present series, three (10.34%) patients had no pain, while 21 (72.4%) of them had slight pain in the thigh. Three (10.34%) patients had mild pain. None of the patients were bed ridden due to pain.

### Limping, Deformity, Range of movements and use of cane.

In the present study four patients (13.7%) had no limping. No patient had severe limping..

Three of them (10.3%) had fixed flexion deformity of 10-30 degrees. 13 of the patients (45%) had a range of movements of 161-210 degrees. Pain was one of the most important determining factor. two of the patients (6.8%) had a range of movement less than 100 degrees.

10 patients (34.5%) required no support for walking, while 1 of them (3.4%) had to use cane for most of the time.

All of the patient were able to walk and none were walking with crutches

In this study we got a mean hip harris score of 78.2 which is comparable to the study conducted by Won Sik Choy et al the mean Harris hip score was 80.6 point and SKS Marya et al where the mean Harris hip score was 85 (range: 69–96).

The functional outcome in the present series was assessed at the end of one year using modified Harris hip score.

The mean Harris hip score in the present study was 78.2.

In the present study 6 of the patients (20.6%) had excellent results, 12 of them (41.8%) had good results, 8 of them (27.5%) had scored fair and only 3 patients (10.3%) had poor results.

Poor results were mainly due to existing pain following loosening of implant. These patients did not undergo proper mobilization at home due to the pain.

### CONCLUSION

In the present study were 21% excellent results and 41% good results. These 62% excellent to good results are comparable to other series. Mean hip harris score was 78, which shows overall result were fair. Higher age group those greater than 65yrs compared to lower age group obtained better scores. Out of the 3 poor result 2 of them had

very low hip harris score which may be resulted in the mean hip harris score 78, which is fair. Poor results in present series were due to loosening of prosthesis and pain after hemiarthroplasty. The success of hemiarthroplasty no doubt depends on preoperative planning and proper attention to surgical culture and dealing with the comorbidities, since most of them are elderly. Patients who lead mainly a sedentary lifestyle with limited daily activities are ideal candidates for hemireplacement arthroplasty. With vigilant pre-operative planning and preparation, using neat surgical technique, good results can be obtained. Hence in rural areas it has been recognized that after the injury, elderly people should be mobilized and weight bearing commenced as soon as the wound is healed, to avoid complications of prolonged recumbency and to return to activity, to restore the patients to the physical, mental and social capabilities. This could be achieved by Hemireplacement arthroplasty, using uncemented bipolar prosthesis and should be considered as one of the primary treatments for fracture neck of femur in elderly patients who are not much active than younger patients since more demands may result in loosening and pain.

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