



## Surgery

## FUNCTIONAL ASSESSMENT OF PATIENTS OF INTRACAPSULAR NECK OF FEMUR FRACTURE TREATED WITH CEMENTED NON MODULAR BIPOLAR HEMIARTHROPLASTY – A 3-5 YEARS FOLLOW UP STUDY.

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### KEYWORDS :

#### INTRODUCTION

Intracapsular fracture of the proximal femur account for a major share of fractures in the elderly. The primary goal of treatment is to return the patient to his or her pre-fracture functional status.(1)It has been predicted that by 2050, the number of hip fractures would triple. As a consequence, proximal femur fractures are a significant cause of morbidity and mortality in all age group especially in the elderly. Regardless of the age of the patient, or the fracture pattern, the primary goal of fracture treatment is to return the patient to a pre-fracture level of function.

For displaced fractures of the femoral neck, reduction, compression, and rigid internal fixation are required if union is to be predictable.

Because nonunion and osteonecrosis develop frequently after internal fixation of displaced femoralneck fractures, many surgeons recommend primary prosthetic replacement as an alternative in elderly ambulatory patients.(2)

Cementless bipolar hemiarthroplasty for femoral neck fractures in elderly permits early return to premorbid life and is not associated with any untoward cardiac event in the perioperative period. It can be considered a treatment option in this select group.(1,2)

Prosthetic replacement allows immediate weight bearing to return elderly patients to activity and help avoid complications of recumbency and inactivity. When the concept of prosthetic replacement was first introduced, this perhaps was the most important advantage.(2)

The complications of persistent pain and protrusioacetabuli with unipolar hemiarthroplasties have led many surgeons to choose a bipolar system. Studies suggest that the current generation of bipolar hemiarthroplasties have a lower incidence of protrusioacetabuli than do earlier designs. Some authors have found, however, that the motion of the inner bearing surface may not last, and that all bipolar hips functionally become unipolar implants.(2)

The decision to perform hemiarthroplasty using a unipolar or bipolar prosthesis remains controversial, with proponents on either side. Advantages of the unipolar prosthesis include lower cost and no risk of polyethylene wear debris. Proposed advantages of the bipolar prosthesis include less acetabular wear and potentially less hip/groin pain(3)

Therefore we attempted this study in order to evaluate functional outcome of patients of intracapsular neck of femur fracture treated with cemented nonmodular bipolar hemiarthroplasty.

In this study we evaluate the functional outcome of cemented nonmodular bipolar hemiarthroplasty and analyze the data and compare it with the observations of the other workers.

#### MATERIAL AND METHODS

Total 50 cases of Intracapsular neck of femur fracture treated with cemented non modular bipolar hemiarthroplasty were studied. The cases were selected from the patients coming for regular periodic

follow up checkup in Orthopaedics. Outpatient department in year 2015 who were operated between year 2010 to 2012.

Patients of either sex who were treated with cemented non modular bipolar hemiarthroplasty for Intracapsular Neck of Femur fracture operated between 2010 to 2012 were included in this study.

Out of 112 patients operated in above mentioned time period, 30 were lost to follow-up, 25 patients succumbed to death due to old age and various co- morbid conditions and 7 patients did not come for follow-up in outpatient department.

Informed consent was taken from all patients after discussing whole process of examination and the need for functional evaluation in view of hemiarthroplasty surgery.

#### INCLUSION CRITERIA:

1. Patients operated in our hospital between 2010 to 2012 for intracapsular neck of femur fracture with cemented non modular bipolar hemiarthroplasty.
2. All the Patients of Intracapsular Neck of Femur fracture treated with cemented nonmodular bipolar hemiarthroplasty.

#### EXCLUSION CRITERIA:

All the other patients of intracapsular neck of femur fracture who were treated with treatment modality other than cemented nonmodular bipolar hemiarthroplasty. Detailed clinical evaluation was done.

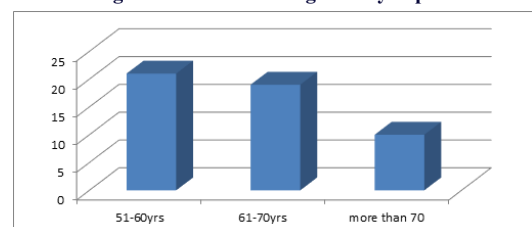
Assessment of various outcome parameters was done using scoring system like-Harris Hip Score (HHS)- The HHS was developed for the assessment of the results of hip surgery, and is intended to evaluate various hip disabilities and methods of treatment (1) in an adult population.

#### RESULTS

The patients were evaluated on the following criteria:

Age distribution amongst study population Sex distribution amongst study population Pain status amongst study population Distance walked amongst study population Activities status amongst study population Public transportation status amongst study population Type of Support amongst study population Limp amongst study population Stairs usage amongst study population Total range of motion amongst study population Harris hip score (HHS) amongst study population

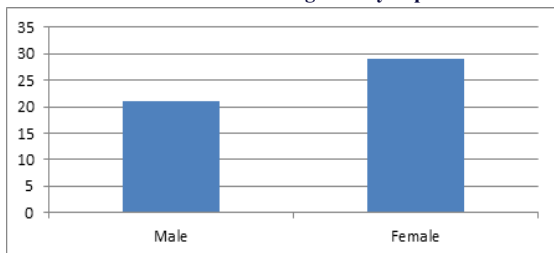
**TABLE No 1 Age Distribution Amongst Study Population**



As seen in the above table, the most common age group amongst study population was 51 to 60 years (42%) followed by 61 to 70 years (38%).

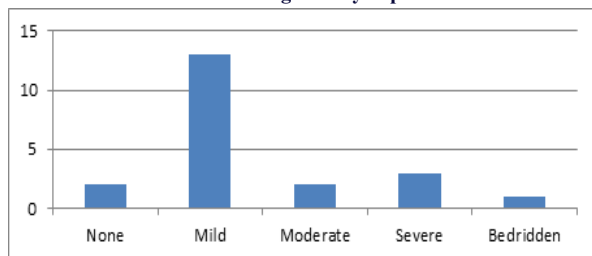
The mean age was  $61.71 \pm 11.66$  years. This shows that we had significant people who were young (42%). Total of 50 patients.

**TABLE no 2 Sex Distribution Amongst Study Population**



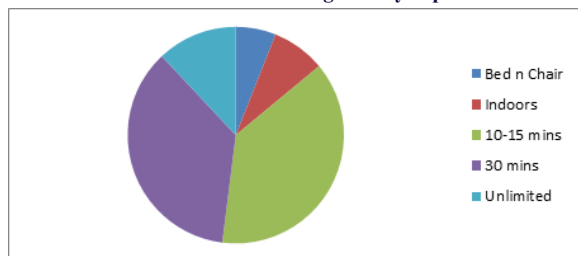
As seen in the above table, there was Female predominance (58%) in our study

**TABLE no 3 Pain Status Amongst Study Population**



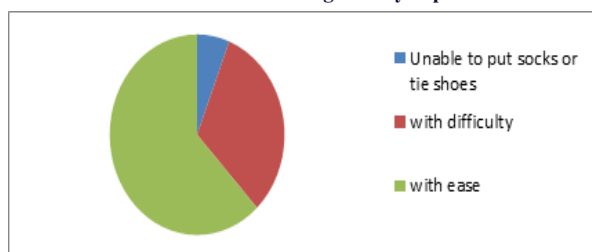
As seen in the above table, most of the study population had slight pain (58%) followed by mild pain (26%).

**TABLE no 4 Distance Walked Amongst Study Population**



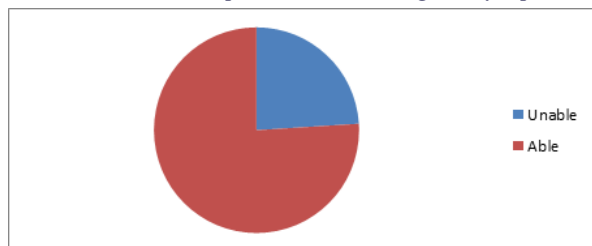
As seen in the above table, most of the study population were walking 2-3block(10-15min) (38%) followed by 6 blocks (30 min) (36%).

**TABLE no 5 Activities Status Amongst Study Population**



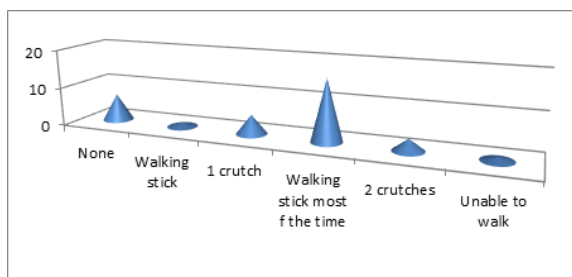
As seen in the above table, most of the study population were doing activities with ease(62%) followed by doing activities with difficulty (32%).

**TABLE no 6 Public Transportation Status Amongst Study Population**



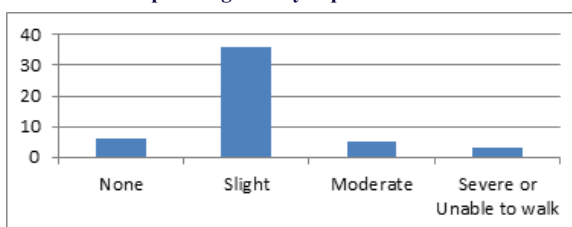
As seen in the above table, most of the study population were able to use transportation (76%).

**TABLE no 7 Type Of Support Amongst Study Population**



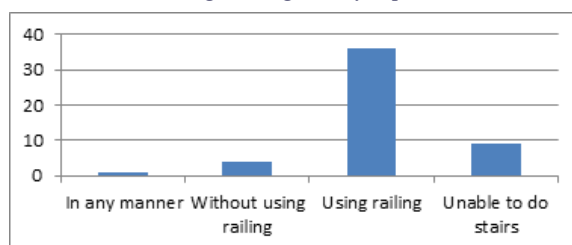
As seen in the above table, most of the study population were using walking stick for long walks as a support (34%) followed by walking stick most of the time (32%).

**TABLE no 8 Limp Amongst Study Population**



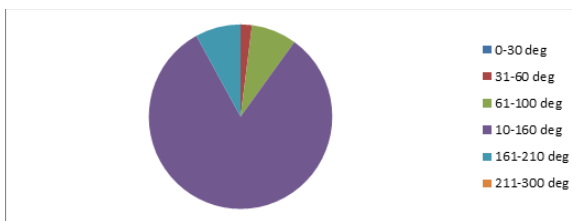
As seen in the above table, most of the study population had Slight limp (72%) followed Moderate limp (10%).

**TABLE no 9 Stairs Usage Amongst Study Population**

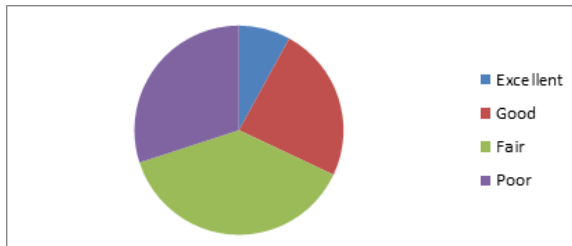


As seen in the above table, most of the study population were using stairs normally along with stairs (72%) while 18% were unable to use stairs

**TABLE no.10: Total Range Of Motion Amongst Study Population**



**TABLE no 11 Harris Hip Score (HHS) Amongst Study Population**



As seen in the above table, most of the study population had Fair HHS(38%) followed by poor HHS(30%), Good HHS (24%) and Excellent HHS(8%)

**DISCUSSION**

As the age advances in elderly population, the occurrence of a femoral neck fracture is becoming more common, hence increasing their socioeconomic importance, and long term impact of various treatment

modalities in terms of functional results (38,39) These fractures leads to devastating injuries that require medical and surgical treatment and consume considerable health care resources. The goal of treatment of these fractures is restoration of prefracture function without associated morbidity. Satisfactory recovery of pre fracture ambulatory status correlates with younger age, co-morbid medical conditions, competent mental status, male gender, community support structure and pre fracture ambulatory status.(40)

Hemiarthroplasty is the most common treatment for displaced fractures of the femoral neck in the elderly and is associated with better functional outcome and fewer reoperations than internal fixation.(41) A large number of prostheses have been used with or without cement and no definite conclusions have been made regarding which type of arthroplasty is preferred.(41,42)

The objective of the hemiarthroplasty was to achieve early mobilization, full weight bearing and early return to daily activities. Cemented hemiarthroplasty has been preferred over uncemented hemiarthroplasty because of less postoperative pain and better mobility(43)

In the present study, the most common age group amongst study population was 51 to 60 years (42%)

followed by 61 to 70 years (38%) . The mean age was  $61.71 \pm 11.66$  years. This was in accordance to the study conducted by Tuteja Sanesh V et al.,44 2014 in which the mean age of the study group was 63.53 years.

In the present study ,there was female predominance (58%). This indicating a higher incidence of osteoporosis in elderly, post menopausal females. Similarly in the study conducted by Tuteja Sanesh V et al.,(44) 2014, there was higher number of female population in their groups (67%).

In the present study, most of the study population had slight to mild pain.(84%).

Parker MJ et al. 45 had confirmed that cemented bipolar hemiarthroplasty patients had minimal pain, better mobility, and no significant difference in complications when compared with uncemented bipolar hemiarthroplasty patients.

In the study conducted by Rajendra Annappa et al.,46 pain was least in cemented bipolar group 80% patients had no pain, whereas in uncemented bipolar group 45% had no pain, 40% had occasional pain & 10% had mild pain. One patient had marked pain with limitation of activity.

In the present study, most of the study population had Slight to moderate limp in (82%).

In the study conducted by Rajendra Annappa et al.,(46) cemented bipolar group had excellent results in functional assessment, with no limp in 85% patients but in uncemented bipolar group 15% patients had slight limp and 5% patient had moderate limp at short term follow up period

This high incidence of limp could be attributed to –

- 1) Slight to mild pain in 84 % of patients.
- 2) Residual abductor weakness due to poor patient compliance , as most of the patients were rural based and had no access to proper physiotherapy guidance.

In the present study, most of the study population were using walking stick for long walks as a support (34%) followed by walking stick most of the time (32%) As against the study conducted by Rajendra Annappa et al.,(46) in cemented bipolar group, only 15% required cane for long walks (>1 km). This again could be attributed to slight pain and abductor weakness.

In the present study, most of the study population had good range of motion, mean range of motion being 140 degrees. Similarly in the study conducted by Rajendra Annappa et al.,(46) , in cemented bipolar group, none of the patients had any significant deformity and range of motion was more than 160 degree

In the present study, most of the study population had fair HHS(38%) With 32% had (excellent+ good) HHS, followed by poor HHS (30%),

In the study conducted by TS Raghendra et al.,(47) Rajendra Annappa et al.,46 the final Harris hip score as evaluated at 6 months follow-up averaged 87.2 with the maximum score being 100 and the minimum score being 55. Of 20 patients, 10 patients (50%) achieved excellent result, 6 patients (30%) achieved good result, 3 patients (15%) achieved fair result and one patient (5%) achieved poor result. Overall, 80% of the patients achieved either an excellent or a good result.

In TS Raghendra et al.,( 47) study the evaluation was done at 6 months as against at the end of 3-5 years in our study, and hence cannot be really compared.

In the study conducted by Ram Kumar Ponraj et al.,48 had a minimum follow-up of 6 months in all the thirty patients and few patients were followed up to 20 months. All were ambulatory and had painless hips. At the follow up, 17 patients had good results, 7 patients had excellent results, 4 patients had fair results and 2 patients had poor results. The mean Harris hip score was 84.2 (range: 64–97).

## CONCLUSION

Cemented Bipolar Hemiarthroplasty is good treatment option for Intracapsular neck of femur fracture in elderly age group as it permits early weight bearing and mobilization and associated with less complications From present study ,we conclude that, patients if intracapsular neck of femur fracture treated with cemented non modular bipolar hemiarthroplasty have good functional outcome in regards with hemiarthroplasty surgery on midterm follow-up evaluation, despite of advancing age and other associated spine and hip pathologies.

However, Compared to short term functional outcome evaluation, midterm follow-up evaluation indicates increased incidence of hip pain and limp, less total range of motion, increased need of support for walking. This can be attributed to comparatively high physical demands in relatively younger age group of patients, which was predominant age group in our study population. These patients need to be closely followed up for functional outcome evaluation on long term basis. For evaluating increasing chances of second surgical intervention for the same e.g. Total Hip Arthroplasty. This prompts guarded use of cemented bipolar hemiarthroplasty in younger age group.

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