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# EARLY OUTCOME OF HEMIREPLACEMENT ARTHROPLASTY IN FRACTURE NECK FEMUR USING CEMENTED BIPOLAR PROSTHESIS

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## ABSTRACT

**BACKGROUND** Fracture of the neck femur has always presented challenges to orthopaedic surgeons and remains, in many ways, today the unsolved fracture as far as treatment and results are considered. Hemi-replacement Arthroplasty is now the established modality of treatment in fresh fracture of femoral neck in the elderly, largely due to failure of other modalities of treatment such as internal fixation.

**MATERIAL AND METHODS** The present study was conducted at the Department of Orthopaedics, SMIMER, Surat. The study analyzed results in 25 patients with fracture neck femur treated with hemireplacement arthroplasty using cemented bipolar prosthesis during the period from March 2015-August 2015

**RESULTS** Bipolar Hemireplacement Arthroplasty is an effective mode of treatment to restore the function, allowing early mobilization in elderly patients with femoral neck fractures and consistently providing excellent results with negligible complications.

**CONCLUSIONS** Bipolar prosthesis is a safe option in treating fracture neck of femur in the elderly with good recovery in-spite of having several co-morbidities. Primary hemiarhtroplasty provides stable pain free mobile joint. Early mobilization is possible avoiding the problems of recumbency.

**KEYWORDS** : Neck of Femur, cemented Hemi Arthroplasty

## BACKGROUND

Fracture of the neck of femur has always presented challenges to orthopaedic surgeons and remains, in many ways, today the unsolved fracture as far as treatment and results are concerned. Femoral neck fractures have probably the highest socio economic impact of all the fractures of human skeleton. Their complications cause major permanent disability in the elderly patients and are a major case of death in elderly.

Hemi-Replacement Arthroplasty is now the established modality of treatment in fresh fracture of femoral neck in the elderly, largely due to failure of other modalities of treatment such as internal fixation. In addition there are certain problems of old age which contribute to the grim outcome of these fractures with other treatments like internal fixation.

Dissatisfaction with the results of operative fixation of displaced fracture neck femur in the elderly resulted in widespread use of prosthesis replacement as a primary treatment.

## MATERIALS AND METHODS

It was a case series study. The purpose of study was to study the functional outcome in patients treated with cemented bipolar prosthesis for fracture neck femur.

The present study was carried at tertiary care hospital. During this period 25 patients of fracture neck of femur treated with cemented bipolar prosthesis. The study was conducted for a period between March 2015 to August 2015.

## RESULTS

The present study includes the results of 25 patients treated with CEMENTED BIPOLAR HEMIREPLACEMENT PROSTHESIS for fractures of neck femur.

| AGE | MALE | FEMALE | TOTAL | PERCENT |
|---|---|---|---|---|
| 50-59 | 5 | 0 | 5 | 20 |
| 60-79 | 3 | 5 | 8 | 32 |
| >70 | 3 | 9 | 12 | 48 |
| Total | 11 | 14 | 25 | 100 |

Table 1 : Age Distribution

The mean age for male patients was 62.09 years and that for female was 49.42 years.

| Sex | No. of Cases | Percentage |
|---|---|---|
| 44 | 11 | 44 |
| 56 | 14 | 56 |
| 100 | 25 | 100 |

Table 2 : Sex Distribution

The ratio of male was 1:1.27.

| Fracture Pattern | No. of Cases | Percentage |
|---|---|---|
| Subcapital | 12 | 48 |
| Transcaervical | 13 | 52 |
| Total | 25 | 100 |

Table 3: Fracture Pattern

| Position | No. of patients | Percentage |
|---|---|---|
| Varus | 4 | 16 |
| Neutral | 11 | 44 |
| Valgus | 10 | 40 |
| Total | 25 | 100 |

Table 4 : Position of Stem

In 44% of cases the stem was in neutral postion while in 16% of cases the stem was in varus position. In 40% of cases stem was in valgus.

| Pain | No. of cases | Percentage |
|---|---|---|
| None | 13 | 52 |
| Slight/Occasional | 12 | 48 |
| Mild | 0 | 0 |
| Moderate | 0 | 0 |
| Marked | 0 | 0 |
| Disability | 0 | 0 |
| Total | 25 | 100 |

Table 5 : Pain (At final follow up)

52% of patients had no pain at final follow up. 48% experienced slight pain which amounted to occasional ache or awareness of pain of low grade with no compromise in activity.

| Limp | No. of cases | Percentage |
|---|---|---|
| None | 18 | 72 |
| Slight | 7 | 28 |
| Moderate | 0 | 0 |
| Severe | 0 | 0 |

| | | |
|---|---|---|
| Total | 25 | 100 |

Table 6 : Limp

72% of patients had no limp while 28% patients experienced mild to moderate limp while walking.

| Distance | No. of cases | Percentage |
|---|---|---|
| Unlimited | 7 | 28 |
| 6 blocks | 17 | 68 |
| 2-3 blocks | 1 | 4 |
| Indoor only | 0 | 0 |
| Bed and chair only | 0 | 0 |
| Total | 25 | 100 |

Table 7 : Walking Distance

Majority of the patients were able to walk upto 1 kilometer or more following operation. Some of the remaining had limited walking distance due to pain, old age and associated condition like osteoarthritis.

| Score | No. of cases | Percentage |
|---|---|---|
| Excellent (90-100) | 16 | 64 |
| Good (80-90) | 7 | 28 |
| Fair (70-80) | 2 | 8 |
| Poor (<70) | 0 | 0 |
| Total | 25 | 100 |

Table 8 : Grading of clinical results

In our study, 92% patients had excellent and good results.

## DISCUSSION

Management of fracture neck of femur in elderly still remains a major and difficult undertaking for an othopaedic surgeon.

Mean age of the patients in our study was 66.2 years. Maximum number of our patients were above 70years of age. The youngest patient was 50 years old and oldest was 85 years. The male to female ratio in our study was 1:1.27. Out of 25 patients in our study 11 patients were male while 14 patients were female.

In our study most of the fractures occurred following low velocity trauma, largely due to osteoporotic bone. Of all patients presented to us, 52% had transcervical fracture while 48% patients had subcapital fracture.

Post surgery quadriceps exercise and high sitting were started on 2nd postoperative day. By that time pain subsided and patients felt comfortable.

Patients were followed up postoperatively at 4 weeks, 12 weeks and 24 weeks. All final follow up 52% of patients had no pain in our series while 48% patients complained of slight pain on routine activities. Some of the patients had complaied of pain in knee joint and back which was attributed to osteoarthritis and Osteoporosis.

We found excellent range of motion at final follow up. 92% of patients had flexion more than 100 degree. Extension of more than 10 degree was possible in 76% of patients. Abduction of more than 30 degree was observed in 88% cases while 20 degree or more adduction was in 92% of cases. 84% of cases had external rotation of more than 30 degree. Internal rotation was more limited with more than 20 degree of internal rotation present only in 52% of cases. In our study there was no case of post operative deformity.

Overall results were graded at final follow up using Modified Harris Hip Score. According to these, excellent results were obtained in 16 patients and good results in 7 patients. No cases of poor results were found. 2 patients had fair results.

## CONCLUSION

The present study was aimed at evaluating the results of cemented bipolar hemireplacement arthroplasty in fracture neck of femur, performed at our institute involving a strict preoperatively, postoperative and intraoperative protocol.

We conclude that cemented Bipolar Hemireplacement Arthroplasty is an effective mode of treatment to restore the function, allowing early mobilization in elderly patients with femoral neck fracture and consistently providing excellen results with negligible complication.

Our study confirm that Bipolar Endoprosthesis has distinct advantages which are as follows:

- Reduction of acetabular cartilage erosion by low friction properties of inner bearing
- Low incidence of acetabular protrusion.
- Least pain and excellent final results.

To conclude, bipolar prosthesis is a safe option in treating fracture neck of femur in the elderly with good recovery in-spite of having several co-morbidities. Primary hemiarthroplasty provides stable pain free mobile joint early mobilization is possible avoiding the problems of recumbency.

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