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ORIGINAL RESEARCH

Outcomes of Indian uncemented bipolar hemiarthroplasty in transcervical fracture neck of femur

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ABSTRACT

Background: Hip fracture contributes to both morbidity and mortality in the elderly. Management of femoral neck fractures in elderly patients has been controversial. Uncemented prosthesis have been said to have a longer life span due to intrinsic bony ingrowth, which provide a long lasting fixation in comparisons to fixation by bone-cement-metal bond which tends to loosen.Hence; under the light of above-mentioned data, the present study was conducted for assessing the short term clinical and radiological outcome of Indian Uncemented Bipolar Hemiarthroplasty.**Materials & methods:**A total of 20 patients were enrolled. Material of uncemented prosthesis used in patients were included in study. Coating of prosthesis was Hydroxyapatite (Completely coated). Clinical outcome is assessed by Harris Hip Score. Patients were followed up at 3 weeks,6 weeks,3 months,6 months and yearly for assessing outcome post operatively. All the results were recorded in Microsoft excel sheet and were analysed by SPSS software.**Results:**Mean age of the patients was 69.5 years. Significant results were obtained while comparing the mean Harris hip score at different time intervals. Excellent results were seen in 45 percent of the patients while good results were seen in 35 percent of the patients. 15 percent of the patients showed fair results while poor results were seen in 5 percent of the patients. **Conclusion:**Hemiarthroplasty using Uncemented Bipolar prosthesis for fractures of the femoral neck in satisfactory outcome and more rapid return to unassisted activity

Key words: Hemiarthroplasty, Femur, Transcervical

INTRODUCTION

Hip fracture contributes to both morbidity and mortality in the elderly. The demographics of world populations are set to change, with more elderly living in developing countries.Proximal femoral Fractures account for a large proportion of hospitalization among trauma cases. Femoral neck fractures (FNFs) are extremely common. FNFs demonstrate a bimodal distribution pattern; occurring secondary to low energy falls in elderly patients, and higher energy traumatic mechanisms in younger patients.

Management of femoral neck fractures in elderly patients has been controversial. Femoral neck fractures have been considered 'unsolvable fractures' in the older era of orthopedics due to the high rate of associated complications, which include nonunion and avascular necrosis of the femoral head, among others. Presently, there are multiple surgical treatment options (cannulated screws, dynamic hip screw systems, blade plates, hemi and total hip arthroplasty) available. Intracapsular extent of the fracture, tenuous blood supply to the femoral head going through the neck and difficulty in maintaining fracture reduction have been cited as reasons for failure of fixation. Although treatment methods have been refined over the years, a consensus on the ideal treatment remains elusive.[1, 2]

Hip replacement arthroplasty (partial or total) is emerging as a most viable treatment option, as it allows immediate weight bearing to return elderly patients to activity, eliminates chances of osteonecrosis and nonunion as complications of femoral neck fractures, and reduces the incidence of reoperation compared with internal fixation in the elderly. Hemiarthroplasty is a common surgery done for displaced fractures of neck of femur.[3, 4]

Hemiarthroplasty can be divided into Unipolar and Bipolar. Unipolar is more associated with a high

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rate of acetabular erosion. In bipolar prosthesis, hip motion primarily occurs at prosthetic joint and secondarily at metal cartilage interface, so there are less chances of articular wear.[5]

Uncemented prosthesis have been said to have a longer life span due to intrinsic bony ingrowth, which provide a long lasting fixation in comparisons to fixation by bone-cement-metal bond which tends to loosen.[6] Hence; under the light of above-mentioned data, the present study was conducted for assessing the short term clinical and radiological outcome of Indian Uncemented Bipolar Hemiarthroplasty.

MATERIALS & METHODS

The present study was conducted with the aim of assessing the short term clinical and radiological outcome of Indian Uncemented Bipolar Hemiarthroplasty.All post operative patients of transcervical fracture of femoral neck managed with Indian Uncemented Bipolar Hemiarthroplasty. A total of 20 patients were enrolled. Material of uncemented prosthesis used in patients were included in study. Coating of prosthesis was Hydroxyapatite (Completely coated). Clinical outcome is assessed by Harris Hip Score. Patients were followed up at 3 weeks,6 weeks,3 months,6 months and yearly for assessing outcome post operatively. All the results were recorded in Microsoft excel sheet and were analysed by SPSS software. Chi-square test, Student t test and ANOVA were used for evaluation of level of significance.

RESULTS

Mean age of the patients was 69.5 years. 70 percent of the patients were males. In 60 percent of the patients, left side was involved while in the remaining 40 percent, right side involvement occurred. In 90 percent of the patients, mode of injury was Trauma (Slipping or tripping while in the remaining 10 percent; mode of injury was Road traffic accident.Mean duration of surgery was 93.5 minutes. Mean duration of surgery was 221.5 ml.Mean hospital stay was 12.8 days. Mean Harris hip score at baseline, 3 weeks follow-up, 6 weeks follow-up, three months follow-up and one year follow-up was 42.8, 65.3, 77.8, 85.9 and 89.2 respectively. Significant results were obtained while comparing the mean Harris hip score at different time intervals. Excellent results were seen in 45 percent of the patients while good results were seen in 35 percent of the patients. 15 percent of the patients showed fair results while poor results were seen in 5 percent of the patients.

Table 1: Duration of surgery

Duration of surgery (mins)	Number
Mean	93.5
SD	10.7

Table 2: Blood loss

Blood loss (ml)	Number
Mean	221.5
SD	29.5

Table 3: Comparison of Harris Hip score at different follow-up

Time interval	Mean Harris Hip score	SD
Baseline	42.8	3.2
3 weeks	65.3	9.4
6 weeks	77.8	8.6
3 months	85.9	8.4
1 years	89.2	8.6
p- value	0.0001 (Significant)	

Table 4: Outcome according to Harris Hip score at 1 year follow-up

Outcome	Number of patients	Percentage
Excellent	9	45
Good	7	35
Fair	3	15
Poor	1	5
Total	20	100

DISCUSSION

Femoral neck fractures are a specific type of intracapsular hip fracture. The femoral neck connects the femoral shaft with the femoral head. The hip joint is the articulation of the femoral head with the acetabulum. The junctional location makes the femoral neck prone to fracture. The blood supply of the femoral head is an essential consideration in displaced fractures as it runs along the femoral neck.Femoral neck fractures are associated with low

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energy falls in the elderly. In younger patients sustaining a femoral neck fracture, the cause is usually secondary to high-energy trauma such as a substantial height or motor vehicle accidents. Risk factors for femoral neck fractures include female gender, decreased mobility, and low bone density.There are approximately 1.6 million hip fractures annually. Seventy percent of all hip fractures occur in women. Hip fracture risk increases exponentially with age and is more common in white females.[6-9]Hence; under the light of above-mentioned data, the present study was conducted for assessing the short term clinical and radiological outcome of Indian Uncemented Bipolar Hemiarthroplasty.

Mean age of the patients was 69.5 years. 70 percent of the patients were males. In 60 percent of the patients, left side was involved while in the remaining 40 percent, right side involvement occurred. In 90 percent of the patients, mode of injury was Trauma (Slipping or tripping while in the remaining 10 percent; mode of injury was Road traffic accident.Mean duration of surgery was 93.5 minutes. Mean duration of surgery was 221.5 ml.Mean hospital stay was 12.8 days. Mean Harris hip score at baseline, 3 weeks follow-up, 6 weeks follow-up, three months follow-up and one year follow-up was 42.8, 65.3, 77.8, 85.9 and 89.2 respectively. Significant results were obtained while comparing the mean Harris hip score at different time intervals. Kumar R et alanalyzed the results of surgical management of fracture neck of femur using modular bipolar hemiarthroplasty. In the series of 20 cases there were 8 males and 12 females, with a maximum age of 92 yrs, minimum age of 50yrs and an average age of 65 years. At the final one year follow up assessment with Harris Hip Score, 75% of the patients achieved an excellent or good result. Modular Bipolar hemiarthroplasty for fractures of the femoral neck provides better range of movement, freedom from pain and more rapid return to unassisted activity with an acceptable complication rate.[10]

In the present study, excellent results were seen in 45 percent of the patients while good results were seen in 35 percent of the patients. 15 percent of the patients showed fair results while poor results were seen in 5 percent of the patients. Bashir Z et al evaluated of functional outcome of uncemented modular bipolar hemiarthroplasty using Modified Harris Hip Score for fractures of femoral neck in elderly patients. The mean pre-operative score was 32.93, the maximum score being 65 and the minimum being 16. Postoperatively the mean total score was 88.967, with 76 being the minimum and 100 being the maximum. Hemiarthroplasty using Modular Uncemented Bipolar prosthesis for fractures of the displaced femoral neck in elderly provides pain relief, better range of movement and more rapid return to unassisted activity with an acceptable complication rate. Though conventionally done in a cemented fashion, uncemented modular hemiarthroplasty provides a good primary anchorage with equally promising results.[11]Rahman M et al evaluated functional outcome of fracture neck of femur treated with cemented bipolar hemiarthroplasty in elderly. 1156 patients were in the age group of 50-85 years with mean age of 62.09 years for males and 69.42 years for females. 48% percent of the patients had sub-capital fracture radiologically, while 52% had Transcervical. In 68% of cases, the mode of injury was trivial trauma. Complications observed were superficial surgical site infection (1%), affected sided mild hip pain (15%), LLD < 1.25 cm of 0.01% and post-operative dislocation within 3 months in another patient. There were 64% excellent results, 28% good results and 8% fair results. No poor results were found in the study. Elderly neglected patients with displaced fracture of neck femur are able to ambulate early after Cemented bipolar hemi arthroplasty. The complication rate is very low and pre injury functional status is restored in majority of patients e were 64% excellent results, 28% good results and 8% fair results. No poor results were found in the study.[12]

CONCLUSION

Hemiarthroplasty using Uncemented Bipolar prosthesis for fractures of the femoral neck in satisfactory outcome and more rapid return to unassisted activity.

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