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Original Research

Comparative study of anterolateral and posterior surgical approach for cemented hemi-arthroplasty in fracture of neck of femur

Ravi Ranjan Singh[1], Shivam Anand[2], Bharat Singh[3]

[1]Senior Resident, Department of Orthopaedics, Nalanda Medical College and Hospital, Patna Bihar
[2]Senior Resident, Department of Orthopaedics, Nalanda Medical College and Hospital,, Patna Bihar
[3]Professor, Department of Orthopaedics, Nalanda Medical College and Hospital, Patna Bihar

ABSTRACT:
Background: Hip fractures in the elderly represent a major public health concern. Surgical approaches to the hip for hip hemi-arthroplasty can be divided into three main categories: lateral approaches (LA), posterior approaches (PA) and anterior approaches (AA). Hence; the present study was undertaken for assessing and comparing the efficacy of anterolateral and posterior surgical approach for cemented hemi-arthroplasty in fracture of neck of femur. **Materials & methods:** A total of 40 patients with fracture of femur were enrolled in the present study. Demographic data of all the patients was obtained and clinical examination was done. Pre-operative radiographs were taken and extent and severity of fracture was recorded. All the patients were broadly divided into two study groups as follows: Group A: Patients treated by hemi-arthroplasty by anterolateral surgical approach, and Group B: Patients treated by hemi-arthroplasty by posterior surgical approach. After treatment, follow-up was done and clinico-radiographic examination was carried out. Follow-up examination included analysis of mobility and pain. Harris hip score was also evaluated on one year follow-up. **Results:** Pain was present in 15 percent of the patients of group A and 10 percent of the patients of group B. Non-significant results were obtained while comparing the incidence of postoperative pain of follow-up in between the two study groups. Also, non-significant results were obtained while comparing the need for mobility in between the two study groups. Mean Harris hip score on follow up among patients of group A and group B was found to be 76.2 and 78.1 respectively. While analyzing statistically, non-significant results were obtained. **Conclusion:** Both the surgical approaches can be used with equal efficacy among patients with femur neck fractures.
Key words: Surgical approach, Hemi-arthroplasty.

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Corresponding Author: Dr. Shivam Anand, Senior Resident, Department of Orthopaedics, Nalanda Medical College and Hospital, Patna Bihar

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INTRODUCTION

Hip fractures in the elderly represent a major public health concern. The management of hip fractures is based on the location of the fracture: the two main categories being intra and extra-capsular fracture. Intra-capsular fractures comprise around 60% of all hip fractures, with up to 80% of these being displaced. Fracture displacement increases the risk of disruption to the femoral head blood supply, and so, is associated with increased rates of osteo-necrosis of femoral head, non-union, delayed union and failure of fracture fixation procedur.[1- 4] Surgical approaches to the hip for hip hemi-arthroplasty can be divided into three main categories: lateral approaches (LA), posterior approaches (PA) and anterior approaches (AA). LAs commonly involve (partial or complete) division or retraction of the hip abductor muscles (gluteus medius and minimus) to enable access to the hip capsule. PAs commonly involve a trans-gluteus-maximus approach, followed by division of the tendons of the short external rotators, to enable access to the hip joint. AAs commonly involve use the inter-nervous plane

between the femoral and the superior gluteal nerves (the superficial interval between sartorius and tensor fasciae latae; and the deep interval between rectus femoris and gluteus medius) to enable access to the anterior hip capsule.[5- 9] Hence; the present study was undertaken for assessing and comparing the efficacy of anterolateral and posterior surgical approach for cemented hemi-arthroplasty in fracture of neck of femur.

MATERIALS & METHODS

The present study was conducted between Dec 2018 to may 2020 in the department of orthopedics, Nalanda Medical College and Hospital,, Patna Bihar, for assessing and comparing the efficacy of anterolateral and posterior surgical approach for cemented hemi-arthroplasty in fracture of neck of femur. A total of 40 patients with fracture of femur were enrolled in the present study. Demographic data of all the patients was obtained and clinical examination was done. Pre-operative radiographs were taken and extent and severity of fracture was recorded. All the patients were broadly divided into two study groups as follows:

Group A: Patients treated by hemi-arthroplasty by anterolateral surgical approach, and

Group B: Patients treated by hemi-arthroplasty by posterior surgical approach

After treatment, follow-up was done and clinico-radiographic examination was carried out. Follow-up examination included analysis of mobility and pain. Harris hip score was also evaluated on one year follow-up. All the results were recorded in Microsoft excel sheet and were analyzed by SPSS software.

RESULTS

Mean age of the patients of group A and group B was 59.2 years and 58.6 years respectively. 60 percent of the patients each of both the study groups belonged to the age group of 50 to 60 years. There was male predominance seen in present study. Pain was present in 15 percent of the patients of group A and 10 percent of the patients of group B. Non-significant results were obtained while comparing the incidence of postoperative pain of follow-up in between the two study groups. Also, non-significant results were obtained while comparing the need for mobility in between the two study groups. Mean Harris hip score on follow up among patients of group A and group B was found to be 76.2 and 78.1 respectively. While analyzing statistically, non-significant results were obtained.

Graph 1: Age and gender-wise distribution

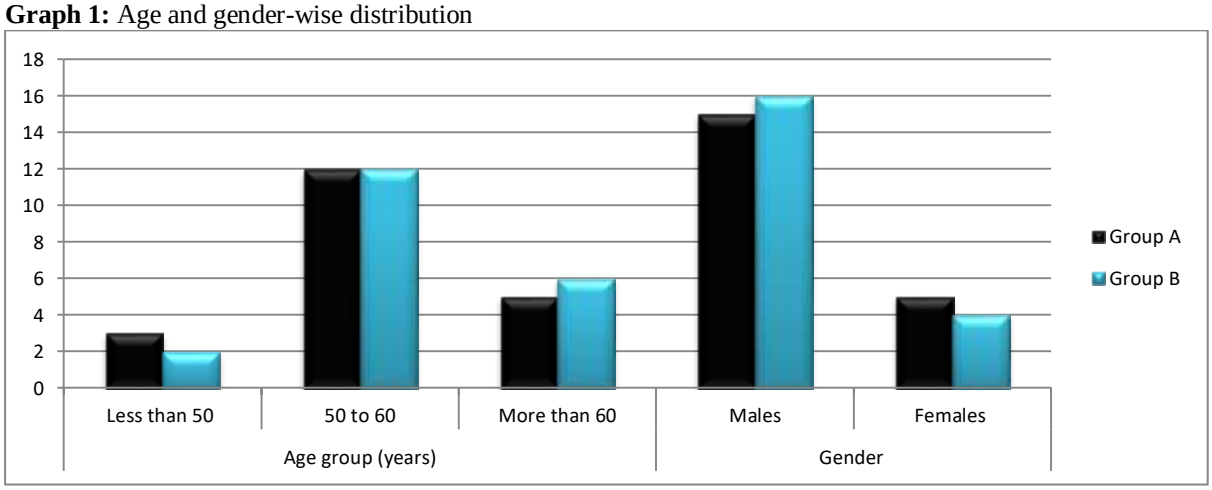

Table 1: Comparison of follow-up variables

Parameter		Group A (n)	Group B (n)	p- value
Need for mobility aid	Mobile without aid	4	5	0.12
	Mobile with aid	16	15	
Pain	Present	3	2	0.46
	Absent	17	18	
Complications	Present	2	2	-
	Absent	18	18	

Table 2: Comparison of Harris hip score on one year follow-up

Harris hip score	Group A	Group B
Mean	76.2	78.1
SD	8.6	6.1
p- value	0.33	

DISCUSSION

Intracapsular fractures of the proximal femur form a major share of fractures in the elderly. Osteoporosis, co-morbidities, increased incidence of trivial trauma increases the incidence and complicates the treatment of these fractures. This high incidence is due to weak bones and increased incidence of trivial trauma. 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.[8-10]

In the present study, mean age of the patients of group A and group B was 59.2 years and 58.6 years respectively. There was male predominance seen in present study. Pain was present in 15 percent of the patients of group A and 10 percent of the patients of group B. Non-significant results were obtained while comparing the incidence of postoperative pain of follow-up in between the two study groups. Mukka S et al compared the efficacy of Direct lateral vs posterolateral approach to hemiarthroplasty for femoral neck fractures. They enrolled 185 hips (183 patients, 128 women, median age 84 years) with a displaced FNF. Subjects were assigned to treatment using DL (n = 102) or PL approach (n = 83) with a hemiarthroplasty (HA). Functional outcome was assessed by Harris Hip Score (HHS), Western Ontario and McMaster Universities Arthritis (WOMAC) index, pain numeric rating scale (PNRS) for pain, mortality and hip complications. Patients were followed-up after 1 year. The HHS was 71 (SD 18) in the DL group and 72 (SD 17) in the PL group (P = 0.59). We found no difference in WOMAC, PNRS and mortality. Seven patients (6.9%) in the DL group and 11 patients (13.3%) in the PL group had undergone a major reoperation. Patients treated with HA for FNF using either the DL or PL approaches had comparable functional outcome after 1 year.[11]

In the present study, non-significant results were obtained while comparing the need for mobility in between the two study groups. Mean Harris hip score on follow up among patients of group A and group B was found to be 76.2 and 78.1 respectively. While analyzing statistically, non-significant results were obtained. Fullam J et al summarized the literature pertaining to the comparison of common surgical approaches to the hip for hemiarthroplasty. Using systematic methods we searched for studies that directly compared the DLA and PA. Studies reporting the following outcomes were considered; dislocation, mortality, pain, activities of daily living, functionality, health-related quality of life, length of stay, surgeon assessment of difficulty, and adverse events. MEDLINE, EMBASE and The Cochrane Library were searched. A total of 13 studies were retrieved: 12 observational studies and 1 randomized trial. The majority of studies were based at single sites. Larger observational studies using multi-site and national registry data have emerged in recent years. Reporting of technique and outcomes is inconsistent. A trend for higher rates of dislocation using the PA was observed and eight studies recommended the use of the DLA over the PA. The authors demonstrated that the existing evidence is highly heterogeneous in nature and not of a sufficient quality to inform practice recommendations.[12]

CONCLUSION

From the above results, the authors concluded that both the surgical approaches can be used with equal efficacy among patients with femur neck fractures.

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