

To Study Outcome of Various Surgical Methods in Fracture Neck of Femur in Elderly Patients Over 60 Years of Age

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ABSTRACT

Background: Femoral neck fractures in the elderly are very frequent and osteoporosis along with age are major predisposing factors, it represents a great health care problem which requires the best and cost effective treatment specially in a country like India where most of people coming to medical college are from poor and low socioeconomic status and farming is one of the major profession. The present study was conducted to compare and review two major modalities of surgical treatment with cancellous screw fixation (3 cancellous 6.5 mm partial threaded screw used in each case) and hemiarthroplasty (only bipolar). Approximately 10 to 20% of patients die within one year of a fracture neck of femur (mostly over 75 years of age) due to lack of proper treatment and ignorance. The purpose of this review is to compare the above mentioned surgical techniques with respect to movement of hip, complications and functional outcome.

Methodology: The present study was conducted by department of Orthopaedics, Varun Arjun Medical College, Banthara Shahjahanpur. It was a prospective study among Patients admitted to orthopaedics department. The study was conducted from 1st July 2016 to 30th June, 2017. Total 62 patients were selected with criteria as fracture duration should be within 3 weeks of injury, and having viable head of femur. 39 patients have undergone cancellous screw fixation. 23 patients have under gone hemiarthroplasty.

Results: The age group was in the range of 60 – 86 years, with the mean age of 66.5±6.50 years in cancellous screw fixation group and 77.51±7.49 years in hemiarthroplasty group. 41 cases were female and 21 are male but in both the groups the fracture is not more than 3 weeks old with viable head. There was good post-operative range of movement both in Cancellous screw fixation group and the HRA Group as in Indian circumstances squatting is very common which is not possible after HRA so in most cases cancellous screw fixation is preferred by us as and where possible. Excellent to good /fair results were seen in 83% of patient in cancellous group fixation group and 74% of patients in HRA group.

Keywords: Cancellous screw, Prosthesis, Fixation, Neck Femur

INTRODUCTION

Fracture of neck of femur is one of the most common injuries sustained predominantly in patients over sixty years of age. Treatment of older patients with intracapsular femoral neck fractures largely depends on local conditions, patient

profiles, personal preferences and training of the surgeon. This is merely based on personal believes determining the management of patients than evidence from the literature. [1,2] They are more common in women who are osteoporotic; trivial fall being the most common mechanism of

injury. [3] There are 2 group of surgeons one believe that cancellous screw fixation is better while other prefer Hence, the optimal treatment of this patient population is still under debate. [4] The goal of treatment of a fracture neck of femur is the restoration of the patient to his or her pre-injury status as early as possible. This can be done only by internal fixation of these fractures to facilitate nursing care, decrease hospitalization and reduce complications of prolonged recumbency. [5]

The type of implant used has an important influence on complications while with cancellous screw if the screw insertion is not proper they will cut through the upper or lower cortex and sometimes there is collapse of femur head and the screw penetrates the head of femur. while in HRA there are chances of loosening and migration and if the size is not proper there is persistent complaint on pain while walking Both in unipolar and bipolar hemiarthroplasty (here in our study we only used bipolar so later on we can change in to THR if required) increase biomechanical stresses on the acetabular bone and that way cause migration of the head with consecutive destruction of the acetabulum. [6]

The present study was conducted with the objectives-

- To compare surgical treatment of fracture of neck femur with the CSF (cancellous screw fixation) and HRA, with respect to movement of hip complications after surgery, and functional outcome.

METHODOLOGY

The present study was conducted by department of Orthopaedics, Varun Arjun Medical College, Banthara Shahjahanpur. It was a prospective study among Patients admitted to orthopaedics department. The study was conducted from 1st July, 2016 to 30th June, 2017.

Patients having undisplaced or minimal displacement fracture were treated

with cancellous screw fixation while displaced and comminuted fractures are treated with HRA hence age is no criteria for the selection of surgical procedure and in all the case it is thoroughly checked that the femur head is viable. Necessary radiological investigations and haematology investigations was done on admission. The immediate post-operative x-rays were evaluated. All the cases were again evaluated through clinical and radiological methods at 4 weeks, 8 weeks, 3 months and 5 months for any morbidity and mortality.

Descriptive and comparative study of functional outcome following surgical management of fracture neck of femur with either CSF or HRA.

A sample size of 62 was selected using purposive sampling technique. 39 patients have undergone CSF. 23 patients have undergone HRA.

All patients above 60 years of age within 3 weeks of injury fracture neck of femur with viable head and who were able to walk prior to the fracture was included in the study. Patient with pathological fracture, and unstable medical illness were excluded from the studies.

The youngest patient in the series was aged 61 years and the oldest was 86 years of age Anteroposterior and lateral radiographs of the affected hip were taken. The patients were then put on skin traction over a Thomas knee splint till waiting for the surgery. Their general conditions were taken care of along with any blood transfusion preoperatively if Hb is low. Adequate arrangement of blood transfusion was done during surgery. Patients were taken up for surgery as early as possible according to their turn on next elective OT day.

All patients received injectable broad spectrum antibiotics given two hours before surgery and continued post operatively for 3 to 4 days. After that Oral antibiotics were continued for next 2 to 3 days. Analgesic was initially given in IV or IM route for few days post- operatively and then orally for next 7-10 days.

There was well defined postoperative patient protocol; all patients were given post operative antibiotics for 24 to 48 hours and prophylaxis of deep venous thrombosis. Patients were allowed to sit up in bed on the second to third post-operative day. Static quadriceps exercises were started on the second and third post-operative day. Sutures were removed after 10 to 12 days. Patients were mobilized non-weight bearing as soon as the pain or general condition improved in HRA cases weight bearing was started after suture removal while it was delayed up to 3 weeks in cancellous screw fixation and was commenced depending upon the stability of the fracture and adequacy of fixation, in some patients with unstable or inadequate fixation with cancellous screw fixation it

was delayed for slightly longer varying from case to case.

All the patients were followed up at 6 weeks 3 months and 5 months intervals for a period of 6 months and check x-rays were taken to assess fracture union in case of cancellous screw fixation and other complications while for other signs like migration or loosening in HRA group.

RESULTS

The present study was conducted by the department of orthopaedics, Varun Arjun, Medical College, Shahjahanpur for a period of one year. Ethical clearance was taken from the institutional Ethical committee. A total of 62 cases were taken for study purpose.

Table-1: Distribution of study subjects according to age

Age (Years)	Method of Fixation		Total
	Cancellous (6.5mm screw fixation (CSF))	Hemi arthroplasty (HRA)	
61 – 75	32(82.05%)	8(34.78%)	40(64.51%)
75 – 86	7(17.95%)	15(65.22%)	22 (35.49%)
Total	39(100%)	23(100%)	62(100.0%)

Table-1 shows distribution of study subjects according to age. The age group was in the range of 61-86 years, with the mean age of 66.52±6.51 years in cancellous screw fixation group and 77.51±7.48 years

in hemi arthroplasty group. It clearly shows that displacement and comminution of fracture neck of femur is more in age group above than 75 years that's why majority of HRA cases are above 75 years of age.

Table-2: Distribution of study subjects according to sex

Sex(M/F)	Method of Fixation		Total
	Cancellous (6.5mm screw fixation (CSF))	Hemi arthroplasty (HRA)	
Female	25(64.10%)	16(69.56%)	41(66.12%)
Male	14(35.90%)	07(30.44%)	21(33.88%)
Total	39(100%)	23(100%)	62(100.0%)

Table-2 shows distribution of study subjects according to sex. More cases were female in both the groups.

Table-3: Distribution of cases according to post-operative complications

complications	Method of Fixation		Total
	Cancellous (6.5mm screw fixation (CSF))	Hemi arthroplasty (HRA)	
Wound infection(superficial)	01(01.61%)	07(11.29%)	08(12.9%)
Screw cut out/ screw back out	02(03.22%)	00(0%)	02(03.22%)
Loosning and migration in prosthesis	00(0%)	06(09.67%)	06(09.67%)
Pain in hip joint during walking	02(03.22%)	09 (14.51%)	11(17.74%)

Table-3 shows distribution of cases according to post-operative complications. Screw cut out/back out seen in 03.22% in cancellous screw fixation group while there was 09.67% migration and loosening in

HRA group. Wound infection and pain in hip while walking was more common in HRA group. Additional problems associated with bipolar hemiarthroplasty are migration

of the bipolar head, as well as stem migration [7]

Table-4: Distribution of cases according to functional outcome

Functional Outcome	Method of Fixation		Total
	CSF	HRA	
Excellent	17 (43.59%)	08 (34.78%)	25 (40.32%)
Fair to good	15 (38.47%)	09 (39.13%)	24 (38.71%)
Poor	07 (17.94%)	06 (26.09%)	13 (20.97%)
Total	39 (100%)	23 (100%)	62 (100%)

Table 4 shows distribution of cases according to functional outcome. Excellent to good/fair results were seen in 82% of patient in cancellous screw fixation group and 74% of patients in HRA group.

DISCUSSION

The aim of the study was to compare the functional outcome of patient with fracture neck of femur surgically treated by different fixation devices, the cancellous screw fixation and the hemiarthroplasty. Study was conducted on 62 patients having fracture neck of femur (within 3 weeks of injury and viable head) out of which 39 was treated with cancellous screw fixation and 23 with HRA.

In the present study there were 41 females and 21 males showing females are much more prone to injuries around hip as compared to males due to osteoporosis. In our study it is around 66% females correlating the studies done by Dahl and colleagues [8] in their study 65% of patients were females having more osteoporosis due to menopause.

All the cases ranged from 61 to 86 years of age. Singh index was not taken as the measure of osteoporosis as it has been questioned by many authors Kootet. [9] White and colleagues [5] did a study of rate of mortality for elderly patients after fracture of the hip in the 1980's and they concluded that the average age for trochanteric fractures is 75.4 years. The average age in our study nearly correlates to that of White and his colleagues. [5]

Complications in this study were wound infection, screw cut out/ back out and migration or loosening of prosthesis and with pain in hip joint during walking which

is a major concern in HRA group The average range of motion the hip joint was good in both group sat 6 months of follow up. But in Indian circumstances as most of the patient belong to lower income strata and socioeconomic status and mostly are farmers and as females do most of their work with sitting on floor and males are doing farming which is not possible while after HRA so we prefer to do cancellous screw fixation in most of the patients.

The overall functional outcome of patient treated by cancellous screw was better compared to HRA in our particular study. And this becomes also more important in Indian circumstances. However in displaced and comminuted fractures of neck femur only HRA is chosen as the preferred method.

CONCLUSION

We conclude that in undisplaced or minimally displaced fracture neck of femur not more than 3 weeks old and a viable head we prefer to do cancellous screw fixation with age no bar as not only it has better results than HRA but it also allows the patient to squat which is of utmost importance in Indian perspective and has a distinct advantage but in cases where there is significant displacement or comminution we had to do HRA as it has better results there. So, in Indian conditions and circumstances by our study we will prefer cancellous screw fixation wherever it is possible to do more in comparison to HRA.

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