



CASE STUDY

EARLY FUNCTIONAL OUTCOME OF TOTAL HIP REPLACEMENT IN DISPLACED FEMORAL NECK FRACTURES IN ELDERLY PATIENTS IN A TERTIARY HEALTH CARE CENTRE

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ABSTRACT

Introduction: During the past 10 years, there has been a worldwide effort in all medical fields to base clinical health care decisions on available evidence as described by thorough reviews of the literature. Hip fractures pose a significant health care problem worldwide, with an annual incidence of approximately 1.7 million. Globally, the mean age of the population is increasing, and the number of hip fractures is expected to triple in the next 50 years. One-year mortality rates currently range from 14% to 36%, and care for these patients represents a major global economic burden. Purpose of this study was to evaluate the clinical and functional outcomes of Total Hip Replacement using Modified Harris Hip score. The incidence of femoral neck was more in 7th decade of life than in 8th and 9th decade with males outnumbering females.

Methods: The study was carried out on 40 patients more than 60 years old with displaced intracapsular fractures of femoral neck in whom Total Hip Replacement was done by the Department of Orthopedics, Government Medical College and Hospital Jammu from August 2013 to August 2015. This was a prospective study with an average follow up of 13.75 months.

Results: The average post operative Harris Hip Score was 86.45(range 77-93). 95% of patients achieved good to excellent result.

Conclusion: Our study suggests that THR can provide satisfactory clinical and radiographic outcomes after an intermediate duration of follow-up for displaced femoral neck fractures in patients more than 60 years.

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INTRODUCTION

Hip fractures are common and comprise about 20% of the operative workload of an orthopaedic trauma unit. Intracapsular femoral neck fractures account for about 50% of all hip fractures. The lifetime risk of sustaining a hip fracture is high and lies within the range of 40% to 50% in women and 13% to 22% in men. Life expectancy is increasing worldwide, and these demographic changes can be expected to cause the number of hip fractures occurring worldwide to increase from 1.66 million in 1990 to 6.26 million in 2050. The estimated annual cost of treating these fractures is enormous and a

significant burden to any healthcare system. One year mortality for hip fractures ranges from 14% to 36%, which is significant, considering the prevalence of such injuries. Management of hip fractures is based on individual patient factors such as pre-injury ambulatory status, age, cognitive function, and co-morbidities, and on fracture factors including fracture type and the degree of displacement. Treatment options include nonsurgical management, percutaneous fixation, closed reduction and internal fixation, open reduction and internal fixation (ORIF), and arthroplasty (i.e. hemiarthroplasty, total hip replacement). Despite the variety of treatment options available, the question remains: What is the best treatment of intracapsular hip fractures in elderly patients? Hip fractures are probably most feared and devastating consequence of osteoporosis in elderly population and a major

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challenge for healthcare and society. There are more and more data indicating that ambulatory elderly patients with a displaced fracture of femoral neck should be treated with primary hip arthroplasty, while there is still controversy regarding choice of arthroplasty. Total hip replacement was not a popular treatment choice for displaced femoral neck fractures in the past because early reports detailed high rates of loosening and dislocation. Nonetheless, there is now an accumulating body of evidence that supports use of THA in suitable patients, and some trials have shown more favourable outcome than other procedures.

MATERIALS AND METHODS

This prospective study was performed in the Department of Orthopaedics, GMC Jammu from August 2013 to July 2015. This study comprised of 40 cases. All the patients who presented in the department with intracapsular fractures of femoral neck were classified according to Gardens classification and those who met the eligibility criteria were included in the study.

Inclusion criteria

- 1) Age > 60 yrs.
- 2) Displaced fractures (Type III and Type IV).
- 3) Pre-injury independent walking capability with no cognitive impairment.

Exclusion criteria

- 1) Undisplaced fractures (Gardens type I and type II).
- 2) Patients with pathological fractures, multiple fractures.
- 3) Pre-injury non-ambulatory patients.
- 4) Patients with cognitive impairment.

METHODOLOGY

Patients were assessed for fitness for surgery by an anaesthetist. The patients consent for participation in study was obtained. Detailed clinical and radiological examination with other relevant investigations were carried out in all the patients.

Prophylactic antibiotics: All patients were given 1.5 g cefuroxime intravenously ½ hour before surgery. **SURGICAL APPROACH:** All patients were operated by exposing hip by direct lateral approach described by Hardinge.

Operative technique: Femoral neck was cut so that 3/4th of inch of calcar remains. The acetabulum was unpacked, thoroughly cleaned and reamed with graded reamers to remove cartilage. The acetabulum was irrigated with saline and size was determined intraoperatively by trial insertion. The acetabulum was then packed to achieve haemostasis. The femoral canal was reamed by using graded broaches for the prosthesis and size determined. Canal was then packed with gauze. Cement was prepared and applied in doughy form in prepared acetabulum and acetabular component applied with the available instrumentation in 45 degree abduction and 15 degree anteversion till cement dried up. After removing

femoral packing trial reduction was done using femoral component. Then bone cement was introduced, stem inserted and held in position till cement dried up. Then reduction was done and stability checked. Extra cement was nibbled away. Then wound was closed in layers over drain.

Evaluation of results

Results were evaluated using Modified Harris Hip score chart as shown below;

Name _____ Date _____

MODIFIED HARRIS HIP SCORE

Please answer the following questions as they pertain to your hip:

Pain:

- None/Able to ignore it
 Slight, occasional, no compromise in activity
 Mild, no effect on ordinary activity, pain after usual activity, use aspirin/ibuprofen/Tylenol
 Moderate, tolerable, makes concessions, occasional narcotic
 Marked, serious limitations
 Totally disabled

Function: Gait

Limp

- None
 Slight
 Moderate
 Severe
 Unable to walk

Support

- None
 Cane for long walks
 Cane all the time
 Crutch
 2 canes
 2 crutches
 Unable to walk

Distance Walked

- Unlimited
 6 blocks
 2-3 blocks
 Indoors only
 Bed and chair

Functional Activities

Stairs

- Can go up/down normally
 Can go up/down normally with banister
 Any method
 Unable

Socks/Shoes

- With ease
 With difficulty
 Unable

Sitting

- Any chair, 1 hour
 High chair, ½ hour
 Unable to sit, ½ hour, any chair

Public Transportation

- Able to enter public transportation
 Unable to use public transportation (such as bus, or airport transportation)

RESULTS

40 patients were included in this study.

Table. Age distribution

Age group in years	No of cases	Percentage
60-70	22	55%
70-80	18	45%
80-90	0	0%
GREATER THAN 90	0	0%
TOTAL	40	100%

Sex distribution

Sex	No of cases	Percentage
MALE	26	65%
FEMALE	14	35%
TOTAL	40	100%

Table. Side involved

Side	No of cases	Percentage
Left	22	55%
Right	18	45%
Total	40	100%

Type of fracture

TYPE	No of Cases	Percentage
Garden III	18	45%
Garden IV	22	55%
Total	40	100%

Table. Period of follow up

Duration(in months)	No of Cases	Percentage
4-6	0	0
7-9	4	10%
10-12	12	30%
13-15	10	25%
16-18	10	25%
19-21	4	10%
Total	40	100%

The average follow up was 13.75 months (range 7- 19 months).

Table. Grading of pain

Grade	Points(44 max)	No of cases	Percentage
None	44	10	25%
Slight	40	28	70%
Mild	30	2	5%
Moderate	0	0	0
Marked	0	0	0
Totally Disabled	0	0	0
Total	40	40	100%

The average pain score was 40.5(range 30-44). 95% of the cases had no or slight pain.

Table. Function

Points	No of Cases	Percentage
47-37	24	60%
36-26	16	40%
25-15	0	0
Below15	0	0
Total	20	100%

The mean functional score achieved was 37.45(31-43).

Table. Range of motion

ROM(in degrees)	Points	No of Cases	Percentage
300-210	5	12	30%
209-160	4	22	65%
159-100	3	6	15%
99-60	2	0	0
59-30	1	0	0
29-0	0	0	0
Total	40	40	100%

The range of motion was calculated by addition of Flexion, Abduction, Adduction, External rotation and Internal rotation.

There were no fixed deformities in any patient. The mean range of motion score was 4.15(range3-5).

Table. Grading of result (Modified Harris Hip Score)

Result	Points	No of Cases	Percentage
Excellent	90-100	6	15%
Good	80-89	32	80%
Fair	70-79	2	5%
Poor	<70	0	0
Total		40	100%

The average Harris Hip Score was 86.45(range 77-93). 95% of patients achieved good to excellent result.

Table. Complications

Complications	No of Cases	Percentage
Cement Herniation	2	5%
Hypotention	4	10%
Foot Drop	-	-
Dislocation of prosthesis	-	-
Superficial wound infection	2	5%
DVT	-	-
Pressure Sores	2	5%

**Figure 1. Garden Type IV fracture of femoral neck on left side****Figure 2. THR done on left side**

Figure 1 and figure 2 showing preoperative and postoperative radiographs of 65 year old female patient.

DISCUSSION

Fracture neck of femur and its complications continue to be unsolved problem and still pose a major challenge to an orthopaedic surgeon. In spite of many technical advancements controversy still exists in ideal treatment of fracture neck of femur in elderly. In view of this conflicting background this short term study was taken up in 40 elderly patients. In our study, 22 cases were in age group of 60-70 yrs and 18 cases were in age group of 70-80 yrs. The mean age was 67.75 yrs. There were 26 male cases (65%) and 14 female cases (35%). This shows incidence of femoral neck fractures is more in males. Left side (55%) was involved more than right side (45%). 12 patients (30%) had subcapital fractures and 28 (70%) had transcervical fractures. 22 (55%) patients were garden type IV and 18 (45%) patients had Type III fracture. Predominant mode of injury was fall on ground (slip) 90%. Size of femoral head ranged from 39-53 and the most common size was 43mm. Four patients were followed up for 7-9 months, 12 patients were followed up for 10-12 months and 12 patients were followed for more than 1 year. The average blood loss was 432.5ml. The duration of surgery was 81 min (range 65-105min). 38(95%) patients had no or minimal pain, 2(5%) patients had mild pain. The average pain score was 40.5(range 30-44). The mean functional score achieved was 37.45(31-43). 24(60%) patients had excellent functional outcome. 12 patients achieved excellent range of motion. The average Harris hip score was 86.45. 95% patients achieved good to excellent result.

There were no major complications except one patient who developed severe hypotension postoperatively requiring intensive care for a day and was managed with crystalloids and blood transfusions. There was no mortality. Superficial wound infection occurred in two cases; both of them cleared with dressing and appropriate antibiotic therapy after culture and antibiotic sensitivity. Cement herniation was seen in two cases which came to notice post operatively. Patients were asymptomatic so nothing was done. Pressure sores were noticed in two cases and were managed by local dressing and water mattress. The techniques currently available, including internal fixation, unipolar arthroplasty, bipolar arthroplasty and total hip arthroplasty have different outcomes and differing risk profiles. The good long-term results of THR are confirmed in a recent study at 13 years in the study by Skinner et al. comparing internal fixation, hemiarthroplasty and THR, in which the revision rate was 33%, 24% and 7%, respectively. Hip function, according to the Harris hip score, was best in the THR group and worst in the hemiarthroplasty group. Parker et al reported on 455 patients randomized to either internal fixation or hemiarthroplasty and found no differences in outcomes for pain, mobility or mortality at 3-year follow-up. However, the authors did note a lower rate of revision in the hemiarthroplasty group (5%) than in the group treated with internal fixation (40%). A meta analysis by Lu-Yao et al showed no difference in mortality in patients treated with internal fixation versus hemiarthroplasty, except for a non-statistically significant increase in the arthroplasty group in the first month (relative risk, 1.4). Nonunion developed in 33% of patients, and osteonecrosis in 16%, with reoperation rates for these complications ranging from 20% to 36%. In the

arthroplasty group, the rates of reoperation for any cause ranged from 6% to 18%. The ideal treatment of displaced intracapsular fractures is not straightforward. The current data indicate that internal fixation of femoral neck fractures is associated with a greater number of significant problems (e.g osteonecrosis, nonunion, revision) than in THR. These risks outweigh the benefits of slightly shorter surgical times and marginally decreased blood loss. With similar mortality and pain scores, total hip arthroplasty appears to be the better option for displaced femoral neck fractures.

Conclusion

- The incidence of femoral neck was more in 7th decade of life than in 8th and 9th decade with males outnumbering females.
- Left side was involved more than right.
- Minor trauma was major causative factor.
- Garden type IV fractures were more than type III fractures.
- Our study suggests that THR can provide satisfactory clinical and radiographic outcomes after an intermediate duration of follow-up for displaced femoral neck fractures in patients more than 60 years.

We believe that the displaced fracture of the femoral neck merits a more patient-related rather than diagnosis related approach. In order to achieve this, we need randomised, controlled clinical trials in which the outcome analysis also includes the patient's perspective of his or her quality of life.

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