

Results of Hemi Arthroplasty in Fracture Neck of Femur in Elderly Person, CMBCB Experience.

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Abstract

Intracapsular femoral neck fracture is a common injury in elderly person. The primary goal of treatment is to return the patient to him or her pre-fracture functional status. The surgical treatment is the treatment of choice, hip replacement arthroplasty (hemi or total) is a viable treatment option. Thirty elderly patients (age 50-80 years) with a displaced intracapsular femoral neck fracture were under treatment over a five year period (January 2010 to December 2015). All of them underwent hemiarthroplasty either unipolar or bipolar, after appropriate medical and anesthetic fitness. The patients were reevaluated at six weeks, at six months postoperative interval and assessed using Harris hip score (HHS) and visual analogue scale (vas) for evaluation of outcome. The mean age of patients was 64.5 years and male female ratio was 43.3% - 56.7%. The mean HHS score was 85.3 by the end of the 6 months. The mean score on VAS scale was 60mm (moderate) at 2 weeks, 40mm (mild) at six weeks and 4mm (mu) at 6 months follow up visit. No significant complications were observed except hip pain. No patients needed revision surgery. Hemiarthroplasty is the treatment of choice in elderly population with displaced femoral neck fracture (Garden type III or IV) ; provides early ambulation, good functional outcome, pain free joint with minimal complications without the need for revision surgery.

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Key Words: Fracture neck femur, elderly patient, hemiarthroplasty, harris hip score, visual analogue score.

Introduction

The femoral neck is the commonest site of fractures in the elderly¹. Fall is the leading cause of injuries and hospital admissions in the elderly population². Femoral neck fractures account for over 90% of hip fractures, occurring in approximately equal proportion³. Proximal femoral neck fractures fall into two groups: Extracapsular and intracapsular. Extracapsular one may be treated by closed reduction and internal fixation by dynamic hip screw (DHS) Most patients presently with intracapsular fractured neck of femur are elderly and osteoporotic⁴. Femoral neck fractures have been considered 'unsolvable fractures' in the older era of orthopaedics⁵. Femoral neck fracture is a common fracture in senior patients, which can decrease mobility and increase mortality⁶.

There are many options for these fractures including internal fixation, hemiarthroplasty

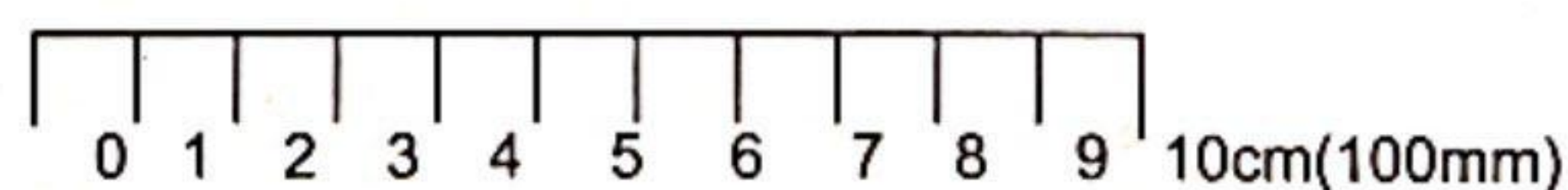
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and total hip arthroplasty⁷. Among these procedures, hemiarthroplasty has become the most preferred treatment option⁸. There are two types of options, including unipolar hemiarthroplasty (UH) and bipolar hemiarthroplasty (BH), when using a hemiarthroplasty. Though nonoperative treatment of these fractures has been documented⁹ there are currently very few indications for the same (terminally ill, bed ridden and non ambulating patients) surgical treatment has been established as the gold standard, open reduction and internal fixation (ORIF) shown to have a high rate of revision surgery due to nonunion and avascular necrosis¹⁰ Hip replacement arthroplasty (partial or total) is emerging as the most viable treatment option¹¹⁻¹⁵. The present study evaluated the functional outcome in addition to surgical outcomes of hemiarthroplasty in fracture neck of femur in these elderly patients.

Methods

This study was conducted in the department of Orthopaedics in Community Based Medical College Bangladesh, Winnerpar, Mymensingh. All Patients above 50 years undergoing hemiarthroplasty for fracture neck of femur during the period of 2010-2015 were under this study. Patients with fracture neck of femur more than one year, unfit for anaesthesia, refusal for consent, associated fractures or polytrauma fractures were excluded from this study. Patient's medical records were reviewed for collecting pre, peri and post operative data. The patients were evaluated preoperatively, at six weeks, at six months postoperatively using harris hip score (HHS) and visual analogues scale (VAS) for outcomes. The HHS was developed for the assessment in the results of hip surgery and was intended to evaluate various hip disabilities and methods of treatment¹⁶ in an adult population. The original version was published 1969. The domains covered are pain, function, deformity and range of motion. The pain domain measures pain severity and its effect on activities and need for pain medication. The function domain consists of

daily activities (stair use, using public transportation, sitting and managing shoes and socks) and gait (Limp, support needed and walking distance). deformity takes into account hip flexion, adduction, internal rotation and extremity length discrepancy. Range of motion measures hip flexion, abduction, external and internal rotation and adduction. The HHS has maximum of 100 points (best possible outcomes) covering pain 44 points, function 47 points, range of motion 5 points and deformity 4 points. Function was sub divided into activities of daily living (14 points) and gait (33) points. The higher the HHS, the less dysfunction. A total score of 70 is considered as poor result. 70-79 is considered fair, 80-89 is good and 90-100 is excellent. Successful result is defined as a post operative increase in harris hip score of >20 points + radiographically stable implant + no additional femoral reconstruction. VAS is a measurement instrument that tries to measure a characteristic or attitude that is believed to range across a continuum of values and can not be easily to directed to measure¹⁷. It is often used in epidemiologic and clinical research to measure the intensity or frequency of various symptoms¹⁸. For example, the amount of pain that a patient feels ranges across a continuum from none to an extreme amount of pain using a ruler, the score is determined by measuring the distance (mm) on the 10 cm line providing a range based on the distribution of pain vas of scores from 0-100. Scores in postsurgical patients who described their postoperative pain intensity as none, mild moderate or severe, the following and points on the pain VAS have been recommended no pain (0-4mm) mild (5-44mm). Moderate (45-74mm) and severe pain (75-100)¹⁹.



Operative procedure: Hip was exposed by southern approach, capsulotomy done by 'H' or inverted 'T' shaped incision. After taking out the head of the femur, size of the prosthesis is selected with the help of the measuring tape (39, 41, 43, 47, 51 sizes). Luckily calcare femori; was present in all of our cases and in

the final step of fixation the stem of Austin moor prosthesis was sunk up to the previously marked point on stem. We use both unipolar or bipolar prosthesis according to patient's need and demand (Fig. 1, Fig. 2 and Fig. 3).

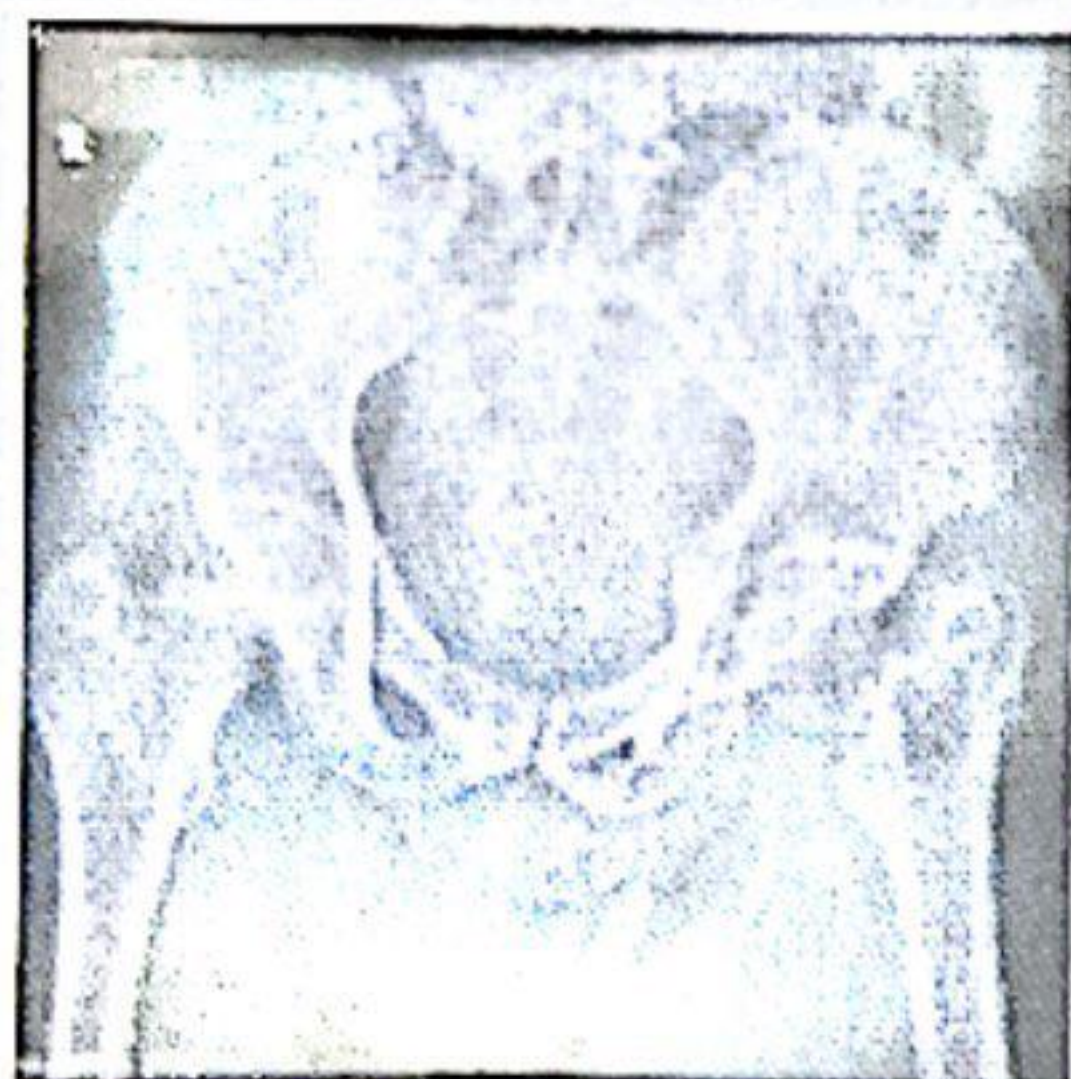


Fig. 1 Fracture Neck of femur

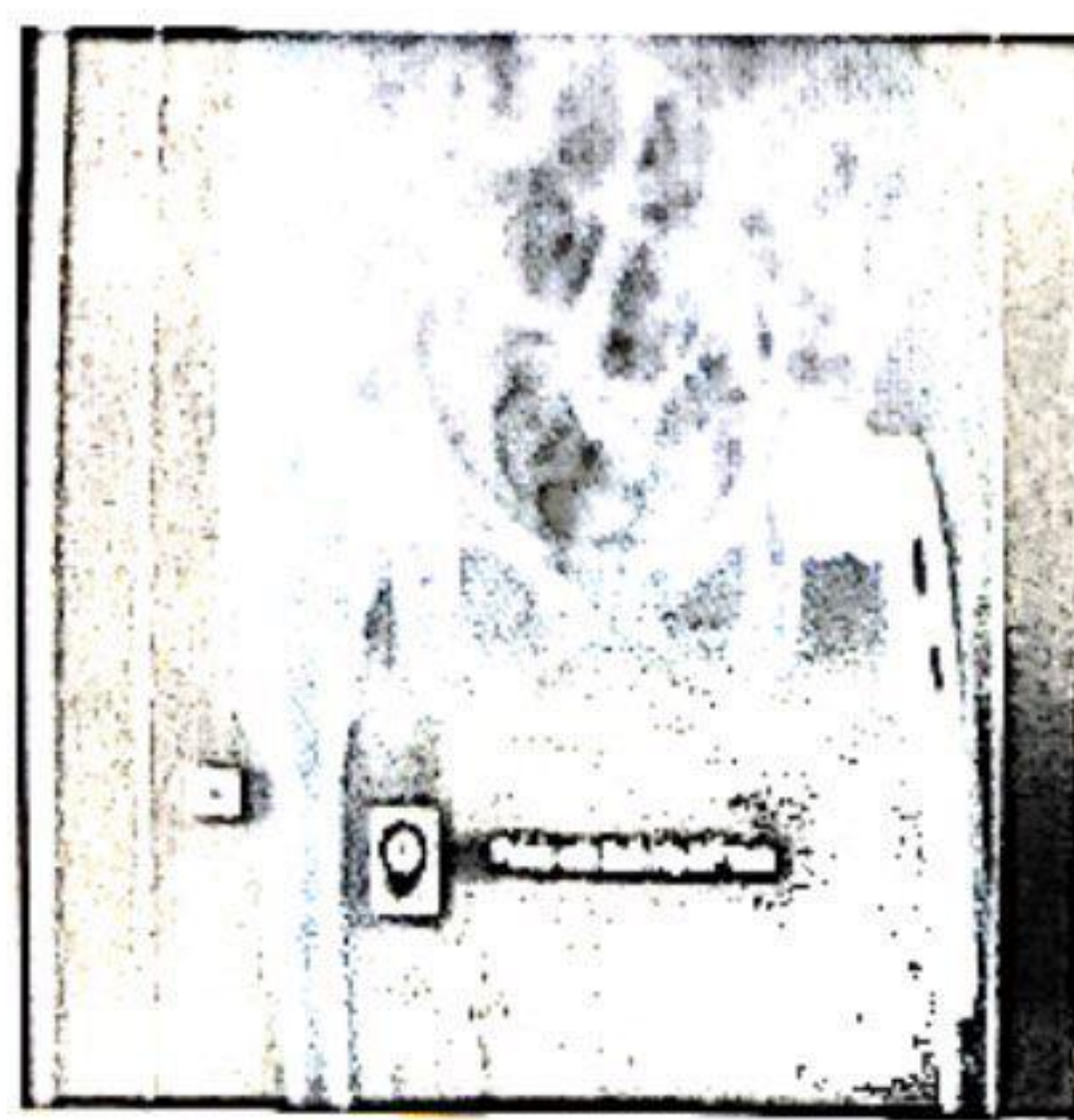


Fig. 2 Unipolar Prosthesis



Fig. 3 Bipolar Prosthesis

Haemostasis was achieved and then the wound was closed in layers over negative suction drain. Physiotherapy was started on the first postoperative day. Patients were allowed to sit on the side of the bed or up right in a chair, moderate flexion of both hips and knees and quadriceps strengthening exercises with a pillow between the legs was allowed. Early gait training with the help of walker was done. Patients were instructed to use only

western style commode for toilet activity. Activities involving squatting and cross legged sitting were restricted for the rest of their life. Two weeks after surgery regular medications for pain were discontinued, sutures removed and the patient was discharged to back home with a walker. The patients were followed up at six weeks and six months after surgery.

Results

Total Number of patients were 30, where 13 were males and 17 were females (Table I). UH was done in 24 patients and BH in 6 (Table II). The HHS score out of 30, excellent 3 (10%) good 21 (70%) and fair 6 (20%). The mean HHS score was 85.3 (good) at 6 months (Table III). VAS scale was 60 mm (moderate) 40mm (mild) and 04mm (no pain) postoperative, at 6 weeks, and at 6 months respectively on followed up visit. No significant complications except one case of deep infection necessitating one case of deep infection necessitating one episode of debridement and three weeks parenteral antibiotics, two instances of thigh pain and two patients developed superficial bed sores (which healed with out sequelae). No H/O dislocation of any patient and no patient required revision surgery.

Table I : Distribution of patients by sex.

	N-30	Percentage (%)
Male	13	43.3%
Female	17	56.7%

Table II : Type of operations done in patients.

Unipolar hemiarthroplasty (UH)	24	80%
Bipolar hemiarthroplasty (BH)	6	30%

Table III : HHS surgical outcome at the end of six months.

Result	N-30	Percentage (%)	Mean HHS
Excellent (90-100)	3	10%	
Good (80-89)	21	70%	85.3
Fair (70-79)	6	20%	
Poor (< 70)	0	00%	

Discussion

Intracapsular displaced (Garden type III & IV) fractures of the neck of femur is usually treated by arthroplasty either hemi (unipolar or bipolar) or total hip replacement. Total hip replacement may be done in some selective cases but in our hospital set up, we treat all the cases by hemi hip arthroplasty. Luckily in all of our cases calcare femori was present and we used austin moor prosthesis. There are no significant difference between BH and UH with regard to operation time, blood loss, blood transfusion, hospital stay, mortality, re-operation, dislocation and complications. BH could not decrease acetabular erosion rate in the long term. However, the close reduction of bipolar head is more difficult than the unipolar prosthesis and BH typically requires open reduction^{20,21}. There was no significant difference in clinical outcomes between BH and UH²². Dipolar implants are more expensive than the unipolar implants^{23,24}. Hence we use unipolar prosthesis more. In our study all the patients under went hemiarthroplasty and the outcomes at the end of 6 months suggests that most of the patients showed good response. Female patients are more than that of male as women are especially at risk, because of a tendency for their bone to become increasingly fragile after the menopause in consequence of generalized osteoporosis²⁵. Postoperatively, breathing exercises and early mobilization are important. Speed of recovery depends largely on how active the patient was before the fracture; after 2-4 months, further improvement is unlikely¹. Hence we follow up the patients up to 6 months. If we want to see acetabular erosion it will take times for few years the domain of HHS can be observed within 6 Months. Walia et al²⁶.

The superiority of total hip replacement in terms of Control of pain, also is highlighted including certain drawbacks of total hip replacement (THR) arthroplasty in elderly patients such as instability, impaired reflexes, cognitive impairment, higher dislocation rates.

In the present study no significant complications were seen in postoperative period Except one case of deep infection necessitating one episode of debridement and three weeks parenteral antibiotics, two instances of thigh pain and two patents developed superficial bed sore (which healed with out sequelae) No H/O dislocation of any patient and no patient required revision surgery. The limitation of present study is the short duration of follow up. There is scope for improvement in results as well as increase in complications with a longer follow up in Community Based medical college hospital, Bangladesh is a private Medical College in Bangladesh. We operated all these cases in our hospital. Number of patients were not satisfactory for a five years period.

We excluded the patents who came with fracture neck of femur after one year, terminally ill patients, bedridden and non ambulatory patients. We also excluded the patients who were unfit for anesthesia & refused operative treatment.

Conclusion

Intracapsular fractures of the proximal femur account a major share of fractures in the elderly. The primary goal of treatment is to return the patients to his or her pre-fracture functional status. Hemi hip arthroplasty is the gold standard surgical treatment opinion for intracapsular displaced femoral neck fracture (Garden type III, IV). The mean HHS score was 85.3 (good). VAS scale was 60mm (moderate) 40mm (mild) and 04mm (No pain) at postoperative, at 6 weeks and at 6 months respectively. Female are more sufferer than male due to senile as well as postmenopausal osteoporosis. There is no significant differences between unipolar and bipolar hemiarthroplasty.

We observed a significant change in HHS and VAS at the end of six months. Good scores are observed in all the patients. Hemiarthroplasty for neck of femur in elderly does provide early ambulation, good

functional outcome, pain free joint with minimal complications without the need for revision surgery.

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