

Management of Avulsion Fracture Tibial Spine by Open Reduction and Endobutton Fixation an Outcome Study

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Abstract Background: Fracture neck of femur are common in elder persons. Reconstruction using uncemented bipolar prosthesis is purpose of study to evaluate functional outcome using Harris Hip Score. Cement causes increased morbidity and mortality in elderly patients, hence uncemented hemiarthroplasty is suggested.

Materials and methods: This is prospective study including thirty patients with neck of femur fractures referred to the department of Orthopaedics, GMC Kota were selected for this study. Patients with femoral neck fractures and aged above 60 years were considered.

Discussion: We have excellent results in 11 cases (36.67%), good in 14 cases (46.67%), fair in 3 cases (10%) and poor in two cases (6.67%) according to the Harris hip rating system. Mobilization exercises in our study patients were started on the second day after surgery. Limb lengthening (<1 cm) was present in two patients (6.66%). Superficial infection was observed in one patient (3.33%).

Conclusion: Uncemented hemiarthroplasty in fracture neck of femur in elderly is associated with less complications like cardiac events.

I. INTRODUCTION

Hip fractures are fairly common and comprise about 20% of the operative workload of an orthopaedic trauma^[1]. Half burden of all hip fractures is fracture neck of femur. The prevalence of the fracture also doubles for each decade of life after the fifth decade^[2]. The hip is a weight bearing joint performing many functions.

As geriatric burden is increasing in our society, this fracture and its sequelae are also increasing^[3]. The treatment goal of this fracture is to restore pre-fracture function with no association of morbidity^[4]. Various methods of management have been employed since ages. Management of fracture neck of femur in elderly has been debatable. Open reduction and internal fixation for this fracture in elderly has unfavourable outcome because non-union and avascular necrosis of femur head were common. Arthroplasty is standard treatment in geriatric patients in most countries.

Now a days, surgeons have options of hemiarthroplasty (unipolar or bipolar) and total hip replacement in the management of femoral neck fractures in the elderly^[5]. Unipolar hemiarthroplasty is out of practice in the developed nations but common in developing nations.^[3] Pain was associated with unipolar due to erosion of acetabulum and stem loosening. Bipolar prosthesis had dual-bearing system so these complications are less.^[6]

Currently, use of modular prosthesis allows adjustment of neck length so limb length discrepancy can be manage and easier future conversion to a total hip arthroplasty.

With superiority of prosthetic replacement over internal fixation in elderly being well established, primary Total Hip Replacement (THR) is being offered at many centres as a treatment option for these fractures. Total hip arthroplasty is still not popular as a treatment modality for fracture neck of femur in our country because majority of the patients do well with hemiarthroplasty and also due to the high costs involved. It also has a higher incidence of dislocations and higher morbidity associated with the procedure^[7].

Cement related complications like thermal necrosis, loosening, osteolysis, bone cement implant syndrome (BCIS), anaphylactic reactions, reflex bradycardia, embolism, pulmonary hypertension, hypotension, cardiogenic shock are absent in uncemented hemiarthroplasty. Uncemented procedure gives better press fitting, better three point fixation of prosthesis, less time consuming than cemented procedure.

This prospective study is done to see functional outcome of bipolar prosthesis in fracture neck of femur in elderly.

II. MATERIAL AND METHOD

Our study was conducted in the Orthopaedics Department, Govt Medical College and Associated group of hospitals, Kota during the year 2015-16. 30 cases of fracture neck femur were included in this study. Age inclusion criteria was >60 years of age having Door's A & B with good bone stock. Patients having arthritis of acetabulum were excluded.

After thorough preoperative evaluation, informed consent was taken for surgery. After induction of either spinal or epidural anaesthesia the lateral position was given to the patient on the operative table with the affected side facing up, GIBSON posterolateral surgical approach of the hip^[8] was used. The capsule is incised, and hip was dislocated by flexion, adduction and internal rotation. Using a head extractor and bone levers, head is delivered out of the acetabulum and the acetabulum is cleared of debris. The size of the extracted head is measured by using measuring gauze, and the size of prosthesis is selected. The appropriate sized prosthesis is inserted into the unreamed canal by using box chisel. Taking care to place it in 10-15 degree of anteversion. The final seating of the prosthesis is by gentle blows with the help of a mallet and the inserter. Prosthesis is seated on the calcar by direct visualization. The hip joint is reduced by gentle traction with external rotation and simultaneous manipulation of the head of the prosthesis into the acetabulum. Range of movement in all directions is checked by taking the joint through the whole range of movements. The stability of the prosthesis and its tendency to dislocate is

checked by telescopy, flexion- adduction of the hip. Great care is taken to achieve adequate closure of the capsule and anatomical reattachment of the rotators. All patients who were operated were kept in supine position with the involved lower limb in 20-30° abduction.

Patient will be made to sit up on bed and Static quadriceps exercises started from 2nd day. Mobilization with a walker was started between third and seventh post-operative day. Patients were initially advised partial weight bearing then later advised progress to complete weight bearing as per patient's tolerance. Sutures were removed on 12th -15th post operative day. The study patients were discharged after 5th day or stitch removal.

Follow up was done at 6 weeks, 3 months then 3 month interval for a year (at 6 months, 9 months, one year). Follow up evaluation was done clinico-radiologically (Harris Hip Score^[9], X-rays).

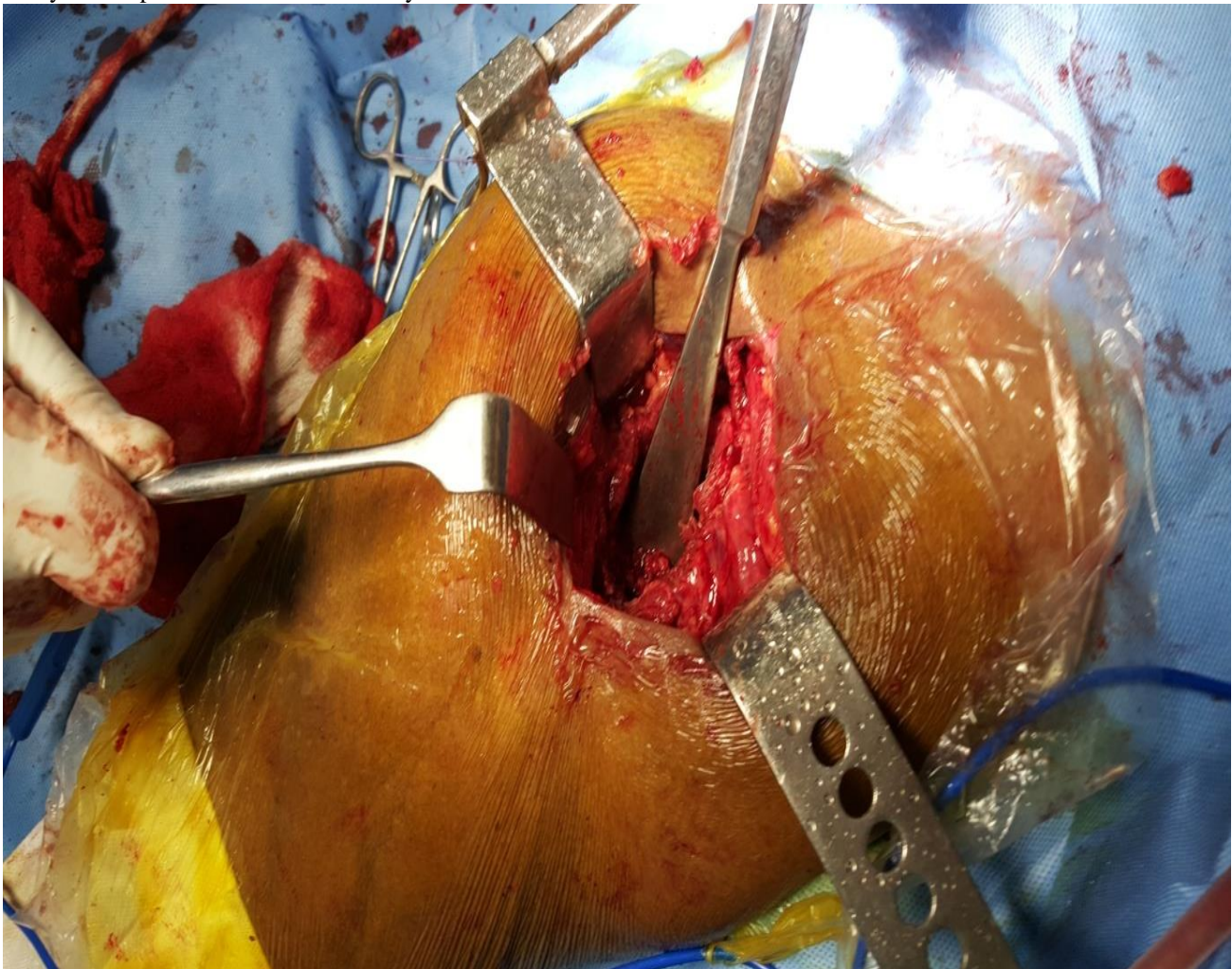


Fig 1:- Exposure To The Fracture Site



Fig 2:- Closure Over A Suction Drain

III. RESULTS-

30 eligible patients were included in this prospective study. All the study patients were taken up for the surgical procedure between the 4th and 17th day after the trauma, the average delay to surgery being 7 days.

In this study sample there were 12 males out of 30(40%) and 18 females out of 30 patients (60%). The mean age was 75 years (SD = 8.37), range is 63-89 years, for females 77.33 years (SD = 9.67), range is 65-89 years and for males 64.25 years (SD = 9.8), range is 63-88 years. The

fracture occurred on the left side in 53.33% of the patients (n = 16) and right side 46.66% (n=14).

56.66% cases (17) had mode of injury slipping on ground, 26.66 (8) cases are due to RTA and 16.66 % (5) cases due to fall from height. Size of prosthesis, complications due to surgery and final HARRIS hip score with clinical results are in table 1,2,3 respectively.

Size of the Prosthesis	Number of Patients	Percentage
41mm	1	3.33
43mm	9	30
45mm	15	50
47mm	5	16.66

Table 1: Size Of Prosthesis

Complications	Number of patients	Percentage
Superficial infection	1	3.33
Wound Gap	0	0
Deep infection	0	0
Subluxation/dislocation	0	0
Bed sores	0	0
Limb Lengthening (<1cm)	2	6.66
Pulmonary embolism	0	0
Intra operative fracture	0	0

Table 2: Complications

Score(Harris Hip)	Grading	No. of Patients	Percentage
90-100	Excellent	11	36.66
80-89	Good	14	46.66
70-79	Fair	3	10
60-69	Poor	2	6.66

Table 3: Harris Hip Score And Final Clinical Result

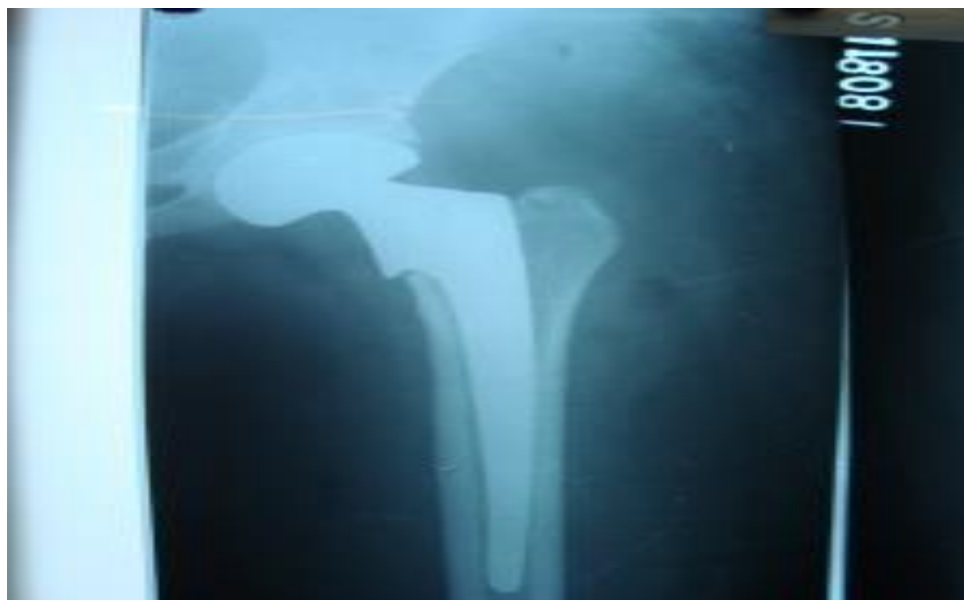


Fig 3:- Post-Operative



Fig 4:- Superficial Wound Dehiscence Which Healed By Local Debridement And Secondary Suturing Under Adequate Antibiotics Cover



Fig 5:- Immediate post-operative x-ray showing prosthesis sitting proud of calcar resulting in 1cm lengthening of the lower limb



Fig 6:- One year follow-up shows no subsidence of the prosthesis and patient continued to have the limb lengthening and limp

IV. DISCUSSION

In fracture neck of femur arthroplasty is done for as early as possible return to routine activities of elderly patient to prevent complications and over-dependency.

Most of our study patients (56.66%) were injured due to a slipping on ground. This is common due to poor neuromuscular coordination and osteoporotic bones.

All the study patients were taken up for the surgical procedure between the 4th and 10th day after the trauma, the average delay to surgery being 7 days. Elective surgery was performed in all cases and cause of delay were poor medical conditions.

In 50% of the cases 45 mm prostheses were used. This was followed in frequency by 43 mm (30%), 47 mm (16.66%) and 41 mm (3.33%) prostheses in the order of frequency. For pressing fit of prosthesis rasp was used to broach the canal.

The prosthesis was not modular so technical difficulty encountered was limb length discrepancy. This problem was also due to miscalculated resection of neck.

In our study mobilization exercises were started on second day after surgery and partial weight bearing started as per patients tolerance within the 72 hours.

In two (6.66%) patients there was limb lengthening (<1 cm) present post- operatively. Cause of this was either miscalculation of resection of neck femur or technical errors in seating of prosthesis over the calcar.

In one patient (3.33%) of our study superficial infection was seen. Serial dressings and adequate control of the diabetes with antibiotics according to culture-sensitivity were done for its management. Nottage, et al. found 3.9% infection rate.

The average hospital stay in our study was 13.8 days. most of our patients were discharged after suture removal. Lestrangle et al reported 21 days^[10], Drinker and Murray et al 23 days.^[11]

Loosening of stem, periprosthetic fracture, dislocation, protrusio acetabuli were not present in any case. Comment over erosion of acetabulum cannot be done because of relative short follow up.

Followed up was regular and done at 6wks then 3rd months then 3 monthly for an year (6 months, 9 months, one year). Evaluation was done recording the Harris Hip Score at each follow-up. Average final Harris Hip Score at one year follow-up was 85.68 (maximum- 93, minimum- 65.8). Out of 30 patients excellent, good, fair and poor were 11 patients (36.66%), 14 patients (46.66%), 3 patients (10%) and 2

patients (6.66%) respectively. Overall an excellent or good result was present in 83.32% of the patients.

This study has some limitations like small study sample, relatively short duration of follow-up of one year. Because of these limitations we are in conclusive for longevity of the prosthesis and acetabulum erosion.

V. CONCLUSION

Uncemented Bipolar prosthesis for fractures neck of femur is suitable and avoid complications associated with cement like thermal necrosis, loosening, osteolysis, canal pressure induced post operative thigh pain, Bone Cement Implant Syndrome (BCIS) – Exothermic reaction, anaphylactic reaction, Reflex bradycardia, Embolic phenomenon, Pulmonary hypertension, Hypotension, Cardiogenic shock.

So this is easy and less time consuming surgical procedure associated with early return to routine activity with less complications in elderly.

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