



FUNCTIONAL OUTCOME OF PRIMARY HIP HEMIARTHROPLASTY IN THE MANAGEMENT OF UNSTABLE INTERTROCHANTERIC FRACTURES OF FEMUR IN THE ELDERLY PATIENTS.

Orthopedics

Dr. TR. Prakash

M.S.Ortho, Assistant Professor Department Of Orthopaedics Government Villupuram Medical College-Villupuram.

Dr. R. Sampath*

M.S.Ortho, Assistant Professor Department Of Orthopaedics Government Villupuram Medical College-Villupuram.*Corresponding Author

ABSTRACT

There is a worldwide increase in the incidence of intertrochanteric fracture among elderly patient. This is due to the increased life expectancy of people and osteoporosis. Unstable fractures are those with comminution in the postero-medial cortex. Fixation of unstable fractures with fixed blade plate and enders nail had high rate of cut out and fracture displacement. Subsequently sliding hip screw was used with much success and became the predominant method of fixation of these fractures. However, even with this device, early full weight bearing mobilisation of unstable osteoporotic fracture can result in rotational deformity and leg length shortening, due to uncontrolled telescoping.

AIM OF THE STUDY: The aim of study is to analyze the functional outcomes of patients with an unstable Intertrochanteric Fracture treated by Primary Hip Hemiarthroplasty

MATERIALS AND METHODS: In all, a total of 20 cases were evaluated and assessed during the study period. The study was conducted in the Department of Orthopaedics, GVMCH villupuram. patients admitted with unstable trochanteric fractures were classified under Boyd and Griffin classification Patients were followed up at an interval of 6 weeks, 3 months, 6 months and 12 months. Functional outcome was assessed using modified Harris hip score

RESULTS: In our study, 12 patients had excellent results, 6 patients had good results, 2 patients had fair results. All the cases were treated with bipolar prosthesis. Tension band wiring of greater trochanter was done in 2 cases. All patients were mobilised and made community ambulatory. 2 patients died of their pre-existing comorbid illness.

CONCLUSION: Bipolar Hip Hemiarthroplasty reduced the complications of prolonged immobilisation, prolonged rehabilitation and offered, faster mobilization, rapid return to pre injury level, improved the quality of life

KEYWORDS

Unstable Intertrochanteric Fractures, Primary Hip Hemiarthroplasty, Elderly

There is a worldwide increase in the incidence of intertrochanteric fracture among elderly patient. This is due to the increased life expectancy of people and osteoporosis¹⁻³. Most of the fractures occurs from trivial trauma. Unstable fracture fractures are those with comminution in the postero-medial cortex Initially, in the past, fixation of unstable fractures with fixed blade plate and enders nail had high rate of cut out and fracture displacement.^{4,5} Subsequently sliding hip screw was used with much success and become the predominant method of fixation of these fractures

BOYD & GRIFFIN (1949) CLASSIFICATION :

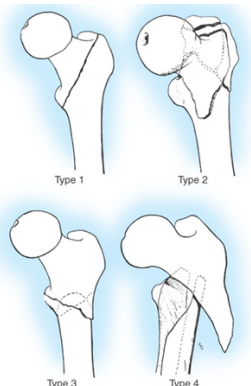
This classification includes all the fractures from extra capsular part of the neck to a point 5cm distal to lesser trochanter.

Type I : Fractures that extend along the intertrochanteric line. Reduction usually is simple and is maintained with little difficulty.

Type II : Comminuted fracture, the main fracture being along intertrochanteric line but with multiple fractures in the medial cortex. Reduction of these fractures is difficult.

Type III : Fractures that are basically subtrochanteric with at least one fracture passing the proximal end of the shaft, just distal to or at the lesser trochanter. Varying degree of comminution, is more difficult to reduce and results in more complications.

Type IV : Fractures of the trochanteric region and the proximal shaft, with fracture in at least two planes, with one fracture along sagittal plane. Open reduction and internal fixation is used, two plane fixation is required.



SURGICAL MANAGEMENT :

Rigid internal fixation of intertrochanteric fractures with early mobilisation of the patients should be considered standard treatment.

The goals of operative treatment are ;

- Rigid and stable fixation of the fracture fragments
- Early mobilization of the patient
- Restoration of the patient to his or her preoperative status at the earliest.

PRIMARY PROSTHETIC REPLACEMENT :

Majority of inter- and subtrochanteric fractures can be treated with primary internal fixation. Indications for primary prosthetic replacement for the management of intertrochanteric fractures includes the following:

- Peritrochanteric fractures in the presence of severe arthritis of the hip, especially if the hip is stiff.
- Pathologic fractures in which the bone stock precludes internal fixation
- Unstable, severely comminuted fractures in the very elderly, whose bone is so osteoporotic that internal fixation, even with cement augmentation, is expected to fail. Many clinical studies have shown that early full weight bearing and rehabilitation, which significantly reduces the post-operative morbidity and mortality, was the definitive advantage of prosthetic replacement in the management of unstable intertrochanteric fractures.

MATERIALS AND METHODS :

Inclusion criteria:

1. patient above 60 years of age .
2. Independently mobile before sustaining the fracture .
3. Comminuted intertrochanteric femur fracture (type II/III Boyd & Griffin).

Exclusion criteria :

1. Patient less than 60 years .
2. Non ambulatory patients before the surgery.
3. patients with pathological fractures.
4. open / stable fractures were excluded from the study

PREOPERATIVE EVALUATION:

After patient's admission detailed history regarding mode of injury,

associated co-morbid condition was taken. Clinical assessment of the patients were done in detail. The following investigations were done routinely on all these patients preoperatively. Blood investigations includes Haemoglobin %, Blood grouping and Cross matching , Fasting and Post prandial blood sugar , Blood urea and Serum Creatinine.

Radiograph :

- Pelvis with both hips –AP
- Injured Hip with femur-AP (Traction and internal rotation view)
- Chest X ray PA view.

The patients were operated on elective basis after overcoming the avoidable anaesthetic risks.

All the surgeries were performed by the same surgical team using the standard posterior approach (Southern Approach) after due clearance from the anaesthetic team and preoperative templating on the anteroposterior x ray of pelvis with both hips. All the patients received a single dose of antibiotics (3rd generation cephalosporins) preoperatively and two doses postoperatively

Post operative protocol :

Post operatively Patients were made to sit up on the second day, stand up with support (walker), on the third day and were allowed to full weight bear and walk with the help of a walker on the fourth postoperative day, depending on his/her pain tolerance and were encouraged to walk thereafter. Sitting cross-legged and squatting were not allowed. The patients were assessed for any shortening or deformities. Patients were followed up at an interval of 6 weeks, 3 months, 6 months and 12 months

Functional outcome was assessed using modified Harris hip score. Harris hip score is a validated 15 item questionnaire in which scores range from 0 to 100. <70 poor, 70-79 fair, 80-89 good. 90-100 excellent.

RESULTS:

The following observations were made from the data collected during the study of 20 cases of intertrochanteric fractures treated by cemented bipolar hemiarthroplasty . The most common associated medical problem was hypertension in 9 patients, type II diabetes mellitus in 8 patients.

All the cases were treated with bipolar prosthesis. Tension band wiring of greater trochanter was done in 2 cases to hold the fragments together. Cerclage wiring done in 1 case. Calcaneal reconstruction using cement done in 15 cases.

Intra operatively average blood loss was 360 ml, mean operative time was 79.5 mins.

Pre-operatively 5 patients (25 %) had blood transfusion and post operatively 13 patients (65%) had blood transfusion, which were uneventful.

Postoperatively, one patient had superficial infection which was treated with I.V. Antibiotics. 9 patients had shortening of the operated limb of which 8 had less than 2 cms, so they were given a heel raise. They walked with the help of a cane, 1 patient had shortening more than 2 cm, he had a slight limp.

Full weight bearing was allowed on and after the 3rd post operative day. The mean day of full weight bearing was on the 6.9 th day. 16 patients were discharged before 14th day. The mean number of days spent by the patient in the hospital in the postoperative period was 13 days Out of 20 patients ,2 patients died within 6 months after surgery due to their medical comorbid illness.. Other 17 patients were followed up at 6 weeks, 3 month, 6 months and 1 year post operatively. Average follow up was 12 months.

At the end of 6 months 4 patients walked without any support, 11 patients walked with the help of a cane, 4 patients complained of occasional anterior thigh pain on long distance walking, which was relieved on taking rest and analgesics. 2 patients were bedridden , 2 patients were dead.

Complications	No of Cases
Superficial infection	1
Deep infection	0
Medical Complication	12

Bed sore	0
Death	2

FUNCTIONAL RESULTS ACCORDING TO HARRIS HIP SCORE :

Functional Results	No of Cases
Excellent	12
Good	6
Fair	2
Poor	Nil

DISCUSSION :

Internal fixation with Dynamic hip screw is the treatment of choice for stable intertrochanteric fracture. However the scenario is different when comes to the management of unstable fracture. Failure rate of as high as 56% have been noted with internal fixation of unstable fractures Hemiarthroplasty is a frequently employed alternative as it gives stability and allows early full weight bearing. Most of the complications associated with internal fixation are avoided with the use of prosthesis . Initially hemiarthroplasty is used only in the treatment of failed fixation of intertrochanteric fractures.

In 1974 Tronzo , was the first surgeon to use long- stem Matchett Brown endoprosthesis for the primary treatment of intertrochanteric fractures. Following this many other surgeons also reported good results with the use of various prosthesis. In 1977 Stern MB , achieved 86% good results with use of Leinbach prosthesis in the treatment of unstable intertrochanteric fractures. In 1987, Green et al , reported good results with bipolar prosthesis. Pho. et al , achieved good results with use of Thompson prosthesis.

In this study we used bipolar prosthesis in all 20 cases. The mean age of patients in our study was 69.4 years. The mean age in studies by Hantjens et al was 80 years, by sanchetti et al was 77 years , by Atul patil was 65.5 years, by Casey C.K et al was 84.2 years, by Broos P L et al 43 was 75 years, and by Rodop O et al was 75.6 years.

Geiger et al , reported a significant increase in blood loss (1050 ml) and operating time (115 min) compared to the internal fixation group . Stappaerts et al , found no significant difference between outcomes of prosthetic group and internal fixation group except for the higher transfusion need in replacement group. Sanchetti et al , reported average blood loss of 350 ml and operative time of 71 mins. In our series average blood loss was 360 ml with only 13 patients required blood transfusion and the operative time was 79 mins. Our results are comparable with other authors.

Stern and Goldstein , used Leinbach prosthesis for treatment of 22 intertrochanteric fractures and found early ambulation and early return to preinjury status as a definite advantage. Grimsrud et al , in a study of 39 patients of unstable intertrochanteric fractures treated with cemented bipolar hip arthroplasty ,reported a relatively low rate of complication. In our series there was no complications like pressure sores, pneumonia, Deep vein thrombosis , since most of our patients were ambulatory immediately after surgery.

Siwach et al , reported shortening of < 5mm in 64% of cases, 28% of cases had limb lengthening between 5mm and 10 mm. He noticed shortening was due to excessive sinking of prosthesis following weight bearing. Kiran kumar et al , reported 20% cases had shortening of less than 2 cm , 10% of case had shortening of more than 2 cm. In our series there was 8 cases had shortening less than 2 cm and 1 case had shortening > 2 cm.

Sanchetti et al , reported 71 % of good to excellent results according to Harris hip score , in their series of 35 patients treated with hemiarthroplasty. Rodop et al , in a study of primary bipolar hemiarthroplasty for unstable intertrochanteric fractures in 37 patients obtained 45 % excellent and 37% good results after 12 months as assessed by Harris hip score. In our study fair to excellent results was achieved in 85% of cases. Thus the results of hemiarthroplasty in the management of intertrochanteric fractures are definitely promising. Post-operative mortality reports were conflicting as cited in the literature , varying from 5.4 % to 48.8% . Most of the comparative studies have shown a slight increase in mortality rate in prosthetic group than the internal fixation group.

Kesmezacare et al ' reported post-op mortality rate of 48.8 % after a

mean of 6 months in patients treated with endoprosthesis. Sanchetti et al, reported post op mortality only in 2 patients out of 37 patients (5.4%) within 6 months of surgery. They have predicted delay in treatment is the most common cause for post op mortality and morbidity.

CONCLUSION :

Osteosynthesis using dynamic hip screws or intramedullary nails are preferred treatment modalities in fracture intertrochanteric femur. Our study primary hemiarthroplasty, was performed for intertrochanteric fractures in elderly patients more than 60 years, offered excellent pain free mobile hip, with easy rehabilitation and early return to functional level, when standard techniques were used. Primary Bipolar hemiarthroplasty reduced the complications of prolonged immobilisation, prolonged rehabilitation, marked residual deformities and need for revision surgeries. The procedure offered, faster mobilization, rapid return to pre injury level, improved the quality of life and gave a long term solution in elderly patients with intertrochanteric fractures of the femur.



REFERENCES

1. Kiran Kumar GN, Sanjay meena, Vijaya Kumar, Manjunath S, Vinaya raj MK.: Bipolar Hemiarthroplasty in Unstable Intertrochanteric Fractures in Elderly: A Prospective Study. *Journal of Clinical and Diagnostic Research* (2013);7(8): 1669-71
2. Feng W, Hao T, Jia YF, Hao ZT, Bai ZB.: Clinical outcome of endoprosthetic replacement for failed treatment of intertrochanteric fractures: A retrospective case series. *Pak J Med sci* 2013;29(2):633-37.
3. Dhanwal DK, Dennison EM, Cooper C. Epidemiology of hip fracture: Worldwide geographic variations. *Indian J Orthop*. 2011;45(1):15-22.
4. Johnell O, Kanis JA. An estimate of the worldwide prevalence and disability associated with osteoporotic fractures. *Osteoporosis Int*. 2006;17(12):1726–33.
5. Kannus P, Parkkari J, Sievanen H, Heinonen A, Vuori I, Jarvinen M. Epidemiology of hip fractures. *Bone* 1996;18:57S-63S.
6. Koval KJ, Zuckerman JD. Hip fractures are an increasingly public health problem. *Clin Orthop Relat Res* 1998;348:2.
7. Rockwood PR, Horne JG, Cryer C. Hip fractures: A future epidemic? *J Orthop Trauma* 1990;4:388-93.
8. Bergström U, Björnstig U, Stenlund H, Jonsson H, Svensson O. Fracture mechanisms and fracture pattern in men and women aged 50 years and older: A study of a 12-year population-based injury register. *Osteoporosis Int*. 2008;19:1267–73.
9. Kayali C, Agus H, Ozluk S, Sanli C. Treatment for unstable intertrochanteric fractures in elderly patients: Internal fixation versus cone hemiarthroplasty. *J Orthop Surg (Hong Kong)*. 2006;14:240–4
10. Claes H, Broos P, Stappaerts K. Pertrochanteric Fractures in Elderly Patients: Treatment with Ender's Nails, Blade-Plate, or Endoprosthesis? *Injury*. 1985;16:261–4.