Indian Journal of Public Health Research & Development
Volume 13 | Issue 4 | October-December 2022

Hemiarthroplasty in Unstable Intertrochanteric Fractures in Elderly: A Prospective Study

Nahas R[1], Jassim Usman[2], Abhishek Shetty V[3], Imthiaz Ahammed[5]

[1]PG, Orthopaedics, Yenepoya Medical College, Mangalore, Karnataka
[2]Assistant professor, Department of Orthopaedics, Yenepoya Medical College, Mangalore, Karnataka
[3]Associate professor, Department of Orthopaedics, Yenepoya Medical College, Mangalore, Karnataka
[4]Intern, Orthopaedics, Yenepoya Medical College, Mangalore, Karnataka
[5]Professor and Hod, Yenepoya Medical College, Mangalore, Karnataka

How to cite this article: Nahas R, Jassim Usman, Abhishek Shetty V, Imthiaz Ahammed et al Hemiarthroplasty in Unstable Intertrochanteric Fractures in Elderly: A Prospective Study. Volume 13 | Issue 4 | October-December 2022

Abstract

Background: Grossly comminuted intertrochanteric fractures in osteoporotic bones are highly unstable and difficult to treat. Hemiarthroplasty is a popular choice because it provides stability and enables for immediate complete weight bearing.

Objectives: The goal of this trial was to see how effective cemented hemiarthroplasty was at treating proximal femoral fractures in older people with severe osteoporosis.

Methods: Thirty patients who had bipolar hemiarthroplasty for unstable intertrochanteric fractures were studied prospectively. The posterior (Moore's) technique was used to treat all of the patients with cemented bipolar prostheses. The average time of follow-up was 12 months. The modified Harris hip score was used to evaluate the patients.

Results: Abductor weakness was present in 5 of the individuals. At the 12-month follow-up, 21 cases (70%) had bad results, while three cases (10%) had poor results. The average length of stay in the hospital was 10.9 days. Excellent to fair results were observed in 24 patients, as measured by the modified Harris hip score.

Conclusion: In older individuals with significant osteoporosis, the therapy of unstable intertrochanteric fractures differs from the treatment of other proximal femoral fractures. Internal fixation is not as effective as cemented hemiarthroplasty in treating these fractures. This approach has a clear advantage in terms of early full weight bearing and recovery. Hips that have undergone cemented hemiarthroplasty are stable and mobile. Weight bearing can begin earlier than with other treatment approaches, avoiding any recumbency-related problems.

Keywords: Intertrochanteric fracture, primary bipolar hemiarthroplasty, Harris hip score, Moore's technique

Introduction

Intertrochanteric fractures are becoming increasingly prevalent in older people worldwide. Trochanteric fractures are the most frequent proximal femur fractures, typically affecting the elderly and ranking among the most hazardous injuries in the elderly. This is due to individuals living longer lives and osteoporosis.[1]

In these people with poor bone quality, fractures are commonly accompanied with issues such as nonunion, metal failure, and femoral head perforation. The majority of fractures are caused by minimal trauma. An intertrochanteric fracture is defined as a fracture that extends from the extracapsular basilar neck area to the lesser trochanter region before the establishment of the medullary canal.[2]

Corresponding Author:
Dr Abhishek Shetty V.
Associate Professor
Department of Orthopaedics, Yenepoya Medical College, Mangalore, Karnataka

Fractures in the posteromedial cortex that have comminution are considered unstable. Internal fixation produces reliable results for treating stable trochanteric fractures. The best way to treat an unstable osteoporotic fracture is still up for debate. In the past, utilising a fixed blade plate and an enders nail to treat unstable fractures resulted in a high rate of cut through and fracture displacement.[3]

Sliding hip screws were then successfully used, and they have subsequently become the most prevalent means of treating these fractures. Even with this technology, due to uncontrolled telescoping, metal fracture, and screw cut out through the skull, early complete weight bearing mobility of an unstable osteoporotic fracture can produce rotational deformity and limb lengthening.[4]

Early weight bearing following internal fixation of comminuted trochanteric fractures by different methods leads to fixation failure and unsatisfactory outcomes in physically elderly and osteoporotic persons. As a result, a time of restricted movement is indicated for this patient, which might lead to complications such atelectasis, bed sores, pneumonia, and deep vein thrombosis.[5]

Intramedullary interlocking devices are proving to be more effective in treating unstable fractures. However, the long-term effects of these gadgets have yet to be identified. Endoprosthetic replacements have recently been found to result in early patient mobilisation and long-term success. However, before a judgement can be formed, further prospective randomised studies are required.[6]

As a result, the appropriate treatment technique for an unstable intertrochanteric fracture remains a point of contention. This research looks at the role of primary hemiarthroplasty in the treatment of unstable intertrochanteric fractures in the elderly and physically aged.

Materials and Methods

Study Design: Random Prospective study

Study setting: Department of Orthopaedics, Yenepoya medical college, Mangalore, Karnataka

Study duration: December 2017 to march 2019.

30 elderly and physiologically elderly patients with comminuted trochanteric fractures who met the inclusion criteria were studied prospectively.

Inclusion criteria:

1. Patient above 60 years of age.
2. Elderly patients with non-united trochanteric fractures
3. Patients with trochanteric fractures treated by internal fixation which has gone for failure.

Exclusion criteria:

1. Patient less than 60 years.
2. Polytrauma patients.
3. Compound intertrochanteric fracture

Boyd and Griffin classification was used to classify fractures. The posterior (Moore's) technique was used to treat all of the patients with cemented bipolar prostheses.

Statistical Analysis: The SPSS 22 software was used for statistical analysis. The data outcome was presented in the form of tables with means and percentages.

Observation and Results

Table 1: Distribution based on Gender

Gender	Frequency	Percentage
Male	17	56.66%
Female	13	43.33%

The average age of the patient was 74.4 years [60-90 years]. The study covered both male and female patients. There were 17 males and 13 females among the patients. All of the patients had suffered a fracture as a result of a minor accident.

Table 2: Distribution based on fracture classification

Fracture Classification	Frequency	Percentage
TYPE 1	0	0%
TYPE 2	24	80%
TYPE 3	4	13.33%
TYPE 4	2	6.67%

A total of 14 patients suffered a left-sided fracture. A total of 16 patients suffered from a right-sided fracture.

Boyd and Griffin Type II intertrochanteric fracture was sustained in 24 patients, Boyd and Griffin Type III intertrochanteric fracture was sustained in 4 patients,

and Boyd and Griffin Type IV intertrochanteric fracture was sustained in 2 patients.

Table 3: Distribution based on singh index

Singh index	Frequency	Percentage
Grade 1	2	6.67%
Grade 2	9	30%
Grade 3	14	46.66%
Grade 4	3	10%
Grade 5	2	6.67%
Grade 6	0	0%

The majority of the patients in our study have Grade 3 or less osteoporosis according to Singh's index.

Three patients died within eight months of surgery, out of a total of thirty. The remaining 17 patients were followed up on at six weeks, three months, six months, and twelve months after surgery.

The mean time from injury to surgery was 12 days. All the cases were treated with cemented bipolar prosthesis. Tension band wiring of greater trochanter was done in 3 cases to hold the fragments together. Calcar reconstruction using cement was done in 15 cases.

The mean day of full weight bearing was on the 6th post operative day. Postoperatively two patients had superficial infection which was treated with I.V. antibiotics.

13 patients had shortening of the operated limb, of which 11 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 limp.5 patients (25%) had abductor weakness at 12 months of following.

Table 4: Distribution based on HARRIS hip score

HARRIS HIP Score	Frequency	Percentage
Excellent	7	23.33%
Good	6	20%
Fair	11	36.66%
Poor	3	10%

The functional results were graded according to Harris Hip Scoring System. In our study, 7 patients had excellent results, 6 patients had good results, 11 patients had fair results, 3 cases had poor result. In our study ,15 cases (70%) had excellent to fair result.

Table 5: Distribution based on Complications

Complications	Frequency	Percentage
Superficial infection	2	6.66%
Abductor weakness	5	16.66%
Limb shortening	13	43.33%
Bed ridden	0	0%

The most common complication in our study is post-operative shortening of the Limb.

Discussion

Internal fixation with a dynamic hip screw is the treatment of choice for stable intertrochanteric fractures. However, the situation is different when it comes to treating an unstable fracture. Internal fixation of unstable fractures has a failure rate of up to 56%. In physiologically normal individuals, early weight bearing following various modalities of internal repair of communited trochanteric fractures. In elderly and osteoporotic individuals, fixation failure and unsatisfactory outcomes are prevalent. Because it offers stability and allows for early total weight bearing, hemiarthroplasty is a common operation. The bulk of the problems related with internal fixation are eliminated when prosthetic replacement is used. Hemiarthroplasty was originally only used to treat failed intertrochanteric fracture repairs.

Stern and Goldstein, who used the Leinbach prosthesis to treat 22 intertrochanteric fractures, found that early ambulation and rehabilitation to pre-injury status was a substantial advantage.[6] Grimsurd et al showed a minimal incidence of complications in 39 patients with unstable intertrochanteric fractures treated with cemented bipolar hip arthroplasty. There were no issues like pressure sores, pneumonia, or deep vein thrombosis in our trial since the majority of our patients were mobile right after surgery.[7]

Kiran kumar et al found that 20% of patients had a shortening of less than 2cm, whereas 10% of cases had a shortening of more than 2cm. Eight of the cases in our research had a shortening of less than two centimetres, whereas one had a shortening of more than two centimetres.[8]

According to our findings, we had good to extraordinary results 75% of the time. As a result, the outcomes of hemiarthroplasty in the treatment of intertrochanteric fractures are highly promising.

Post-operative death rates varied from 5.4 % to 48.8 %. The prosthetic group has a slightly higher mortality

rate than the internal fixation group, according to the majority of comparison studies.[9,10]

Kesmezacare et al, observed a 48.8% post-op mortality rate in patients treated with endoprosthesis after a mean of 6 months.[11] Only two patients out of 37 (5.4 %) died within six months following surgery, according to Sanchetti et al.[12] The most prevalent cause of post-operative death and morbidity, they predicted, is treatment delay.

The mean number of days spent by the patient in the hospital in the postoperative period was 12 days. At the end of 12 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 , 3 patients died due to unrelated causes. There was no incidence of deep vein thrombosis, pneumonia, pressure sores or cardiovascular complication in the early post operative period.

Bipolar Stem was fitted in valgus position in 3 cases , varus position in 2 patient, whereas the position of the stem was centre (normal) in 25 patients. Cement filling was adequate in 22 cases, whereas it is inadequate in 4case.

There was no prosthetic dislocation, stem loosening, acetabular erosion or periprosthetic fracture after a period of 12 months follow up in our series.

Conclusion

When standard approaches were employed, this therapy resulted in good pain-free mobility, uncomplicated rehabilitation, and a quick return to functional level. The adaptability of the bipolar prosthesis is demonstrated by its ability to function in a variety of settings. This demonstrates the technique's effectiveness. Extended immobilisation, long rehabilitation, significant residual abnormalities, and revision procedures were all minimised with bipolar hemiarthroplasty. In older patients with femur intertrochanteric fractures, the surgery enhanced mobility, hastened recovery to pre-injury levels, increased quality of life, and provided a long-term solution.

Ethical Clearance: The ethical clearance was obtained from the Yenepoya Medical College institutional ethics committee prior to the commencement of the study

Conflict of interest: Nil

Source of Funding: Self

References

1. Kannus P, Parkkari J, Sievanen H, Heinonen A, Vuori I, Jarvinen M. Epidemology of hip fractures. Bone 1996;18:57S-63S.
2. Koval KJ, Zuckerman JD. Hip fractures are an increasingly public health problem. Clin Orthop RelatRes1998;348:2.
3. Rockwood PR, Horne JG, Cryer C. Hip fractures: A future epidemic? J Orthop Trauma1990;4:388-393.
4. Laros, G. S. and Moore, J. F.: Complications of fixation in intertrochanteric fractures, Clin. Orthop.1994;101:110.
5. Jensen, J. Steen, Tondevold, E. & Sonne-Holm.: Unstable trochanteric fractures. A comparative analysis of four methods of internal fixation. Actaorthop. sand.1980;51,949-962.
6. Stern MB, Anger man A: Comminuted Inter trochanteric fractures treated with a Leinbach prosthesis. Clin orthop.1987 May (218): 755-780.
7. Chris Grimsrud,Raul J.Monzon,Jonathan Richman and Michael D.Ries:Cemented Hip Arthroplasty With a Novel Cerclage Cable Technique for Unstable Intertrochanteric Hip Fractures.J Arthroplasty 2005Apr;337-343.
8. 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.
9. Tronzo RG. The use of an endoprosthesis for severely communited intertrochanteric fractures. Orthop Clin North Am1974;5:679-681.
10. Pho RW, Nather A, Tong GO, Korku CT. Endoprosthetic replacement of unstable, communited intertrochanteric fracture of the femur in the elderly. J Trauma1981;21:792-797
11. Kesmezarcar H, Ogut T, Bilgili MG, Gokay S, Tenekecioglu Y.: Treatment of intertrochanteric fractures in the elderly patients. Internal fixation (or) hemiarthroplasty. Acta Orthop Traumatol Tur 2005;39:287-294.
12. Sancheti et al.: Primary hemiarthroplasty in elderly unstable osteoporotic intertrochanteric fracture. Indian J orthop 2010;44(4):428-434.