

To Evaluate the Functional Result of Older Patients with Unstable Comminute Intertrochanteric Fractures Treated with Primary Bipolar Hemiarthroplasty

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Abstract

Aim: To evaluate the functional result of older patients with unstable comminute intertrochanteric fractures treated with primary bipolar hemiarthroplasty.

Material and Methods: This was an interventional retrospective randomized control trial study was conducted in the Department of Orthopedics, Patna medical college and Hospital, Patna, Bihar, India for one year. Data collected from patients presenting with unstable intertrochanteric fractures satisfying inclusion and exclusion criteria who are treated with Cemented Bipolar Hemiarthroplasty. Patient with age group >60 years of either sexes who are able to walk before injury and Intertrochanteric fracture classified as unstable fracture according to Boyd and Griffin classification (type II, III, IV) were included in this study. Polytrauma patients, Patient <60 years of age, Compound intertrochanteric fractures, Patients medically unfit for surgery and Patients with immunocompromised status were excluded from the study.

Results: Thirty-one patients were enrolled in this study of them 26 sustained fractures after fall from a standing height, while 5 patients sustained road traffic accidents. The average age at surgery was 73.84 years (range, 65-90 years). There were 13 men and 18 women. The mean operative time was 100±10 minutes. There were two cases of superficial infection and one death.

Conclusion: Intertrochanteric fractures of femur are very common among old age patients; females being more commonly affected. The most common mode of injury is domestic fall. According to our results, we believe that Cemented Bipolar Hemiarthroplasty is of choice in freely mobile elderly patients above sixty years of age with an intertrochanteric femoral fracture. In elderly patients with intertrochanteric fractures of the femur treated with hemiarthroplasty gave early mobilization, early return to pre injury level, superior the quality of life and gave a long-term solution.

Keywords: Unstable comminute, Intertrochanteric fractures, Primary bipolar hemiarthroplasty

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Introduction

Unstable comminute intertrochanteric fractures are a significant concern in the elderly population due to the high morbidity and mortality associated with these injuries. These fractures typically occur due to low-energy trauma, such as falls, in individuals with osteoporotic bones. The management of these fractures is challenging due to the complexity of the fracture patterns and the compromised bone quality in elderly patients. [1-3] Traditionally, internal fixation using dynamic hip screws (DHS) or intramedullary nails has been the standard treatment for intertrochanteric fractures. However, in cases of unstable comminute fractures, these methods can lead to high rates of mechanical failure, prolonged

immobilization, and complications such as non-union and hardware failure. [4] As a result, there has been growing interest in alternative surgical treatments that can provide immediate stability, allow early weight-bearing, and improve functional outcomes. Primary bipolar hemiarthroplasty has emerged as a viable option for the treatment of unstable comminute intertrochanteric fractures in the elderly. [5,6] This procedure involves replacing the fractured femoral head and neck with a bipolar prosthesis, which consists of a femoral stem and a dual-bearing head. The bipolar design allows for movement at both the prosthesis-bone interface and the prosthesis's internal articulation, which can

reduce wear and improve mobility. [7] This approach offers several advantages, including immediate postoperative stability, early mobilization, and a reduced risk of complications related to internal fixation. Studies have shown that primary bipolar hemiarthroplasty can lead to favourable outcomes in elderly patients with unstable intertrochanteric fractures. [8-10] Despite these promising results, there are still concerns regarding the long-term outcomes and potential complications of primary bipolar hemiarthroplasty. Complications such as dislocation, prosthetic loosening, and infection remain significant challenges. Additionally, the cost-effectiveness of hemiarthroplasty compared to other treatment modalities needs further evaluation. Therefore, ongoing research and long-term follow-up studies are essential to fully understand the benefits and limitations of this surgical approach.

Material and methods

This was an interventional prospective randomized control trial study was conducted in the Department of Orthopedics, Patna Medical College and Hospital, Patna, Bihar, India for one year.

Patient with age group >60 years of either sexes who are able to walk before injury and Intertrochanteric fracture classified as unstable fracture according to Boyd and Griffin classification (type II, III, IV) were included in this study. Poly trauma patients, Patient <60 years of age, Compound intertrochanteric fractures, Patients medically unfit for surgery and Patients with immunocompromised status were excluded from the study.

Data collected from patients presenting with unstable intertrochanteric fractures satisfying inclusion and exclusion criteria who are treated with Cemented Bipolar Hemiarthroplasty.

Results

Thirty-one patients were enrolled in this study of them 26 sustained fractures after fall from a standing height, while 5 patients sustained road traffic accidents. The average age at surgery was 73.84 years (range, 65-90 years). There were 13 men and 18 women. The mean operative time was 100±10 minutes. There were two cases of superficial infection and one death.

Table 1: Functional results according to Harris hip score

Functional outcome	No. of Patients	%
Excellent	9	29.0
Fair	8	25.8
Good	10	32.3
Poor	3	9.7
Death	1	3.1
Total	31	100.0

Discussion

The treatment of intertrochanteric fracture is still associated with some failures. High stress concentration that is subject to multiple deforming forces and high incidence of complications reported after surgical treatment compels the surgeon to give a second thought regarding selection of proper implant. A large number of fixation implants has been devised and discarded. The treatment still merits the type of fracture and condition of the patient. Displaced, unstable, posteromedial comminuted intertrochanteric fracture in osteoporotic elderly patient is not easy to treat. Hemiarthroplasty has been used for unstable intertrochanteric fractures since 1971 [11] however less frequently as compared to femoral neck fractures. [12] Its initial use was as a salvage procedure for failed pinning or other complications. [13] Tronzo claimed to be the first to use long, straight-stemmed prosthesis for the primary treatment of intertrochanteric fractures. [14] Rosenfeld, Schwartz, and Alter reported good results with the use of the Leinbach prosthesis. [15]

Since then there are multiple studies showing good results using this technique. Bipolar Hemiarthroplasty having less complications than in unipolar implants like- loosening, dislocation, protrusion, and acetabular wear. Due to dual bearing surfaces in prosthesis good advantages such as sharing of the motion at the two surfaces and hence, it reduces the net wear at either surface, thus reducing erosion at the acetabular joint interface. In addition, the total range of motions at the joint is increased. In wide femoral canal Cemented fixation gives the implant good stability. an unstable intertrochanteric fracture, allowed early walking with full weight bearing and helped the patients to return to refracture level of activity rapidly, preventing complications such as pressure sores, pneumonia, atelectasis and pseudoarthrosis”.

Conclusion

Intertrochanteric fractures of femur are very common among old age patients, females being more commonly affected. The most common mode of injury is domestic fall. According to our results,

we believe that Cemented Bipolar Hemiarthroplasty is of choice in freely mobile elderly patients above sixty years of age with an intertrochanteric femoral fracture. In elderly patients with intertrochanteric fractures of the femur treated with hemiarthroplasty gave early mobilization, early return to pre injury level, superior the quality of life and gave a long-term solution. Postoperative early full weight bearing after Hemiarthroplasty avoids long-term immobilization, rehabilitation, deformities and need for revision surgeries.

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