

ORIGINAL RESEARCH

To assess the functional outcome of elderly patients with unstable comminuted intertrochanteric fractures who had primary bipolar hemiarthroplasty

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ABSTRACT

Aim: To assess the functional outcome of elderly patients with unstable comminuted intertrochanteric fractures who had primary bipolar hemiarthroplasty. **Material and methods:** Present Study was conducted at LHMC and associated Hospital during May 2016 to may 2017. This was an interventional prospective randomised control trial study was conducted in the Department Of orthopaedics. 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:** Out of the 50 patients, 15 (30%) achieved an excellent outcome according to the Harris Hip Score. 16 patients (32%) had a good outcome. This means that a slightly higher proportion than those with excellent outcomes showed significant improvement and functional recovery, but with some minor limitations. 13 patients (26%) were categorized as having a fair outcome. 5 patients (10%) had a poor outcome, indicating minimal improvement in hip function. These patients likely continued to experience significant pain, discomfort, or limited mobility post-surgery. There was 1 patient (2%) who did not survive, highlighting the serious nature of the conditions being treated and the risks involved in surgery for an elderly population. **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 comminuted, Intertrochanteric fractures, Primary bipolar hemiarthroplasty

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INTRODUCTION

Unstable comminuted 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 comminuted

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 comminuted 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 favorable 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

Present Study was conducted at LHMC and associated Hospital during May 2016 to May 2017. This was an interventional prospective randomised control trial

study was conducted in the Department Of orthopaedics. 50 patients were included in this study. 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

50 patients were enrolled in this study of them 40 sustained fractures after fall from a standing height, while 10 patients sustained road traffic accidents. The average age at surgery was 73.11 years (range, 65-88 years). There were 20 men and 30 women. The mean operative time was 100.12±10.35 minutes. There were two cases of superficial infection and one death.

Table 1 basic parameter

Parameter	Number of Patients	Percentage (%)
Total Patients Enrolled	50	100
Cause of Injury		
- Fall from Standing Height	40	80
- Road Traffic Accidents	10	20
Average Age at Surgery (years)	73.11 (range 65-88)	-
Gender Distribution		
- Men	20	40
- Women	30	60

Out of the 50 patients, 15 (30%) achieved an excellent outcome according to the Harris Hip Score. 16 patients (32%) had a good outcome. This means that a slightly higher proportion than those with excellent outcomes showed significant improvement and functional recovery, but with some minor limitations. 13 patients (26%) were categorized as having a fair outcome. 5 patients (10%) had a poor

outcome, indicating minimal improvement in hip function. These patients likely continued to experience significant pain, discomfort, or limited mobility post-surgery. There was 1 patient (2%) who did not survive, highlighting the serious nature of the conditions being treated and the risks involved in surgery for an elderly population.

Table 2: Functional results according to Harris hip score

Functional outcome	No. of Patients	%
Excellent	15	30
Fair	13	26
Good	16	32
Poor	5	10
Death	1	2
Total	50	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 1971¹¹ 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 prefracture level of activity rapidly, preventing complications such as pressure sores, pneumonia, atelectasis and pseudoarthrosis”.

CONCLUSION

Intertrochanteric fractures of the femur are prevalent in elderly people, with females being more often afflicted. The primary cause of harm is falling inside one's own home. Based on our findings, we conclude that Cemented Bipolar Hemiarthroplasty is the preferred treatment for senior patients over the age of sixty with a femur fracture in the intertrochanteric region. Early mobilization and hemiarthroplasty treatment in senior patients with intertrochanteric fractures of the femur resulted in higher quality of life and long-term solutions, allowing for an early return to their pre-injury level. Early postoperative full weight bearing after Hemiarthroplasty prevents prolonged immobility, the requirement for rehabilitation, abnormalities, and the need for revision procedures in the long run.

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