



PRIMARY CEMENTED PROSTHETIC REPLACEMENT - A PREFERRED TREATMENT MODALITY IN UNSTABLE INTERTROCHANTERIC FRACTURE IN ELDERLY

Orthopaedics

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ABSTRACT

Introduction unstable intertrochanteric fractures in elderly osteoporotic bone is a challenging condition. Osteosynthesis by internal fixation through various extramedullary or intramedullary devices is technically demanding and leads to complication's associated with implant, fractured bone and medical condition. Aim of the study is to address the fracture, early mobilization and function's thereby minimizing complication's and improving condition of patients with primary cemented bipolar hemiarthroplasty. **Materials and Methods** we prospectively analyzed 20 cases there were 11 female's and 9 males operated with primary cemented bipolar hemiarthroplasty performed for osteoporotic unstable intertrochanteric fracture (Evans type III and IV, AO/OTA type 31-A2.2 and 2.3 fracture) with Moore's approach. 14 cases were of type 2 fractures, 3 were of type 3, 2 were of type 1 fractures and 1 was of type 4. Greater Trochanter encircage was done in 10 (50%) patients. Harris hip score was used for the clinical evaluation. The mean follow up period was 9 months. **Result:** In our study, which had 20 patients, the average age was 75.5 years. The Harris hip score was 80 on average. At follow-up, excellent to fair results were obtained in 18 (90%) cases, and poor results were found in 2 (10%) cases. There was a 12.2-day average hospital stay. There were just 2 infections reported: one deep and one superficial. There were no other complications. **Conclusion:** comminuted unstable intertrochanteric fracture in elderly is best treated with cemented bipolar hemiarthroplasty; than with internal fixation for osteosynthesis. Besides early ambulation and reduced hospital stay, cemented hemi-arthroplasty provides stable and mobile hips. Weight bearing can be started earlier than in other methods of treatment, which prevents any recumbency related complications.

KEYWORDS

cemented Bipolar Hemiarthroplasty · comminuted unstable Intertrochanteric fractures · Osteoporosis

INTRODUCTION

Hip injuries are a prevalent issue among the elderly. In 1990, there were reportedly 1.66 million hip fractures globally. With an expected incidence of 6.26 million by the year 2050, this global annual number is rising quickly. the prevalence of this is because of osteoporosis and longer life expectancy, there is an increase in rate of fractures. [1-3] In these individuals' bones are of low quality, and their fractures frequently result in problems after fixation such as femoral head perforation, metal failure, and non-union. The majority of fractures result from trivial trauma. An intertrochanteric fracture is described as a fracture extending from the extra-capsular basilar neck area to a location along the lesser trochanter. Fractures that have fragmentation in the posteromedial cortex are considered unstable. Endo prosthetic replacements have recently demonstrated early patient mobilization and positive long-term outcomes in unstable fracture. Osteosynthesis by Internal fixation is a reliable treatment option for stable trochanteric fractures. There is an ongoing debate over how to treat unstable osteoporotic fractures. Initially, osteosynthesis in unstable fractures using a fixed blade plate and an ender's nail had a high risk of fracture displacement and cut through. [4,5]

Osteosynthesis with Sliding hip screws were subsequently utilized with great effectiveness and took over as the standard way of fixing these fractures. Even with this device, though, early full weight bearing mobilization of an unstable osteoporotic fracture can cause limb shortening and rotational deformity due to uncontrolled telescoping, metal fracture, and head screw cuts. In physically aged and osteoporotic individuals, early weight bearing after internal fixation of comminuted intertrochanteric fractures by a variety of techniques resulted in fixation failure and subpar outcomes [6]. Therefore, for this patient a time of limited mobility is advised. This might lead to problems including atelectasis, bed sores, pneumonia, deep vein thrombosis, etc. [7,8] In order to treat unstable fractures, osteosynthesis with intramedullary interlocking devices now perform better. The long-term effects of these devices have not yet been determined. Hemiarthroplasty have recently demonstrated early patient mobilization and good long-term outcomes. [9-11]. However, further prospective randomized studies are necessary before drawing

any firm conclusions. There is an ongoing debate regarding the best course of therapy for an unstable intertrochanteric fracture. This study evaluates the role of primary hemiarthroplasty in treatment of unstable intertrochanteric fracture in the elderly patients

MATERIALS AND METHODS:

A prospective study was conducted at Al-Ameen medical college and hospital, between October 2020 to April 2022, in which 20 patients underwent cemented bipolar hemiarthroplasty for unstable intertrochanteric fracture.

Selection Criteria:

Inclusion Criteria:

1. Patient above 65 years of age.
2. Independently ambulatory before sustaining the fracture.
3. Unstable intertrochanteric femur fracture.

Exclusion Criteria:

1. Patient less than 65 years.
2. Non ambulatory patients before the surgery.
3. Open / stable fractures were excluded from the study.

Pre-operative data included: Age, sex, side, fracture type and mode of injury. Post-operative data included time to full weight bearing average hospital stay and complications. This study was approved by the institutional ethics committee. All the patients provided written informed consents.

RESULTS:

The data collected from patients was analyzed, evaluated, compared with each other and the observations summarized as follows;

- The average age at surgery was 75.5 years (range, 65-95).
- There were 9 men and 11 women. The male to female ratio was 1.2:1(55%-45%).
- 14 patients had type II fractures, 3 had type III fractures, 2 had type I fractures and one had a type IV fracture (Boyd and Griffin's Classification).
- Singh's index (grades of osteoporosis) was grade III in 12 patients

- and it was grade II in 8 patients.
- The mean operative time was 105 ± 17 minutes.
- Greater trochanter was reconstructed in 10 cases (50%)

The average Harris hip score was 80. Excellent to fair results were obtained at follow-up in 18 (90%) cases and in 2 (10%) cases, the results were poor. [Figure. 1] Average hospital stay was 12.2 days. Only 2 cases of infection noted one superficial and one deep. No other complications were there.

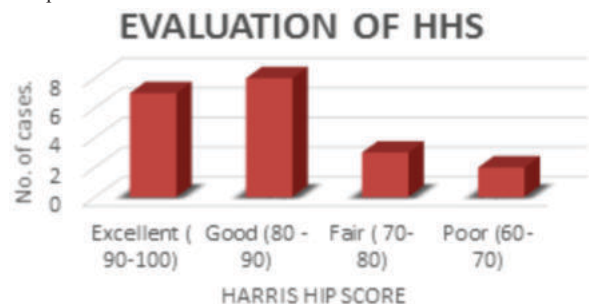


Figure .1 Evaluation of HHS

Complication;

Complications noted in 2 cases one case of a superficial infection and one case of a deep infection.

DISCUSSION;

For stable intertrochanteric fractures, osteosynthesis by internal fixation is the treatment of choice. When it comes to the care of unstable fractures, the situation is somewhat different. Internal fixation of unstable fractures has been shown to have a failure rate of up to 56%. In physically aged and osteoporotic individuals, early weight bearing after internal fixation of comminuted intertrochanteric fractures by different techniques leads to fixation failure and unsatisfactory results [6]. Hemiarthroplasty is a popular treatment option because it provides stability and enables for early complete weight bearing. The adoption of prosthetic replacement eliminates the majority of the difficulties associated with osteosynthesis by internal fixation. Initially, hemiarthroplasty was solely used to treat unsuccessful intertrochanteric fracture repair. In 1974 Tronzo[9], 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. Pho et al [10], achieved good results with use of Thompson prosthesis. In 1987, Green et al [12], reported good results with bipolar prosthesis. In this study we used bipolar prosthesis in all 20 cases. In our study, the average age of the patients was 75.5 years. The mean age in studies by Hantjens et al was 80 years, 77 years in Sanchetti et al [13], 65.5 years in Atul patil et al [14], 84.2 years in Casey C.K et al, and 75.6 years in Rodop O et al [15]. Stern and Goldstein used the Leinbach prosthesis to treat 22 intertrochanteric fractures and discovered that early ambulation and restoration to preinjury state was a distinct benefit. In a study of 39 patients with unstable intertrochanteric fractures treated with cemented bipolar hip arthroplasty, Grimsurd et al found a rather low risk of complication. Because majority of our patients were ambulatory soon after surgery, there were no problems such as pressure sores, pneumonia, or deep vein thrombosis in this study. Siwach et al observed limb shortening of 5mm in 64% of cases and limb lengthening of 5mm to 10mm in 28% of cases. He discovered the shortening was caused by significant sinking of the prosthesis during weight bearing. Kiran kumar et al. [16] observed that 20% of patients had a shortening of less than 2cm and 10% had a shortening of more than 2cm. In our study, only one case exhibited shortening of less than two centimetres. In their group of 35 patients treated with hemiarthroplasty, Sanchetti et al [13] found 71% of satisfactory to outstanding outcomes according to Harris hip score. In a study of 37 intertrochanteric fractures treated with bipolar hemiarthroplasty, Rodop et al [15] obtained 82% of satisfactory to outstanding outcomes as measured by the Harris hip score. In our study, 80% of cases yielded fair to Excellent results. Thus, the outcomes of hemiarthroplasty for the treatment of unstable intertrochanteric fractures are quite encouraging. In the current study, one case of superficial infection and one case of deep infection were treated with a two-week course of intravenous antibiotics. Nikunjmaru and K H Sanchetti's [13] research revealed one incidence of superficial infection. Atulpatil et al. [14] found two incidences of superficial infection in their research.

There were no cases of heterotrophic ossification. KhSanchetti et al [13] reported heterotrophic ossification at 6-month followup, however this did not restrict the range of motion. In this study, there was no dislocation, loosening, late infections, heterotrophic ossification, protrusion acetabula, or implant fracture. No cases were reported for deep vein thrombosis or hypostatic pneumonia.

CONCLUSION;

Primary cemented bipolar hemiarthroplasty in elderly patients with comminuted unstable intertrochanteric fractures produces a painless stable joint that allows patients to ambulate early in the post-operative period, limiting the risks associated with extended recumbency.



Figure: 2 Preop



Figure: 3 Postop

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