



ISSN (P): 2521-3466
ISSN (E): 2521-3474
© Clinical Orthopaedics
www.orthoresearchjournal.com
2021; 5(3): 139-141
Received: 01-05-2021
Accepted: 03-06-2021

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To evaluate clinical and functional outcome among 50 patients having unstable intertrochanteric fracture femur and treated by cemented hemiarthroplasty

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DOI: <https://doi.org/10.33545/orthor.2021.v5.i3c.304>

Abstract

Background and Method: Patients who have sustained an intertrochanteric fracture femur and are admitted to Index Medical College and Research Centre, Indore M.P. are taken for this study after obtaining their consent. Total No of cases: 50 Patients with intertrochanteric fracture femur satisfying the inclusion criteria, who required surgical intervention, were worked up clinically and radiologically. All patients selected for the study were examined according to protocol, associated injuries, if any, were noted and investigations carried out in order to evaluate fitness for anesthesia.

Result: Age distribution pattern of the patients. Average age -79.5 years, youngest patient-70 years and oldest-90 years. Increase in average Harris Hip Score at 1 month, after 6 months and after 1 year follow up.

Conclusion: Primary hemiarthroplasty provides a stable, pain-free, and mobile joint with acceptable complication rate as seen in our study. The meticulous reconstruction of the posteromedial calcar area with bone graft taken from neck of femur is crucial for stable implantation of the prosthesis. Early mobilization, less hospital stay and excellent stability offered by hemiarthroplasty makes it a promising method to deal with the challenging problem of comminuted intertrochanteric fractures in the elderly population.

Keywords: clinical, intertrochanteric, femur & hemiarthroplasty

Introduction

Hip fractures are an increasingly important public health problem. Due to osteoporosis and increased life expectancy, their incidence has increased. There were an estimated 1.66 million hip fractures worldwide in 1990. By the year 2050, the expected incidence of hip fracture will be 6.26 million ^[1].

The mechanism of injury is mostly trivial trauma ^[2]. Low-energy trauma (fall <1 m) caused 53% of all fractures in persons 50 years of age and older. In those over 75 years, low-energy trauma caused >80% of all fractures.

Patients with hip fractures are usually osteoporotic elderly patients with a high rate of mortality and morbidity. Therefore, such patients must immediately recover to their previous functional status ^[3].

Elderly patients are often unable to cooperate with partial weight bearing, the primary stability of the device is crucial to allow early mobilization to prevent cardiopulmonary complications and thrombosis ^[3]. Stable Inter-trochanteric fractures have been treated successfully with open reduction and internal fixation using Dynamic hip screw, Cephalomedullary nail or Jewett blade plate etc. Treating unstable comminuted inter-trochanteric femur fractures (Evan type 4 and 5, AO/OTA type 31- A2.2 and 2.3) in elderly osteoporotic patients has been challenging as getting anatomical reduction and allowing early rehabilitation are essential for a good functional outcome.

Fixed nail plate devices were used in the past for the fixation of intertrochanteric fractures, but had high rates of cut-out and fracture displacement ^[4,5]. Subsequently, a sliding hip screw was commonly being used with much success and became the predominant method of fixation of these fractures. DHS also came up with complications such as head perforations, excessive sliding leading to shortening, plate pullout and plate breakage.

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This continued to be a problem especially with the unstable type of intertrochanteric fractures [6].

Material and Method

Patients who have sustained an intertrochanteric fracture femur and are admitted to Index Medical College and Research Centre, Indore M.P. are taken for this study after obtaining their consent. This is a prospective study from Nov 2015 to June 2017. No of cases: 50

Inclusion criteria

- Patients age- 70 yrs and above
- IT fracture classification OA/OTA type 31-A2.2 and A2.3
- Evans classification type 4 and 5
- Patients with primary implant failure included.
- Patients with co-morbid conditions included.

Exclusion criteria

- Stable fractures.
- Any other fracture in the same bone apart from IT fracture.
- Fractures extending into the diaphysis [Subtrochantric]

Method of collection of data

Patients with intertrochanteric fracture femur satisfying the inclusion criteria, who required surgical intervention, were worked up clinically and radiologically. All patients selected for the study were examined according to protocol, associated injuries, if any, were noted and investigations carried out in order to evaluate fitness for anaesthesia.

Results

Table 1: Age distribution

Patients age in Years (range)	No. of patients	Percentage %
70-75	17	34
76-80	11	22
81-85	13	26
86-90	9	18

Age distribution pattern of the patients. Average age -79.5 years, youngest patient-70 years and oldest-90 years.

Table 2: Side distribution

Laterality (L/R)	No. of patients	Percentage %
LEFT	22	44
RIGHT	28	56

Table 3: Classification of fracture

Evans classification	No. of patients	AO classification	Percentage%
TYPE 4	17	31-A2.2	34
TYPE 5	33	31-A2.3	66

Classification of fracture, its dominant type in our study.

Table 4: Size of prosthesis

Size of prosthesis (MM)	No. of patients	Percentage%
41	3	6
43	10	20
45	22	44
47	12	24
49	3	6

Most common size of prosthesis used in our study.

Table 5: Harris hip score progression

	At 1 month	After 6 months	After 1 year
Average HHS	62.42	80	85.15

Above graph showing increase in average Harris Hip Score at 1 month, after 6 months and after 1 year follow up.

Discussion

Intertrochanteric fracture femur is a prevalent disease in the elderly population. In advanced-age patients, complications induced by bedridden status accounts for 77.9%. Because of poor bone quality that is age related osteoporosis, early mobilization is difficult and there is a high failure rate of internal fixation methods [7].

Hip fractures hence are most serious health care problems affecting elderly patients. There were an estimated 1.66 million hip fractures world-wide in 1990, this worldwide annual number will rise to 6.26 million by the year 2050.

Incidence of general complications such as pulmonary embolism, DVT and pneumonia ranges from 22% to 50% when internal fixation was done in these fractures.

Internal fixation implants like Dynamic hip screw, gamma nail and other intra-medullary devices are commonly used for the treatment of stable inter-trochanteric fractures [8]. But in unstable type of intertrochanteric fractures mainly in osteoporotic and elderly patients, complications like screw cut-out, Plate breakage, Z-effect, Reverse Z-effect are encountered [9].

To achieve good functional outcomes, the fracture reduction should be anatomical or near anatomical, there should be proper positioning of the implant and monitored rehabilitation protocol. But in unstable fractures along with osteoporosis, cut-out rates of implant is high, loss of reduction leads to poor functional results. Also Ambulation is prevented in elderly patients with fear of such complications, which in elderly patients causes other complications like Aspiration Pneumonitis, Bed sores, Deep vein thrombosis, atelectasis etc. which gets further complicated with existing co-morbidities [10].

Conclusion

Primary hemiarthroplasty provides a stable, pain-free, and mobile joint with acceptable complication rate as seen in our study. The meticulous reconstruction of the posteromedial calcar area with bone graft taken from neck of femur is crucial for stable implantation of the prosthesis. Early mobilization, less hospital stay and excellent stability offered by hemiarthroplasty makes it a promising method to deal with the challenging problem of comminuted intertrochanteric fractures in the elderly population.

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