

Case Series

Case series of results of intertrochanteric femur fracture treated with hemiarthroplasty

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ABSTRACT

Intertrochanteric femoral fractures are one of those mysteries which become more and more mysterious with advancing knowledge and better imaging modalities. 20 patient of intertrochanteric fracture treated with hemiarthroplasty prospective study done at GCS Medical College and Hospital. Good result obtain in term of early mobilization. The conclusion is that in comminuted fractures. 31A2.2, 31A2.3 by hemiarthroplasty give good result.

Keywords: Intertrochanteric femur fracture, Failure, Hemiarthroplasty

INTRODUCTION

Orthopedic practice demands repetitive and complex decision making. The goal of fracture treatment has shifted from just union of the fracture to the maximal functional recovery of the limb as early as possible.^{1,2} Intertrochanteric femoral fractures are one of those mysteries which become more and more mysterious with advancing knowledge and better imaging modalities. For many decades; attempts have been made to overcome the difficulties which surgeons encounter in the treatment of intertrochanteric femoral fractures.³

CASE SERIES

20 patient of intertrochanteric fracture treated with hemiarthroplasty were selected.

Inclusion criteria

Patients who were (a) more than 50 years of age, (b) all patients with unstable intertrochanteric femur fracture type 31-A2.2 and 31-A2.3 (AO/OTA classification); (c) patients in whom open reduction internal fixation for

intertrochanteric fracture has failed; and (d) patients must be ambulatory before sustaining injury were included.

Exclusion criteria

Patients who were (a) who were medically unfit with high risk on table for anesthesia; (b) with stable fracture patterns; (c) infections around hip joint; (d) treated for intertrochanteric fractures by other methods which are not failing; (e) chronically debilitated and bed ridden patients; and (f) with compound fracture were excluded.

Surgical technique for hemiarthroplasty⁴⁻¹¹

After induction of the patient, lateral position on a simple table is given with lateral position. under all aseptic precautions. By posterolateral approach fracture is open. Removal of the femoral head done. With the removal of the head, the fracture now has three main fragments namely the greater trochanter, the lesser trochanter, and the shaft with the retained portion of the neck of femur. In some cases the lesser trochanter was in continuity with the neck of the femur and was reconstructed with the shaft and greater trochanter with steel wires. A neck cut was taken

roughly about 1-2 cm above the lesser trochanter depending on the amount of comminution. At times, the lesser trochanter was found as a separate fragment with the neck as a separate fragment; in these cases it was difficult to reconstruct the calcar. In these cases, the lesser trochanter and the greater trochanter were fixed to the shaft with steel wires; however, most of the neck had to be sacrificed. Where lesser trochanter was comminuted, the trochanter pieces were left attached to the soft tissue and the medial defect was reconstructed using a cement mantle or a calcar stem prosthesis was used. In some cases the greater trochanter was fractured en masse and was reattached to the main shaft using steel wires. In cases where the greater trochanter was coronally split a tension band was applied beneath the gluteus medius tendon and a bony tunnel was drilled in the distal greater trochanter. In some cases, the greater trochanter was found to be severely comminuted; here ethibond sutures were used to suture together the trochanter pieces and the soft tissue to make a stable construct. The gluteus medius, greater trochanter, and the vastus lateralis apparatus were maintained in continuity as a stable lateral sleeve.

This was then fixed loosely to the shaft fragment with steel wires or ethibond sutures. In cases where both the greater and lesser trochanter were comminuted, they were both segregated with ethibond suture to form separate masses and were reattached to the shaft after insertion of cemented femoral stem.

Thus at the end of reconstruction, the greater trochanter, the lesser trochanter, and the shaft were wired together using steel wires, while only ethibond sutures were used in cases which were severely comminuted.

Version of the prosthesis is decided as a long axis of the leg is taken, a line is drawn perpendicular to its axis, and femoral rasping is done 15 to 20 degrees anteversion to it. After a canal preparation trial bipolar prosthesis was then inserted and checked for limb length equality. Final implant inserted after cementing

The short external rotators were then sutured back using bone tunnels in the greater trochanter with the closure of the superficial layers, as routine over a suction drain after achieving hemostasis.

All patients underwent a routine postoperative physiotherapy protocol that included early ambulation in bed and lower limb exercises with weight bearing as allowed by patient condition. The rehabilitation then progressed as tolerated by the patients. Patients were examined postoperatively at 6 weeks, 3 months and 6 months and thereafter annual follow up was advised. At each follow up visit, a clinical radiological examination was done and the patient was evaluated using the Harris hip score and were graded as <70 poor, 70-79 fair, 80-89 good and 90-100 excellent. Anteroposterior radiographs of the hip were analyzed at each follow-up to note evidence of loosening.

Table 1: Age (years) distribution in groups.

| Age group (in years) | n |
|----------------------|-----------|
| 51-60 | 7 |
| 61-70 | 4 |
| 71-80 | 7 |
| 81-90 | 7 |
| Total | 25 |

Table 2: Associated medical comorbidities.

| Comorbidity | n |
|--|-----------|
| No known | 4 |
| Hypertension | 9 |
| Hypertension+chronic obstructive pulmonary disease | 3 |
| Hypertension+diabetes | 9 |
| Total | 25 |

Table 3: Functional outcomes.

| Functional outcome | n |
|--------------------|----|
| Excellent | 6 |
| Good | 16 |
| Fair | 0 |
| Poor | 1 |



Figure 1: Case 1- fixed with TBW+kwire 6 month follow-up.

DISCUSSION

Between May 2017 and November 2019, 25 patients with

an unstable comminuted intertrochanteric femoral fracture (AO/OTA type 31A2.2, A2.3) were enrolled in the study, which was approved by our institutional review board. Written and informed consent of each of the patients was taken. The majority of patients fell at home. All the cases were followed up for a period ranging from 1 month to 1 year with an average of 6 months. The functional results were evaluated on the basis of Harris hip scoring system.

Mean age

Mean age was 71.12 years. Unstable intertrochanteric fractures are more common in old age groups.

Age distribution

Minimum patients belonged (4) to 61-70 years of age, rest age groups had equal distribution (Table 1). Similar to other study.⁷⁻¹⁰

Sex distribution

Total numbers of females (15) is higher as total numbers of males (10).

Side distribution

In our study, the right (14) side was more involved than the left (11) side.

Associated medical comorbidities

Hypertension, chronic obstructive pulmonary disease and diabetes mellitus were frequently observed medical comorbidities. Since most of the patients belong to elderly age group, medical comorbidities are very common. There was 4 patient who had no medical comorbidities (Table 2). Similar to other study.⁸⁻¹⁰

Duration of hospital stay

Minimum duration of stay was 8 days and maximum duration was 15 days. Mean duration is 9.88 days as compared with fixation is more.^{9,10}

Mean incision length and blood loss

Mean incision length in hemireplacement arthroplasty was big (10.92 cm) and so resulting blood loss was high (320 ml) and in all the patients blood transfusion was required (1 bag per patient similar to other study).

Fracture type

Majority of them were AO/OTA type 31A2.2, is 21 which is a highly comminuted type of fracture, seen in elderly patients because of osteoporosis. Rest of case is 31A2.3.

Operating

Average operating time (101 min) was high that means longer duration of anesthesia and resulting complex surgery.

Method of greater trochanter fixation

According to the fracture pattern, greater trochanter was fixed and reconstructed either using a tension band wiring along with k wire fixation (5), only tension band wiring (14) or ethibond sutures (6).

Limb length discrepancy

There is no significant limb length reduction in hemireplacement (average is 0.5 cm). Not a single case reported limb lengthening. One case got infected and implant had to be removed and has limb shortening of 3 cm. As compared with other study is less.^{8,9}

Harris hip score

Evaluation of post-operative functional status of all patients at the 1, 3, and 6 months interval with Harris hip scoring system showed following results. Which implies that those patients who had hemireplacement had a good activity of daily living (Table 3).

Early post-op complications⁷

There were 2 early post-operative complications in hemireplacement group which included 2 superficial infections which got treated by long term antibiotic therapy according to sensitivity.

Delayed postoperative complications and revision surgery

Out of 25 patients, 2 patients died because of medical comorbidities, not related to surgery. 1 patient presented with deep seated infection with discharging sinus at 1 month follow up visit and had to undergo debridement surgery and prolonged antibiotic therapy; upon failure to control infection removal of the prosthesis was done and yet another debridement surgery was done.

This patient had 3 cm shortening after all the procedures and is the only patient with poor Harris hip score at 6 month follow up.

Mortality

Out of 25 patients, 2 patients had died by the end of 6 months, giving a mortality rate of 8%.

CONCLUSION

Postoperative ambulation time and time to start

independently walking were significantly less. Harris hip score was significantly higher at 1, 3, and 6 months of follow up. Pain, limp, use of support for walking, sitting, and stair climbing were significantly better. So, hemi-replacement provides faster rehabilitation to the patient, and better activity of daily living than fixation. The number of delayed complications, number of revision surgeries, and limb length discrepancy (shortening) were significantly low. Thus, patients with hemi-replacement experience low level of morbidity, and low level of difficulty in activity of daily living. It also avoids a revision surgery in elderly patients with medical comorbidities thereby decreasing morbidity to a great extent.

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