



CASE STUDY

A STUDY ON MANAGEMENT OF INTERTROCHANTERIC FRACTURES BY VARIOUS MODALITIES

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ABSTRACT

Introduction: Several fixation devices have been developed to overcome the difficulties encountered in the treatment of intertrochanteric femoral fractures. However the management of such fractures still remains a point of discussion.

Aim of the Study: This study is undertaken to assess the various modalities of surgical management of intertrochanteric fractures and their clinical, functional and radiological outcomes in our institution.

Materials and Methods: This is a prospective study from July 2015 to March 2017. The present study consists of 50 adult patients with intertrochanteric fractures of femur who are treated with DHS and PFN, Ender's nails and Cemented bipolar prosthesis at Department of Orthopaedics, Prathima Institute of Medical Sciences, Nagunur, Karimnagar, Telangana State, India. All the patients with intertrochanteric fractures were selected among the admissions, operated and results were assessed clinically and radiographically. Clinical evaluation was made using the Modified Harris hip score. Perioperative complications were recorded. The mean follow-up period was 6months.

Results: Fracture union was achieved in all cases. Bony consolidation was seen after a mean of 20weeks (range 18 to 22 weeks) and the time until full weight bearing ranged from 10 to 18 weeks. The mean Harris hip score was 85.02 (DHS – 25, PFN-09, CEMENTED BIPOLAR 09, ENDERS NAIL-07). None of the patients had a poor Harris hip score. Superficial wound infection occurred in 3 patients and varus collapse in 4 patients.

Conclusion: Due to the quicker union time, earlier postoperative mobilization, shorter operation time and better functional outcome, PFN seems to have distinct advantages over the other implants and is currently the implant of choice in the surgical management of unstable intertrochanteric fractures. However, the DHS, PFN, CEMENTED BIPOLAR & ENDERS NAIL have their own set of advantages and indications and play a role in the management of certain specific fracture.

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INTRODUCTION

Intertrochanteric fractures are a major cause of morbidity and mortality in elderly population. The incidence of all hip fractures is approximately 80 per 100,000 persons. Intertrochanteric fracture makes up 45% of all hip fractures (Zuckerman, 1996). Unstable intertrochanteric fractures in elderly patients are associated with high rates of morbidity and mortality (Jensen, 1981) although the results have improved with the use of internal fixation. In these patients however, comminution, osteoporosis, and instability often preclude the early resumption of full weight bearing (Bergman *et al.*, 1987). Trochanteric fractures almost invariably occur as a result of fall, involving both direct and indirect forces. Koval (Asencio, 1978) and Zuckerman postulated that Intertrochanteric fractures constitute almost half of all fractures of the proximal femur. Intertrochanteric fractures like femoral neck

fractures are commonly encountered in the practice of Orthopaedic Surgery. Intertrochanteric fractures usually occur in patients over 60 years of age commonly and are three times more frequent in women than men because women tend to be less active and develop postmenopausal osteoporosis. Severe osteoporosis in these age group is responsible for high incidence of trochanteric fractures with minimal to moderate trauma. Norton and Riska described patients with Intertrochanteric fractures to be 10 to 12 years older than patients with intracapsular femoral neck fractures, the average age reported in these patients in 60 to 75 years (Bendo *et al.*, 1994). The present study consists of 50 cases of intertrochanteric fracture treated by different surgical modalities like DHS, PFN, Enders Nail's and cemented bipolar.

MATERIALS AND METHODS

This was a prospective study conducted at Prathima Institute of Medical Sciences, Karimnagar, Telangana state from 2015 to

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2017. During this period 50 adult patients with intertrochanteric fractures, classified according to the AO/OTA classification, were selected according to inclusion criteria. Out of the 50 patients, 25 underwent Dynamic Hip Screw (DHS) fixation, 09 underwent Proximal Femur Nailing (PFN), 09 underwent cemented bipolar, 07 underwent Ender's nailing. The choice of implant for each patient was based on the individual fracture geometry and age of the patient. It was a comparative study. The mean follow up period was 10.2 months (Range 6 – 14 months). All the cases were followed up at regular intervals. In all the patients, along with personal data, mode of trauma, type of fracture, type of surgery, intra operative & postoperative complications, follow up examination including hip joint examination and duration of full weight bearing were considered. This study was conducted with due emphasis for analysis of functional and radiological outcome of surgical management of both stable and unstable intertrochanteric fractures.

Inclusion criteria

All patients with both stable and unstable intertrochanteric fractures with age > 18 years, either sex, fit for surgery, patient giving consent for surgery.

Exclusion criteria

Age < 18 yrs, unfit for surgery, compound fractures, pathological fractures, associated fractures on same side, with previous ipsilateral hip / femur surgeries.

Surgical procedure

The patient was positioned supine on the fracture table. Reduction was carried out by closed means whenever possible under C-Arm guidance. In cases where closed reduction did not yield satisfactory results, open reduction was done. After achieving satisfactory reduction, the fracture was stabilized with the chosen implant. A standard lateral approach was used for DHS, posterior approach used for cemented bipolar, skin incision approximately 5 cms long was made on the medial aspect of the lower thigh beginning from the adductor tubercle. A small 3 cm incision proximal to the tip of greater trochanter was used for PFN. After the procedure, thorough wound wash was given and wound was closed in layers after inserting a drain in DHS and cemented bipolar.

Follow up and Evaluation

Standard post operative protocol was followed and the patient was mobilized partial weight bearing with walker support at the end of 6 weeks. All patients were followed up every 2 weeks until 6 weeks followed by monthly follow up until 6 months. Radiologic outcome was evaluated by taking check X-Rays in the immediate post op period, at 6 weeks and at the end of 3 months and 6 months. Functional outcome was evaluated using the Modified Harris Hip Score 6,7 at 3rd month and 6th month post operatively.

RESULTS

In our study of Bipolar Hemiarthroplasty out of 9 patients 3 (33.34%) had excellent, 5 (55.56%) good outcome, 1 (11.12%) had fair outcomes respectively. Out of 9 patients of PFN 4 (44.44 %) of excellent, good 4 (44.44%), fair 1 (11.12%) patient

and no poor results. Out of 25 patients of DHS 20 (80%) patients are excellent to good results, 3 (12%) patient had fair and 2 (8%) patients had poor results. Out of 7 patients of Ender's nails 2 (28.57%) had excellent and 3 (42.85%) had good and 1 (14.28%) fair, 1 (14.28%) had poor results.

Dynamic hip screw fixation



Preoperative Xray



Immediate postop Xray



6months followup Xray

Fixation by enders nails**Preoperative Xray****6months followup Xray****Proximal femoral nail fixation****Immediate postop Xray****Preoperative xray****Cemented bipolar fixation****Preoperative Xray****Immediate postop Xray****Immediate postop Xray****DISCUSSION**

In the present study of 50 patients of intertrochanteric fractures, 9 cases were treated with PFN, 25 cases with DHS, 9 cases with bipolar Hemiarthroplasty and 7 with Ender nails. The data was assessed; analyzed, evaluated. The average age of patients in our study was 65years. Out of 50 patients 28(56%) female and 22(44%) male incidence noted showing female preponderance as observed by various other western authors (Dousa *et al.*, 2002; Pajarinen *et al.*, 2004) as the Indian males are more active and mobile than females. Left side is more commonly involved in 27(54%) patients than right side 23(46%). Fracture classified based on Evans classification as stable 12(24%) fractures and unstable 38(76%) fractures.

Average blood loss in Cemented bipolar 300ml, PFN 100ml, DHS 250 ml, Enders nail 50ml. Full weight bearing started in cemented bipolar from 6weeks, PFN 8weeks, DHS 12weeks, Enders nail 12weeks. Postop complications in DHS noted are varus malunion 1(4%), screw backout 1(4%), Implant failure 1(4%). In PFN, superficial infection 1(11.12%), screw backout 1(11.12%). In Cemented bipolar, superficial infection 1(11.12%), limb lengthening 1(11.12%). Enders nail distal migration of nails 2(28.5%), limb shortening 1(14.2%), knee joint stiffness 3(42.8%), external rotated malalignment 1(14.2%).

Conclusion

The ideal modality of surgical management for unstable intertrochanteric fractures has remained a point of discussion with the advent of many new implants. However, it cannot be overemphasized that the key to a good outcome is to achieve a good fracture reduction, regardless of the method of stabilization. Based on the results of our study, the PFN seems to have many distinct advantages over the remaining implants in terms of shorter operative times, relatively less blood loss and smaller incisions. In addition, the PFN had significantly better functional outcome, shorter time for complete radiological union and negligible post operative complications when compared with the other implants. It also has the unique advantages of closed reduction, preservation of fracture haematoma, less tissue damage, early post operative rehabilitation and weight bearing and early return to work. So, we conclude that the PFN is the implant of choice for the management of unstable intertrochanteric fractures.

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