

Original Research Article

Is External Fixation In Femoral Intertrochanteric Fractures in Critically Ill Geriatric Patients – Still Relevant?

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Abstract: Trochanteric fractures are common fractures seen in the elderly often beset with medical problems of cardiac, renal, respiratory problems and systemic diseases like hypertension and diabetes. The efficient fixation of Trochanteric fractures by DHS and PFN depends on the fractures as classified by Boyd & Griffin. However prolonged anaesthesia with medical problems, surgical exposure and blood loss coupled with the patient's reluctance may force a surgeon to opt for older conservative treatment by traction /derotation boot & bar with consequences of malunion and problems of prolonged recumbency. Fixation of these fractures using multiple Schanz Screw (External Fixator) under local anaesthesia without exposure offer adequate stability permitting early ambulation with least risk from medical problems. The goal of this study was to evaluate the role of external fixator as a treatment of intertrochanteric fractures in geriatric patients with high unacceptable operative risk to withstand conventional osteosynthesis.

Keywords: Trochanteric fractures, Adequate Fixation, Early Weight Bearing, Local Anesthesia and High risk patients

INTRODUCTION

Intertrochanteric fracture femur are common fractures which occurs as a result of low energy trauma such as simple fall [13] in advanced age while caused by high velocity trauma in young individuals. Due to increase in life expectancy together with osteoporosis and senile muscle atrophy patient with intertrochanteric fractures are increasing. Geriatric patients with these fractures usually have medical and surgical problems like chronic obstructive pulmonary disease, hypertension, diabetes mellitus which make them unfit for prolong anaesthesia

Efficient fixation of intertrochanteric fracture with internal fixation device such as DHS [10, 14] and PFN [8] depends on the fracture classification by Boyd and Griffin [3]. However due to prolonged anaesthesia with medical problem, surgical exposure, blood loss with patient reluctance may force a surgeon to opt for conservative method like traction/ derotation boot bar which results in malunion and problem of prolonged recumbency like UTI, pneumonia, DVT etc.

Fixation of these fractures using multiple schanz pins (external fixator) [16] under LA without exposure offer adequate stability, early postoperative

mobilization and preservation of fracture hematoma; shorter hospital stay and early mobilization of the patient [2,4,5,6,17].

AIM

Adequate fixation, early weight bearing, with minimal blood loss, local anesthesia, simple quick and inexpensive procedure are some advantages and the aim was to analyze its place in treatment of trochanteric fractures.

MATERIALS AND METHODS

28 high risk patients of intertrochanteric fractures were taken at Irwin Hospital Muzaffarnagar, Shymal Trauma and child care and MMC College and hospital was treated with external fixation that are not fit for major surgery (open reduction and internal fixation) under anaesthesia due to associated medical/surgical problems. According to the American society of anaesthesiologist risk score [7, 9] anesthetic risk for prolonged and invasive surgery were classified as follows. Out of 28 patients 15 patients were classified as grade 3(58.57%) while remaining 13 patients were under grade 4 (46.42%). AP and lateral X-rays views of the injured hip fractures were done and fractures graded according to Boyd and Griffin classification [3]. There

were 8 (28.57%) type 1, 6 (21.42%) type 2, 9 (32.14%) type 3 and 5 (17.85%) type 4 fractures. The average age at operation was 75yrs (70±80) and M:F ratio 19:9. The selection criteria was more than one comorbidity e.g diabetes mellitus, neurological disease, heart failure, coronary disease, respiratory disease or anaemia with HB less than 8-9gm/l. Exclusion criteria was previous Hip fracture, multiple fractures, pathological fractures, patient going on chemotherapy and extremely obese patients. Shortest and safest anaesthesia was used which is intramuscular sedative(5-10mg diazepam) and pain killers (50mg tramadol) which is given 30 min before surgery and just before surgery 1% xylocaine was infiltrated at proposed sites of pin insertion. Patient was placed supine on the fracture table and fracture was reduced by traction and gentle manipulation under image intensifier and after acceptable reduction in both AP and Lateral view patient was painted and draped [1, 3]. The first pin was inserted through a small

incision at the base of greater trochanter across the fracture site into the femoral neck. Two or three more pins inserted parallel to each other across the fracture site up to the subchondral bone in the femoral head. Once the fracture was stabilized the knee was flexed to 90 to increase the range of motion and three 4.5mm cortical schanz screw were inserted at right angle to the shaft fragment and pins were connected through universal clamp and tubular connecting rod. Procedure was completed on an average 30min. Final check by fluoroscopy was made.

Post-operative

Patient was encouraged to do active hip and knee exercise on the 1st day. Partial weight bearing using a walker started on 2nd and 3rd day and patient was discharged from the hospital on 4th-5th day depending on tolerance to pain and confidence of standing. Patient was taught how to do pin sites dressing.

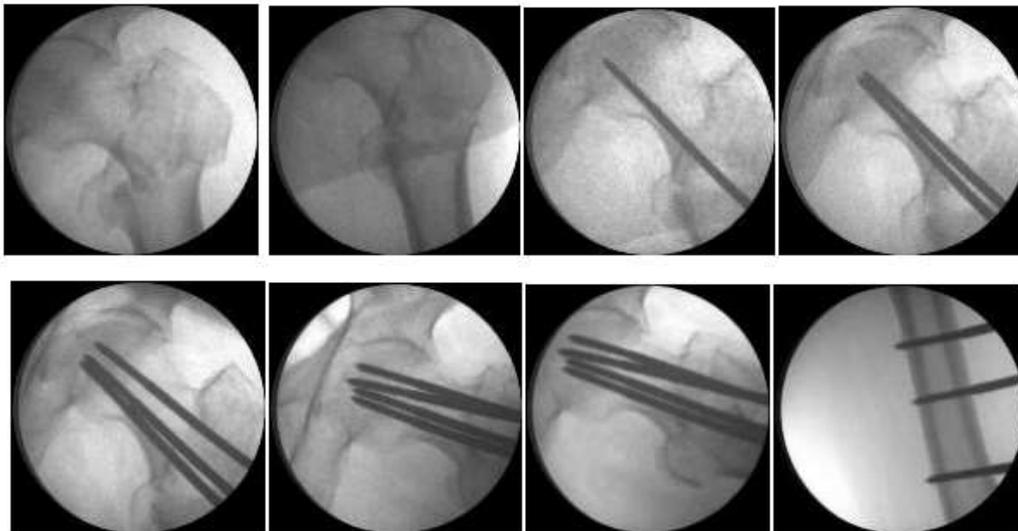


Fig-1: Per operative steps of fixation of trochanteric fracture by external fixator



Fig-2: X-rays after 2 months of external fixation



Fig-3: X-rays after 4 months of external fixation

OBSERVATIONS

Intertrochanteric fractures of all type were fixed using external fixator in one plane and 4.5 mm Schanz screw (3-4) was used in fixator assembly. Procedure was completed on an average in 30 minutes (range 25-35 mins) after giving local anesthesia. 1 patient developed cardiac complication but was revived.

Follow-up regime-evaluation performed every month to note the ambulatory status of the patient, status of quadriceps muscle(wasting present or not) and X-Rays done at each visit, to find adequacy of reduction, union of the fracture, minor pin adjustment if required and complications if any.

Table 1: Pre Injury health status of the patients

Co morbidity	Numberpatients	%
Heart failure	4	14.28
Coronary disease	6	21.42
Respiratory disease	3	10.71
Diabetes mellitus	3	10.71
Neurological disease	2	7.14
Anaemia	10	35.71
Total	28	

The lower extremity measure [9, 13], was used to assess the pre injury and post-operative functional status at 12 months based on daily activities, walking capacity & pain.

RESULTS

1. Surgery was performed after a mean of 5-6 days following trauma. No intra operative complications occurred
2. In case of anemic patients bloods were transfused as per their requirement. Out of 26 Patients 10 patients (38.46%) required blood transfusion.
3. The average operative time in this study was 30 mins (25 to 35 min) [8, 9]
4. The average Hospital stay were 4 days (range 3 to 7 days)
5. The average time of union was 14 weeks (10 to 18 weeks)

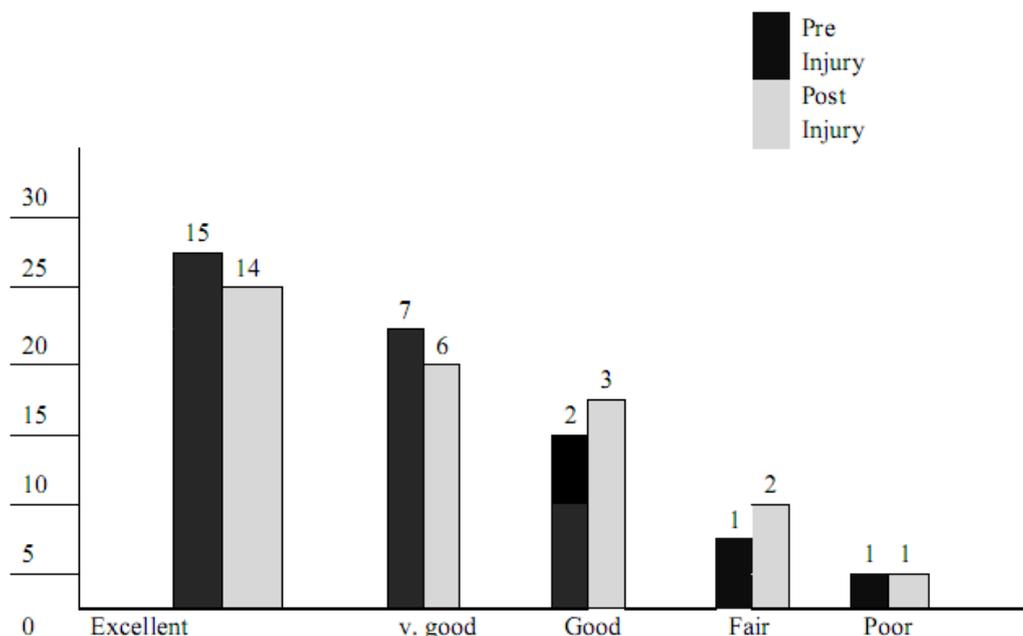
6. All patients returned and were followed up till removal of external fixator. Follow up time was from 8 months to 2 years.
7. 26 patients were mobilized at an average time of 2-5 days after surgery.
8. Walking with support and partial weight bearing was possible in 20/26 (76.92%)of patients, within two months after procedure and 6/26 (23.07%), 16 percent were able to make after 4 months. full weight bearing was possible after 6 month in 26/26 (100%) , of patient.
9. 2 (7.6 9%) patients developed pin tract infection which subsided after removal of pins[2].
10. 2/26 (7.69%), patient developed shortening of limb from .6cm to 1 cm
11. 2 patients died within 3-6 months after discharged from the hospital due to their medical problems hence not included in this study.
12. Knee stiffness and pin loosening were the most common complication

The pre-injury functional status of the patients were as under

Table 2: Lower Extremity Measure Score [9, 13]

Score	Results	No. Of Patients	%
100	Excellent function	14	53.84
85-99	Very good function	6	23.07
55-84	Good function	3	11.53
26-54	Fair function	2	7.68
25	Poor function	1	3.84

After 12 months e.g. post injury functional status of patients, 14 patients (53.84%)scored excellent, 6 patients (23.07%)have very good function, 3 patients(11.10%) scored good & 2 patients(7.26%) fair, 1 patient(3.84%) poor. It is clear that there is no difference between pre injury & final functional score so as to say the result of our study is near to other studies regarding fixation of trochanteric fractures by external fixator in high comorbidity patients



**Fig-4: Functional score of patient’s pre injury (Black) & 12 months postoperative (grey).
No significant difference**

DISCUSSION

IT femoral fractures are one of the most important fractures of the lower extremity especially in geriatric population due to increasing life expectancy and osteoporosis. The main goal is survival of the patient and to minimize the complication related to age and immobilization which can be achieved using internal or external fixation. Conservative methods have complication like pneumonia, bed sores, and UTI while OR and IF in geriatric patients associated with high risk of anaesthetic or post-operative complications. External fixation is a simple procedure which requires minimal invasion, shorter operating time, less hospitalization and early ambulation in high risk geriatric patients. Trochanteric fractures generally unite due to cancellous region our primary aim is near anatomical reduction, minimal shortening and earliest ambulation.

The most common complication of IT fractures is late collapse due to instability of medial cortex and implant failure due to severe osteoporosis. Main complication in using external fixator for IT fracture are pin traction infection and varus deformity in grossly unstable fractures, knee stiffness while advantage is less invasive, don’t interfere with fracture hematoma which is important for union, shorter surgical time, less expensive so it may be considered as a treatment modality for high risk geriatric patient [11, 12, 15].

CONCLUSION

The best treatment for trochanteric fracture in geriatric patients with the associated medical and surgical problem is controversial but external fixator might be the possible solution for those patients who are

at high risk for open surgery due to anaesthetic risks and blood loss. The technique is simple, safe and economical and boom for developing countries where patients are undernourished, poor socioeconomic status and could not withstand high cost of treatment

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