



EXTERNAL FIXATION IN PERTROCHANTERIC & BASICERVICAL FRACTURE OF FEMUR

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ABSTRACT:

Objectives: To assess the outcome of external fixators in pertrochanteric fractures and fracture neck in elderly patients.

Study Design: It is a prospective study.

Place and Duration of Study: From March 2007 to Jan. 2009. Multicenter, mainly at Nawaz Sharif Social Security Teaching Hospital, Lahore

Patients and Methods: Twenty five high-risk old patients with pertrochanteric and basicervical neck fracture of femur treated with external fixation, with follow-up of one Calendar year. Routine workup of all the patients had some associated disease like hepatic failure, renal failure, malignant hypertension and cardiac myopathies, malnutrition and bed-sores. Most of the patients were high-risk not fit for anesthesia and were managed under regional blocks for minimally invasive procedure.

Results: This method of treatment was associated with less blood loss ($p < 0.001$), short operation time, reduced postoperative pain, shorter hospital stay and early mobilization. Superficial infection (pin tracts) was noted in 12 of the patients which was significantly higher ($p < 0.01$), managed successfully with simple antibiotics and pin care. The fracture union period was comparable with the standard open osteosynthesis procedures.

Conclusion: External fixation is a safe procedure in elderly high risk patients with pertrochanteric fracture of femur.

Keywords: Fracture proximal femur, external fixator, high-risk old patients.

INTRODUCTION:

Per trochanteric Hip fractures in the elderly patients are serious injuries with high morbidity and high mortality. Due to high morbidity and mortality, the treatment of pertrochanteric fractures has remain controversial.^{1,2} It is more common in females due to early osteoporosis. It is more common problem with us, as our community pay very little attention to prevent osteoporosis. Moreover, the general condition of these patients is often

poor. In the majority of geriatric patients, mobility is limited before the fracture, and further expected to decrease after management.³

Conservative management outcome of geriatric fractures is not satisfactory due to the increased risk of co morbid factors in this age group. Prolonged immobilization is one of the biggest risk factor.⁴ The objectives of surgical treatment are to obtain anatomical reduction, to obtain

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stable fixation and to allow early rehabilitation.⁵ Various surgical techniques and materials have been proposed. Open reduction and internal fixation of patients with pertrochanteric fractures may result in increased risk of hemorrhage and additional soft tissue trauma.^{6,7} For the elderly patients the treatment of choice for pertrochanteric or basicervical fractures is surgical as non-operative treatment involves high morbidity and mortality compared to surgical treatment^{8,9}. But the mortality rate in the first postoperative year is also reported as 18%, to 30%.⁴

In developing countries, the situation is more serious due to lack of intensive care. Many patients with pertrochanteric fractures are unsuitable for treatment by conventional open reduction and internal fixation¹⁰. In these high risk group of patients, minimal invasive surgical techniques with less morbidity should be priority. A surgical procedure that achieves minimal surgical blood loss, short operative and hospitalisation time, minimal anaesthetic risk, the least morbidity and mortality rates, is the treatment of choice¹¹. External fixator is the probable rescue in these situations. Recently, external fixators with superior biomechanical properties using minimally invasive techniques have been developed.¹² In this study, results of patients with intertrochanteric fractures, who have been managed with external fixators are analyzed.

PATIENTS AND METHOD:

From March 2007 to Jan. 2009 twenty five consecutive high-risk (ASA >3)¹³ old patients with pertrochanteric and neck of femur fracture landed in emergency of Nawaz Sharif Social Security Teaching Hospital, and other center were included in the study. Patients were given informed consent.

We excluded pathological fractures, sub-trochanteric extension, reverse obliquity and fractures presenting more than fifteen days after fracture. All fractures were classified before operation according to Evans classification.¹⁴

Procedure: After proper painting and draping, fractures were reduced closely under image intensification and a guide wire was passed in the upper part of the head and neck through trochanteric region to act as stabilizer and as a derotation wire. Two 5 mm Schanz screws were passed perpendicular to the fracture, after making initial holes in the proximal cortex with 4.5 mm bone drill bit, up to 0.5 to 1 cm from sub-chondral region. Further two pins were applied to the proximal shaft and two to the distal femur following the lever principals. All patients received pre and postoperative antibiotics and thromboprophylaxis with low molecular weight heparin along with elastic crape bandage on leg and foot for two weeks mobilization was commenced from second post operative day with the help of walking frame. Patients were encouraged to weight bear partialy . Patients were discharged on an average of fourth post operative day (range 2- 7days). Full weight bearing was allowed on 6-10 weeks time. Follow-up was on two weeks, one month, three month, six month and at one year. Three of the patients were lost to follow-up because of mortality. Data were analysed using Microsoft Excel.

RESULTS:

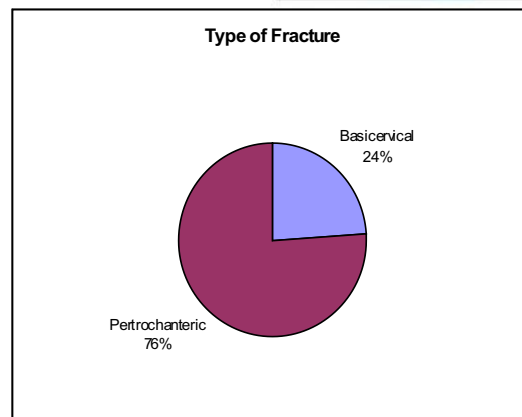
There were 17 males and 9 females.14 fractures (9 M / 5 F) on left side and 11 (7 M / 4 F) on right side. The preparation time i.e; positioning of the patient and closed

reduction, was 12 minutes (7-17 minutes). There were 14 patients with CLD ((9 M / 5 F). Operation time was 22 minutes (17- 28 min.). Blood loss 10-15 cc. More than half the fractures(15) reduced anatomically i.e.; where neck shaft angle was reproduced and less than 2mm gap at the fracture site on AP and Lat x-rays. Average shortening was 9.4 mm (Range 00 mm 14 mm). No Medialization of the distal fragment was noted in any patient. Minor valgus angulations up to 10 degrees and a gap of not more than 3-4mm were acceptable where anatomical reduction was not possible. Only one fracture has an unacceptable reduction. The fixator was well tolerated and did not interfere with sitting or lying and movements at hip and knee. Pain was recorded on second post operative day, when partial weight bearing started. On a four-grade verbal scale (none, mild, moderate and severe). All the patients had mild to moderate pain on second postoperative day which regress subsequently over few days to almost no pain. The walking ability before and after surgery at six month follow up revealed that there was increased dependency on walking aids for all the patients (Table I). Pin tract infection (superficial) was noted in twelve of the patients. Only one patient had one pin breakage at last follow-up (Table II).

Figure I: Pre-op and post-op with evidence of union



Figure II: Pin breakage



Type of Fracture	Basicervical	Petrochanteric
Numbers	06	19

Table: I

Total	Independent walker	One Stick	Two Stick	Walker	Bed Ridden
No. Of Patients 25	18	02	01	02	02



Functional Outcome

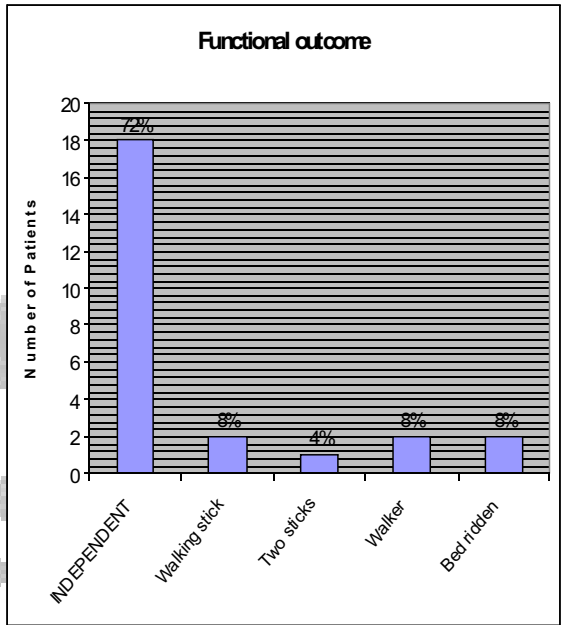
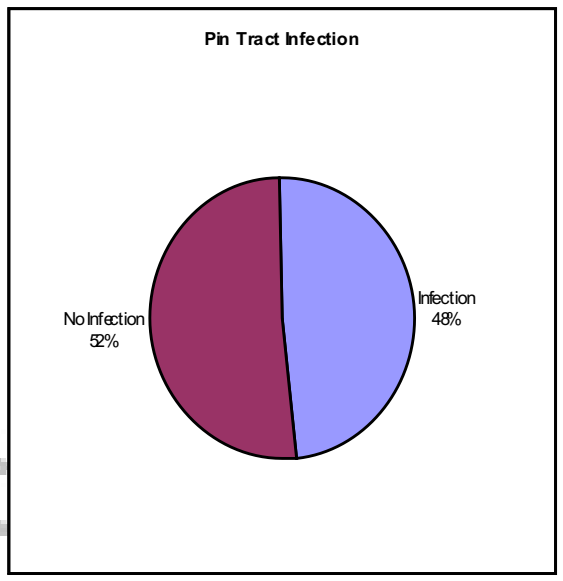


Table II: Percentage of Pin tract infection



DISCUSSION:

External fixator was used for pertrochanteric fractures in the past prior to the sliding hip screws in high-risk old patients^{15,16,17}. The main advantages of this method include quick and simple application, almost no blood loss, satisfactory stabilization and early rehabilitation. The only drawback is that fixator application is limited to pertrochanteric and few basicervical fractures of femur compared to other implants. In our study all the patients were high-risk and with low reserves. So early mobilization was essential to prevent associated complications like chest infection, UTI, DVT, bed sores and to improve nursing care. External fixation proved to be excellent in achieving these goals. Apart from this, it has definitive positive socio-economic impact on family and society as a whole. Although quality of bone, pattern of fracture and adequacy of reduction plays a significant role in the stability of fixation. Our study shows that external fixators have significant low rate of mechanical complications. This can be attributed to the long rods of fixator acting as tension-bands. The distance between loading axis and the outer tension-band increases its efficacy. Additional reported advantages of external fixation include the possibility of application under local anesthesia for patients who have poor general health in whom other options are not available.^{17,18} It is a closed application, without disturbing the fracture haematoma and preserve the biological healing potential.¹⁹ The walking ability and accommodation before the fracture have a significant role in the final functional outcome. For many patients, however, the fracture has a profound impact, resulting in a reduction of their walking capacity and an increase in social dependency²⁰,



irrespective of the method of fixation. Superficial pin-track infection remains the main complication of external fixation, but it is easily treatable and subsides promptly by good oral antibiotics and pin-care education to the patient and their relatives. This method of osteosynthesis provides early mobilization, less operation time, short hospital stay, early mobilization and cost effective method of treatment.

CONCLUSION:

External fixation is a safe procedure in elderly high risk patients with pertrochanteric fracture of femur.

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