



Closed Femur Interlocking Nailing in Lateral Position

Dr. Neel M. Bhavsar	Department of Orthopedics, Smt. NHL Medical College, VS General Hospital, Ellisbridge, Ahmedabad, Gujarat, India 380006.
Dr. Hardik S. Vaghela	Department of Orthopedics, Smt. NHL Medical College, VS General Hospital, Ellisbridge, Ahmedabad, Gujarat, India 380006.
Dr. Nadeem A. Lil	Department of Orthopedics, Smt. NHL Medical College, VS General Hospital, Ellisbridge, Ahmedabad, Gujarat, India 380006.
Dr. Pankaj R. Patel	Department of Orthopedics, Smt. NHL Medical College, VS General Hospital, Ellisbridge, Ahmedabad, Gujarat, India 380006.

ABSTRACT

Purpose: To study advantages of lateral position of patient on fracture table while doing interlocking nail in fracture shaft femur.

Methods: A observational study of 60 patients of fracture shaft of femur admitted in the Orthopaedic Department of V.S.Hospital, Ahmedabad was carried out. All adult patients with shaft femur fracture treated with reamed femur intramedullary interlocking nailing were taken in to study from jan 2008 to Oct 2011. Eligibility criteria were closed shaft femur fracture, patients fit for surgery, and adult patients.

Results: The common age group was ranging from 20 to 71 yrs with average age group of 36 yrs. 38(63.3%) patients were males, 22(36.6%) were females. All patients were operated by closed interlocking nail technique on lateral fracture table using C-arm. We had 100% union rate, 24.3 wks for full union, 92min of average operating time and average fluoroscopy time 102 seconds. The study was statistically comparable.

Conclusion: interlocking femur nailing in lateral position is convenient as greater trochanter is easily palpable so correct entry point can be taken, trunk doesn't come in the way during insertion, gravity helps in reduction, distal locking is easier and reduces the number of assistant required in the surgery.

KEYWORDS : Femoral shaft fractures; reamed femoral intramedullary interlocking nailing ; Lateral position.

Introduction:

Intramedullary nailing with reaming of the bone and static locking of the nail is the treatment of choice for fractures of the femoral shaft in adults [1-5]. Intramedullary nailing is performed with use of fracture table and excellent results have been reported. Although this operation is usually performed with the patient in supine position, lateral position has also been described.

Obese patients are difficult to fit on a fracture table in the supine position, and it can be extremely difficult to establish entry point. An advantage of the lateral decubitus position is its improved access to the piriformis fossa, especially in obese patients or in those with ipsilateral hip disease associated with a decreased range of motion of the hip [7]. Here we are presenting a study of patients treated with closed intramedullary nailing in lateral position.

Methods :

From January 2008 to October 2011, 60 patients (38 males and 22 females) with closed femoral shaft fractures were included in this study. Patients were classified according to Winquist-hansen classification. Surgery was performed within 48 hours of injury ones patient was stabilized and fit for surgery [11]. As soon as patient was diagnosed with femoral shaft fracture, patient was assessed with proper history and clinical examination. Hemodynamic status and other injuries were evaluated and primarily stabilized with traction on Böhler-braun splint.

Patients were taken for surgery under spinal anaesthesia in lateral position on a fracture table. Operating limb was kept upside and non operating limb was flexed at hip and knee joint, and kept downside (Figure-1 and 2). IITV was placed at right angle to the patient. Traction was given and length was achieved. Preparation was done under all aseptic precaution entry point of the nail was created in the piriformis fossa via standard nailing technique. Proximal femoral fragment was reamed to adequate size and appropriate size nail was inserted up to fracture site keeping it into proximal fragment [9]. Nail was assembled

with back-track assembly and reduction of the fracture is achieved with the help of a long lever arm of back-track assembly and with help of an assistant, after getting reduction guide pin was inserted into distal fragment. Then nail was removed and reaming of distal fragment was done with flexible reamer up to appropriate size. Then femoral nailing was performed in a standard fashion [10]. Operating time was defined as the time interval between skin incision and wound closure [9]. Fluoroscopy time was noted as displayed in the fluoroscopy machine. Patients began isometric quadriceps-setting and straight leg raising exercises on the first day after surgery. From the second postoperative day they were encouraged to walk using crutches. Weight bearing was allowed on the injured limb as tolerated by the patient.

Follow up:

Patients were discharged when stable. Patients were instructed in partial weight-bearing crutch ambulation. They had regular follow-up clinical evaluations and roentgenographic examinations to record healing status, alignment (including varus, valgus, anterior or posterior angulations), leg length discrepancy (comparing the distance from the anterior superior ischial spine to the medial malleolus in both legs) and any complications[9]. Union was determined by serial radiographs and defined as callus bridging the fracture site.

Results:

All operations were completed without any difficulty. The mean follow up was 15 months (6 to 24 months). Patients were evaluated by WOM-AC Score [8]. We had 38(63.3%) males and 22(36.6%) female; majority had a road traffic accident as a mechanism of injury. We had a 100% union rate; it took 24.3 weeks on average for full union. It took more time in arranging the table with mean operating time of 92 min. Average fluoroscopy time was 102 seconds which was more initially later decreased as we got use to the lateral position. We have done comparison of our study with study by James et al. 'z test' was applied. The 'z' value for Mean operative time, Incision length and fluoroscopy time is 5.97, 24.32 and 56.6 respectively, which are more than 1.96 suggesting significant study.[8]

Discussion:

Reamed intramedullary nailing of the femur is usually performed with a fracture table with patient in either supine or lateral position. Excellent results have been reported with the techniques [12-16]. Lateral position gives excellent exposure to pyriformis fossa so correct entry point is easier to take. Due to effect of gravity all of the fat in gluteal region falls down and greater trochanter becomes prominent so easier to feel even in obese patient. In a very muscular healthy patient reduction can be difficult at times in supine position. But due to the help of gravity in lateral position reduction is easier and reduces the number of assistance. In a supine position the trunk of the patient comes in a way while inserting the nail and can be cumbersome at time, this problem never occurs in lateral position. While doing a distal locking the direction of the distal locking screw will be perpendicular to the floor in a lateral position making it easier to insert than a screw which is parallel to the floor as in supine position. Draw-back of this position is it requires a special fracture table assembly. It is difficult to do in a haemodynamically unstable, patients with bilateral fractures, patients with hip bone fractures or any other surgical or medical condition in which lateral position is contraindicated.[7] Hsien-Tao Liu et al, have showed good results in lateral position without a fracture table. Sirkin et al. (presentation at 1996 Annual Meeting of the American Academy of Orthopaedic Surgeons, Atlanta, Georgia, U.S.A.) reported the results of a surgeon randomized study of femur fractures treated with intramedullary nails with or without a fracture table. They found no difference in alignment between the two groups but did find that the operative procedure performed without a fracture table was significantly faster than the procedure performed with a fracture table. Wolinsky et al. also displayed the similar results in comparison of both procedures [17]. We agree that if the femur is kept out to length while in traction, manual method can still be used for nailing, but if the femur is allowed to shorten and nailing is delayed for more than 24 hours a fracture table must be used to regain length[18].

Conclusion:

Interlocking nailing is a standard technique in a closed shaft femur fractures. This can be done in a both supine as well as lateral position. We find interlocking nailing in a lateral position more convenient as finding a tip of greater trochanter is easier, precise entry point in the pyriformis fossa is easier to find, trunk does not come in the way while inserting the nail, reduction is easier due to the help of gravity reducing the number of assistants and distal locking is much easily done. Lateral positioning requires a special fracture table attachments, it has a learning curve for operating surgeon. It is cumbersome for patients as well as anaesthetist. In case of bilateral fracture of femur lateral position is not possible.

Table-1

Male / Female ratio	38 / 22
Mean Age (year)	36.1 (18-70)
Winquist-Hansen Classification	
Type 0	22
Type 1	14
Type 2	18
Type 3	5
Type 4	1
Mode of Injury	
RTA	36
Fall from height	14
Occupational/Aggricultural	5
Others	5

Table- 2

WOMAC Score	
3 months	40.8
6 months	32
12 months	28.28
Union rate	100%
Union time(weeks)	24.3
Mean operative time(min)	92
Fluoroscopy time(sec)	102

Table-3

WOMAC Score	Our study	James et al
3 months	40.8	39
6 months	32	30.7
12 months	28.28	27.03
Union rate	100%	100
Union time(weeks)	24.3	22.9
Mean operative time(min)	92	104
Fluoroscopy time(sec)	102	149

FIGURE 1



FIGURE 2



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