

Study of Outcome of Closed Interlocking Intramedullary Nailing Of Fracture Shaft of Femur in Adults

**Dr. Arun Kumar V¹, Dr. Gopala Krishnaiah T², Dr. Biju R³,
Dr. M.O.Krishnamurthy⁴**

1. *Senior Resident, Department of Orthopaedics, King George hospital, Visakhapatnam.*

2. *Asst. Prof. Department of Orthopaedics, Narayana Medical College, Nellore.*

3. *Prof. Department of Orthopaedics, Narayana Medical College, Nellore.*

3. *Prof. & HOD, Department of Orthopaedics, Narayana Medical College, Nellore.*

I. Introduction

Fractures of shaft of femur are among the most common fractures encountered in orthopaedic practice. The femur is the largest and strongest bone in the body articulating with hip joint proximally forming knee joint with tibia at its distal end.

As industrialization and urbanization are progressing year to year with rapid increase in traffic, incidence of high energy trauma increasing with same speed. Femoral shaft fractures result from high energy trauma, commonly road traffic accidents, gunshot injuries, fall from height.

Fall from tree is a common cause in rural india. Due to its larger size, rich vascularity and muscular attachments a fracture may lead to a significant blood loss. As femur is one of the principal load-bearing bone of the body, fractures can cause prolonged morbidity and extensive disability unless adequately treated. Femoral shaft fractures are equally common in upper, middle and lower third and can occur at any age. Fractures secondary to low energy trauma like trivial fall occurs more commonly in elderly females. Morbidity in femoral shaft fractures arises from limb shortening, malalignment, knee contractures and other complications of fractures.

Mortality is infrequent but can result from open fractures, fat embolism, adult respiratory distress or multi organ failure especially in polytrauma patients. Both morbidity and mortality can be reduced by prompt reduction and internal fixation of fracture. (Robert A., Hansen T et al 1978)¹. Restoration of alignment, length and rotation, restoration of blood supply to aid union and rehabilitation are the objectives of the treatment.

There are various options available for treatment of diaphyseal fractures of femur. The type and location of fracture, degree of comminution, age of the patient, patient's social and economic demands and other factors play a role in deciding the modality of treatment.

Various treatment modalities includes closed reduction and spica cast immobilization, skeletal traction, femoral cast bracing, internal fixation with plates and screws, interlocked intramedullary nails. The art and science of fracture management has tremendously advanced over the years. From use of external splints in Hippocratic age to recent sophisticated instrumentation, treatment of fracture has made an impact in surgical field. With tubular anatomy of femur intramedullary nailing appears better than plating. Nailing can tolerate more torsional and bending forces better than plates. Being load sharing devices intramedullary nails cause less cortical osteopenia. Currently interlocked intramedullary nailing is considered to be most choice of treatment for femoral diaphyseal fractures. (Funk J., Wells .R et al 1968)².

II. Materials And Methods

The prospective study included 40 cases of diaphyseal fractures of femur treated with closed interlocking intramedullary nailing .The study was done at department of orthopaedics in Narayana Medical College and Hospital, Chintareddypalem, Nellore. The study was done over a period of two years from July 2011 to June 2013 with sequentially selected cases.

A minimum of two views were taken to assess the fracture i.e antero-posterior and lateral views of affected femur including hip and knee joint. After the patient is clinically and radiologically diagnosed to have fracture shaft of femur and after meeting the inclusion criteria, patients were taken up for intramedullary interlocking nailing. Standard antegrade insertion through piriformis fossa⁴ was done in all patients.



C arm image of entry point – AP view and lateral view



Guide pin insertion



Reaming



Nail insertion



Locking



Implants and instruments

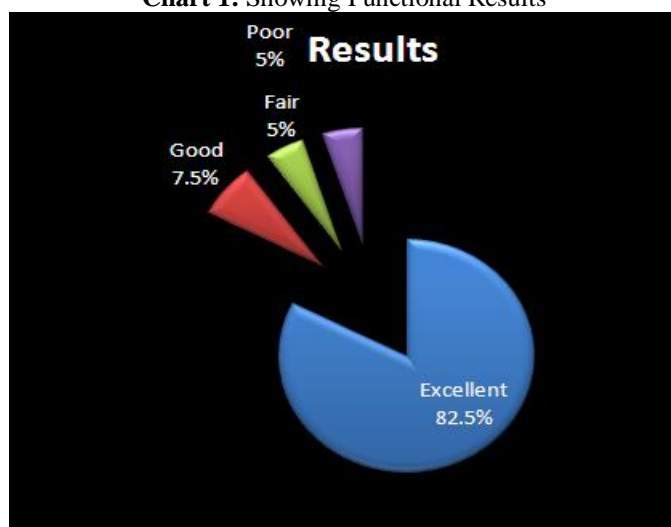
III. Results And Analysis

Functional results were evaluated based on classification system for result of treatment by Thoresen B O et al 1985³. All the patients were followed up at regular interval i.e. 3 months, 6 months, 12 months, 18 months and 24 months.

Table 1: Functional Results Based on Result of Treatment by Thoresen B O et al 1985³.

Functional Results	No of Cases	Percentage
Excellent	33	82.5 %
Good	3	7.5 %
Fair	2	5 %
Poor	2	5 %

Chart 1: Showing Functional Results



IV. Discussion

Internal fixation of fractures of the femoral shaft has gained widespread acceptance as implants and technology have improved. The rationale for internal fixation is that it restores the anatomical alignment and allows early mobilization of the patient and limb. In the study of Wiss et.al⁴ mean age was 29 years, in the series of Thoresen et al⁵ of 48 cases of femoral shaft fractures stated a mean age of 28 years. In our study the average age was 31 years.

In our series there were 28 males and 12 females, showing male preponderance. In the series of Arpacioğlu MO et al 2003⁶ showed sex distribution of 35 men and 11 women.

In our study common mode of injury was RTA. Of all, RTA accounted for 30 (75 %) cases followed by fall from height 10 (25 %) cases. In the series of RC Meena & others 2006⁷, out of 108 cases RTA was the mode of injury in 91 cases. In our study transverse fracture pattern was predominant 24 (60 %) cases, followed by oblique 8 (20 %). In the study of Thoresen et.al⁸ comminuted fractures were the commonest followed by the transverse and then the spiral pattern. In the series of Wiss et al⁹ comminuted fractures predominated.

In our series average blood loss was around 350 ml. In the series of Donald Wiss⁹, average blood loss amounted to 470ml. In the series of George White et al the blood loss was 560ml.

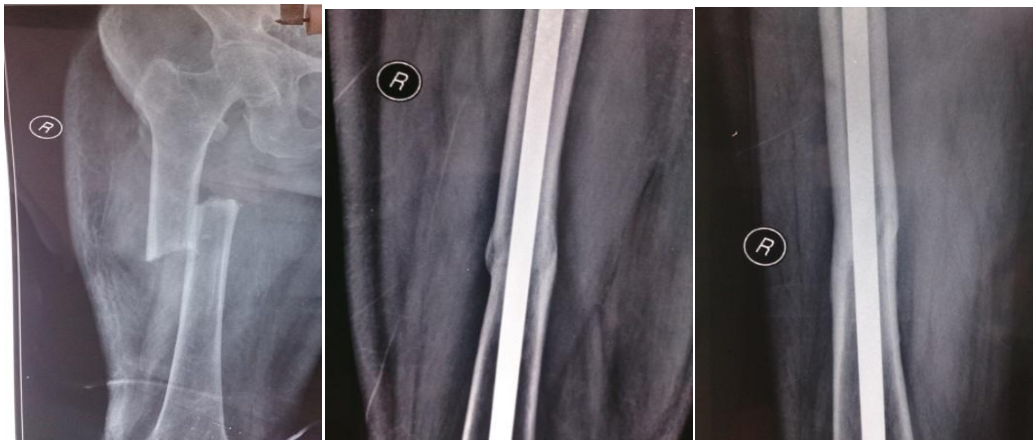
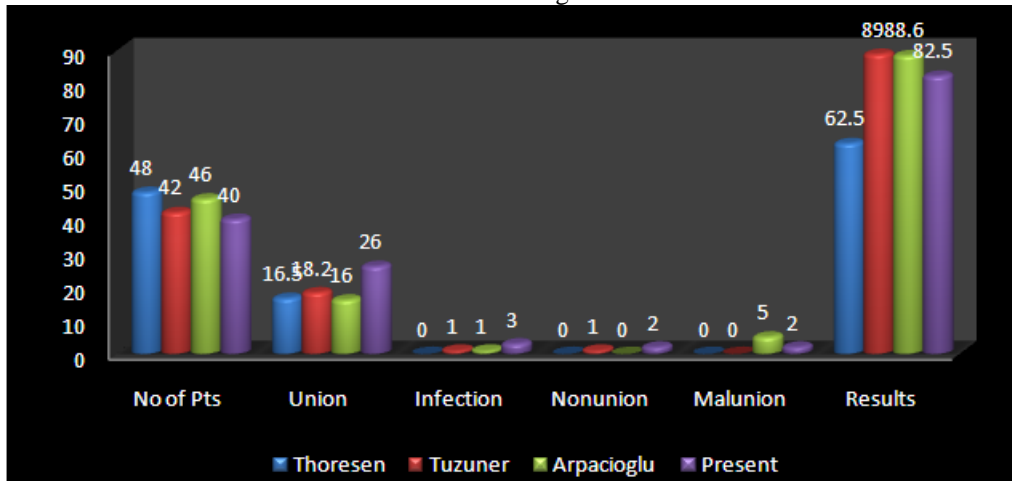
Reaming was done in all cases. In 2000 Brumback R J et al¹⁰ in a series showed that there were more instances of non-union and delayed union in cases of unreamed ILIM nailing than compared to reamed group.

Entry point was piriformis fossa in all 40 patients. James P. Stannard et al 2011¹¹ in a study showed no statistical difference in ILIM nailing performed through trochanteric or piriformis entry point.

Table 2: Comparing Functional Results with Other Series

Authors	No of patient	Union(wks)	Infection	Nonunion	Malunion	Delayed Union	Excellent Results %
Arpacioğlu MO et al	46	16.5	1	-	Varus -4 Valgus-1	-	88.6
Tüzüner T et al	42	30.5	1	1	-	-	89
Thoresen BO et al	48	16	-	-	-	-	62.5
Present study	40	26	3	2	Varus -2	-	82.5

Chart 2: Showing Results



Pre-op

6 months Post op

1 year post op



Full Weight Bearing



Squatting

V. Conclusion

Fractures of the femur are one of the commonest injuries sustained in high velocity trauma. Management includes prompt fixation of the fracture restoration of the anatomical alignment and function to the limb. Closed nailing results in less intraoperative blood loss, shorter operative time, earlier weight bearing, early union rates and early return to work with reduced morbidity compared to open techniques. Early mobilization of the patient helps in healing of the fracture and prevents joint stiffness. The procedure has an acceptable complications rate as compared to other modalities of treatment. Cost effective as there is reduced need for outpatient care, earlier return to work and cessation of sickness benefit compensation.

The results in our series confirm as have those of other series that closed intramedullary interlocking nailing is the treatment of choice for femoral shaft fractures.

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