

Assessment of efficacy of Expert Tibial nailing and Distal Tibial Plating in managing patients with Distal 1/3rd extraarticular Tibial Fractures

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Abstract

Background: The proximal portion of the tibia consists of a medial and lateral condyle, which combine to form the inferior portion of the knee joint. Distal end is shaped like a rectangular box which presents five surfaces; it is prolonged downward on its medial side as a strong pyramidal process, the medial malleolus. Hence; the present study was undertaken for assessing the efficacy of Expert Tibial nailing and Distal Tibial Plating in managing patients with Distal 1/3rd extraarticular Tibial Fractures. **Materials & methods:** A total of 20 patients with presence of Distal 1/3rd extraarticular Tibial Fractures were enrolled. Complete demographic and clinical details of all the patients were obtained. All the patients were divided into two study groups with 10 patients in each group as follows: Group 1: Expert Tibial nailing group and Group 2: Distal Tibial Plating group. All the patients were operated according to their respective groups. Patients were followed up for 6 months after operation and evaluated as per Johner and Wruss Criteria. All the results were summarized in Microsoft excel sheet and were analyzed by SPSS software. **Results:** Mean operative time among the patients of group 1 and group 2 was 88.3 minutes and 108.6 minutes respectively. Significant results were obtained while comparing the mean operative time among the patients of both the study groups. Mean fracture union time among the patients of group 1 and group 2 was 18.6 weeks and 22.9 weeks respectively. Significant results were obtained while comparing the mean fracture union time among the patients of both the study groups. Significantly better outcome was noticed among the patients of group 1 in comparison to group 2 patients. **Conclusion:** From the above results, the authors concluded that efficacy of Expert Tibial nailing was better in managing patients with Distal 1/3rd extraarticular Tibial Fractures.

Key words: Expert Tibial nailing, Distal Tibial Plating, Tibial Fractures

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Introduction

The proximal portion of the tibia consists of a medial and lateral condyle, which combine to form the inferior portion of the knee joint. Between the two condyles lies the intercondylar area, which is where the anterior collateral ligament, posterior collateral ligament, and menisci have attachments. The shaft of the tibia is triangular in cross-section with three borders and three surfaces. Distal end is shaped like a rectangular box which presents five surfaces; it is prolonged downward on its medial side as a strong pyramidal process, the medial malleolus. The lower extremity of the tibia together with the fibula and talus forms the ankle joint. Tibial fractures are prone to complications. The epidemiology of fractures of the tibial shaft has been addressed in a number of studies. The incidence of tibial shaft fractures is reported in the literature with variation over years and between different countries and cultures. Distal tibia fractures are challenging injuries. Most of tibial fractures are closed. Diaphysis is the most common fracture site in tibia[1-3]. Surgeons have used 4 management approaches for tibial fractures: intramedullary nail fixation (interlocking intramedullary nails and simple intramedullary rods), plate fixation, external fixation and casting or functional bracing. While it may be preferable to cast a closed tibial shaft fracture, most surgeons agree that in certain unstable fracture patterns, casts will not maintain adequate fracture alignment. In recent years surgeons have moved away from plates and

external fixators in favor of intramedullary nails in the operative treatment of both closed and open tibial fractures[4-6].

With course of time various techniques have been used with IMN like proximal and lateral entry point, use of the semiextended position, poller screws, temporary unicortical plates, clamps and provisional Kwire reduction and use of newer implant designs Expert Tibia Nail (ETN) was designed as an adaption of the regular tibial interlocking nail specially designed for the metaphyseal fractures[5-9]. Hence; the present study was undertaken for assessing the efficacy of Expert Tibial nailing and Distal Tibial Plating in managing patients with Distal 1/3rd extraarticular Tibial Fractures.

Materials & methods

The present study was undertaken for assessing the efficacy of Expert Tibial nailing and Distal Tibial Plating in managing patients with Distal 1/3rd extraarticular Tibial Fractures. A total of 20 patients with presence of Distal 1/3rd extraarticular Tibial Fractures were enrolled. Complete demographic and clinical details of all the patients were obtained. All the patients were divided into two study groups with 10 patients in each group as follows: Group 1: Expert Tibial nailing group and Group 2: Distal Tibial Plating group.

Inclusion criteria

1. Skeletally mature patients
2. Extrarticular fractures of distal tibia (Simple, wedge, complex or segmental)

Patient presenting within 2 weeks after sustaining injury/trauma Patients were given first aid in the form of splintage of the limb, anti-inflammatory drugs and analgesics according to the need. Any accompanying fresh injury or illness was noted and managed accordingly. All the patients were operated according to their respective groups. Patients were followed up for 6 months after

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operation and evaluated as per Johner and Wruss Criteria. All the results were summarized in Microsoft excel sheet and were analyzed by SPSS software.

Results

Mean operative time among the patients of group 1 and group 2 was 88.3 minutes and 108.6 minutes respectively. Significant results were obtained while comparing the mean operative time among the patients of both the study groups. Mean Post-operative weight bearing among the patients of group 1 and group 2 was 8.25 weeks and 12.81 weeks

Table 1: Mean operative time

Operative time (minutes)	Group 1	Group 2
Mean	88.3	108.6
SD	11.9	12.8
p- value	0.01 (Significant)	

Table 2: Mean Post-operative weight bearing (weeks)

Post-operative weight bearing (weeks)	Group 1	Group 2
Mean	8.25	12.81
SD	2.35	3.58
p- value	0.01 (Significant)	

Table 3: Comparison of fracture union time

Fracture union time (weeks)	Group 1	Group 2
Mean	18.6	22.9
SD	2.9	3.7
p- value	0.00 (Significant)	

Table 4: Comparison of outcome

Johner - Wruss scoring System	Group 1		Group 2	
	Number of patients	Percentage	Number of patients	Percentage
Excellent	8	80	5	50
Good	2	20	3	30
Fair	0	0	1	10
Poor	0	0	1	10
Total	10	100	10	100
p- value	0.00 (Significant)			

Discussion

In the present study, mean operative time among the patients of group 1 and group 2 was 88.3 minutes and 108.6 minutes respectively. Significant results were obtained while comparing the mean operative time among the patients of both the study groups. Mean Post-operative weight bearing among the patients of group 1 and group 2 was 8.25 weeks and 12.81 weeks respectively. Significant results were obtained while comparing the mean Post-operative weight bearing among the patients of both the study groups. Mahmood A et al, in a study, evaluated the results of Expert tibial nailing for distal tibial fractures. A total of 44 distal tibial fractures in the same number of patients were treated with the nailing system. One patient died in the immediate post operative period from complications not directly related to the procedure and 3 were lost to follow up leaving a cohort of 40 patients for evaluation. 31 of the fractures were closed while the remaining 9 were open. The average age group of the cohort was 46.8 years with 26 males and 14 females. All 40 patients were followed up to full radiological union of their tibia fractures. The average time to radiological union was 12.5 weeks for the closed fracture group and 15.1 weeks for the open fractures. The difference in time to union between the two groups was not statistically significant. There was infection around a distal locking screw in a closed fracture which settled with screw removal. Three patients in the closed fracture group required dynamisation to hasten union while none required dynamisation in the open fracture group. No bone grafting was performed on any of the patients. One patient had non union of a distal fibula fracture which required plating of as an additional procedure. On follow-up none of the patients reported knee pain or had limitation of ankle movements. The Expert tibial nail is an effective implant for the treatment of both open and closed distal tibial fractures with a low complication rate[10].

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patients (38.1 %), fair in four patients (19%) & poor in two patients (9.5%). The excellent and good results were considered as satisfactory results while the unsatisfactory included the fair and the poor results. Thus, satisfactory results were found in 15 patients (71.43%), and the unsatisfactory results were found in six patients (28.57%). Treatment of distal tibial fractures using intramedullary nail with multi directional distal locking screws (Expert nail) is a safe and accepted method alternative to conventional nail and plating technique[12].

Conclusion

From the above results, the authors concluded that efficacy of Expert Tibial nailing was better in managing patients with Distal 1/3rd extraarticular Tibial Fractures.

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