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ORIGINAL RESEARCH

Comparison Of Expert Tibial Nailing With Distal Tibial Plating In Patients With Distal 1/3rd Extraarticular Tibial Fractures

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ABSTRACT

Background: Distal tibia shaft fractures pose a significant challenge to treating surgeons. The present study was conducted to compare expert tibial nailing with distal tibial plating in patients with distal 1/3rd extraarticular tibial fractures.

Materials & Methods: 60 patients of extra-articular distal 1/3rd tibia fractures were divided into 2 groups of 30 patients each. Group, I was treated with expert tibial nailing, and group II with distal tibial plating.

Results: Group I comprised 20 males and 10 females and group II 14 males and 16 females. The mean intraoperative blood loss was 51.4 ml and 85.4 ml, operative time was 81.2 minutes and 100.6 minutes, union time was 17.3 weeks and 24.2 weeks and post-operative full weight bearing time was 8.5 weeks and 14.3 weeks in groups I and II respectively. The difference was significant (P< 0.05). Johner – Wruss scoring system in group I and group II was excellent seen in 20 and 18, good in 3 and 6, fair in 7 and 3, and poor in 0 and 3 respectively. The difference was significant (P< 0.05).

Conclusion: Tibial interlocking nailing was superior as compared to plating for the management of patients.

Keywords: interlocking nailing, tibial fractures, nail

INTRODUCTION

Distal tibia shaft fractures pose a significant challenge to treating surgeons. The treatment of these fractures has evolved over the past few decades with a better understanding of soft tissue biology. Giving more importance to anatomical reduction and ignoring often injured soft tissues has led to poor outcomes and high complication rates. Fractures of the distal tibia are distressing because these occur mainly because of high-energy impact. Because of its complex nature, fractures of the distal tibia and pilon are difficult to manage. In combination

with crucial bone injury, the adjacent soft tissue components often become severely traumatized.[3]

The treatment of distal metaphyseal tibial fractures with IM nailing is an effective alternative for the treatment of distal metaphyseal tibial fractures. It has been known for years now that one distal locking screw is insufficient and two are needed.[4] MIPO has over the years proven to be just as effective as IMN in treating mid-diaphyseal fractures of the tibia.[5] Moreover, surgical wounds heal better with IMN than MIPO with better soft tissue coverage, reducing recovery time and postoperative pain, thus allowing for expedited rehabilitation.[6] Anterior knee pain, a major drawback of IMN, can be avoided as a whole with the MIPO technique.[7] The present study was conducted to compare tibial nailing with distal tibial plating in patients with distal 1/3rd extraarticular tibial fractures.

MATERIALS & METHODS

The present study consisted of 60 patients of extraarticular distal 1/3rd tibia fractures of both genders. All enrolled patients gave their written consent for participation in the study.

Data such as name, age, gender, etc. were recorded. Patients were divided into 2 groups of 30 each. A thorough clinical examination was carried out. All underwent a CT scan of the involved site. Group I patients were treated with expert tibial nailing and group II with distal tibial plating. Patients were followed up for 6 months after the operation and evaluated as per Johner and Wruss Criteria. Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

RESULTS

Table I: Distribution of patients

Groups	Group I	Group II
Method	tibial nailing	tibial plating
M: F	20:10	14:16

Table I shows that group I comprised 20 males and 10 females and group II 14 males and 16 females.

Table II: Assessment of parameters

Parameters	Group I	Group II	P value
Intraoperative blood loss (ml)	51.4	85.4	0.03
Operative time (minutes)	81.2	100.6	0.02
Union time (weeks)	17.3	24.2	0.01
Full weight bearing (weeks)	8.5	14.3	0.02

Table II, the graph I show that mean intraoperative blood loss was 51.4 ml and 85.4 ml, operative time was 81.2 minutes and 100.6 minutes, union time was 17.3 weeks and 24.2 weeks, and post-operative full weight bearing time was 8.5weeks and 14.3 weeks in group I and II respectively. The difference was significant (P< 0.05).

Graph I: Assessment of parameters

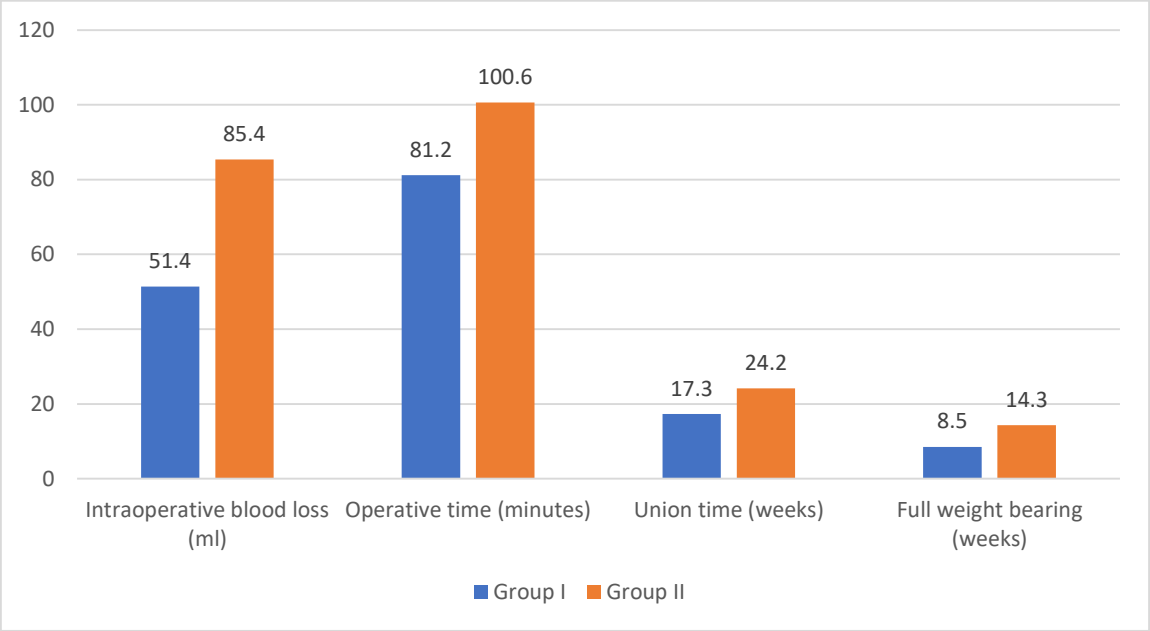
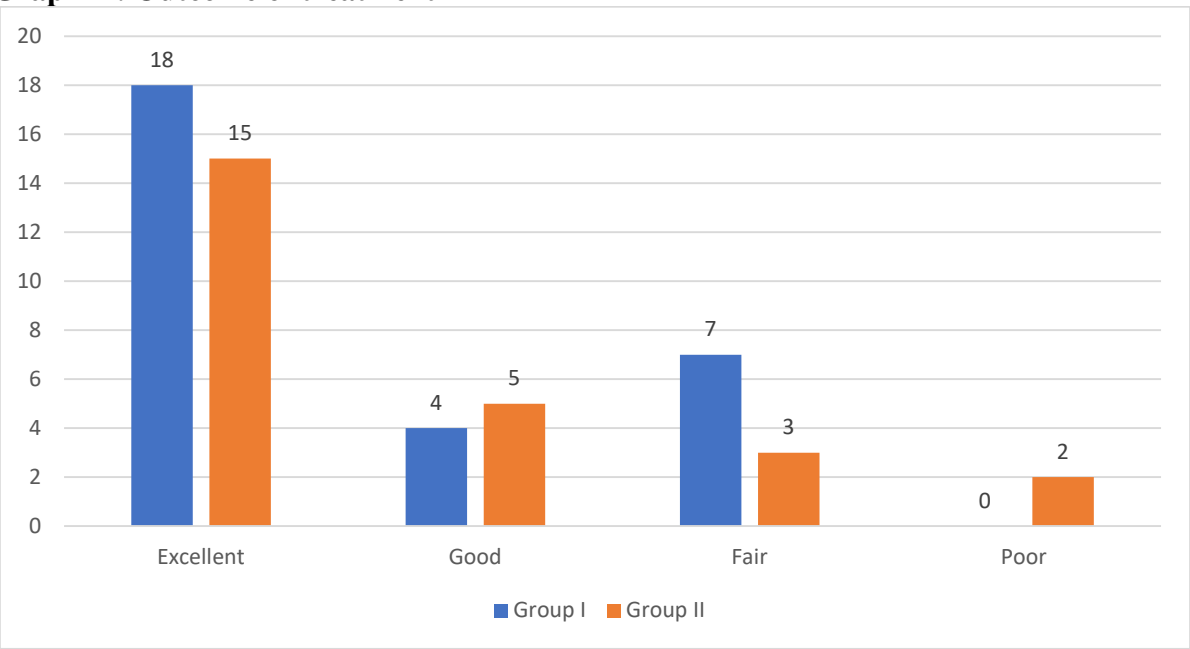


Table III: Comparison of outcome

Johner – WrussScoring System	Group I	Group II	P value
Excellent	20	18	0.94
Good	3	6	0.05
Fair	7	3	0.03
Poor	0	3	0.02

Table III shows that the Johner – Wruss scoring system in group I and group II was excellent seen in 20 and 18, good in 3 and 6, fair in 7 and 3, and poor in 0 and 3 respectively. The difference was significant (P< 0.05).

Graph II: Outcome of treatment



DISCUSSION

The tibia constitutes one of two bones of the leg. Since it is a weight-bearing bone, it is suggestively superior and tougher in comparison to the fibula. The proximal component of the tibia comprises a medial and lateral condyle.[1] These join to form the knee joint's inferior portion. The intercondylar portion lies in between the two condyles. It is this particular area where the anterior cruciate ligament, posterior cruciate ligament, and menisci have their attachments. The tibial shaft is widened at its higher end to support the condyles.[2] According to the AO/ASIF system "distal" tibia fractures are primarily located within a square based on the width of the distal tibia (Muller square). In practice, distal tibia fractures include the more proximal metaphysis and distal diaphysis. A simple extension of the fracture into the joint which has minimal displacement is often treated in a similar manner to extraarticular fractures. The present study was conducted to compare tibial nailing with distal tibial plating in patients with distal 1/3rd extraarticular tibial fractures.

We found that group I comprised of 20 males and 10 females and group II 14 males and 16 females. Singla et al[12] compared the results of Expert Tibial nailing with the results of Distal Tibial Plating in patients with Distal 1/3rd extraarticular Tibial Fractures. The mean age of the patients of the expert tibial nailing group and the distal tibial plating group was 48.12 years and 49.71 years respectively. The mean operative time among the patients of the expert tibial nailing group was 83.15 minutes and was significantly lower in comparison to the patients of the distal tibial plating group (101.2 minutes). Mean intraoperative blood loss was compared between expert tibial nailing and distal tibial plating. Tourniquet was used in all the cases. Mean intraoperative blood loss among the patients of the expert tibial nailing group was 51.6 ml and was significantly lower in comparison to the patients of the distal tibial plating group (89.1 ml). postoperative weight-bearing time among the patients of expert tibial nailing was 8.95 weeks and was significantly lower in comparison to the patients of distal tibial plating (14.35 weeks).

We observed that mean intraoperative blood loss was 51.4 ml and 85.4 ml, operative time was 81.2 minutes and 100.6 minutes, union time was 17.3 weeks and 24.2 weeks and post-operative full weight-bearing time was 8.5 weeks and 14.3 weeks in group I and II respectively. Kwok et al found 8 studies that evaluated plates compared with a nail for distal tibial fractures. No significant difference was found between the use of a plate and nail regarding bone union complications, and wound complications including superficial infection, and deep infection. They found a significantly reduced risk of fracture malalignment with the use of a plate compared with a nail.

We found that the Johner – Wruss scoring system in group I and group II was excellent seen in 20 and 18, good in 3 and 6, fair in 7 and 3, and poor in 0 and 3 respectively. The difference was significant ($P< 0.05$). Kumar et al included 52 patients and they were divided into two groups a nailing group and a plating group. The plating group included 22 patients whereas the nailing group included 30 patients. The mode of injury was road traffic injury in 32 cases followed by self-fall in 17 cases and sports-related injury in 3 cases. Distal tibia fracture was associated with in 29 patients (87%) of the nailing group whereas in 17 patients (80) of the plating group. The average distance of fracture from the pilon was 6 cm in the nailing group and 3cm in the plating group. The average duration of surgery in nailing was the group was 88 minutes (range, 65-130 minutes) whereas the average duration of surgery in the plating group was group was 92 minutes (range, 70-130 minutes). The average time for the union was 16 weeks for the nailing group and for the plating group, it was 18 weeks.

Obremskey WT[11] found that group I (n = 39) patients were stabilized with an intramedullary nail by community orthopedic surgeons. Group II (n = 18) patients were treated by orthopedic trauma surgeons. In Group I (community), 9 (23%) patients treated by the community surgeons exhibited >5 degrees of angulation in at least one direction. Five (13%)

of these patients displayed angulation in more than one direction, and 3 of these patients exhibited >10 degrees of angulation. In Group II (trauma) 1 (5%) patient had >5 degrees angulation in any plane (P < .05). No differences were noted in time to union, nonunion, delayed union, hardware failure, or infections between the two groups. Functional outcomes were assessed using the MODEMS lower limb module. In a comparison of the patients with and without significant angulation. Patients treated by community orthopedic surgeons had a higher incidence of malalignment, as compared to those treated by orthopedic trauma specialists. Good outcome of the interlocking nail in extraarticular fracture distal tibia requires:

The ideal entry point in the proximal tibia

Distal fracture fragment needs to be reduced perfectly using joystick techniques

The length of the nail should be adequate, and the tip of the nail should sink into the subchondral bone of the distal tibia.

At least two distal locking screws should be there.

CONCLUSION

The authors found that tibial interlocking nailing was superior as compared to plating for the management of patients.

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