



RESULTS OF PRIMARY INTERLOCKED INTRAMEDULLARY NAILING IN COMPOUND FRACTURES OF TIBIAL SHAFT.

Orthopaedics

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ABSTRACT

Fractures of tibia shaft have always posed challenges to orthopedic surgeons since times immemorial. Tibia is a subcutaneous bone. Invention of high speed vehicles, high energy trauma often leads to compounding and comminution in tibial shaft fractures. The dilemma whether to operate or not and the timing and choice of surgery continues, as the fear of infection, delayed union, non union is very high in such type of fractures.

In this study we evaluated the results of primary interlocked intramedullary nailing in compound grade I (Gustilo Anderson) I Fractures of shaft of tibia in patients who reported within six hours of injury. Our aim was to make the patient upright and start weight bearing as early as possible. Regular follow up was done. Evaluation done at 12 and 24 weeks showed excellent results. All the patients returned back to normal life more or less after that period. In this study we noted that nailing is not only a fast process, it also provides a stable fixation without disturbing fracture haematoma, and periosteum, and thus promoting secondary bone healing.

KEYWORDS

Interlocked, Intramedullary, compound fracture, weight bearing.

INTRODUCTION

As we all know that fracture shaft tibia is always challenging to treat because most of the times it is compound in nature, owing to its subcutaneous anatomical location and rise in high speed vehicles¹. Previously the gold standard was to wait and watch by applying plaster cast and taking care of wounds in plaster immobilization. That was not only cumbersome but increased morbidity², it also increased the stay in hospital and used a lot of time and energy of health care workers. It also led to delayed joint movements and thus leading to stiff joints. Then came the external fixator^{3,4} which no doubt was much better than plaster immobilization, but needed another surgery most of the times leading to increased morbidity. So the need of a procedure which could make the patient upright quickly and provide early weight bearing was always there. And that paved the way to think of another procedure which could solve these issues keeping in mind the chances of infection. Open reduction and internal fixation does not seem to be a great idea in this situation, not only because the chances of infection are very high but further soft tissue damage could lead to increased chances of delayed and non union. It led to the idea of doing closed interlocked intramedullary nailing in compound fractures of shaft of tibia^{5,6,7,8,9}. Many people have tried this in the past. So we decided to conduct this study to find out the results of closed interlocked intramedullary nailing in compound fracture shaft of tibia.

MATERIAL AND METHOD

This study was conducted between March 2017 to March 2019 in S N Medical College Agra. In this study we included the cases which came to the hospital within six hours of injury. These patients were given thorough wound irrigation, cleaning and debridement along with broad spectrum antibiotic coverage. After preop investigations and fitness, these were taken for surgery as early as possible.

Closed interlocked intramedullary nailing was done under C Arm image intensifier.

In the present study we included patients between 18 years to 70 years of age with grade one compound tibial shaft fractures who came to the hospital within six hours of injury.

We excluded the grade II and grade III patients in this study. Patients with pathological fractures and unfit for anaesthesia were also not included in this study.

A small parapatellar incision was given just medial to patellar ligament. Awl was used to make an entry point just Medial to lateral tibial eminence in AP view and just distal to joint line in the lateral view.

Active toe, ankle, and knee movements were started as soon as effect of anaesthesia was over. Next day patients were made upright with the help of Walker. Quadriceps exercise started as soon as patient could bear pain. Average duration of partial weight bearing was 14 days. Patients were followed up at regular intervals. Full weight bearing was allowed after radiological sign of union was there.

OBSERVATIONS

Table - 1 : Level Of Fractures

Level	No. of patients
proximal third	3
middle third	7
distal third	15

Table2: Time Of Partial Weight Bearing

Days since operation	No. of patients
1st week	14
2nd week	7
3rd week	3
> 3 weeks	1

Table - 3 : Functional Outcome

Outcome	No. of Patients
Excellent	20
Good	4
Fair	1

DISCUSSION

Compound grade one fractures of tibial shaft have always posed challenge to orthopedic surgeons since long. There is a dilemma whether to go with internal fixation, external fixation or remain conservative. With the increase in the high speed vehicles there has been rise in the compound fractures of tibial shaft, thus increasing the need of an aggressive approach to treat such fractures so that the patients can go back to normal life quickly thereby decreasing the load on hospital beds and manpower. Such fractures are more prone to complications like mal union, delayed union, non-union and infection etc.

In this study we found that if the patients come to the hospital within 6 hours and the management started within 6 hours of injury then the results of primary interlocked intramedullary nailing are very good. not only the chances of infection are not increased but the rate of union is also very high¹⁰, takes less time, reduces the chances of mal union. It also brings the patient back to normal life much faster. The average union time in our study was 16 weeks which well corroborates with the studies by Ekeland¹¹ et al and Vaquero et al¹².

In our study none of the patient got deep seated infection.

In our study partial weight bearing was started very early as soon as the patient could bear partial weight without pain. This fact is well supported by the study of Arne Ekeland et al (1988)¹³ in whose study the median time of full weight bearing was only 30 days. In comminuted fractures full weight bearing could not be permitted until radiograph showed good callus formation around 6 to 8 weeks. so we decided the weight bearing time according to the fracture pattern.

According to Johner and Wruhs¹⁴ criteria outcome of our study was excellent in 75% of cases and good to fair in 25% of cases. None of the cases had poor result. Kaare Solheim and Olav B. (1973)¹⁵ showed that IM nailing without reaming and with supplementary plaster produced good to fair results in 96% of the cases after 2 and half years follow up.

CONCLUSION

In our study we found that interlocked intramedullary nailing is an excellent modality of treatment for grade I compound fractures of tibial shaft. It reduces the morbidity. It reduces the requirement of second surgery. It makes early range of motion exercises possible. It provides early resumption to normal life. It also decreases the load on hospital beds. Though further work is required to find the role of primary interlocked intramedullary nailing in more severe type of fracture tibial shaft i.e. grade II and grade III compound tibial shaft fractures.

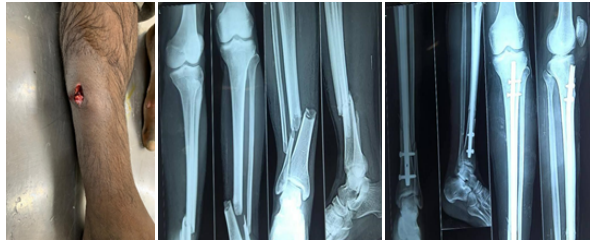


Fig. 1.

Fig. 2 .

Fig. 3.

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