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Research Paper

COMPLICATIONS AND FUNCTIONAL OUTCOME IN TIBIAL DIAPHYSEAL FRACTURE WITH INTRAMEDULLARY INTERLOCKING NAIL

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Fracture shaft of tibia are increasing due to high velocity trauma and industrialization. Not only are they common but often difficult to treat. With the introduction of reamed intramedullary interlocking nail for tibial shaft fractures has overcome some of these complications and encourages the patients for early mobilization. This study has been done to evaluate the complications and functional outcome of reamed intramedullary interlocking nail for tibial shaft fractures. Forty two adult patients with fresh tibial shaft fractures were treated surgically with reamed intramedullary interlocking nail between October 2009 to September 2011. Among forty two patients treated, 24 fractures united at an average of 17.34 weeks with a union rate of 96%. Two fractures shows delayed union. Three cases had superficial infection and three had anterior knee pain. 57.14% have achieved excellent results. Reamed intramedullary interlocking nail is a safe and effective technique for management with high union rates and low complication.

Keywords: Intramedullary interlocking nailing, Functional outcome, Complications

INTRODUCTION

Fractures of tibia are among the most common of serious skeletal injuries. Those who sustain then face slow recovery, with possible permanent deformity and disability. Tibial fractures vary so widely in severity that general prescriptions for treatment are not applicable to each patient. The spectrum of injury extends from trivial enough to be ignored to so severe that amputation is the best treatment. Extremely prepossessed clinical policies so called standards of care may offer a

reasonable course of treatment, but so many variables affect a given patients situation that treatment must be individualized. Both operative and non-operative treatments of tibial shaft fractures have been strongly advocated. Less severe fractures gradually do well without surgery, the more severe fractures usually requires it. The rationale for operating on closed tibial fractures of moderate and major severity is to prevent disability and frequent morbidity associated with these injuries. Problems are usually decreased by appropriate fixation.

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Gerhard B G Kuntscher (1958), opined that intramedullary nailing represent the ideal treatment of fractures and requires no external fixation or special postoperative care. The basic principle in this method is stable osteosynthesis through flexible impingement of nail in the bone. Zucman *et al.* (1969), treated 36 two level tibial fractures by intramedullary nailing. The results showed that intramedullary nailing in two-level tibial fractures allows walking with full weight bearing in an average of 3 to 4 months. It decreases the rate of non-union, malunion and it should decrease the rate of infection, in closed fractures compared with other types of internal fixation. Compound tibial fractures treated by nailing are still complicated by infection, but there are no other studies to conclude that other methods could lower significantly the infection rate. The present study was done to assess the complications and functional outcome of tibial fractures.

MATERIALS AND METHODS

All confirmed cases of fracture shaft of tibia in Department of Orthopedics in BLDE University's Shri B M Patil Medical College Hospital and Research Centre, Bijapur from October 2009 to September 2011. A minimum 42 cases of either sex will be studied. Patient will be informed about the study in all respect and written and informed consent will be obtained. Follow up period will be 6 weeks, 3 months and 6 months.

RESULTS AND DISCUSSION

The study was done in the B L D E University's Shri B M Patil Medical College and Hospital, Bijapur. 42 patients with fracture shaft of tibia were treated with closed interlocking nailing. The results are observed here.

Age	No. of Patients	Percentage
11-20	4	9.52%
21-30	14	33.4%
31-40	9	21.42%
41-50	5	11.90%
51-60	7	16.66%
61-70	1	2.34%
71-80	2	4.76%
Sex		
Male	37	88.09%
Female	5	11.91%
Total	42	100

We can depict from the above table that, the majority of the patients were in the age group of 21 to 30 years (33.4%). Tibial shaft diaphysis fractures were seen in the younger age group as they are the persons who are physically active, were engaged in increased various outdoor activities and as a result most of the injuries sustained were high-velocity injuries.

Study by Arne Ekeland *et al.* (1988), in 45 patients noted the average age of patients to be around 35 years and Court Brown *et al.* (1990) noted the average age to be 32.4 years. Average age was seen to be around 37 years in a study b Court Brown *et al.* in 1995 in a study titled "The Epidemiology of Tibial Fractures".

In our studies, males predominated the females. There were (88.09%) male patients and (11.91%) female patients. The occurrence of males is higher because of their more outdoor activities, while women majorly confined themselves to domestic activities.

Court Brown *et al.* (1990), in their study noted male incidence to be around 81.3%, while the female around 18.7%, Hooper *et al.* (1991) noted male incidence at 82% and Gaston *et al.* (1999), also noted the percentage of males to be around 81%.

Table 2: Complications

Complications	No of patients	Incidence
Superficial	3	7.14
Proximal screw breakage	0	0
Distal screw breakage	0	0
Non-union and nail breakage	0	0
Anterior knee pain	3	7.14
Mal-union	0	0
Shortening	0	0
Total	6	14.28

The above table infers that, total number of patients with complications were 6, of which 3 (50%) had superficial infection and the remaining with anterior knee pain (50%). In one patient nail was abutting the patellar tendon and tibial tuberosity and this can be relieved after removal of the nail. Lawrence B. Bone *et al.* (1986), Noted an infection rate of 6.25%, Arne Ekeland *et al.* (1988), noted infection rate of 4.4% and Blachut *et al.* (1997), noted 1% of infection.

Similar results were obtained in our study with superficial infection rate of 7.14% and it healed with dressing and antibiotics and proper management of Diabetes Mellitus. The cause for anterior knee pain in another patient could be heterotropic ossification of patellar tendon.

Anterior knee pain can be compared to Hernigou *et al.* (2000), who noted improper entry of nail into medullary canal, may cause anterior

knee pain, Jarmo AK Toivnen *et al.* (2002), noted anterior knee pain to be common in tibial intramedullary nailing.

Table 3: Functional Outcome

Functional outcome	No. of Patients	Percentage
Excellent	24	57.14%
Good	16	38.04%
Fair	2	4.77%
Poor	0	0%
Loss to follow up	0	0%
Total	42	100

Final assessment in our study was done at 6 months using the Johner and Wruh's criteria, taking into account of the following objective and subjective symptoms of gait, pain, deformity, range of motion of knee, ankle and subtalar joints, shortening, Neurovascular disturbances, ability to do strenuous activities, radiological union and presence or absence of non-union. Functional outcome was graded into Excellent, Good, Fair and poor.

In our study, 57.14% patients have got excellent, 38.09% good, 4.77% have fair results.

Klem *et al.* (1986), reported 62.50% excellent, 4.5% fair and 1.2% poor results.

Arne Ekeland *et al.* (1988), reported 64.4% excellent, and 4.4% as fair.

CONCLUSION

Tibial diaphyseal fractures are commonly seen in physically active young people and are commonly seen as result of road traffic accidents. The method of treatment employing closed intramedullary interlocking nailing to stabilize both principal fragments on the nail is an excellent one

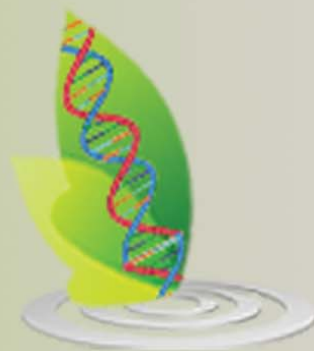
for closed fractures with comminution. The method of intramedullary interlocking nailing is ideal because of excellent. The method has a long learning curve but with the excellent results, the advantage of rapid rehabilitation and relatively of few complications serves to recommend it for wider use.

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