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Research Article

TREATMENT OF OPEN DIAPHYSEAL FRACTURE OF TIBIA WITH INTRA MEDULLARY INER LOCKING NAIL AND ITS OUTCOME

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Abstract:

Objective: To evaluate the outcome of an open diaphysis fracture of tibia interfaced with intra medullary inter locking nail and absence of infection, range of motion and union frequency.

Study design: Descriptive case series.

Place and Duration: In the Orthopedic Department of Nishter Hospital, Multan from September 2016 to September 2017.

Patients and Methods: Gustilo-Anderson I-III A type open tibia fracture patients inter-fixed with intramedullary static inter locking nail were selected for the study also with other co-morbids. With limited Gustilo Anderson type III B-C, ankle disease with restricted motion or previous knee injury were not selected for study. Patients were examined radiologically and clinically in terms of infection, fracture and ability to move the knee for Six months, and documented as proforma. For statistical analysis SPSS-16.0 version was used.

Findings: Ninety Two patients between the ages of 18 and 60 were included in study. Males were 71(77.2%) females were (22.8%) 21. 32 ± 9 was the mean age. In 77 patients Gustilo-Anderson type I fractures were found, 11 patients (12%) type II fractures and 4 (4.3%) patients type III-A. Sixty (66.3%) patients were treated 6 hours after injury and 31 (33.7%) patients were treated between 6 and 12 hours. During the first follow-up, superficial infection was detected in 11 (12%) patients. 30 patients needed dynamism during the 6th week of the visit. At the last follow-up, 3 (3.4%) patients had deep infection and 89 (96.7%) patients had no infection at 6 months. Union deficiencies found in (3.3%) patients. The 97.07% had a motion range between 0 and 1350. The overall outcome of the patients was 90.2% success and 9.7% failure.

Conclusion: Intramedullary static nail improves functional outcome, which is a preferred treatment of tibiales, which prevents complications from reducing hospital stay, providing early mobilization of the patient, open to Gustilo-Anderson type I-III A type diaphyseal fractures.

Key words: Tibia, open diaphragm fracture, static unlocked nail, unionized

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INTRODUCTION:

In orthopedic practice the tibial axis open fracture is very common fracture. Many factors causing fracture are patients related and lesions rather than residual angular deformities can affect tibial shaft open fracture outcome of a patient. These components include other related injuries during the treatment of fractures, bonding time and the range of soft tissue injuries, substance abuse, patient education, complications, work return and activities. For most open tibial shaft fractures the preferred treatment is intramedullary locking nail. The tibia intramedullary locking nail greatly enhances axial stability and for axially unstable fractures mostly used extending 4 cm above the axis and below the knee joint 7 cm. The best option is a shorter hospital stay, premature return to work and fewer infections, unionized and rotational deformity. Frequency dependence functional outcome of the open tibia fracture, knee and infection frequency As far as we know the range of motion is not printed in any foreign or local literature. In our work, the all procedures efficacy will be assessed in all directions so we wanted to assess the nails results in the open competitive tibia fracture with 3 parameters.

MATERIALS AND METHODS:

This Descriptive case series was conducted in the Orthopedic Department of Nishtar Hospital, Multan from September 2016 to September 2017. Adult patients with traumatic open diaphyseal fracture type I-III A3 Gustilo-Anderson irrespective of age and sex were selected. Children and elderly people over 60 years of age, Gustilo-Anderson type III B, C lesions, comorbid diseases, associated injuries, restricted knee and ankle movements. The disease procedure, benefits and risks were suggested. Informed consent was obtained. After 6 hours injury, majority of patients were operated for soft tissue treatment and 6 to 12 hours after injury others were operated. To correct fractures, Intramedullary static interlocking

nails were used in most of the following elective lists exposed to injury, infection, risk and neglect of healthy wounds. The insertion in the midline was performed after the fracture of the patellar tendon. Under the image intensifier spaced fragments were reduced by guide wire. Open reduction needed in few fractures with open wound. A suitable length of 1 mm in diameter was placed smaller than the carousel having the maximum diameter used. Distal block and Proximal block were placed under the image intensifier. The injuries were washed, closed and debrided. Postoperative antibiotics intravenously were administered, which were changed orally after the bandage change on the second operation day. Oral antibiotics lasted for 5 days. The patient was discharged at least on the 4th day of the operation with a recommendation to walk without a seat for 2 weeks. The social sciences statistics program (SPSS) 15 was used to analyze the data. Standard deviation and Mean for quantitative variables such as hospital stay and age were calculated.

RESULTS:

A total of Ninety two patients of 18 to 60 years of age with Gustilo-Anderson Type I-III were selected. An open tibia diaphysis was chosen. 32 ± 9 was the mean age. (range 18-60). The average male patients age was 72 (77.2%) males and 21 (22.8%) 3,4 females. Most of the patients (53.3%) were in the 31-40 age group 11 (12%), 27 (29.3%) in the 41-50 year group, and 5 (5.4%) in the 51-60 age group. 64 (69.05%) with right femoral involvement and 30 (30.95%) with left limb involvement. 66.3% of patients were admitted after 6 hours of traffic accidents, and 32 (34.07%) patients were admitted after 6 hours. In (83.7%) 77 patients, Gustilo-Anderson type I fractures were present, 11 patients (12%) type II fractures and 4 (4.3%) patients type III-A. In 11 (12%) of patients superficial infection was noted at 2-week follow-up, but complete remission at 3 months.

Table 1: Outcome of Patients At 6 Months Follow Up According To Gender

Follow up outcome	Gender		
	Male	Female	Total
Infection			
▪ None	69 (79.2)	20 (95.2)	89
▪ Superficial	0 (00%)	0 (00%)	0
▪ Deep	2 (2.8)	1 (4.8)	3
Union			
▪ Yes	69 (97.2)	20 (95.2)	89
▪ No	2 (2.8)	1 (4.8)	3
Range of motion			
▪ 0-90°	0 (0)	0 (0)	0
▪ 0-125°	2 (2.8)	1 (5.0)	3
▪ 0-135°	70 (97.2)	19 (95.0)	89
Overall outcome			
▪ Successful	64 (91.4)	19 (86.4)	83
▪ Failure	6 (8.6)	3 (13.6)	9

Values given in parentheses are percentages.

Deep infection occurs in 3 (3.3%) patients at 6 months follow-up, and 89 patients (96.7%) had no infection. Three (3.3%) patients were 89 (96.7%) with a 6-month follow-up. At 6 months there was a series of 0-1250 movements in which most of the patients followed (96.6%) in any number of patients from 0 to 0, while the range of motion ranged from 3.4 to 1350%.

Table 2: Outcome of Patients on 6 Months Follow Up According To Age

Follow up outcome	Age groups (years)				Total
	18-30	31-40	41-50	51-60	
Infection					
▪ None	49 (100)	26 (96.3)	10 (90.9)	4 (80)	89
▪ Superficial	0 (0)	0 (0)	0 (0)	0 (0)	0
▪ Deep	0 (0)	1 (3.7)	1 (9.1)	1 (20)	3
Union					
▪ Yes	49 (100)	26 (96.3)	10 (90.9)	4 (80)	89
▪ No	0 (0)	1 (3.7)	1 (9.1)	1 (20)	3
Range of motion					
▪ 0-90°	0 (0)	0 (0)	0 (0)	0 (0)	0
▪ 0-125°	0 (0)	1 (3.8)	1 (10)	1 (25)	3
▪ 0-135°	55 (100)	25 (96.2)	9 (90)	3 (75)	89
Overall outcome					
▪ Successful	51 (100)	20 (80)	8 (72.7)	4 (80)	83
▪ Failure	0 (0)	5 (20)	3 (27.3)	1 (20)	9

Values given in parentheses are percentages.

Deep and superficial infections were higher in males than females (13.01% and 5.01%, respectively) (4.8% vs. 2.8%). There was no association between a woman (4.8%) and two men (2.8%). the range of motion was male and female (97.1% and 95%), and the overall success was similar in males and females, respectively (85.05% and 86.07%). Deeper / superficial infections and lack of boiling were greater in older groups. 3 infections every one and there is no association between 31-60 years old. The range of motion between 0-135 in the 18-30 age group was 100% and 96.1% in the 31-40 age group. However, the overall success rate was 93.9% higher in the youngest age group, ie, in the 18-30 age group. Deep and superficial infections are higher in patients who are injured (22.6% and 6.6%), respectively (6.5% vs. 1.6%), and then more than 6 hours in 6 hours.

Table 3: Outcome of Patients on 6 Months Follow Up According To Time Duration of Injury

Follow up outcome	Time duration of injury		
	≤ 6 hours	> 6 hours	Total
Infection			
▪ None	60 (98.3)	29 (93.1)	89
▪ Superficial	0 (0)	0 (0)	0
▪ Deep	1 (1.6)	2 (6.9)	3
Union			
▪ Yes	60 (98.4)	29 (93.5)	89
▪ No	1 (1.6)	2 (6.5)	3
Range of motion			
▪ 0-90°	0 (0)	0 (0)	0
▪ 0-125°	0 (0)	3 (10.3)	3
▪ 0-135°	63 (100)	26 (89.7)	89
Overall outcome			
▪ Successful	69 (97.2)	19 (73.1)	89
▪ Failure	2 (2.8)	7 (26.9)	9

Late presentation of unrecognition is higher in patients who are hospitalized within 6 hours after injury (6.5% vs. 1.6%), ie> 6 hours in illness. A good range of motion (0-135°) was observed in the patients who applied within 6 hours of the delayed presentation (89.7% versus 100%). The rate of successful outcomes was higher than those who were delayed within 6 hours (61.7% versus 96.7%). Deep infection was detected in 4 of Type III-A fractures (25%). A good range of motion (0-135°) followed by type II (90%) was achieved in Type I fracture (98.7%).

DISCUSSION:

In our work and in the west there are similarities that are more traffic accidents than gunshot wounds. Most of our patients had a young, active life, motorcycles and automobile enthusiasts who were the main drivers of traffic accidents. Karachi is also responsible for many traffic accidents in this Pakistani city, as well as mass transit vehicles, which are frequently victims of floods. A local study reported that 36% of the total was crossing and 1.8 times more traffic deviations than walkers. The reflection of the causes can also be seen in our work. In our work, men are more commonly affected than women, the cause is the nature of work. In our study, 77% of men were affected, others were females. Another local study reports that the most common injury mechanism is traffic accidents (44%), superficial infection rate is 10.8% and deep infection is 4.6%. In this study (26.3%), 23.1% (15 cases) of tibial fractures treated with IM.7 fixation were consistent with the local frequency study, but the unconjugated case was high. In another study, however, the rate of unionism was 4.3%. In an Indian study involving 40 prospective cases of open tibia fracture notches I, II, IHA and IIIB in a traffic accident, the functional outcomes were as good and fair as 25% to 65%, 10% to 100%, 25% of successful outcomes and successful outcomes of delayed union cases, 10. However, contrary to the Hindu study, which is based only on the evaluation parameters, we use three parameters to assess the contagious

association of non-operative knee 0-1350 in the knee to assess the overall success of the intramedullary nail locking. Union time is comparable to different studies ranging from 17 to 24 weeks. 89 (96.7%) patients were included in the study. Our work is comparable to other international studies. After 24 weeks in this study, a successful follow-up was obtained.

CONCLUSION:

Intramedullary Locking Nail is an option of treatment that reduces the duration of hospitalization and early mobilization of the patient, providing rotational and axial stability in open fractures of the diaphyseal tibia, thus reducing the total cost of care.

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