ORIGINAL RESEARCH

To compare the different complications that result from the various treatment modalities in tibial fracture

Dr. Tushar Anand
Assistant Professor, Department of Orthopaedics, National Capital Region Institute of Medical Sciences, Meerut, Uttar Pradesh, India

Corresponding author
Dr. Tushar Anand
Assistant Professor, Department of Orthopaedics, National Capital Region Institute of Medical Sciences, Meerut, Uttar Pradesh, India

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ABSTRACT
Aim: To compare the different complications that result from the various treatment modalities in tibial fracture.
Materials & methods: Patients were categorized into four groups, each consisting of one hundred patients. Plaster casts were used to treat patients in group 1, plate and screws were used to treat patients in group 2, reamed and unreamed intramedullary nails were used to treat patients in group 3, and unreamed intramedullary nails were used to treat patients in group 4. **Results:** The rate of delayed union or non-union was 20% among those in group I, 5% among those in group 2, 11% among those in group 3, and 19% among those in group 4. It was determined that there was a significant difference ($P< 0.05$). The prevalence of malunion in group 1 was 34%, whereas it was only 3% in group 2, 6% in group 3, and 14% in group 4. there was no evidence of a superficial infection in group 1. In group 2, there was a 12% prevalence of infection. In group 3, it was reported to be 5%, but in group 4, it was reported to be 3%. It was determined that there was a significant difference ($P< 0.05$). the requirement for a second surgery was present in 11% of patients in Group 1, 7% of patients in Group 2, 15% of patients in Group 3, and 26% of patients in Group 4. It was determined that there was a significant difference ($P <0.05$).**Conclusion:** Tibial fractures have been treated with a variety of therapeutic techniques throughout the years. There has been no one that has been shown to work. So, the selection of a certain approach is required in order to prevent complications.
Keywords: Tibial fractures, malunion,

INTRODUCTION

It's not uncommon for the tibial shaft to suffer a closed fracture. The most frequent kind of fracture to occur in a long bone is the tibia shaft fracture. Accidents involving motor vehicles, sports, or falls from a great height are common types of high-energy trauma that may cause them. They often affect young patients who lead busy lifestyles. [1] The simultaneous occurrence of significant soft tissue injury and a high frequency of open fractures is a common side effect of direct trauma, such as those caused by car accidents. These fractures are prone to infection and may not heal properly since the tibial shaft is not covered by any kind of soft tissue and there is little blood flow to the area. Tibial shaft fractures are serious injuries that may lead to lifelong disability if not treated immediately. [2]

The AO classification of long bones (Type 42) is used to categorise tibial shaft fractures, which are then further subdivided into simple, wedge, and complicated fractures (Type 42. A/B/C). Fractures of type A may be further split into spiral, oblique, and transverse fractures, while fractures of type B can be further subdivided into spiral wedge, oblique wedge, and transversal wedge breaks. Type C fractures are split into spiral, segmental and irregular fractures. The classification supplied by Tscherne and Oestern may be used to categorise closed soft tissue injuries, whereas the classification given by Gustilo and Anderson can be used to categorise open fractures. [3]

In spite of the many varied treatment options available, there is ongoing debate over which approach to therapy is most effective. Cast application is a conservative treatment option for fractures of the tibial shaft that are stable and do not involve displacement of the fractured fragments. The patient receives conservative therapy in the form of a thigh plaster for roughly four weeks. Following the procedure, a functional brace should be worn for between 8 and 12 weeks. [4] For treating open or closed

solitary tibia shaft fractures, intramedullary nailing is the treatment of choice. This comprises fractures of the tibial shaft such as oblique and transverse breaks, segmental breaks, torsion breaks, debris fractures, and open fractures even with bone loss. Intramedullary nailing with locking screws has lately taken the place of the more traditional approach of plate osteosynthesis as the treatment of choice for tibial shaft fractures that do not include damage to the surrounding soft tissue. [5] The purpose of this particular research was to describe the complications that were related with the various treatment approaches.

MATERIALS & METHODS

This research was carried out at the orthopaedics section of the hospital. subsequently to receiving authorization to do so from the institute's ethics committee. It included four hundred individuals who had suffered tibial fractures. It includes both males (200) and females (200). The patient's demographic information, including their name, age, gender, and other details, were recorded. Patients were categorised into four groups, each consisting of one hundred patients. Plaster casts were used to treat patients in group 1, plate and screws were used to treat patients in group 2, reamed and unreamed intramedullary nails were used to treat patients in group 3, and unreamed intramedullary nails were used to treat patients in group 4.

All of the groups kept a record of many aspects, including the amount of time it took for the fracture to heal, the number of cases of delayed union, nonunion, and malunion, the incidence of infection, and other problems. The results that were collected in this manner were then analysed statistically. A p value of less than 0.05 was deemed statistically significant.

RESULTS

According to Table 1, patients were assigned to one of four treatment groups: group 1 received treatment in the form of a plaster cast; group 2 underwent fixation using a plate and screws; group 3 received treatment in the form of a reamed intramedullary nail; and group 4 received treatment in the form of an unreamed intramedullary nail. There were one hundred patients in each of the groups. The patients' age ranges and gender breakdowns are shown in Table 2. There was no statistically significant change (P>0.05). According to Table3, the rate of delayed union or non-union was 20% among those in group I, 5% among those in group 2, 11% among those in group 3, and 19% among those in group 4. It was determined that there was a significant difference (P< 0.05). According to Table 4, the prevalence of malunion in group 1 was 34%, whereas it was only 3% in group 2, 6% in group 3, and 14% in group 4. It was determined that there was a significant difference (P< 0.05). According to Table 5, there was no evidence of a superficial infection in group 1. In group 2, there was a 12% prevalence of infection. In group 3, it was reported to be 5%, but in group 4, it was reported to be 3%. It was determined that there was a significant difference (P< 0.05). According to Table 6, the requirement for a second surgery was present in 11% of patients in Group 1, 7% of patients in Group 2, 15% of patients in Group 3, and 26% of patients in Group 4. It was determined that there was a significant difference (P <0.05).

Table 1: Type of treatments

Groups	Treatment	Number of patients
Group1	Plaster cast	100
Group 2	Fixation with plate	100
Group 3	Reamed intramedullary nail	100
Group 4	Unreamed intramedullary nail	100

Table 2: Gender and Age of the patients

Gender	Number	%
Male	200	50
Female	200	50
Age		
below 25	74	18.5
25-35	180	45
35-45	90	22.5
Above 45	56	14

Table 3: Delayed and non union in all groups

	Number	%	P value
Plaster cast	20	20	0.002
Fixation with plate	5	5	
Reamed intramedullary nail	11	11	
Unreamed intramedullary nail	19	19	

Table 4: Malunion in all groups

	Number	%	p value
Plaster cast	34	34	0.003
Fixation with plate	3	3	
Reamed intramedullary nail	6	6	
Unreamed intramedullary nail	14	14	

Table 5: Superficial infection in all groups

	Number	%	P value
Plaster cast	00	00	0.004
Fixation with plate	12	12	
Reamed intramedullary nail	5	5	
Unreamed intramedullary nail	3	3	

Table 6: Need for reoperation in all groups

	Number	%	P value
Plaster cast	11	11	0.002
Fixation with plate	7	7	
Reamed intramedullary nail	15	15	
Unreamed intramedullary nail	26	26	

DISCUSSION

In the treatment of tibial shaft fractures, the goals of the treatment are to restore full weight bearing as quickly as possible, achieve a firm bone union, prevent pseudarthrosis, recover complete range of motion in the knee and ankle joint, and prevent infections and further injury to soft tissue. The purpose of this particular research was to describe the complications that were related with the various treatment approaches. It included four hundred individuals who had suffered tibial fractures. It includes both males (200) and females(200). The patient's demographic information, including their name, age, gender, and other details, were recorded. Patients were categorised into four groups, each consisting of one hundred patients. Plaster casts were used to treat patients in group 1, plate and screws were used to treat patients in group 2, reamed and unreamed intramedullary nails were used to treat patients in group 3, and unreamed intramedullary nails were used to treat patients in group 4.

According to the findings of our research, the rate of delayed union or nonunion was 20% among those in group I, 5% among those in group 2, 11% among those in group 3, and 19% among those in group 4. It was determined that there was a significant difference (P< 0.05). Harrington et al. provide evidence for the high prevalence that was seen using plaster casts.[6]

In addition, we recorded instances of malunion across all of the groups. The incidence of malunion was found to be 34% in group 1, 3% in group 2, 6% in group 3, and 14% in group 4. It was determined that there was a significant difference (P< 0.05). The research conducted by Krettek C et al[7] also came to the same conclusions. According to Wiss DA[8] research, the use of plates and screws results in the highest frequency of malunions. In group 1, there was no evidence of a superficial infection. In group 2, there was a 12% prevalence of infection. In group 3, it was reported to be 5%, but in group 4, it was reported to be 3%. It was determined that there was a significant difference (P< 0.05). The research conducted by Gregory P. et al.[9] lends credence to the hypothesis that plates and screws are associated with an increased risk of infection. In group 1, there were 11% of patients who required a second procedure, whereas in group 2 there were 7%, group 3 had 15%, and group 4 had 26%. It was determined that there was a significant difference (P< 0.05). The research conducted by Oni OO et al[10] came to similar conclusions. On the other hand, the Batten RL[11] study revealed a greater frequency of subsequent operations using plates.

CONCLUSION

Tibial fractures have been treated with a variety of therapeutic techniques throughout the years. There has been no one that has been shown to work. So, the selection of a certain approach is required in order to prevent complications.

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