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Clinical Profile of Patients with Fracture Shaft Tibia: Descriptive Clinical Study

Vijaykumar Angadi*, Ravi Kumar Naganur**

Author Affiliation: *Senior Resident **Assistant Professor, Dept. of Orthopedics, GIMS, Gadag, Karnataka.

Reprint Request: Vijaykumar Angadi, Senior Resident, Dept. of Orthopedics, Gadag Institute of Medical Sciences (GIMS), Gadag – 582103, Karnataka.
E-mail: ramspsm@yahoo.co.in

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Abstract

Introduction: Fractures of the tibial shaft are important for the reason that they are common and controversial. The exposed anatomical location of the tibia makes it vulnerable to the direct blow and high energy trauma as a result of motor vehicle accidents thus resulting in communited fractures, which are frequently open with significant loss of skin and soft tissues. *Methodology:* A through clinical examination was performed including detailed history relating to age, sex, occupation, mode of injury, past and associated medical illness and the limb was immobilized in the form of above knee plaster of paris posterior slab (or) Thomas splint. Limb elevation over a pillow was given in all the patients.Routine investigations were done for all patients. All patients were evaluated clinically and radiographically to assess for any injuries. *Results:* The predominant tibial fracture pattern was Type A1 (27%). In our study most of the cases were associated with fibula fracture. *Conclusion:* The mean age of patients with these fractures was 40.7 years and the maximum patients were in the age group of 18-48 years. Males predominated in our study.

Keywords: Shaft Tibia; RTA; Profile.

Introduction

As industrialization and urbanization are progressing year to year with rapid increase in traffic, incidence of high energy trauma are increasing with the same speed.Tibialdiaphyseal fractures are the commonest long bone fractures encountered by most orthopaedic surgeons. In an average population there are about 26 tibialdiaphyseal fractures per 1 lakh population per year. Males are more commonly affected than females with male incidence being about 41 per 1 lakh per year, and female incidence about 12 per 1 lakh per year. There is a bimodal distribution of tibial fractures with a preponderance of young males [1].

Fractures of the tibial shaft are important for the reason that they are common and controversial. The exposed anatomical location of the tibia makes it vulnerable to the direct blow and high energy trauma as a result of motor vehicle accidents thus resulting in communited fractures, which are frequently open with significant loss of skin and soft tissues.

In contrast to the rest of appendicular skeleton, tibia has precarious blood supply due to inadequate muscular enveloped [2]. Tibial fractures may be associated with compartment syndrome, vascular or neural injury. The presence of hinge joints at the Knee and the ankle, allows no adjustment for rotatory deformity after fracture. Because of the high prevalence of complications associated with these fractures, management often is difficult, and the optimum method of treatment remains a subject of controversy.

There are five principle causes of tibialdiaphyseal fractures; fall, sports injuries, direct blows or assaults, motor vehicle accidents and gun shot

injuries.[1]The important factors in prognosis are (1) amount of initial displacement (2) degree of communition (3) whether infection has developed and (4) severity of soft tissue injury excluding infection [2].

"Every fracture is an individual problem, and the decision to treat it by internal fixation or indeed conservatively should be based on a realistic assessment of the advantages and the hazards of each method in the circumstances of that particular case .This calls for a high degree of clinical judgment which is harder to acquire or to impart than technical virtuosity in the operating theatre" – Nicoll [3].

Management of the fractured tibia requires the widest experience, greatest wisdom and the best of clinical judgment in order to choose the most appropriate treatment for a particular pattern of injury – Watson and Jones [4].

Methodology

On admission general condition of the patient was assessed with regards to hypovolemia, associated orthopaedic or other systemic injuries and resuscitative measures taken accordingly. All patients received analgesics in the form of I.M. injections, Tetglob 500 I.V. intramuscularly and antibiotics intravenously. A through clinical examination was performed including detailed history relating to age, sex, occupation, mode of injury, past and associated medical illness and the limb was immobilized in the form of above knee plaster of paris posterior slab (or) Thomas splint. Limb elevation over a pillow was given in all the patients.

Routine investigations were done for all patients. All patients were evaluated clinically and radiographically to assess for any injuries. X ray were taken in two planes, anteriorposterior view and lateral view, and importance is given, and other serious injuries like head injuries.

Patients were operated as early as possible once the general condition of the patient was stable and was fit for surgery.

Pre operatively the length of the nail is calculated by subtracting 3 to 4 cm from measurement taken from the knee joint line to tip of the medial malleolus clinically and medullary canal is measured at the isthmus on X-rays. Accordingly a stock of interlocking nails 2 cm above and below the measured length and 1 mm above and below the required diameter were always kept.

Results

Table 1: Age incidence

Age in years	No. of Cases	Percentage
18-28	9	30
28-38	6	20
38-48	6	20
48-58	6	20
58-68	3	10

Majority of the patients were in the age group of 18 to 48 years(70%). The youngest was 24 year old and the oldest was 66 year old.

Table 2: Sex Distribution

Sex	No. of Cases	Percentage
Male	24	80
Female	6	20

Majority of the patients are male 80% and only 20% are female patients

Table 3: Mechanism of Injury

Type of Trauma	No. of Cases	Percentage
H/O of Fall	6	20
RTA	24	80

The major causes of fracture in our study was road traffic accident 80%

Table 4: Side affected

Side	No. of Cases	Percentage
Right	21	70
Left	9	30

In most of the patients Rt side was affected.

Table 5: AO type

Type of fracture	Type A			Type B			Type C		
	A1	A2	A3	B1	B2	B3	C1	C2	C3
No. of Cases	8	5	6	2	5	4	-	-	-
Percentage	27	17	20	7	17	12	-	-	-

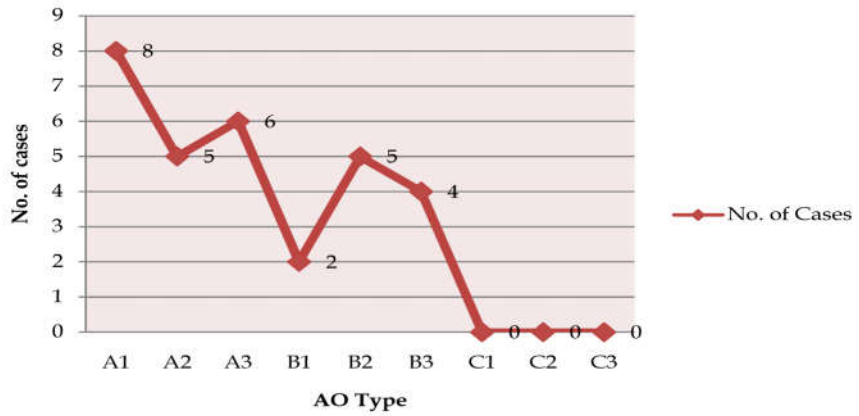
Table 6: Level of fracture

Level of fracture	No. of Cases
Proximal 1/3	1
Middle 1/3	18
Lower 1/3	11

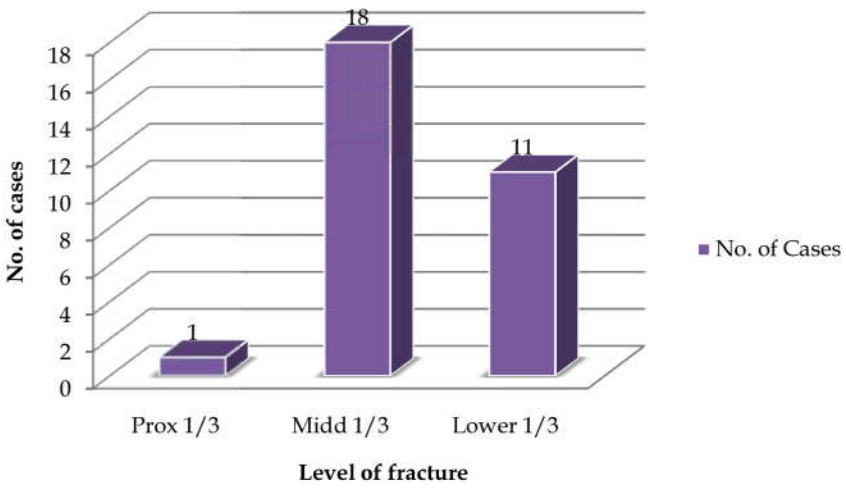
Majority of fracture occurred at middle and distal third (97%) in our study.

Table 7: Associated injuries

Associated injuries	No. of Cases	Side Affected		Treatment Given
		RT	LT	
Head injury	6	-	-	Consevatively treated
Clavicle fracture	3	1	2	Consevatively treated
Distal radius	3	2	1	Consevatively treated



Graph 1: AO Type



Graph 2: Level of fracture

- The predominant tibial fracture pattern was Type A1 (27%).
- In our study most of the cases were associated with fibula fracture.

Discussion

The average age of all cases in this series was 40.7 years. The fracture is more common in the age group of 18 – 48 years.

The average age in a study of 50 fractures of tibia conducted by Whittle et. al., showed that the average age was 34 years.

In a study of 43 fractures of tibia conducted by Singer and Kellam, the average age was 36 years.

In another study of 72 fracture of tibia conducted by Borratuset. al., the average age was 30.3 years.

There were 24 male and 6 female patients showing male

Table 8: Age distribution compared with other studies.

Authors	Average age in years
Bonatus et. al.,[5]	30.3
Duwelius et. al.[6]	40.5
Singer and Kellam[7]	36.0
Whittle et. al.,[8]	34.0
Present study	40.7

Table 9: Sex preponderance compared with other studies

Authors	Male	Female
Bonatus et. al.,[5]	52	19
Duwelius et. al.[6]	12	06
Singer and Kellam[7]	30	11
Whittle et. al.,[8]	34	13
Present study	24	06

predominance.

The sex distribution in a study by Bonatus et al., showed that there were 52 men and 19 women. In a study by Singer and Kellam, there were 30 males and 11 females

Majority of the cases sustained fractures from road traffic accidents. 6 patients who sustained fracture after a fall. Among R.T.A. motar vehicle accidents 28 cases (80%) was most common mode of injury in present series.

Conclusion

Road traffic accidents are the main cause of these fractures followed by fall.

In our series most of them were type A1 (27%) of AO classification. Most of the fractures occurred at the junction of middle-distal third of tibia. 40% of patients had other associated injuries.

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