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Original Research Article

Study of incidence and cause of delay for treatment of long bone fractures of the lower limb in tertiary care hospital

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ABSTRACT

Background: Musculoskeletal trauma represents a considerable global health burden. Lower limb long bone fractures are seen as a serious concern at the individual and population level. So the purpose of the study was to find incidence and cause of delay for treatment of long bone fractures of the lower limb in tertiary care hospital.
Methods: All adult patients (more than 18 years) reporting to Emergency Medicine Department of a tertiary care hospital with long bone fractures of lower limb were included in the study. Effects on the final outcome on the lifestyle of the patients were evaluated against the interventions and management at all stages of the course of the illness. Delay of surgery: in our study delay of surgery means if surgery occurs after one day (24 hours) of admission. The entire data is statistically analysed using SPSS software. P values less than 0.05 are considered to be statistically significant.
Results: 74 operated cases. 60 cases (81.10%) had delayed surgery, 14 cases (18.9.0%) did not have delayed surgery. 33 cases (55%) had medical reason for delay, 19 cases (31.7%) had financial reason for delay, 5 cases (14.3%) had infrastructure issues (unit system/non availability of implant), 3 cases (5.0%) had plan of surgery as causes of delay.
Conclusions: These factors have an effect in the final outcome of the cases. The final outcome is dependent on multiple factors. Adequate attention to each and every one of them was long way to get the patient to the pre-incident stage.

Keywords: Incidence, Cause of delay, Long bone fractures, Tertiary care hospital

INTRODUCTION

Musculoskeletal trauma represents a considerable global health burden. Extremity fractures are commonly seen in prehospital care. They demonstrate a wide variety of injury patterns which depend on the patient's age, mechanism of injury and premorbid pathology.[1]

Many fractures which are commonly associated with road traffic injuries. For example, front seat occupants may sustain patella fractures, femoral shaft fractures, and posterior hip dislocations following impact with the dashboard. When struck by a car, pedestrians have injuries that reflect whether they were struck from the front or the side, for example, tibial plateau fractures on the side of impact.[2]

Long bone lower limb fractures include fractures of femur, tibia and fibula and they are commonly seen at a tertiary care hospital. Mode of injury in these cases include fall while walking, fall from heights, road traffic accidents (RTA), sporting injuries and assault.[3] Prompt action is required at all stages of management as it has a very significant bearing on the morbidity and in some cases on the mortality of these patients. Compound fractures have an additional comorbidity in the form of

infection. Early mobilization after surgery helps to achieve good range of movements and also ensures a good quality of life.[4]

Inter trochanteric femoral fractures mostly occur in patients older than 70 years. They are classified based on classification suggested by Boyd and Griffin.[3] Subtrochanteric fracture accounts for 10% to 34% of all hip fractures. It has a bimodal age distribution. These fractures are classified based on Seinsheimer's classification.[4] Conservative methods of management are advocated in young children.

Femur shaft fracture has a blood loss of nearly 1.5 L and occurs due to major violence. Simple shaft fracture femurs are treated by open reduction and internal fixation. Fractures with soft tissue injury were initially managed by traction. Fracture of distal femur accounts 7% of all femoral fractures.

Tibial shaft fractures are most common fractures because of its location. As the bone is subcutaneous, open fractures occur more commonly.[5] The tibial shaft fracture is treated by cast or intramedullary nailing.[6] A segmental fracture is treated by interlocking nails. Intramedullary nailing of lower limb fractures gives good results.[7]

National Institute for Clinical Excellence (NICE) guidelines state that 'a quality improvement process that seeks to improve patient care and outcomes through systemic review of care against explicit criteria and the implementation of change'. Aspects of the structure processes and outcomes of care are selected and systemically evaluated against explicit criteria.

Wherever indicated, changes are implemented at an individual, team or service level and further monitoring is used to confirm improvement in health care delivery.[8]

Lower limb long bone fractures are seen as a serious concern at the individual and population level. So the purpose of the study was to find incidence and cause of delay for treatment of long bone fractures of the lower limb in tertiary care hospital.

METHODS

This study was conducted as a prospective observational study. Total 80 cases aged between 20 to 92 years were included in the study. A written consent was taken from each patient. All adult patients reporting to Emergency Medicine Department of Bharati Hospital Pune, Maharashtra Patients with long hone fractures of lower limb were included in the study.

Patients GCS of <8 or who are on ventilator support were excluded from the study. Duration of study was 1 year from September 2015 to September 2016 and follow up was done at 1, 3 and 6 months for all cases

Total number of 80 orthopedic patients presented to emergency medicine department of hospital as per the audit inclusion and exclusion criteria are considered into the study.

Patients who took leaving against medical advice (LAMA) and discharge against medical advice (DAMA) are taken into consideration for incidence calculation, pre hospital care, and management in emergency department but excluded from the detailed study.

Effects on the final outcome on the lifestyle of the patients were evaluated against the interventions and management at all stages of the course of the illness. Best practices at each stage would be identified. Details history, examination and investigations were undertaken as per department protocol for patients coming to hospital. Details of preadmission interventions if any and their responses were noted. Prehospital care of the patient was assessed. Time gap between the admission & time patient got operated was noted. Cause for delay of surgery in operated cases was categorized into delay due to medical fitness issues, financial issues (lack of money and approval of schemes), infrastructure (non-availability of OT, unit system & non-availability of implant) and plan of surgery (non-emergency like distal tibia and fibula fractures). Delay of surgery in our study means if surgery occurs after one day (24 hours) of admission.

The entire data is statistically analyzed using Statistical Package for Social Sciences (SPSS ver 21.0, IBM Corporation, USA) for MS Windows.[9-11] P values less than 0.05 are considered to be statistically significant.

RESULTS

80 cases (80.0%) completed the study, the mean±SD of age of the entire study group was 55.1±22.4 years. The minimum - maximum age range among the cases studied was 20-92 years. 67 cases were males and 33 cases were females.

Table 1: Incidence of lower limb bone fractures during the study period.

	No. of cases	% of cases
No. of orthopaedic patients managed in emergency ward	1572	6.36
No. of orthopaedic patients managed in emergency medicine department	313	31.94
No. of study cases	100	---

Incidence of lower limb long bone fractures among total orthopedic patients treated in the emergency department and total orthopedic patients admitted in our hospital through emergency medicine department was 6.36% and 31.94% respectively over a period of one year one month.

Table 2: Distribution time of presentation to emergency room after injury

Time duration	No. of cases	% of cases
<24 hours	62	62.0
24 hours—1 week	24	24.0
> 1 week	14	14.0
Total	100	100.0

The above Table 2 showed 62 cases (62.0%) took less than 24 hours for time of presentation to emergency room (ER), 24 cases (24.0%) took 24 hours to 1 week for time of presentation to ER and 14 cases (14.0%) required more than 1 week for time of presentation to ER.

Table 3: Distribution of time gap from admission to operating table.

Time gap	No. of cases	% of cases
<24 hours	14	18.9
24 hours–48 hours	14	18.9
48 hours–1 week	31	41.9
>1 week	15	20.3
Total	74	100.0

The Table 3, showed 74 cases who were taken to operating table (OT), 14 cases (18.9%) required less than 24 hours time gap from to admission OT, 14 cases (18.9%) required less than 24 hours to 48 hours time gap from to admission OT, 31 cases (41.9%) required 48-hours to 1 week time gap from admission to OT and 15 cases (20.3%) required more than 1 week time gap from admission to OT. Of 74 operated cases. 60 cases (81.10%) had delayed surgery, 14 cases (18.9.0%) did not have delayed surgery.

Table 4: Distribution of delay of surgery among the cases got operated.

Delay of surgery among total operated	No. of cases	% of cases
Delayed	60	81.1
Not Delayed	14	18.9
Total	74	100.0

Table 4 showed 74 operated cases. 60 cases (81.10%) had delayed surgery, 14 cases (18.9.0%) did not have delayed surgery.

Table 5: Causes of delay of surgery among the operated cases.

Causes for delay of surgery	No. of cases	% of cases
Medical	33	55
Financial	19	31.7
Infrastructure issues	5	8.3
Plan of surgery	3	5
Total	60	100.0

The Table 5 showed 60 cases that had delayed surgery, 33 cases (55%) had medical reason for delay, 19 cases (31.7%) had financial reason for delay, 5 cases (14.3%) had infrastructure issues (unit system/non availability of implant), 3 cases (5.0%) had plan of surgery as causes of delay.

DISCUSSION

This study was undertaken to know the incidence, clinical presentation, pain management in the emergency ward, events in intra-hospital stay and outcome of patients after discharge in long bone lower limb fractures.

Jindal et al, in his retrospective study conducted over a period of 4 years shows that prevalence of lower limb fractures is more in males (61.9%) than females higher prevalence of males as compared to females may be explained by the fact that women are involved in domestic activities rather than outdoor tasks and motor bicycle riding.[13]

In this study the time of presentation of patient to emergency medicine department after lower limb injury were less than 24 hours in 62 cases (62. 0%). (24.0%) reported to the ER between 24 hours and 1 week. Fourteen cases (14 4.0%) to the PD after more than 1 week.

A lot can be done in the area of pre hospital management of patients. Splinting of fractured limbs and proper transportation needs to be looked into. Triage in emergency department for lower limb long hone fractures is important as delay and mistakes involves snore blood loss and severe pain. Mechanism of injury should not be neglected.[14,15]

The cause of lower limb long bone fractures is mainly road traffic accidents in patients whose age is less than 60 years and because of fall in the elderly. Patients with lower limb long hone fractures need proper prehospital care and transportation to a tertiary care hospital. The chief causes of delay in surgery are; comorbidities, financial and infrastructure related issues. Delays due to all these causes can be corrected by changes in administration leading to decrease the hospital stay of the patients.[16]

This shows that 38% cases presented to tertiary care hospital 24 hours after the incident. This leads to delay in treatment of the patient and increase the hospital star of the patient. This delay is avoidable. Education and proper counselling by their local doctor or family doctor about immediate admission for lower limb long bone fractures was go a long way to reduce the morbidity in these cases. Proper first-aid and splinting by the first responders was also help.[17] Transportation by ambulance instead of other means of transport is one of the other things, in the pre-hospital area which was improve the outcome of these patients.

CONCLUSION

These factors have an effect in the final outcome of the cases. The final outcome is dependent on multiple factors. Adequate attention to each and every one of them was go a long way to get the patient to the pre-incident stage.

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