Length Of Stay Diaphyseal Tibial Fractures In North Sumatera Hospital

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Abstract : Background : Diaphyseal tibial fracture are the most common long bone fractures. From distribution data in Adam Malik General Hospital from January 2005 – March 2007 revealed that lower extremity has the highest incidence rate (63,5%). Mostly the hospital shows ineffective service as a reason to make the cost was increase. The purpose of this study is to know the length of stay differences between close and open diaphyseal tibial fractures.

Methods : Ninety six patients with closed and open diaphyseal tibial fractures were retrospectively review. Close fracture has thirty four patients. Open fractures has sixty two patients. The length of stay was count by measured the differences between date came and date out.

Results : In the close fracture group the mean time was 18.41 ± 14.27 *(p<0.05)* and in the open fracture group the mean time was 13.90 ± 8.87 *(p<0.05)*.

Conclusion : There was no statistically significant differences of the length of stay between close and open fracture.

Keyword: length of stay, tibial diaphyseal.

Introduction

Diaphyseal tibial fracture is the most common long bone fractures. In average population, there are about 26 tibial diaphyseal per 100,000 population per year (Court Brown, Heckman, & McQueen, 2015). A closed fracture is one which the covering skin is intact. By contrast, an open fracture is one that has communicated with the external environment, either because a fracture fragment has penetrated the skin from within or because sharp object has penetrated the skin to fracture the bone from without (Salter, 1999). Data distribution In Haji Adam Malik General Hospital from January 2005 – March 2007 revealed that lower extremity has the highest incidence (63,5%) rate of all trauma (Moesbar, 2007).

Although isolated musculoskeletal injuries in healthy individuals are seldom fatal, they are serious in that they cause much physical suffering, mental distress, and loss of time for the victim; that it to say, they have a low mortality but a high morbidity (Salter, 1999). A lot of factors that influence length of stay in open

diaphyseal tibial fractures patients such as wound care, operation more than one time, insurance problem, implants not available make the length of stay of patients more longer than close diaphyseal tibial fractures. The purpose of this study is to know the length of stay differences between close and open diaphyseal tibial fractures

Methods

This study was conducted at Medical Faculty of North Sumatera University / Haji Adam Malik General Hospital, North Sumatera, Indonesia for duration from January 2015 to December 2016 that retrospectively review use medical record. The target population of this study take from patients who sustain tibial diaphyseal fractures in Haji Adam Malik General Hospital, North Sumatera and for the subject of the study take from target population if the met the inclusion criteria.

Inclusion criteria were (1) an age of 18 years or older, (2) unilateral diaphyseal tibial fracture, (3) diapyhseal tibial fracture, (4) no pathological fracture, (5) no head injury, (6) no multiple fractures, (7) no contraindication to general anesthesia, (8) no previous surgery on the diaphyseal tibial. 96 subjects with tibial diaphyseal fractures devided into two groups (closed and open fractures).

Correlation test was used to find out the differentiation of length of stay in closed and open fractures. The difference between length of stay in tibial diaphyseal fractures were analysed using a computer based Wilcoxon statistical analytic. The study approved by the Health Research Ethical Committee of Medical Faculty of North Sumatera University / Haji Adam Malik Hospital and an Informed consent was obtained from all subjects

Results

The study inculded 96 patients diaphyseal tibia fractures, 35,41% (n = 34) in closed fractures and 64,58% (n = 62) in open fractures. Subject with tibial diaphyseal fractures correlated with gender, closed fractures 22 was male and 12 was female, open fractures 50 was male and 12 was female. Subject correlated with treatment, closed fractures, 26 patients was performed open reduction internal fixation with plate and screw and 8 patients was refused to treatment, open fractures, 6 patients was performed amputated, 6 patients was performed debridement and casting, 22 patients was performed open reduction and external fixation, 20 patients was performed open reduction and internal fixation, 8 patients was refused to treatment. The mean time for all subject was 15.5 ± 11.22, closed fracture was 18.41 ± 14.27 day and for open fracture was 13.90 ± 8.87 day.

Table 1. Patients gender correlated type of fractures.

Gender	Closed fractures	Open fractures	Total
Male	22	50	72
Female	12	12	24
Total	34	62	96

Table 2. Type of fractures correlated with treatment.

Type	Treatment*					Total
	I	II	III	IV	V	
Closed fractures	0	0	0	26	8	34
Open fractures	6	6	22	20	8	62
Total	6	6	22	46	16	96

* I (Amputation), II (Debridement and casting), III (OREF), IV (ORIF), V (Refused)

Table 3. Frequency distribution based on patients length of stay.

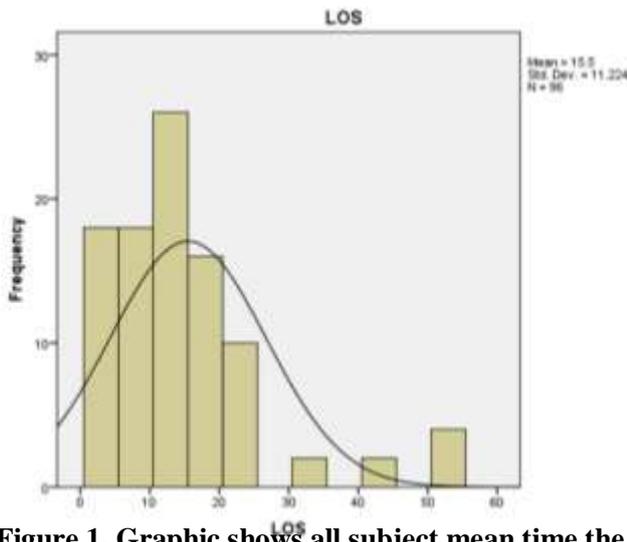|	Type of Fractures	
	Closed	**Open**
Mean	18.41	13.90
Std. Deviation	14.27	8.87

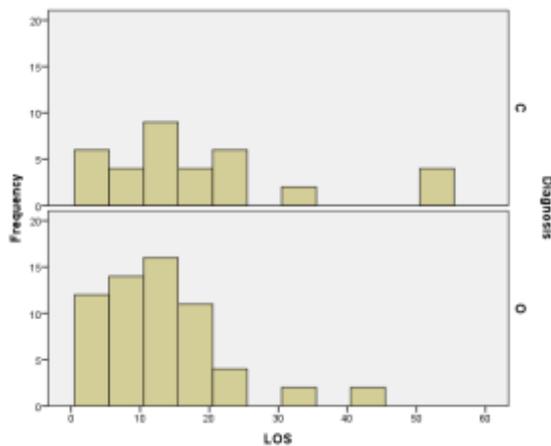**Figure 1. Graphic shows all subject mean time the length of stay**

Figure 2. Graphic shows mean time the length of stay based on type of fractures.

Discussion

The central purpose of this study was to evaluate the difference of length of stay between closed and open fracture diaphyseal tibia fractures. In this study, type of fractures were found no association with length of stay and after statistical analysis of the closed and open fractures with length of stay, we also found there is no significant relationship between closed and open fractures with length of stay of patients.

From statistical analysis show that the type of fractures not the factor that influence the length of stay of patients in this study. This is proven by paying attention p value from each group. Both of p value we get less than alpha value from this study 0,05. In our opinion, there are a few factors that can make the length of stay more longer in this study, first, from hospital that cannot afford the implant like intramedullary nail which is can make the length of stay of patient more shorter because the patient can early weight bearing compare to the plate and screw, second, from the patient that did not take care of insurance before the accident, thats why a lot of patient that refuse the treatment because the patient did not have the insurance.

Conclusion

Therefore, we concluded that from this study there is no difference between closed and open fractures that influence the length of stay patients. This study was care, operation more than one time, implants not available, etc make the care of patients more longer than close fractures.

Conflict of Interst

No potential conflict of interest relevant to this article was reported.

References

1. Court-Brown CM, Heckman JD, McQueen MM. 2015. Rockwood and green's fractures in adults. Wolters kluwer. 57:2415-17
2. Dahlan MS. 2010. Langkah-langkah membuat proposal penelitian bidang kedokteran dan kesehatan. Sagung seto. 3:32-7
3. Moesbar N. 2007. Pengendara dan penumpang sepeda motor terbanyak mendapat patah tulang pada kecelakaan lalu lintas. USU e-Repository. 8-10
4. Rasjad C. 2007. Pengantar ilmu bedah orthopedi. Yarsif watampone. 14:355-358
5. Salter RB. 1999. Textbook of disorders and injuries of the musculoskeletal system. Williams and wilkins. 15:417-22.

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