|| ISSN(online): 2589-8698 || ISSN(print): 2589-868X ||
International Journal of Medical and Biomedical Studies
Available Online at www.ijmbs.info
NLM (National Library of Medicine ID: 101738825)
Index Copernicus Value 2021: 70.61
Research Article Volume 7, Issue 1; January: 2023; Page No. 60-63

The Prevalence of Maxillary Fractures at Hasan Sadikin Hospital Bandung between 2018 and 2020

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Received: 26-12-2022 / Revised: 18-01-2023 / Accepted: 24-01-2023
DOI: https://doi.org/10.32553/ijmbs.v7i1.2651
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Conflict of interest: No conflict of interest.

Abstract

Introduction: Maxillofacial trauma includes injuries to the lower, middle, or upper thirds of the face and oral cavity. As these fractures have the potential to cause morbidity and even mortality, they require careful examination and management based on their severity. This study aimed to provide information regarding the number and types of maxillary fracture cases at Hasan Sadikin General Hospital, Bandung.

Methods: The design of this study was a descriptive study. Patients diagnosed with unilateral maxillary fractures, palatal fractures, Le Fort I fractures, Le Fort II fractures, and Le Fort III fractures admitted to Hasan Sadikin Hospital, Bandung, from January 2018 - December 2020, were included. Patients with incomplete medical records were excluded from this study.

Results: This study found 157 maxillary fracture patients out of 1221 maxillofacial trauma patients treated at the Oral and Maxillofacial Surgery Department of Hasan Sadikin General Hospital between January 2018 and December 2020. Male patients had a more significant number of cases (87.26%). The ages 11 to 20 years had the highest incidence of maxillary fractures (29.29%). Maxillary fractures accompanied by palatal fractures were the most prevalent, followed by Le Fort II fractures and unilateral maxillary fractures (28.66%, 21.01%, and 11.46%, respectively). About 42.67% of patients who experienced maxillary trauma also sustained mild head injuries. The most frequent mechanism of injury was motor vehicle accidents (95.54%).

Conclusion: This study reported the prevalence of maxillary fractures at Dr. Hasan Sadikin Bandung between 2018 and 2020 based on fracture types, sex, age groups, head injuries, and mechanism of injury. Future study is required to measure the force, direction, impact mechanism, use of helmets, and types of helmets to prevent maxillofacial trauma.

Keyword : *Maxillary fracture, le fort I, le fort II, palatal fracture*

Introduction

Maxillofacial trauma is classified into injuries that can occur in the face's lower, middle or upper third, including injuries to the soft and hard tissues of the face and the oral cavity.[4] Fractures of the middle third of the face often occur in the maxillary region and potentially cause morbidity and even mortality that require careful examination and appropriate management. The middle third of the face (midfacial) has an essential role in function and esthetics, so trauma-induced abnormalities in this region tend to be more visible and damage the appearance of the

lower face. The Le Fort classification is a classification used to describe fractures of the maxillary bone.[4–6] This Le Fort fracture can occur with other oromaxillofacial fractures, one of which is in the palate region. %.[7–11] Research conducted by Park in the case of Le Fort fractures found 13.2% of palate fractures. Research conducted by Chen CH et al. found about 46.4% of palatal fractures in Le Fort fractures.[8] Hasan Sadikin General Hospital in Bandung is a referral center from the province of West Java, where referrals for maxillofacial trauma cases have a reasonably high referral rate at this hospital. Several previous studies regarding maxillofacial trauma at Hasan Sadikin Hospital have not had a study that specifically discusses the prevalence of maxillary fractures in maxillofacial trauma in terms of Age, gender, type of fracture, etiology, or treatment. This reason underlies the author's to examine the prevalence of maxillary fractures at Hasan Sadikin Hospital, Bandung.

Methods

This was a descriptive study of maxillofacial trauma patients diagnosed with unilateral maxillary fractures, palatal fractures, Le Fort I fractures, Le Fort II fractures, and Le Fort III fractures admitted to Hasan Sadikin Hospital, Bandung during January 2018 - December 2020. Patients with unilateral maxillary fractures, Le Fort I, II, and III fractures, and palatal fractures were included in this study. Patients with incomplete medical records were excluded from this study. Unilateral maxillary fracture in this study was defined as a fracture that occurs solely on a single side of the maxilla bone and is clinically and radiographically apparent. Le Fort fractures were midface fractures that were visible both clinically and radiographically. Palatal fractures were clinically and radiographically visible palate-involved fractures. The authors collected the data from patients medical records at Hasan Sadikin Hospital Bandung. The data was then analyzed in Microsoft Excel.

Result

The results of the analysis consisted of descriptive analysis to calculate patient characteristics. The sample in this study was 157 people with a diagnosis of the maxillary, le fort, or palate fracture from the total population of maxillofacial trauma patients in the period January 2018 - December 2020 who were treated at the Oral and Maxillofacial Surgery section, Hasan Sadikin Hospital, Bandung. Characteristics of patients taken in this study were gender, Age, type of maxillary fracture, involvement of head injury, and mechanism of trauma.

Table 1: Characteristics by Gender

Patients Characteristic	f(n)	Percentage (%)
Gender		
Male	137	87,26%
Female	20	12,73%

From the results of the study through medical records based on gender criteria, it was found that 137 male patients, or 87.26%, and female patients, as many as 20 people, or 12.73%.

Table 2: Characteristics by Age

Patient Characteristics	f(n)	Percentage (%)
Age		
0-10 Age	2	1,27%
11-20	46	29,29%
21-30	44	28,02%
31-40	33	21,01%
41-50	17	10,82%
51-60	7	4,45%
61-70	8	5.09%

Respondents in the 0-10 year age group were two people or 1.27%, the 11-20 year age group were 46 people or 29.29%, the 21-30 year age group were 44 people or 28.02%, the age group 31-40 as many as 33 people or 21.01%, the age group 41-50 years as many as 17 people or 10.82%, the age group 51-60 years as many as seven people or 4.45% and the group 61-70 years as many as eight people or 5.09%.

Table 3: Characteristics by Type of Maxillary Fracture

Patient Characteristic	F (n)	Percentage (%)
Maxillary Fracture Type		
Maxillary Unilateral	33	21,01%
Maxillary + Palatum	45	28,66%
Le fort I	18	11,46%
Le fort I + Palatum	12	7,64%
Le fort II	33	21,01%
Le fort II + Palatum	13	8,28%
Le fort III + Maxilla	2	1,27%

The most common fracture types were maxillary fractures accompanied by palatal fractures, as many as 28.66%%; the second most were unilateral maxillary fractures and Le Fort II fractures, as many as 21.01%; and the third most were Le Fort I fractures, with 11.46 %. Other fractures found were Le Fort II fractures accompanied by 8.28% palate fractures, 7.64% of Le Fort I fractures with palate fractures, and 1.27% of Le Fort III fractures with maxillary fractures.

Table 4: Characteristics Based on Severity of Head Injury

Patient Characteristic	f(n)	Percentage (%)
Head Injury		
Mild Head Injury	67	42,67%
Moderate Head Injury	26	16,56%
Severe Head Injury	4	2,54%

Characteristics obtained from medical records in maxillary trauma patients also found involvement of head injuries, where as many as 42.67% of these patients also had mild head injuries, while 16.56% had moderate head injuries. Injury) Moreover, 2.54% had a severe head injury (severe head injury).

Table 5: Characteristics Based on Trauma Mechanism

Patient Characteristic	f(n)	Percentage (%)
Mechanism		
Road Accident	150	95,54%
Fall	7	4,45%

The medical record data found that the most trauma mechanism was due to traffic accidents, as many as 150 patients or 95.54%, while the other was due to falls, as many as seven patients or 4.45%.

Conclusion:

From the research and data analysis conducted, it can be concluded that there were 157 maxillary fracture patients out of a total of 1221 maxillofacial trauma patients treated at the Oral and Maxillofacial Surgery Department of Hasan Sadikin General Hospital between January 2018 and December 2020. Motor vehicle accidents are still the highest causative factor in Indonesia which causes maxillofacial trauma and head

injuries. Male patients had greater incidences. The age group of 11 to 20 years had the highest incidence of maxillary fractures. Maxillary fractures accompanied by palatal fractures are the most prevalent, followed by Le Fort II fractures and unilateral maxillary fractures. As demonstrated in this study by the presence of mild head injuries in a number of cases, maxillary fractures can also be accompanied by head trauma. A traffic collision causes the greatest number of fractures. Additional research is required on the mechanism of maxillary fractures resulting from traffic accidents to measure the force, direction, impact mechanism, use of helmets, and types of helmets (half and full face).

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