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Concomitant injuries in maxillofacial fractures from head and neck division of surgery department at Dr. Sutomo General Hospital, Surabaya, Indonesia period 2015-2016



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ABSTRACT

Introduction: Maxillofacial fractures were caused most by traffic accidents. This study aims to know about concomitant trauma in maxillofacial fractures.

Method: Observational descriptive study to evaluate maxillofacial fracture patients in Head and Neck Division of Surgery Department, Dr Sutomo Hospital between 2015 – 2016.

Result: Distribution of maxillofacial fracture patients in 2015 - 2016 based on sex, data on male patients was 77.52%. In 2015 male compared to female 70.5%, increased in 2016 male compared to female 83.82%. The side of fracture found midface fracture 48%,

lower face 30.2% and combination mid and lower face 21.7%. Data on maxillofacial trauma with concomitant trauma were 46.5%. Concomitant injury in 2015 was 36.06% and in 2016 as many as 55.88% where there was an increase in cases of concomitant trauma. In 2015 there were 63.63% of the accompanying brain injuries, while in 2016 there were 42.1% brain injuries, where the trauma outside the brain injury also increased.

Conclusion: Incidence of concomitant injuries in maxillofacial fractures is 46,5 %, and head injury found 50 % in concomitant injuries. The cause of traffic accidents were motorcycles.

Keyword: concomitant injuries, maxillofacial fractures, descriptive study, incidence.

Cite This Article: Wibowo, M.D., 2019. Concomitant injuries in maxillofacial fractures from head and neck division of surgery department at Dr. Sutomo General Hospital, Surabaya, Indonesia period 2015-2016. *Bali Medical Journal* 8(3): S812-S814. DOI: [10.15562/bmj.v8i3.1552](https://doi.org/10.15562/bmj.v8i3.1552)

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INTRODUCTION

Maxillofacial fractures are fractures that occur in the facial bone, including the frontal bone, zygomatic bone, orbital bone, nasal bone, maxillary and mandible.^{1,2} Trauma that causes maxillofacial fractures is caused by sharp trauma or blunt trauma. Blunt trauma is more common with causes such as traffic accidents, abuse or violence, sports accidents and workplace accidents.^{3,4} Indonesian Police Department released data on traffic accidents that occurred in Indonesia, the trend is rising. The number of traffic accidents in 2014 reached 88,897, 2015 rose to 96,073, in 2016 to 106,591, 2017 dropped to 104,327. Then it rose again in 2018 to 107,968. Traffic accidents accounted for the most occurrence of maxillofacial fractures with an incidence of 92% in the Head Neck Division of Surgery Department Dr Soetomo General Hospital Surabaya. In 2006, Reksoprawiro study in the Head Neck Division of Surgery Departement Dr Soetomo General Hospital in 2001- 2005 for maxillofacial trauma in adolescents to young adults from 15 to 40 years old, male to female 7: 1, the cause of the most traffic accidents reaching 82.4 % which is accompanied by trauma in other parts of the body as much as 64.38%. Concomitant in brain injury were

55.4% compared to other body parts. Whereas in 2007-2013 maxillofacial fractures were 904 cases, of which the majority were male 78% of cases, with age under 35 years as many as 57%.

The incidence of maxillofacial trauma is often accompanied by trauma to other areas of the body such as brain trauma, thoracic trauma, abdominal trauma and fractures of the extremities and spine. Handling severe trauma requires a holistic and multidisciplinary handling of the patient to save the patient's life first.^{5,6}

Efforts to prevent traffic accidents need to be focused primarily on motorbike riders because based on 2016 data in Surgery Department of Dr. Soetomo General Hospital the incident involving motorcycle was 88.23%. Preventive steps have been taken in the form of safety riding education, helmet use properly, avoid being drunk and sleepy when driving.

Based on available data, we will reveal the incidence of concomitant fracture with a maxillofacial fracture in the Head-Neck Surgery Department of Dr. Soetomo General Hospital in 2015-2016. The study aims to know of concomitant trauma in maxillofacial fractures in Departement of Surgery, Dr Sutomo General Hospital

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Received: 2019-07-12

Accepted: 2019-11-25

Published: 2019-12-01

METHOD

This research was in the form of observational descriptive by analysing data from medical record of patients with maxillofacial fractures in the Head Neck Division, Departement of Surgery Dr. Soetomo General Hospital Surabaya during 2015-2016 including variables of gender, age, maxillofacial fracture type, concomitant fracture trauma.

RESULT

The distribution of maxillofacial fracture patients in 2015 - 2016 described in Table 1 as follow, based on sex found that male patients had more maxillofacial fractures than women as much as 77.52 %. In 2015 male compared to female 70.5%, increased in 2016 male compared to female 83.82 %. Average male to female ratio was 3.4: 1. Based on age below 50 years as much as 89.92%. Midface fractures were 48%, lower face fractures were 30.2% and combination mid and lower face fractures were 21.7%. Data on maxillofacial trauma without concomitant trauma were 53.5%, while those with concomitant trauma were 46.5%, Concomitant trauma and maxillofacial fractures in 2015 were 36.06% and increased in 2016 as many as 55.88%. Based on the type of concomitant trauma distinguished by brain injury from trauma to other organs/extremities, it was found that brain injury often concomitant maxillofacial fractures in as many as 50% of cases where the mechanism of

trauma to the face with a large force will be transmitted to the brain. In 2015 there were 63.63% of the concomitant brain injuries, while in 2016 there were 42.1% brain injuries (Table 1).

DISCUSSION

Based on table 1 that male patients had more maxillofacial fractures than women as much as 77.52 %. In 2015 male compared to female 70.5%, increased in 2016 male compared to female 83.82 %. Average male to female ratio is 3.4:1. In Europe, male : female is 1,8:1 until 6,6:1.⁵ Men are more on the road so they are high risk of accidents, the high density of motorcycles and high risk of fall down.⁷⁻¹¹

Based on table 1, Maxillofacial fractures by age in 2015-2016 with the most dominance at the age of 0 - 50 years as much as 89.92%. Productive age works at the age of 26-50 years, high mobility on the road so the risk of trauma is greater. While under the age of 25 are mostly students (table 1). In Poland, the characteristic of maxillofacial fracture found on 18-25 years old group.¹²

From Table 1, Midface fractures were 48%, lower face fractures were 30.2% and combination mid and lower face fractures were 21.7%. The mechanism of trauma that affects the midface, the direction of trauma comes from the frontal direction which directly affects the face, the force of trauma is tremendous so the force will be forwarded to the intracranial. In the other country, lower face fractures were 47.1%.¹³

Concomitant trauma and maxillofacial fractures in 2015 were 36.06% and increased in 2016 as many as 55.88%, based on table 1. Increased cases of concomitant injury with maxillofacial fractures were at Dr. Sutomo General Hospital because it was a national hospital referral where multi-trauma cases require multidisciplinary treatment.

Based on table 5, in 2015 there were 63.63% of the concomitant brain injuries, while in 2016 there were 42.1% brain injuries, where the trauma outside the brain injury also increased.¹ Brain injury often coincides with midface fracture because large trauma to the face will continue to intracranial.^{14,15} The midface bone is relatively thin and flat so it cannot withstand a large trauma load. Whereas trauma to the extremities, chest and abdominal occurs due to motorcyclists when they fell down, the risk of trauma to other body parts will be affected.^{7,9}

CONCLUSION

Based on data obtained in 2015-2016, it can be concluded that maxillofacial trauma with concomitant trauma accompanies as much as 46.5%, of which 50% of concomitant trauma is brain injury.

Table 1 Study characteristics, injury area, concomitant trauma, and type of concomitant type of trauma

Variable	2015	2016	Total
Sex			
Male	43	57	100
Female	18	11	29
Age			
0 - 25 years	33	26	59
26 - 50 years	22	35	57
> 50 years	6	7	13
Injury Area			
Midface fractures	31	31	62
lower face fractures	20	19	39
Mid and lower face fractures	10	18	28
Concomitant trauma with maxillofacial fractures			
Without concomitant	39	30	69
With concomitant	22	38	60
Type of concomitant trauma			
Brain injury	14	16	30
Extremity, chest, abdominal trauma	8	22	30

The mechanism of trauma to the face with great force will cause maxillofacial fractures to brain injury. The causes of maxillofacial fractures due to traffic accidents are motorbike riders as much as 88.23% in 2016 so the risk of other concomitant trauma is also large 55.88%.

SUGGESTION

The development of this research requires the existence of multi-central research to find out data on maxillofacial trauma in the Surabaya area and its surroundings, because handling this maxillofacial trauma most hospitals have been able to handle it.

Improvements in safety riding for motorists and other vehicle users to be more careful and obedient to traffic regulations.

ETHICAL CLEARANCE

This research had been approved by Ethics Committee Dr. Sutomo General Hospital with reference number No.1537/KEPK/IX/2019.

CONFLICT OF INTEREST STATEMENT

The author declares that there was no conflict of interest in the research

FUNDING

The author is responsible for study funding without the involvement of grant, scholarship, or any other resource of funding

AUTHOR CONTRIBUTION

The author has contributed to all process in this research, preparation, drafting, review and approval of this manuscript.

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