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RESEARCH ARTICLE

**PREVALENCE OF FRACTURES ZYGOMATIC-MAXILLAR COMPLEX FOR
DIFFERENTS INCIDENCES DURING TEN YEARS**

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ABSTRACT

Maxillofacial fractures represent a major public health problem. Among these, those of the maxillary zygomatic complex are among the most incidents, representing the second or third position. Young adult males are affected more frequently. The most prevalent etiologies are motorcycle accidents, car, assaults, sports and falls. These vary according to the demographic region studied and the age of patients. Due to this high variation in prevalence of fractures of CZM, this study aimed to evaluate during the period 2002-2011 characteristics of zygomatic fractures in patients treated by postgraduate and Maxillofacial Surgery Faculty of Dentistry Araçatuba-UNESP. During the study period of zygoma fractures accounted 25.44 % of facial fractures was analyzed in 2512 records. Among 639 zygomatic fractures, men are the most hit, 71.8 %, and the age group 21-30 years is the most affected. The most frequent cause was motorcycle accident. The predominant treatment was surgery. Our study showed that a variation in the literature on the etiology of these fractures according to the study area occurs.

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INTRODUCTION

The maxillofacial fractures represent a major public health problem. Nowadays there is a higher incidence and diversity in the standart of these injuries. 1-3 They cause high morbidity for the patient and cost a lot to the country's health system.³⁻⁵

Among the most significant facial fractures, is the zygomatic complex, occupying the second or third position, after fractures of nasal bones and jaw due to higher prominence of these bones in the face. These traumas occur either in isolation or associated with other types of facial trauma.⁶

The male is often the most affected, about 78 %. The age range in which there is higher incidence is 20-39 years, being 64% of men and 69% of women aged in this range.¹⁰⁻¹¹

The dominant etiology varies by demographic region studied and the age of the patient, and observed that the falls appear

more often when the study involves elderly.¹²⁻¹³ Motorcycle accidents car accidents, physical assaults, sports and falls are among the other etiological factors that lead to this type of injury.^{6,11}

The zygomatic complex fractures diagnosis is usually clinical, with radiographic confirmation.¹⁴ As signs and symptoms can emphasize the subconjunctival ecchymosis, limitation of mouth opening movement, cheek flattening, double vision, enophthalmos and periorbital ecchymosis.¹¹ The infraorbital nerve can be compromised after the occurrence of these traumas and the improvement of their sensitivity is directly related to the degree of involvement and smaller displacement of the fracture.¹⁵ The coverage is multidisciplinary, encompassing with emphasis the traumatologic specialties, ophthalmology, plastic surgery, maxillofacial and neurosurgery.¹⁰

Treatment can be either surgical or conservative, and varies according to the classification of the jaw zygomatic complex

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fracture, can be opened or closed reduction, with a highlight for the surgical reduction and rigid internal fixation in two points to cases of non-comminuted fractures. ¹⁶⁻¹⁷

The aim of this study was to evaluate, in the period between 2006 to 2011, the prevalence and characteristics of zygomatic fractures in patients treated by Surgery, Traumatology and Maxillofacial of Post Graduate Dentistry of Araçatuba College UNESP.

METHODS

After the submission of the project by the Research Ethics Committee in Human and its approval, code 32/06, the work had typed 2512 records and subsequent analysis of 639 corresponding to zygomatic fractures. The variables analyzed were: gender, Age, Type of fracture (single or associated). Etiology: The data were stored in the statistical program Epi Info 3.5.1, in a prepared form. Statistical analyzes were performed using the SPSS 20.0 program.

RESULTS

During the studied period, the zygomatic complex fractures (ZCF) corresponded 25.4 % of facial fractures records analyzed in 2512 records, ranking third position, after mandibular fractures, and nasal 26.67%, 26.15%. The male gender was the most affected, with 71.8% of zygomatic fractures (n = 639). Although, the number of men was three times higher than women in the total of evaluated cases (total = 2512, male = 1855, female = 657); the male affected by ZCF fracture corresponded 24.5 % of examined men in the study. No statistically significant difference was noticed when compared to females (28.2 %) (figure 1). Among the confirmed cases with fracture CZM 454 were men and 185 women.

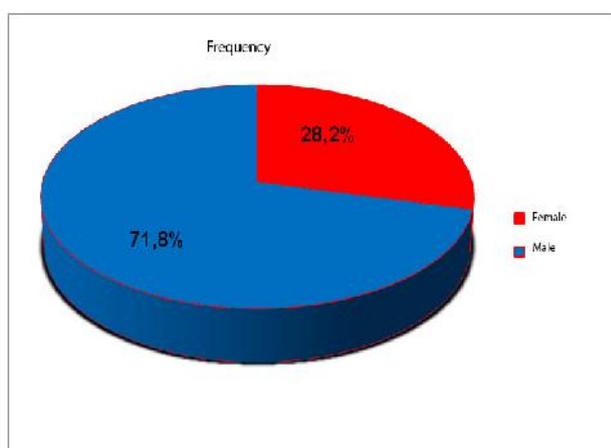


Figure 1 Distribution of ZCF fractures in gender proportion.

The age group 21 to 30 years appears more affected by ZCF fracture, followed by the age group of 11-20 and 31-40 years (figure 2). When evaluated, the etiological factors that cause CZM fractures, stand out motorcycle accidents, which is statistically significant when compared to the others (figure 3).

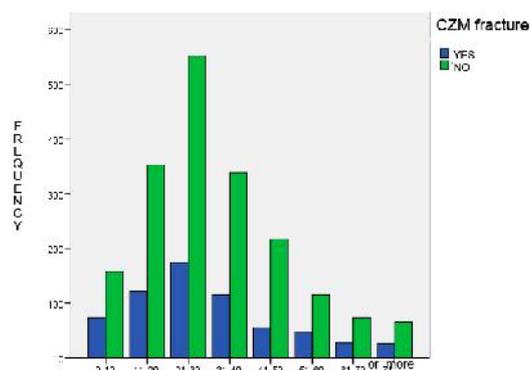


Figure 2 Distribution of age groups and their frequencies.

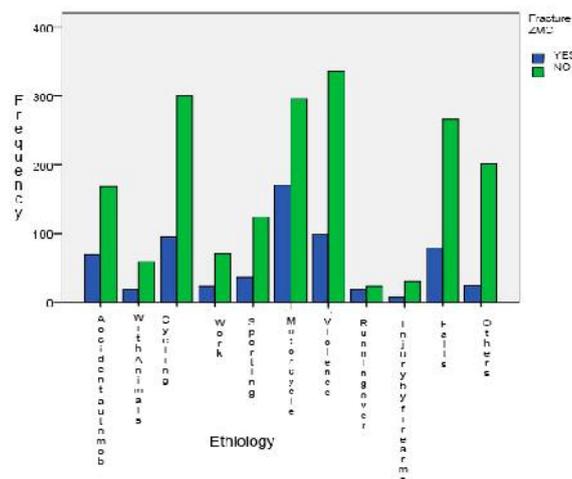


Figure 3 Distribution of etiologies and their frequencies.

The most frequent cause for all age groups were motorcycle accidents, with 26.6% of zygomatic complex fractures jaw occurrences (figure 4). In the corresponding children age there was a predominance of motorcycle accidents, followed by automobile, and more senile groups there was predominance of motorcycle accidents followed by simple falls. Ages most affected by motorcycle accidents are within a range ranging 11-60 years, with the largest number of victims having between 21 to 30 years (figure 4).

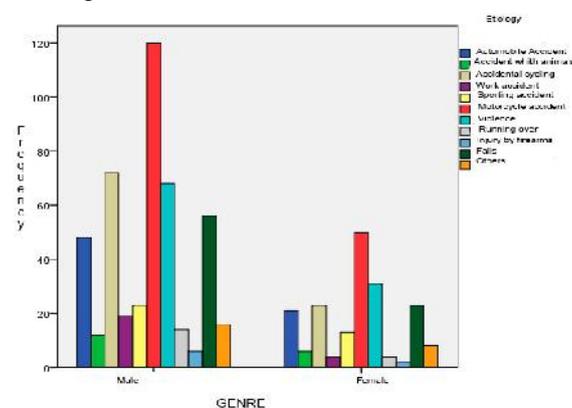


Figure 4 Association between the frequency of etiologies and gender.

For females, motorcycle accidents represent 27% of the fractures followed by physical aggression (16.8%), cycling accidents (12.4%) and simple fall (12.4). For men, there was higher prevalence in motorcycle accidents, 26.4%, followed by

cycling accidents (15.9%) and physical aggression (15%) (figure 5).

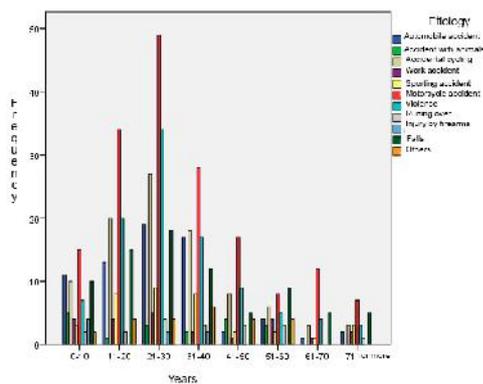


Figure 5 Association between etiology and age.

When analyzed the association of clinical signs and presence of ZCF fractures, we notice that facial bruises, “FCC” (cut blunt injury) and “FLC” (lacerum blunt injury) are not essential clinical conditions for existence of fractures (figure 6). Among the patients with jaw zygomatic complex fractures, 4.7 % had two or more associated fractures (figure 7). Regarding adopted treatment procedures, the surgical approach prevailed over the conservative in 89.2% (figure 8).

DISCUSSION

In the present study the zygomatic complex fractures occupy the third position among facial fractures, which encompassed: fracture of the frontal bone, orbital, nasal bones with or without dislocation and comminuted, naso orbito ethmoid, maxillary, Le Fort I, II and III and mandibular. This result becomes evident due to the greater back and previous projection of the nasal bone and mandible relative to the zygomatic bone.⁷⁻⁹

The most affected individuals are in the age group 21-30 years, although the age groups 31-40 and 41-50 also show relatively high frequencies. This study may also corroborate the literature, also considering the age range for each age group. Young adults are more likely to suffer physical injuries due to greater enthusiasm enjoying life.^{10,11, 14, 18, 19.}

However, when doing statistical analysis to evaluate the prevalence in the gender, it was found that men and women are equally affected by the ZCF fractures, in other words, once diagnosed the fracture males are not more susceptible than females. Probably, when the authors cite this prevalence, this is done only by an descriptive evaluation not quantitative as related in this study

Regarding the trauma etiology, motorcycle accidents had the highest rate, 26.6 %, followed by physical aggression 22.8 % and 14.9 % cycling accident. Correlating gender and etiology, we observed that for women the motorcycle accident had the highest prevalence, 27 %, followed by physical abuse, 16.8 %. For men motorcycle accidents had a highest rate, 26.4 %, followed by 15.9 % cycling accident.

Motorcycle accidents have shown frequent cause in this work, reflecting the large use of this type of transport in the region

studied, mainly due to easier and cheaper access when compared to cars, and the greatest shift in traffic due to the cost. The same can be seen for accidents involving bicycles, considering that along with motorcycles corresponds the transportation majority used. Fractures involving these accidents can be associated with the use of open helmets, or simply the non-use of this equipment, as can be seen in cyclists.¹⁰

The abuse of alcohol is a variable that adds a relatively high number of cases of traffic accidents and physical assault. the domestic violence is an important factor to be considered, as it can be directly related to the second more frequent etiology in females.¹³

Nowadays, policy act to prevent and reduce the number of accidents involving drunk drivers in the state, but when it comes to physical assault, other factors are involved, such as education and culture. The seat belt is extremely important in reducing the severity of an accident involving automobiles, its use and speeding are also commented in prevention programs.¹²

Sometimes the object impact against the face do not affect only one place, however can occasion associated fractures, as shown in this study for 4.7 % of people. The low prevalence of the fractures in the elderly and children, when compared to most common age group may be associated with greater attention from relatives and the few social activities. Although the number of fractures in children has not been the lowest in this work and the motorcycle accident had a greater prevalence, some studies report the fall as the main etiology in younger age groups and also the elders. Movement and balance are directly proportional to age, and being more senile, physiological mechanisms such as altered proprioception, tremors, weakness, reduced reflexes facilitate the fall.^{6,10, 11, 17}

In children from seven years, conditions of care for their own safety should be considered, as appropriate protective equipment, so that in these conditions become passengers on motorcycles. In automobiles, children under 10 years old must be transported in the back seat under use of seatbelt or equivalent restraint system, chosen as the weight.²⁰⁻²¹

CONCLUSION

Facial trauma can affect all age groups. The etiologies have greater or smaller frequency depending on the age and the characteristics of the region studied. Mostly male gender is most affected, mainly involving young adults. Educational and preventive programs could be strengthened in schools and driving schools advising on traffic accidents, alcohol use, drugs and interpersonal violence, elucidating the influence of psychosocial and economic aspects, that change, in the life quality of a victim of trauma maxillofacial.

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