FREQUENCY OF DIPLOPIA IN PATIENTS WITH ZYGOMATICOMAXILLARY COMPLEX(ZMC) FRACTURES REPORTED TO TERTIARY CARE HOSPITAL

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ABSTRACT

Objective: *To determine the frequency of diplopia in patients with zygomaticomaxillary complex (ZMC) fractures reported to Tertiary care hospital.*

Materials and Methods: *The study design was descriptive cross sectional and was conducted in oral and maxillofacial surgery unit Hayatabad Medical Complex Peshawar and duration was 6 months from 4th june 2018 till 4th December 2018. Chi square test was used for association of diplopia with age & gender. Pvalue ≤0.05 was taken is siginificent.*

Results: *Out of total 126 patiens, 30(23.80%) were recorded in 15-30 years age groups while mostly 60 (47.61%) were recorded in 31-45 years of age grpups must of the participants were 108 (85.71%) male. As per Zygomaticomaxillary complex fractures, 22 (17.46%) patients were recorded with Diplopia out of 126 patients.*

Conclusion: *As Zygomatic bone plays an important role in facial contour therefore with the help of this study we have been able to understand the etiologies and characteristics of ZMC fractures such as diplopia thus forming a foundation to properly diagnose and treat it, and to reduce its incidence in this region.*

Keywords: *ZMC Fracture, Diplopia, RTA*

INTRODUCTION

The zygomatic bone is a paired bone which forms the prominence of cheek, contributes to the floor and lateral wall of the orbit, and the walls of temporal and infratemporal fossae, and completes the zygomatic arch. Each zygomatic bone is roughly quadrangular in shape. Each zygomatic bone articulates with frontal bone through frontozygomatic suture, with maxilla through zigomaticomaxillary suture ,with sphenoid bone through zygomaticosphenoid suture and with temporal bone through zygomaticotemporal suture.[1]

By definition Zygomaticomaxillary complex fractures are lateral midface fractures and the second most common in the midface after fractures of the nasal skeleton.[2] The main causes of these fractures are trauma due to Road traffic accidents(RTA), assaults, falls, sports related injuries, and the civilian warfare.[3] The common characteristics of ZMC fracture are periorbital ecchymosis, Infraorbital nerve paresthesia , flattening of cheek, subconjunctival hemorrhage, epistaxis, pain, step deformity of orbital margins, trismus and diplopia.[4] The causes of diplopia may be extraoculer muscles entrapment, Injury to nerve and increased ocular pressure due to swelling. According to the study of Bartoli et al Diplopia was present in 20.2 percent of the patients with zygomaticomaxillary complex fracture.[5] In Ellis et al's series of 2067 zygomatico-orbital fractures (1985), diplopia was noted in approximately 12% of patients.[6] Diplopia that occurs after zygoma fractures not associated with significant orbital floor fractures and entrapment is

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usually transitory and is probably associated with hematomas. Barclay reported an 8.4% incidence of diplopia; 60% were transitory.[7] A symptomatic diplopia associated with a positive forced duction test and CT evidence of entrapped muscle or soft tissue with no improvement over 1-2 weeks may be an indication for surgery. When diplopia is associated with enophthalmos, an improvement in vision can be predicted after correction of the enophthalmos. Diplopia associated with zygomatico-orbital fractures may persist longer, and young patients may recover more slowly than adults.[8]

The purpose of this study was to evaluate Frequency of diplopia in patients with zygomaticomaxillary complex(ZMC) fractures reported to Tertiary care hospital.

MATERIALS AND METHODS

The cross sectional study was conducted at department of Oral and Maxillofacial Surgery, Hayatabad Medical Complex, Peshawar from 4th june 2018 till 4th December 2018 by using connective sampling after approval obtained from Research and Ethics Committee of the hospital. All the patients within the study meeting inclusion criteria were included after taking informed consent in written. The purpose and benefit of the study was explained to the patients and was assured that the study is conducted purely for research and data purposes. A Performa was used for data collection.

The total sample size was 126 patients by using WHO sample size calculator at 7 percent margin of error and 95 percent confidence interval using previous frequency of diplopia 20 percent.

For Diplopia the ocular mobility test was performed in nine gazes and in 20 patients forced duction test was also performed when the patients were under general anesthesia during surgery to rule out the cause of diplopia.

Data was analyzed by using SPSS(statistical package for social sciences) version 20. Mean and standard deviation was calculated for numerical variables like age. Frequencies and percentages was calculated for categorical variables like gender, diplopia. Stratification was done with respect to age, gender using post-stratification chi-square test to see effect modifiers. P value ≤ 0.05 was considered significant.

RESULTS

Out of total 126 Patients,the per age distribution was 30 (23.80%) patients were recorded in 15-30 years age group, 60 (47.61%) patients were recorded in 31-45 years age group and 36 (28.57%) patients were recorded in 46-65 years age group. Mean and SDs for age was 36+12.16. (Table No. 1).

As per gender and age groups distribution, 108 (85.71%) patients were recorded as male patients whereas 18 (14.28%) patients were recorded as female patients.As per zygomatico maxillary complex fractures, 22 (17.46%) patients were recorded with diplopia in which 18 were male and 4 were female (Table No. 2).

DISCUSSION

The zygomatic complex gives the cheek promi-

Table: 1 FREQUENCIES AND PERCENTAGES OF DIPLOPIA IN PATIENTS WITH ZYGOMATICOMAXILLARY COMPLEX FRACTURES (n=126)

ZYGOMATICO MAXILLARY COMPLEX FRACTURES	FREQUENCY	PERCENTAGE
Diplopia	22	17.46%
Gender		
Male	108	85.71%
Female	18	14.28%
Age		
15-30 Years	30	23.80%
31-45 Years	60	47.61%
46-65 Years	36	28.57%
Mean Age	36±12.16	

Table: ASSOCIATION OF ZYGOMATICO MAXILLARY COMPLEX FRACTURES WITH GENDER AND AGE GROUPS(n=126)

Zygomatic Maxillary Fractures		Gender		P Value
		Male	Female	
Diplopia	Present	18 (14.28%)	04 (3.17%)	0.565
	Absent	90 (71.42%)	14 (11.11%)	

		Age Group			P Value
		15-30	31-45	46-60	
Diplopia	Present	10 (7.93%)	09 (7.14%)	03 (2.38%)	0.022
	Absent	20 (15.87%)	51 (40.47%)	33 (26.19%)	

*P value<.05 as significant

**Chi square test

nence, and it is the second most common mid-facial bone fractured after the nasal bone and overall represents 13% of craniofacial fractures.[9]

Etiologies of maxillofacial fractures vary from country to country and it shows that some variations are attributed to social, cultural and environmental factors. Inter personal violence is the commonest cause in western countries[10] Whereas RTA is common cause in developing countries.[12]

This changing trend in the etiology of fractures in western world may be attributed to the implementation of compulsory seat belts legislation and to the abuse of alcohol and use of illicit drugs in those societies.[10,11]

Facial bones, especially of the middle third of the face, are composed of a network of fragile bones held together across sutures which give way in case of force to a lesser extent than other parts of the body. The key to management of facial trauma is to operate the cases as soon as clinical conditions permits with a special emphasis on function and esthetics.[13]

According to jamal et al gender distribution of patients with zygomaticomaxillary complex fractures was 88 percent male with mean age of 36 years and according to our study 86 percent patients were male and out of 126 patents 69 percent patients were from age group of 30 to 65 years,[14] similarly according to Bartoli et al Diplopia was 20 percent[5] which is nearly equal to our result that is 17.45 percent. The reason behind the high incidence of ZMC fracture in male patients in our community may be that they are more socially exposed and mostly in our society male use to drive automobiles resulting in road traffic accidents due to poor traffic control system.

The risk factors for the development of diplopia are: RTA, blow-out fracture and comminuted malar fracture. For persistent diplopia, however, the only risk factor which is statistically significant is the pure or impure blow-out fracture. It is our belief that all patients with diplopia in the primary position of gaze should be evaluated by an ophthalmologist in order to establish the cause and to determine the optimum plan of management. Mild Diplopia may be caused by edema, haematoma, nerve palsies or entrapment.[15]

With the introduction of compulsory use of seatbelts in developed nations there is a significant reduction of facial injuries. In our neighbor country India as per Motor Vehicle Act (MVA) use of seatbelts and helmets is compulsory, but the compliance is poor. It is imperative to educate people regarding the use of headgear (crash helmet) and seatbelts while traveling in motorized transport which will go a long way in preventing injuries to facial region.[13]

CONCLUSION

As zygoma plays an important role in facial contour therefore with the help of this study we have been able to understand the etiologies and characteristics of ZMC fractures thus forming a foundation to properly diagnose and treat it, and to reduce its incidence in this region and if not treated early can lead to severe complications . The information may assist healthcare providers in evaluating and designing a framework for reducing the incidence of facial injuries. Strict legislative measures must be enforced regarding use of the seat belt, wearing of helmet, restricted speed limits and unwavering adherence

to traffic rules.

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