

## Incidence and evaluation of Zygomatico maxillary complex fractures at Govt Dental College Srinagar - A 5 Year Retrospective study

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**Abstract:** *Back ground:* The incidence and prevalence of maxillofacial injuries has increased in past few years owing to increase in road traffic accidents. Facial trauma not only is the most common Trauma all around world it is always associated with some neurological deficit also. Zygoma is one of the most common bone of the face to fracture after nasal bone and mandible. Being the most esthetic part of the body it needs immediate attention of maxillofacial surgeon so that best possible treatment is provided to restore the esthetics and function. *Objectives:* The aim of the study was to investigate incidence and prevalence of zygomaticocomplex facial fractures and treatment provided. *Methodology:* A retrospective clinical study was conducted from January 2014 - January 2019 and data collected from the Record section of Department of oral and maxillofacial surgery Govt dental college Srinagar with patients having ZMC fractures and subjected to statistical analysis to find out the age, gender distribution, etiology, fracture site, mode of injury, characteristics of fracture, associated soft tissue injuries and treatment provided. *Results:* our results showed that road traffic accidents were the leading cause of facial trauma. Besides Gunshot injuries were also contributing factors in significant no of patients. Incidence of ZMC fractures was more seen in males compared to females and that too amongst the young adults. Gilles temporal approach was the proffered method of reduction of Zygomatic fractures. *Conclusion:* it is important to know the pattern and special characteristics of ZMC fractures so that best treatment is provided to the patients in order to restore the functional and esthetic components of face.

**Keywords:** Fractures, Zygoma, Etiology, Treatment.

### Introduction

Maxillofacial trauma is the most common trauma all over the world and more than 30% Deaths are due to severe injuries to Maxillofacial skeleton [1]. Facial trauma is most of the times associated with the neurological injuries that makes it even more difficult to manage [2]. Maxillofacial fractures are also accompanied with severe morbidity, functional defecits, disfigurement and significant financial cost [3].

Zygoma being one of the prominent bones on the face and so zygomatic complex fractures are second most common fracture after nasal bone fractures [4] Fractures of this bone causes disruption in articulation of zygomatico complex ane esthetic and functional impairment it is very important to reduce and fix these fractures accurately [5].

### Material and Methods

A retrospective clinical study was conducted on patient records available in the record section of Department of oral and maxillofacial surgery Govt dental college Srinagar between January 2014-January 2019. The data collected was analyzed for age, gender, etiology, fracture site, mode of injury characteristics of fracture, associated soft tissue injuries and treatment provided.

#### *Inclusion criteria for study:*

1. Patients who were treated for ZMC Fractures in department of oral and maxillofacial Govt Dental College Srinagar only.
2. Patients whose all case records were available in record section.
3. Patients with only Zygomatico complex fractures.

4. Patients aged between 11 -70 years.

*Exclusion criteria*

1. Patients who were treated at other centers and then referred to our department.
2. Patients who had associated fractures like mandibular fractures.
3. Patients whose treatment record files were not fully available.
4. Patients with isolated orbital fractures.

Zygomatico complex fractures were evaluated as per *Knight and North 1961* Classification system [6]. Most of the cases presented with special characteristics like flattening of cheekor Malar eminence, circumorbital ecchymosis, subconjunctival hemorrhage, trismus and paresthesia of infraorbital nerve. Diagnosis were confirmed by taking Routine Radiographs, PNS view, Submentovertex View,3-D CT and Computer tomography- C.T. scans. A total of 600 patient’s full filling the inclusion criteria were included in the study. Epidemiological data including age, gender, etiology, site and mode of injury and details of treatment were collected and tabulated. Statistical method used to evaluate the results included Descriptive Frequency, Chi square test, Cramer’s test.

**Results**

Gender distribution. Out of 600 evaluated patients 443 were males (74%) and 157 females (26%) Table-I. Statistically Chi square test – 118.67, and df-1 which was clear indication of prevalence of more traumas among male population compared to females.

Sex	Frequency	Percentage
Males	443	74%
Females	157	26%
Total	300	

Road traffic accidents (RTA) was the main etiologic factor 51%, followed by Assault 25%, fall from height 12%, gunshot and bullet injuries 8% and sports injury 4% (Table-II). The Statistical analysis was Chi square test – 118.67, and df-1, which were both statistically signifant findings.

Type	Frequency	Percentage
RTA	307	51%
Assault	149	25%
Falls	72	12%
Gunshot & Bullet	48	8%
Sports	24	4%
Total	600	

Age distribution varied with most prevalent age group between 31-40 years age accounting for 33.4% injuries followed by 41-50 age group patients 22% Table-III. The statistical parameters were Chi square test-116.67, and df-6, which gave clear indication of more incidences of fractures among young adult patients compared to old aged and pediatric age groups.

AGE	Frequency	Percentage
11-20 years	74	12.3%
21-30 years	86	14%
31-40 years	202	33.7%
41-50 years	132	22%
51-60 years	48	8%
61-70 years	60	10%
Total	600	

The soft tissue injuries seen along with ZMC fractures included Lacerations 76%, Abrasions 21%, Degloving Injuries 2%, and Contusions 1% Table IV. Statistical findings Chi square test – 204.37, and df-3 proved that lacerations are more associated with facial trauma compared to other soft tissue injuries.

Types	Frequency	Percentage
Laceration	348	57.3%
Abrasions	96	16%
Degloving	6	1%
Contusions	154	25.7%
Total	600	

Types of ZMC	Operative					Non operative	Total
	Gillies	Lateral Eye Brow Approach	Subciliary	Trans-Conjunctival	Intra Oral		
Type-I	0	0	0	0	0	0	0
Type-II	71 (40%)	21 (11.1%)	17 (10%)	3 (1.7%)	17 (8.7%)	51 (30%)	180
Type-III	34 (30.9%)	10 (9.1%)	6 (5.4%)	2 (1.8%)	38 (34.5%)	20 (18.1%)	110
Type-IV	24 (21%)	14 (12.3%)	5 (4.2%)	0	48 (42.3%)	23 (20.2%)	114
Type-V	48 (39.3%)	36 (29.5%)	9 (7.3%)	0	29 (23.6%)	0 (0%)	122
Type-VI	32 (42.3%)	6 (8.1%)	10 (13.5%)	0	18 (24.3%)	8 (10.9%)	74
Total	209 (34.8%)	87 (14.5%)	47 (7.8%)	5 (0.8%)	150 (25.0%)	102 (17.0%)	600
<b>Test User</b>			<b>Value</b>		<b>Significance</b>		
Nominal by Nominal Cramer's V test			0.266		0		

The CT study was done to evaluate pattern of ZMC fracture among Males and Females-accounting Unilateral ZMC fracture in Males (50.45%), Females (35.89%), Bilateral ZMC Males (14.4%), Females (29.48%), Isolated ZMC fractures Males(30.1%), Females (35.89%). A total of 498 patients were operated and 102 patients were managed conservatively. The different incisions and approaches were adopted for ORIF of ZMC fractures included Gillie's temporal approach, lateral eye brow incision, subciliary approach, trans conjunctival approach and combination of gingivo buccal sulcus approach or intra oral approach. TABLE-V .Gilles temporal approach was the most commonly used and preferred method of reducing zygoma 34.5% followed by intraoral or Keens approach in 25% patients. Type II ZMC fractures accounted for most of fractures.

**Discussion**

Among the factors tabulated maximum amount of ZMC fractures are seen in male population due to RTA in mid adult age groups 31-40 years of age and Type II ZMC accounted maximum [6-7]. ZMC fracture were managed by Gillies temporal approach and some times by combination of Gillie's and Lateral Eye Brow incision [7-8].

Subconjunctival approach was the least used surgical approach as it is very delicate procedure which sometimes needs plastic surgeon as was followed in this study [9]. Type-I fractures were

managed conservatively as there was no indication cosmetically and functionally for surgical intervention [10]. Optimal management of ZMC fractures begins with accurate and expedient diagnosis followed by formulation of treatment plan that accounts for proper reduction of fractured segments to restore facial balance. Finally surgical expertise is needed to allow for appropriate execution of treatment plan as well as to manage different types of fractures.

**Conclusion**

Zygomatic bone occupies predominant role in facial skeleton whose deformity causes much of cosmetic significance for patient. A thorough knowledge and analysis of individual cases for proper management is of paramount importance in each case. As per the above study Males have higher incidences of ZMC fractures due to and most common fractures are Type II fractures best managed by Gillie's temporal approach [9]. However individual techniques have to be tailored for ZMC fractures for each patient. Facial trauma can result in fractures limited to one component of tetrapod fractures but more commonly results in tetrapod fractures involving all 4 buttresses [10]. Each patient of ZMC patient has to be evaluated individually and data recorded for further modifications so that patients receive the best treatment possible.

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