

## INCIDENCE OF ZYGOMATIC COMPLEX AND MANDIBULAR FRACTURES IN WEST KARNATAKA

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### ABSTRACT

**Objective:** The objective of this investigation was to determine the incidence of zygomatic complex and mandibular fractures in west Karnataka. **Design:** A retrospective review of patient records and radiographs for the 3-year period from 2010 to 2013 was conducted. Data regarding age, gender, anatomic site and treatment modalities were reviewed. **Results:** During the 3-year period, 189 patients with 243 zygomatic complex and mandibular fractures were treated. The age range was 5 to 73 years (mean 28.8 years). Of the 189 patients, 75.3% were male, with the peak incidence occurring in the age group of 20 to 29 years. The incidence of zygomatic complex (seen in 96 cases, or 50.8% of total) and mandibular fractures (seen in 93 cases, or 49.2%) were almost equal. Only 20.10% patients were treated by closed reduction and remaining 79.90% were treated by open reduction surgery. **Conclusion:** The findings support the view that the incidence of zygomatic complex and mandibular fractures varies.

**KEYWORDS:** Zygomatic complex; mandibular fractures; west Karnataka

### INTRODUCTION

The incidence of zygomatic complex and mandibular fractures vary widely from one country to another because of social, cultural and environmental factors. The purpose of this investigation was to determine the incidence of both the above fractures.

### MATERIAL AND METHODS

The records and radiographs of patients who were treated for zygomatic complex and mandibular fractures at the Oral and Maxillofacial Surgery

Department of the AJ Institute Of Dental Sciences during the 3-year period from 2010 to 2013 were reviewed retrospectively. Data regarding age, gender, anatomic site and treatment modalities were obtained. All patients, whether admitted to the hospital or treated as out patients in the oral surgery clinics, were included in this study. The Oral Surgery Departments are the tertiary care centers for the west Karnataka, so they receive patients from the entire region, which has a population of approximately 1.8 million with a male, female ratio of 1.07:1. The fractures were classified according to the mandibular and zygomatic complex system of Killey. If more than one facial bone fracture occurred in a single patient, it was classified as a combination fractures. In an out patient basis, simple methods of reduction and immobilization were used, with patients under local anesthesia. Patients who were edentulous or semidentate, in cases of unfavorable fractures and multiple fractures were treated by open reduction.

### RESULTS

#### Age and gender distribution

During the 3-year period from 2010 to 2013, 189 patients with 243 zygomatic complex and mandibular fractures were treated. Patient's age at the time of injury ranged from 5 to 73 years, with a mean age of 28.8 years. In most cases (139; 73.9%) the patient was between the ages of 10 and 39 years; the peak incidence was associated with patients 20 to 29 years of age, who accounted for 60 cases (31.8% of the sample). Only 12.3% of patients were less than 15 years of age and only 4.7% were more than 60 years of age. Most of the patients were male (142 cases; 75.3%), with a male:female ratio of approximately 3:1.

**Table I: Incidence of fractures**

Site	No. cases (%)	No.fractures
Zygomatic complex	96 (50.8)	133
mandible	93 (49.2)	110
Total	189 (100)	243

**Table II: Sites of mandibular fractures**

Frature site	No.cases ( % )
Body	31(32)
Angle	23(24.8)
Ramus	21(22.7)
Condylar neck	13(14.1)
Symphysis	5(4.0)
Coronoid	0
Total	93(100)

**SITE OF FRACTURE**

The incidence of fractures are presented in Table I. The zygomatic complex fracture was seen in 96 cases (50.8) and the mandible was fractured in 93 cases (49.2%). The distribution of the mandibular fractures by site is detailed in Table II. The most common site was the body of the mandible (32.0%), followed by the angle (24.8%), the ramus (22.7%), the condylar neck (14.1%) and the symphysis (4.0%). A small proportion of the patients (36;19.5%) had more than one mandibular fracture. Of the zygomatic complex fractures, the arch was involved in 62 cases (64.58%).

**TREATMENT**

Several methods of reduction and fixation were used in the treatment of mandibular and zygomatic complex fractures such as eyelet wiring, arch bars, miniplates, simple intermaxillary fixation, Gillies temporal and Keen's approach. Among this, 10 (10.75%) mandibular fractures and 30 (31.25%) zygomatic complex fractures were treated by closed reduction. Rest all patients 83 (89.25%) mandibular fractures and 66 (68.75%) zygomatic complex fractures were treated by open reduction internal fixation under general anesthesia. We used a standard regimen of parenteral antibiotics beginning at the time of admission; usually it was cefotaxim (1g) twice a day and metronidazole (500 mg) thrice a day administered intravenously for 48-72 hours postoperatively, followed by the same antibiotics administered orally for 5 days.

**DISCUSSION**

The predominance of injured males in the age group 20-29 years is consistent with the findings

of previous published work.<sup>[1-6]</sup> Previous studies have also shown a lower incidence of maxillofacial fractures in females, with male:female ratios ranging from 5.2:1 to 5.4:1.<sup>[7]</sup> In this study the ratio was 3:1, which indicates that females in west Karnataka are more likely to sustain facial bone fractures than females in other countries. In the present study condylar neck fractures comprised 6.87% of the total fractures and 14.1% of the mandibular fractures; this rate differs from the 20% to 36% rates reported from other centers.<sup>[8-10]</sup> As in Nigeria<sup>[5]</sup> the rates of incidences of zygomatic arch and complex fractures were low, probably because of the low incidence of fights. In present study, the rate of incidence of zygomatic complex fractures (50.8%) are almost equal to the mandibular fractures (49.2%). Among 10 (10.75%) of the 93 mandibular fractures and 30 (31.25%) of the 96 zygomatic complex fractures were treated by closed reduction. Rest all patients 83 (89.25%) mandibular fractures and 66 (68.75%) zygomatic complex fractures were treated by open reduction internal fixation under general anesthesia. In Nigeria simple methods of reduction and immobilization were used on an outpatient basis for mandibular fractures, with patients under local anesthesia such treatments were also practiced for some patients in this study. In European and American countries the use of mini-plate osteosynthesis has become increasingly popular for the management of mandibular fractures.<sup>[11-13]</sup> In recent reviews of clinical controversies in the treatment modalities of comminuted mandibular fractures, Finn<sup>[14]</sup> recommended closed reduction with external fixation or maxillo-mandibular

fixation, whereas Smith and Teenier<sup>[15]</sup> advocated treatment with open reduction and rigid internal fixation of minimally displaced comminuted mandibular fractures. The present study indicates that the incidence of zygomatic complex and mandibular fractures are almost equal. These findings support the view that the incidence of both types of fractures vary from one country to another.

#### CONCLUSION

The present study revealed that the peak incidence of zygomatic complex and mandibular fractures in west Karnataka occurred in the age group consisting of 20 to 29 year olds. The incidence of both types of fractures are almost equal. The most commonly used treatment was open reduction.

#### CONFLICT OF INTEREST & SOURCE OF FUNDING

The author declares that there is no source of funding and there is no conflict of interest among all authors.

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