Original Article

MAXILLOFACIAL TRAUMA SPECTRUM AT CIVIL HOSPITAL KARACHI: A REPORT FROM LARGEST TERTIARY CARE PUBLIC SECTOR TEACHING HOSPITAL IN SINDH PROVINCE

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ABSTRACT

Objective: *The objective of this study is to document pattern and management of maxillofacial trauma cases seen at Department of Oral and Maxillofacial Surgery, Civil Hospital Karachi.*

Materials and Methods: *This retrospective study was carried out among admitted patients sustaining facial trauma at the Department of Oral and Maxillofacial Surgery, Civil Hospital Karachi. Demographic details related to: gender, age, fracture diagnosis, maxillofacial surgical treatment and mode of Anesthesia used for intubation were obtained from Patient's Post Operative Surgical records. Study period ranged from August 2008 till December 2010. Patient's data was subsequently analyzed using SPSS version 17 with Statistical analysis done for descriptive variables.*

Results: *From total 54 maxillofacial trauma cases, there were 10 (19%) females and 44 (81%) males. Regarding age distribution, 13(20%) belonged to age groups: 11-20 and 21-30 respectively, followed by patients from age group 1 to 10 (18%). Diagnosis of facial bone fracture showed that fracture mandible was the most common bone fracture is isolation 12(22%). Regarding treatment, 12(22%) cases were treated with Maxillomandibular fixation in different combinations followed by 10(19%) cases treated by open reduction and internal fixation. General anesthesia was used for intubation in 78% cases, whereas only 22% cases were managed under local anesthesia and intravenous sedation.*

Conclusions: *Maxillofacial trauma is more prevalent in males and in young age group. Fire arm related Oral and Maxillofacial trauma in Karachi as compared to other reported national studies in Pakistan reflect the poor law and order situation.*

Key words: *Oral and Maxillofacial trauma, General Anesthesia, Fire arm injuries, Gunshot trauma*

INTRODUCTION

The human face is the most important expressive-communicable and exposed contact region of the human body; therefore, facial trauma management is of great significance for all concerned specialists[1]. Oral & Maxillofacial (OMF) trauma not only disturbs form and function of the face but can also lead to serious psychological and aesthetic issues to all effected ones[2].

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A recent change has been noted in local epidemiological data reported for facial trauma[3]. Regarding etiology of trauma in West, interpersonal violence forms the leading cause of facial trauma, whereas in developing countries, road traffic accident forms the commonest cause of maxillofacial fractures despite the use of safety devices used for prevention to drive motor vehicles. As per WHO statistics, more than 1 million people globally lose their lives and around 15 to 20 million people sustain trauma due to road traffic accidents per year[4].

Maxillofacial trauma not only involves the facial skeleton and its associated soft tissue musculature and dentition but is also associated with trauma occurring

to other parts of the body, like: cervical spine, skull, abdomen etc presenting as, Poly-trauma[5]. Gun Shot / fire arm traumatic injuries to maxillofacial region are serious and life threatening due to their complex regional impact and subsequent management is again a major problem which at times is managed in phases due to its complex clinical presentation[1,2]. This cause though reported low in our country seems to have increased in our current complex society. Trauma to lower jaw is one of the most common forms of facial injury due to its complex multidimensional movements and anatomical status[5,6].

The objective of this study is to share oral & maxillofacial trauma experience with its demographic analysis from Civil Hospital Karachi (CHK), which is the largest tertiary care referral teaching hospital in Sindh Province. In addition, mode of anesthesia used for intubation to manage such patients is internationally documented and that, this area is routinely not documented, is now unexplored in our local research and is therefore being addressed via this study, as a new chapter for our specialty research data[7].

METHODS AND MATERIALS

Diagnosed 54 maxillofacial trauma patients, irrespective of age and gender were included and Patients having pathological fractures from other causes were excluded from the study. Patients were admitted at the department of Oral & Maxillofacial Surgery Civil Hospital Karachi (CHK), which is a tertiary care teaching hospital affiliated with Dr, Ishrat ul Ebad Institute of Oral Health Sciences, Dow University of Health Sciences (DUHS). The duration of the study was 16 months i.e, from August 2008 till December 2010. Majority of the study patients were referred from CHK emergency department, some from CHK Dental Outpatient department, a few referred from other hospitals of the city, whereas others referred from different parts of the Sindh and some also from remaining Provinces of Pakistan. After taking informed consent complete patient's history was recorded, clinical examination of facial skeleton was conducted and all related maxillofacial X-rays, CT Scans were done. Maxillofacial fracture cases were diagnosed and treatment was provided to all cases by the corresponding author with his team. After getting medical fitness from all related specialists and getting informed consent from the patients, parents/ attendants, management was done at the CHK Operation Theatre Complex. All data collected was consequently processed and analyzed using the Statistical Package for Social Sciences (SPSS) version-17 for statistical analysis and descriptive variables.

RESULTS

A total of 54 patients with maxillofacial trauma were recruited in this study.

Gender distribution was such that 44 (81%) were males whereas, only 10(19%) females with a male to female ratio of 5:1. Age was divided into 6 groups and ranged from 1 to 50 years, (Mean 24.72 years $\pm$ 14.73 SD). The most common age groups were 11-20, and 21-30 (20% each) followed by age group 1-10(18%). The details are given in Figure-1. Diagnosis of Facial Bone fracture showed that 28% cases occurred as comminuted fracture. while 22% as isolated mandibular fractures.Mandible combined with Condyler fractures formed 10(19%) of cases. The details are given in Table-1.

Surgical Treatment shows that, 22% cases were treated with MMF in different combinations followed by 10(19%) cases, each treated by ORIF / Bone Plating and same number of Gunshot/Firearm cases were managed by debridement and dressing as initial management. The details of pattern and surgical modalities performed is given in Table-2. General anesthesia with nasal intubation was used in 78% cases, whereas, only 11(22%) cases were managed under local anesthesia and intravenous sedation.

DISCUSSION

Karachi is Pakistan's mega Economic Capital city having multi dimensional, multi linguistic and multi ethnic population. Jooma reported 35607 injuries due to RTA in Karachi, involving different areas of human body, including our specialty closely related

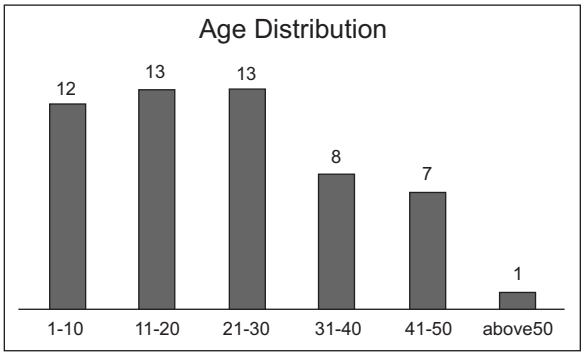

FIGURE-1: AGE DISTRIBUTION

TABLE-1: Pattern of fractures

Diagnosed Fractured Facial Bones	n	%
Mandible Isolated	12	22%
Gunshot / Firearm Causing Comminuted Mandible + Maxilla	16	28%
Mandible + Condyles	10	19%
Maxilla isolated	1	2%
Mandible + Zygoma	2	4%
Zygoma isolated	5	9%
Haematoma	1	2%
Orbital bone isolated	1	2%
Soft tissue trauma	3	6%
Lefort II Malunion case	1	2%
Malunion # Mandible	2	4%
Total Cases	**54**	**100%**

Table-2: Surgical procedures performed

OMF Surgical Procedures	n	%
IMF Via LassoWire / Arch Bars / Elastics & Intra Osseous wiring	12	22%
ORIF / Bone Plate + Lasso Wires	10	19%
Gillies Temporal Procedure	5	9%
Poswillow Bone Hook Procedures	4	7%
ZMC Suspension Wiring Cases	3	6%
Acrylic Splint Cases	6	11%
Gunshot/ Firearm Cases Debridement / dressings	10	19%
Risdon Wiring without IMF	1	2%
Reconstruction DP Flap	1	2%
Soft Tissue Repair	1	2%
Haematoma Drainage	1	2%
Total Cases	**54**	**100%**

neurosurgical trauma for the year 2007[8]. To combat such an extensive and growing number of trauma cases Karachi city has only 3 tertiary care public sector hospitals and a Civil Hospital so far, is the largest. It is a 1900 bed tertiary care patient referral centre and caters to patients from whole Sindh Province and also other parts of Pakistan[8].Therefore, the current study can be stated as a pioneer maxillofacial trauma descriptive study reported from CHK. The facial trauma causes are variable, globally differ and depend on multiple factors. Local studies as well as Asian study report RTA as the leading cause of maxillofacial trauma[1,3,4,9,10]. Majority of 44 (81%) study patients, similar to other local studies were males and this reflects our male dominated, conservative society trends in Pakistan and that, males are subsequently more vulnerable to accidents due to their social-cultural activities. In comparison, females face more social, religious and cultural limitations and therefore also sustain less maxillofacial trauma[1,2,5]. The majority of the patients in this study belonged to young age groups that is, 11-20 and 21-30 years. This result is comparable with other studies throughout the world[11,12]. It is generally reported that trauma occurs more frequently in young adults as compared to elderly. This is because, in young age people are more active, energetic and involved in outdoor activities. Moreover, they actively participate in outdoor activities as a result; interpersonal violence also affects young adults more as compared to elderly[13].

In our present study 12(22%) isolated mandibular fracture cases were found, whereas 16(28%) cases were having comminuted fracture of mandible with maxilla in different combinations due to fire arm/ gunshot as leading cause. This high figure of 28% cases obtained from our study is higher over a period of only 16 months, as compared to reports from other local studies[1,2,4,5,6,10]. This is also higher in percentage than that reported as by Shafiullah et al from AFID in 3 years from 2001 till 2004[14]. In another study by Bukhari from AFID over a period of 7 years from 2001 till 2008 total 38 Patients were treated for gunshot/ fire arm injuries of maxillofacial region[15]. These reports from Armed Forces Institute of Dentistry (AFID) are self explanatory, since Pakistan Army as our National Frontline Defenders are handling multiple National level law and order situations, in fact we are facing terrorism at multiple fronts[14,15].

Our study showing 16(28%) maxillofacial trauma gunshot/ fire arm cases over a short period of only 16 months in Karachi city is not only very high but alarming for all concerned and this also represents our changing society trends. Gunshot/ firearm injuries show increasing frequency worldwide and since this cause is very obvious and alarming therefore, it was recorded as such and obtained from patient's post operative treatment records and related management provided primarily[16,17]. Other causes of OMF injuries in this study could not be evaluated due to incomplete details obtained from these records. In addition, patient's referral details and detailed etiology of OMF trauma also could not be found as our study limitations.

Management of maxillofacial trauma addresses patients main domains related to: form- function, aes-

thetics and psychological support, as their treatment is complex, time and high cost dependent and also needs competent surgical expertise[2,3,10]. Maxillofacial domain includes middle third of face and mandible in terms of its anatomical classification[14]. Regarding management our study results showed that, 12(22%) cases were treated with MMF in different combinations using: arch bars, Lasso-Intra osseous wiring, elastics followed by 10 (19%) cases treated by ORIF / bone plating. Furthermore, 10(19%) cases from gunshot/ Firearm trauma were also managed as initial treatment with debridement/ dressing procedures. Managing maxillofacial gunshot cases is always a complex procedure and is managed in primary and secondary phases, similar to picking up the pieces like constructing a mosaic puzzle[2,17]. These cases are initially managed on Advanced Trauma Life Support (ATLS) Protocol and as fractures may involve combination of two or more bones, may also need multiple surgical procedures, depending upon the extent of facial soft and hard tissue trauma sustained, status of general health, associated shock and hemodynamic status of the patients[11,13,17,18,19].

Local literature search shows that, similar studies on facial trauma are now well reported from Pakistan[1,2,3,4,6,8,9,10,15,17]. This aspect reflects, a positive trend to document and share related maxillofacial experiences which poorly existed before year 2000 and as a result, very limited studies were documented before that[1,2,14,15]. In addition, mode of anesthesia used to intubate and manage such patients is internationally documented. This is stated as a new trend to treat maxillofacial injuries and is superficially stated or totally unaddressed from Pakistan. This study showed that, 43 (78%) cases were managed under nasal intubation - General Anesthesia whereas; some cases were managed under local anesthesia and intravenous sedation. This new finding is hoped to encourage others to also share their related experiences and augment national maxillofacial data.

CONCLUSIONS AND RECOMMENDATION

Maxillofacial trauma is more prevalent in males and in young age group and fire arm injuries is common etiology causing Oral and Maxillofacial trauma in Karachi as compared to other reported national studies in Pakistan.

The increased frequency of 28% maxillofacial trauma due to gunshot/firearm in Karachi city, being highest in Pakistan over a short period of 16 months, reflects the increased trend to violence and is alarming in comparison to other local reports cited. This cause and its issues need detailed exploration and also warrant strong administrative attention and control from all concerned authorities. In addition, we also need to increase research related to unexplored national maxillofacial specialty in areas related to: treatment cost, hospital stay duration, patient referral patterns, day care surgical procedures and furthermore, explore operative procedures done per week per month to move towards international research trends.

Our study limitation includes the inability to obtain detailed Etiology of facial trauma and Patient referral pattern details due to incomplete information.

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