A THREE YEAR AUDIT OF MAXILLOFACIAL WARD HAYATABAD MEDICAL COMPLEX

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ABSTRACT

Background: Very little work has been reported on the pattern of presentation and treatment of oral and maxillofacial surgical diseases through out the word, although it is essential for quality care. A huge number of patients are managed surgically in Oral and Maxillofacial Surgery department of Khyber Girls Medical College, Hayatabad Medical Complex Hospital Peshawar, but up till now, no surgical audit has been carried out to identify the potential problems in patient care.

Objectives: The objective of this clinical audit was to evaluate the performance of a newly established Oral and maxillofacial surgery department Hayatabad Medical Complex during the first three year of its existence.

Place of study: This Descriptive study was conducted at on all patients admitted to Oral & Maxillofacial Surgical Unit of Hayatabad Medical Complex Peshawar over a 3 years period of three years from November 2013 to December 2016.

Materials and method: A detailed data was collected retrospectively from indoor ward patient treatment chart. Data collected also included, the number and nature of the case weather emergency or outpatient department case, treatment given and any prominent complication etc-. Data was put and then analyzed by SPSS version 16.

Results: A total of 704 patients were included in this study. Male subjects accounted for 78.4%, while female accounted for 21.6% giving a gender (male: female) ratio of 3.6:1. The country wise distribution of these patients was in the ratio of 7.3:1 for Pakistan and Afghanistan. Age 2- 20 years was most common 51.7%**.** Trauma was more (75.28%) as compared to pathology (24.72%) . Malignant tumors were most frequent occurring pathology followed by cystic lesions. Mandible (49.05%) was the most common bone to be involved followed by zygomatic complex , maxilla and their combination**.** Most common post operative complications were plate infection, malocclusion, and nerve injury.

Conclusion: Trauma remains the main burden of our maxillofacial department. Strong consideration should be given by the government for preventing maxillofacial trauma by implementation of legislations and laws. Squamous cell carcinoma is the most common pathology presented to our department and mostly are delayed diagnosed.

Key wards: Clinical audit, maxillofacial, trauma, pathology, Hayatabad

INTRODUCTION

The first Clinical audit was initiated by the Ernest Hey Groves (1908) in England and then Ernest Amory Codman (1910) in United States.[1] Clinical audit has a continuous marked effect on clinical patients care and safety since its foundation to routine clinical work.[2] Prof David Johnson defined audit as "means of quality control for medical practice by which the profession shall regulate its activities with the intention of improving overall patient care".[3] Surgical audit is a systematic, an appraisal based on careful analytical evaluations of the quality of surgical care that is assessed by peers against clear cut yardstick and standard, and then used to further inform and improve surgical practice with the endmost goal of improving the quality of care and safety for patients.[4]

In Pakistan very few articles have been published on maxillofacial audit and the concept of Clinical Audit is still in early stages and is observed in few institutions. An audit of newly established Oral & Maxillofacial Surgery department at Hayatabad medical complex from November 2013 to December 2016 is presented in this study which covers most of the clinical, academic and research features. It is outlined with the aim to identify prospective issues and muddles in the standards of care when oral and maxillofacial services are provided to the community at a very newly established public care center. This study may result in improved clinical practice, increased efficiency, better clinical outcomes or more cost-effective service, all of which are now part of clinical governance. It will also provide opportunities for learning for all staff involved in the care of patients.

METHODOLOGY

All patients admitted to Oral & Maxillofacial Surgical Unit of Hayatabad Medical Complex Peshawar over a 4 years period from November 2013 to December 2016 were included in this study irrespective of age and gender. Data was collected retrospectively on patient's

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age, gender, occupation, date of admission, geographic distribution, cause of disease/ trauma and presenting complains, treatment given/ procedures done, complications and mortality from ward patient treatment chart. Data collected also included, the number and nature of the case weather emergency or outpatient department case, hospital stay etc-.

Inclusion Criteria

Indoor admitted diagnosed maxillofacial fractures Patients with out any gender discrimination and from any age group presenting in the time period of 2013 to 2015.

Exclusion Criteria

Patients with simple soft-tissue injury, dentoalveolar injuries or simple fractures that were treated in outpatient department under local anesthesia without admitting them in hospital, patients treated in other ward like general surgery, neurosurgery, orthopedics etc - and patients who refused treatment at our center were excluded from the study.

All the data was put in SPSS version 16 and results were generated.

RESULTS

A total of 704 patients having both either maxillofacial trauma or having maxillofacial pathology were admitted in oral and maxillofacial surgical ward Hayatabad medical complex Peshawar from November 2013 to December 2016. Out of these 704 patients male subjects accounted for 552 patients (78.4%), while female subjects accounted for 152 (21.6%) giving a gender (male: female) ratio of 3.6:1 (Fig-1). All these patients were reported either from inside Pakistan or from outside Afghanistan. The country wise distribution of these patients was in the ratio of 7.3:1 for Pakistan and Afghanistan. The youngest patient in this study was 2 years old and the eldest was 85 years old. with the peak in 1st decade. The overall mean age was 25.01 years with standard deviation of 15.65. Age 2- 20 years was most common 51.7% (Table-1). Three Hundred and Fifty-five patients (50.4%) were admitted through accident and emergency department and 349 patients (49.6%) were admitted throughout patient department (Fig-2). Out of 704 patients 530 (75.28%) patients were admitted with maxillofacial trauma and 174 (24.72%) patients were having maxillofacial pathology (figure-3). Regarding ethnicity 88.07% patients were Pakistani and 11.93 % were Afghani patients. Out of 704 total patients, 478 (77.2%) Pakistani patients suffered maxillofacial trauma and 141 (22.8%) were victims of maxillofacial pathology. While 52 patients (61.2%) Afghani patients were suffering from maxillofacial trauma and 32 patients (37.2%) were admitted due to maxillofacial pathology (Table -2). Regarding gender distribution for trauma and pathology there were 453 (82.1%) male patient suffered trauma and only 141(22.8%) suffered pathology, while

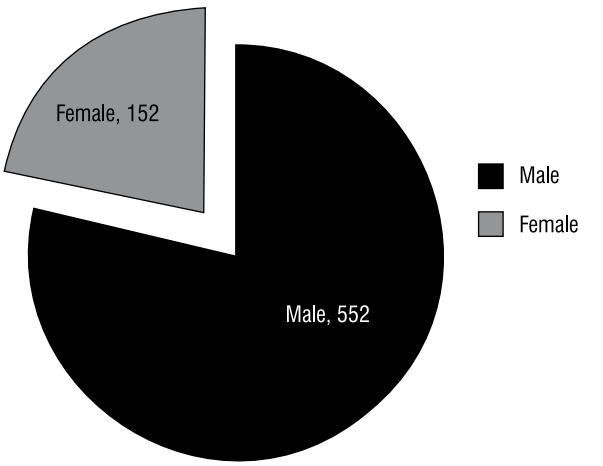

Figure 1: Gender Distribution

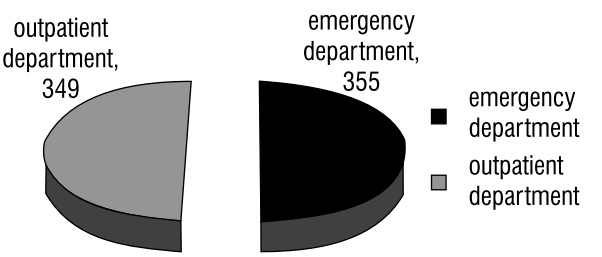

Figure 2: Nature of admission

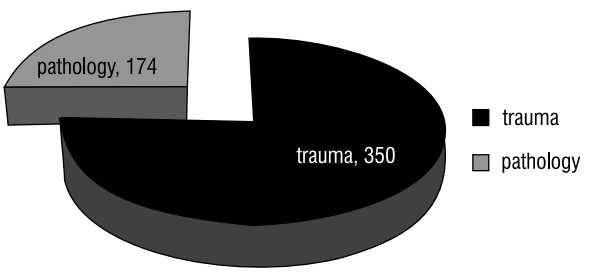

Figure 3: Nature of case

Table 1: Age Distribution

Years	Frequency	Percentage
<=10	124	17.6
11-20	213	30.3
21-30	185	26.3
31-49	76	10.8
41-50	39	7.0
51-60	41	5.8
61-70	10	1.4
71-80	3	0.4
80+	3	0.4
T otal	704	100.0

Table 2: Ethnicity verses trauma and pathology

			Ethnicity		Total
			Pakistani	Afghani	
Disease	Trauma	count	478	52	530
		% within ethnicity	77.2%	61.2%	75.3%
	Pathology	count	141	32	174
		% within ethnicity	22.8%	37.8%	24.7%
Total	Count		619	85	704
	% within ethnicity		100%	100%	100%

Table 3: Gender verses trauma and pathology

			Gender		Total
			Male	Female	
Disease	Trauma	count	453	77	530
		% within Gender	82.1%	50.7%	75.3%
	Pathology		99	75	174
			17.9%	49.3%	24.7%
Total	Count		552	152	704
	% within Gender		100%	100%	100%

Table 4: Pathology Distribution

Disease	Numbers	%age
Malignant tumors	27	15.51
Bony Cystic lesion	24	13.79
Benign tumors	19	10.92
Facial space infection	13	10.34
Trigeminal neuralgia	16	9.19
TMJ ankylosis	15	8.60
Mandible defects	15	8.60
Giant cell lesion	8	4.59
Ameloblastoma	8	4.59
Impactions teeth	8	4.59
Cleft alveolus	7	4.08
Ranula	5	2.91
Vascular malformation	3	1.72
Oral sub mucous fibrosis	2	1.14
Others	4	2.29
Total	174	100

Table 5: treatment of pathology

S No	Treatment given	Numbers	%age
1	Excision without reconstruction	29	16.66
2	Excision with reconstruction	21	12.06
3	Enucleation	19	10.91
4	Neck dissection	18	10.34
5	Bone Grafting	17	9.77
6	Peripheral Neurectomies	16	9.19
7	TMJ Arthroplasty	15	8.62
8	Extraction	14	8.04
9	Biopsy	11	6.32
10	Mersupaliaztion	8	4.59
11	Sclerotherapy	2	1.15
12	Distraction Osteogenesis	2	1.15
13	Submandibular gland stone removal	2	1.15
	Total	174	100

Table 6: Bone involved

S.No	Bone involved	No of cases	%age
1	Mandible	260	49.05
2	Zygomatic complex	87	16.41
3	Maxilla	77	14.52
4	Mandible and maxilla	25	4.71
5	Pan-facial	22	4.15
6	Mandible and zygomatic bone	20	3.77
7	Frontal	13	2.45
8	Orbital floor(pure blow out)	9	1.69
9	Maxilla and zygomatic	9	1.69
10	Nasoethmoidal	8	1.50
	Total	530	100

Table 7: Treatment of fractures

S.No	Procedure	Numbers	%age
1	ORIF+MMF	187	35.28
2	ORIF only	177	33.39
3	MMF / closed reduction only	87	16.89
4	Conservative	33	6.22
5	Plates removal	27	5.09
6	Orbital floor reconstruction	17	3.20
	Total	530	100

Table 8: Major complications

S no	Major complications	number
1	Plate infection	10
2	Brain abscess	2
3	malocclusion	5
4	Non union	1
5	Nerve injuries	5
6	Sialocele	1

77(50.7 %) female suffered trauma and 32(49.3%) pathology (Table-3). Malignant tumors were most frequent occurring pathology followed by cystic lesion, benign tumors, facial space infection, trigeminal neuralgia and temporomandibular joint ankylosis etc- (Table -4). Common treatment given to patients were Excision with or without reconstruction, enucleation, neck dissection, bone grafting and peripheral neurectomies (Table- 5). Mandible (49.05%)was the most common bone to be involved followed by zygomatic complex , maxilla and their combination (Table-6). Common treatment given were open reduction and internal fixation (ORIF) with maxillomandibular fixation (MMF) (35.28%) , ORIF only (33.39%), and MMF only (11.32%) (Table-7). Common major complications were plates infection, post op malocclusion and iatrogenic nerve injury (table- 8).

DISCUSSION

Each medical institution regularly and customarily make strategy of quality assurance for patients care and safety. Such standard refining and enhancing plans are considered as audit. Audits are a part of the continuous quality enhancement in the health care systems. It is a regular repetitive exercise. It weighs up the practice of standards and excellence, assesses performance, makes refinements and involves a re-audit after a time period to ensure that the improvement is retained. [5] Awareness of the sequence, norms and load of diseases and condition that may be frequent among regional populations should constitute the rational yardstick upon which health care delivery could be best implemented. In this regard, the present study has drawn special attention to useful baseline information as the results of the current study; we believe represent the whole range of OMFS conditions in the country.

The province of Khyber Pakhtunkhwa is located in North West boundary of Pakistan where its border meet with Afghanistan through famous Khyber Pass. The population of Khyber Pakhtunkhwa is nearly 20 Millions. There was only one maxillofacial centre available at Khyber College of dentistry established in 1989 at Peshawar before our centre at Hayatabad Medical Complex which start functioning 2013. Afghanistan is also lacking any specialized maxillofacial centre therefore most of the patients with complex trauma and pathology seek treatment in Peshawar. Although many studies have been carried out on the presentation of different maxillofacial disease in this region but only one compile audit study by Rehman B, was conducted in Khyber college of Dentistry.[6]

Our study comprise of total 704 admitted patients. Among them there were 552 male (78.40%) and 152 female (21.60%). This difference is larger than previous study.[6,7,8] This may be due to the reason that our centre is newly established where trauma cases are more than pathology cases and male are more prone to trauma as compared to female due to culture and socioeconomic environment of this region. Regarding age distribution, age range 11-20 (30.3%) was the most common presenting age followed by 21-30 (26.3%) years. This little contradicts with the findings of others studies where first decade was more common. This may be due to that we usually extract children teeth under general anesthesia as day case without admission. In our study there were total 11.93% patients were from Afghanistan. This is little increase as compared to an previous study carried out at Khyber College Of Dentistry.[6] This may be due

to close proximity to afghan border. The percentage of Afghani patients were more for Pathology as compared to trauma in comparison to Pakistani. This may be due to less developed maxillofacial specialized centre in Afghanistan.

Maxillofacial injuries remain the serious clinical problems because of the specificity of this anatomical region and constitute approximately 45% of the work load on Oral and Maxillofacial surgeons worldwide.[7] In our study, 75.28% patients were presented with maxillofacial trauma and 24.72% patients were having maxillofacial pathology. The percentage of trauma is much more as compared to pathology in this study in contrary to other studies.[6,8,9] This may be due to the reason that our centre is newly established in this area while other centre were old and well known and the patients with maxillofacial pathology are referred from peripheries usually to the old established centers. However the percentage of pathology is increasing every year in respect of trauma. The other reason is that our centre is placed in multi specialties tertiary care hospitals and where most of pathologies were also treated by otolaryngology and plastic surgery departments. But with the establishment of maxillofacial center now the trend is changing towards super specialties.

In our study malignant lesions were most common followed by cystic lesion and benign tumors. This is in contrast to study carried out by previous authors where malignant tumors were less common.[6,9,10] This is due to the facts that mostly malignant tumors management require specialized multidisciplinary approach and post operative intensive care unit which is only available in our setup. Squamous cell carcinoma is the most common malignant tumor in this region due to high consumption of snuff dipping which contain tobacco and other carcinogenic substances. In other study conducted by sheikh et al in Sindh province shows 7.5% malignant tumors.[11] In Pakistan and Afghanistan specially in Pakhtun built the low income people likely to chew tobacco. Poor people use lee fruits and vegetables as they don't know nutritional value of these. The poor people also have bed oral hygiene which also contributes toward development of oral cancer. Another study conducted by Elango JK et al in India shows that oral cancer is the in the top three most common cancer.[12] Malignant tumors are very much less as compared to this area in developed countries. A study carried out by Kelloway E in Australia the malignant tumors were very less (02.7%) and Squamous cell carcinoma was recorded 1.8% only. [13] Odontogenic facial space infections were also more common and this is an agreement with the study conducted in the same locality.[14] This shows the lack of early treatment for dental carries and uncontrolled diabetes mellitus. Common mode of treatment was excision with or without reconstruction with neck dissection followed by radiotherapy. This represents the delayed presentation of lesion usually in stage 4. The lacks of education, poor socio economic status of patients and lack of facilities are the main causes of delayed diagnosis.[15]

In this study mandible was the most common bone fracture followed by zygomatic complex and maxilla. This is an agreement with the previous studies.[6,16,17,18] open reduction and internal fixation with maxillomandibular fixation (35.28%) was the most common mode of treatment followed by only open reduction and internal fixation (33.35%). closed reduction was only (11.32%). This is contrary to the study conducted by Rehman B, where closed reduction was the major mode of treatment.[6] This may be due to the use of modern concept of treatment given to the trauma patients where maxillomandibular fixation is avoided mostly by use of internal fixation of fractures.

A total of 27 plates were removed out of 364 patients. This 7.41 % of the plates removal were mostly due to patient demand. The other cause was infection (6%) and the site was frontozygomztic suture. This is an agreement with the study carried out by Thomas J et all.[19] the reason may be the most superficial location of the this site as compared to other site of maxillofacial region.

Odontogenic fascial space infections are one of the common diseases with which the patients present to maxillofacial ward.[20] these Odontogenic fascial space infection are associated with mortality rate of 10–40%.[21] With the introduction of modern antibiotics, mortality rates are significantlydecreased.[22] Brain abscess is a rare, extremely aggressive, life-threatening infection. A mortality rate of between 36% and 90% has been reported.[23] A total of 13 patients (10.34%) out of 174 pathology patients with deep facial space infections in our study. Two patients died due to development of brain abscess due to late presentation to our unit.

Post traumatic malocclusion is one of the complication of maxillofacial fractures. 5 cases of post traumatic malocclusion were presented in our ward. In all cases close reduction and fixation was the treatment option. Three cases (60%) were of condylar fracture which is an agreement with the study of Sofie C et al.[24]

Iatrogenic nerve injury is one of complication of treatment of mandible angle fracture. 5 cases of marginal mandibular nerve injury with extra oral fixation of two mini plates at angle presented in our study which is in conferment with the study of Fox AJ. All were recovered after a period of 5 months.

CONCLUSION

This study is first of its kind in a newly established centre. Trauma remains the main burden of our maxillofacial department. Strong consideration should be given by the government for preventing maxillofacial trauma by implementation of legislations and laws. While treating such fractures the surgeon should try to use the methods for approach which has fewer

complications. Squamous cell carcinoma is the most common pathology presented to our department and mostly are delayed diagnosed. Proper consideration should be given for timely diagnosis and prevention of cancer and life threatening infections by educating the community and dentists.

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