

An Audit of 6 years of Oral and Maxillofacial Surgical Conditions admitted for Interventional Treatment at Muhimbili National Hospital, Dar es Salaam – Tanzania.

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Background: The world wide pattern of OMFS conditions has been rarely reported despite its significance in the head and neck medicine; maxillofacial trauma and tumors. The main objective of this study was to audit oral and maxillofacial surgical (OMFS) conditions admitted for interventional treatment at Muhimbili National Hospital.

Methods: Patients presenting to the OMFS unit with oral and maxillofacial pathological conditions between January 2003 - January 2009 were studied prospectively. Data for analysis were obtained from the daily operation list and includes age, sex, location, diagnosis of the pathological lesion, surgical procedure and date of procedure.

Results: During the study period, the unit offered specialized services to 454 patients. Among them, 222 were males and 232 females. The mean age of the patients was 31.7 and the range was 79 years. Patient aged 21-30 years were mostly affected. Of the pathological lesions attended, benign tumors were the most common 255(56.2%) followed by fractures 58(12.8%), cysts 46(10.1%), malignant tumors 36(7.9%) and chronic infections 17(3.7%). Of the 255 cases of benign tumors 155(60.8%) were located on the mandible and 64 (25.1%) on the maxilla. Malignant tumors were 36 cases in which 11(30.6%) were located on the mandible. Maxillofacial fractures accounted 58 cases in which 31(53.4%) cases were located on the mandible. Cysts were 46 cases of which 17(37%) were located on the floor of the mouth, 10(21.7%) on the mandible and 7(15.2%) on the maxilla. Tumor excision was the commonest procedure performed 119(26.2%), followed by Tumor excision + reconstruction 89(19.6%), ORIF+IMF 51(11.2%), Fistulectomy 45(9.9%), Tumor enucleation 45(9.9%), Wide surgical excision 27(5.9%), Sinusectomy 16(3.5%) and Sequestrectomy 15(3.3%).

Conclusion: There is a significant burden of OMFS conditions attended at MNH. We suggest that the government enhance the state of medical infrastructure in the local hospitals in terms of manpower and facilities for the diagnosis and treatment of simpler OMFS disease as well as timely referral on to regional center for the more complex issues. This will reduce the burden of OMF conditions experienced by this hospital and improve OMF services country wide.

Introduction

Audit is an obligatory activity in which all health care professionals must play a role. Surgical audit is a normal part of surgical practice^{1&2}. It is a systematic, critical analysis of the quality of surgical care provided, with aims of improving quality of care, continuing education for surgeons, and guiding appropriate use of health resources. It has certain advantages, e.g. accuracy of data collection, opportunities for clinical learning and training needs analysis, clinical outcome indicators, development of surgical protocols, measurement of operational effectiveness, opportunities to identify and correct problems and guidelines for research^{3,4}.

An audit of surgical outcome can be seen as the final step in what has been termed the “journey of care” for both the individual patient and for the population as a whole⁵. The world wide pattern of OMFS conditions has been rarely reported despite its significance in the head and neck medicine⁶; maxillofacial trauma¹⁻³ and tumors⁴⁻⁵. These conditions with their attendant morbidity constitute some of the major problems with which the maxillofacial surgeon is confronted. Audit of OMFS conditions has not been

done in our setup before. This study was designed with the aim to identify OMFS conditions requiring surgical intervention under GA on patients admitted Muhimbili National Hospital (MNH).

Patients and Methods:

Patients presenting to the OMFS unit, of the Muhimbili National Hospital (MNH), Dar-Es-Salaam, with OMF pathological conditions between January 2003 and January 2009 were prospectively studied. The unit is the only referral and teaching centre for OMFS in the country. The unit performs major OMFS operations four days per week. The other theatre time in the audit figures was utilized performing minor procedures under local anesthesia (LA) but these procedures were not the part of this study. The data collected was obtained from the daily operation list and from patient's files, and includes age, sex, diagnosis and location of the pathological lesion, type and date of surgical procedure performed. Data was entered in Excel and analyzed using SPSS version 15.

Results

Between 2003 to 2009 the Department of Oral and Maxillofacial Surgery, MNH, offered specialized services to 454 patients. Among these 221 were males and 226 were females. The male to female (M:F) ratio was 1:1.1. The mean age of the patients was 31.7 and the range was 79 years. Most of the pathological lesions affected age groups 21-30 years, followed by 11-20, 31-40 and 41-50 years. Age groups 71-80, 51-60 and 61-70 years were the least affected (Table 1). Of the pathological lesions attended, benign tumors were the most common 255 (56.2%) followed by fractures 58 (12.8%), cysts 46 (10.1%), malignant tumors 36 (7.9%) and chronic infections 17 (3.7%). Others conditions were in low frequency (Table 2).

Table 3 shows the anatomical location of the most common operated pathology. There were 255 cases of benign tumors of which 155(60.8%) were located on the mandible and 64 (25.1%) on the maxilla. The rest were located on the palate, parotid gland, submandibular gland and the cheek. Malignant tumors were 36 cases in which 11(30.6%) were located on the mandible. Fractures of the maxillofacial region accounted 58 cases in which 31(53.4%) cases were located on the mandible.

Table 1. Age Groups and Sex Distribution of the Patients

Age Group (years)	Sex		Total Number (%)
	Female Number (%)	Male Number (%)	
0-10	20 (8.8)	19 (8.6)	39 (8.7)
11-20	47 (20.8)	42 (19.0)	89 (19.9)
21-30	55 (24.3)	60 (27.1)	115 (25.7)
31-40	39 (17.3)	41 (18.6)	80 (17.9)
41-50	30 (13.3)	29 (13.1)	59 (13.2)
51-60	14 (6.2)	15 (6.8)	29 (6.5)
61-70	19 (8.4)	15 (6.8)	34 (7.6)
71-80	2 (0.9)	0 (0)	2 (0.4)
Total	226 (100%)	221 (100%)	447 (100%)

***7 cases missing (there were no sex records information)*

Table 2. Distribution of the Diagnoses among Patients

Diagnosis	Number	Percentage
Benign tumors	255	56.2
Facial fractures	58	12.8
Cysts	46	10.3
Malignant tumors	36	7.9
Temporomandibular - disorder	20	4.4
Chronic infections	17	3.7
Vascular malformations	6	1.3
Sialolithiasis	4	0.9
Congenital malformations	3	0.7
Keloid	3	0.7
Oral antral fistula	3	0.7
Multiple impactions	1	0.2
Bullet wound	1	0.2
Rejected implant	1	0.2
Total	454	100

Table 3. Anatomical Location of Most Common Operated Pathology

Diagnosis	Location									Total
	Mandible	Maxilla	Palate	Lip	Cheek	P/gland	S/gland	Gingival	Floor-mouth	
Benign tumors	155	64	22	-	4	2	4	4	-	255
Chronic infections	16	-	-	-	-	-	-	-	1	17
Cysts	10	7	2	-	-	3	1	-	23	46
Facial fractures	31	25	2	-	-	-	-	-	-	58
Malignant tumours	11	3	5	7	-	4	2	2	2	36
TMJ- disorder	20	-	-	-	-	-	-	-	-	20
Vascular anomalies	-	-	-	-	6	-	-	-	-	6
Total	243	99	31	7	10	9	7	6	26	438
No %	55.5	22.6	7.1	1.6	2.3	2.1	1.6	1.4	5.9	100

* *8 pathologies had very low frequency to warrant analysis (16)

Table 4. Types of Procedure Performed

Name of Procedure	Frequency	Percentage
Tumor excision	119	26.2
Tumour excision + reconstruction	89	19.6
ORIF+IMF	51	11.2
Tumour enucleation	45	9.9
Fistulectomy	45	9.9
Wide surgical excision	27	5.9
Sinusectomy	16	3.5
Sequestraectomy	15	3.3
Condylectomy+Coronoidectomy	9	2.0
Condylectomy	8	1.8
Coronoidectomy	7	1.5
Wide surgical excision + neck dissection	3	0.7
Marsupialization	3	0.7
Frenectomy	2	0.4
Sclerosing agent injection	2	0.4
Kelloidectomy	2	0.4
Cranio-maxillary fixation	1	0.2
Cystectomy	1	0.2
IMF+Cranio-maxillary fixation	1	0.2
ORIF	1	0.2
ORIF+Cranio-maxillary fixation	1	0.2
Oro-antral fistula repair	1	0.2
Palatorrhaphy	1	0.2
Plate removal	1	0.2
Remodelling	1	0.2
Surgical disimpaction	1	0.2
Surgical toilet	1	0.2
Total	454	100

ORF: Open reduction and fixation; IMF: Intermaxillary fixation

Cysts of the oral and maxillofacial region were 46 cases of which 17(37%) cases were located on the floor of the mouth, 10(21.7%) on the mandible and 7(15.2%) on the maxilla. Other pathologies were located in low frequency on different tissues of the oral and maxillofacial region. The distribution of the types of procedure performed is given in (Table 4). Tumor excision was the commonest procedure done 119(26.2%), followed by tumor excision + reconstruction 89(19.6%), ORIF+IMF 51(11.2%), fistulectomy 45(9.9%), tumor enucleation 45(9.9%), wide surgical excision 27(5.9%), sinusectomy 16(3.5%) and sequestrectomy 15(3.3%). Other procedures were done in less frequently.

Discussion

Knowledge of the pattern and burden of diseases and condition that may be prevalent among regional populations should constitute the logical benchmark upon which health care delivery could be best implemented. In this regard, the present study has highlighted useful baseline information as the results of the current study; we believe represent the whole range of OMFS conditions in the country. MNH is the major centre for OMFS in the country with the most trained surgeons and the only training programme for the specialty. There other three referral centers in the country which are ill-staffed with OMFS. Our centre receives referrals from the whole country. It is worthy of note, in this study, that most of the pathological lesions affected young age groups especially age groups 11-20 and 21-30 years as with previous studies on maxillofacial surgical diseases^{7, 9, 14}. During this age there is active development of diverse pathological lesions¹². The jaws are unique structures with regard to the different pathological processes occurring within them. Multiple foci of embryonic tissues (ectodermal and neuroectodermal-mesodermal in origin) are contained within the jaws during the first 25 years of life. Additionally, the jaws contain many foci epithelial rests, with or without their associated mesenchymal anlage¹³. These tissues possess the potential to develop into cysts or neoplasm in the postutero life, hence the vast diversity of maxillofacial lesions presenting especially in the younger age group. This very active age group experiences most of the traumatic injuries.

Among the pathological diagnoses found in the current study, benign tumors and cysts were the commonest. Most patients present late with difficult deforming tumors and cysts. This could be due to patient's limited knowledge and poor socioeconomic status. Huge tumors cause disfiguring with functional disturbances in speech, chewing and swallowing. This late presentation results in resections with large defects, which necessitate reconstruction for functional and aesthetic reasons. These reconstructions are not readily available in our environment. We would like to develop the ability to offer this sort of surgical development in the major OMFS centre for the country.

Malignant tumors in most patients seen in this audit present late with difficult deforming tumors just as its counterpart benign tumors. The percentage of malignant tumors found in this study is not a true picture of malignant tumors attended at Muhimbili National Hospital since the cases reviewed were only those scheduled for major operation. Those who presented late with difficult deforming tumors were diagnosed as inoperable and instead referred for alternative treatment in another centre for palliative treatment. Ignorance of early symptoms of OMF disease and prevalent poverty prevent many patients from reporting early with disease for treatment. The combination of ignorance, poverty and inadequate medical infrastructure limit treatment options and survival of patients in our environment. Therefore, patient education should be encouraged to seek treatment early in the course of disease to reduce the problems of delay management for both benign and malignant tumors. Better patient care would result from the establishment and equipping of referral centers for the management of these tumors.

Maxillofacial injuries remain the serious clinical problem because of the specificity of the anatomical region⁸ and constitute approximately 45% of the work load on OMF surgeons worldwide⁹. As fractures were the second most common maxillofacial surgical conditions, our findings (12.8%) for maxillofacial

fracture is not low since these are those fractures which were treated secondarily. The etiology of maxillofacial injuries varies from one country to another and even within the same country depending on the prevailing socioeconomic, cultural and environmental factors. Periodic verification of the etiology of maxillofacial injuries helps to recommend ways in which maxillofacial injuries can be averted.

We have noticed a significant increase in motorcycle related maxillofacial injuries in most urban and suburban centers of the country during the period of study starting from year 2006 (anecdotal). Motorcycles have become a prominent mode of transportation in both urban suburban cities in Tanzania. Frequent traffic jams as a result of poor road network in the country have made motorcycles attractive to commuters because motorcycles can pass through narrow ways. However, most of the operators of these motorcycles have no driving license and lack knowledge on laws governed road traffic operation. This might have resulted for the increase in OMF injuries in this population. Therefore, there is a need to reinforce legislation aimed to prevent road traffic crashes and the total enforcement of existing laws to reduce maxillofacial injuries in the country.

Adebayo et al⁶ audit oral and maxillofacial surgical conditions at Port Harcourt Nigeria for a period of 4 years and found 79 surgical procedures were done at that period, both primary (under local anesthesia) and secondary (under general anesthesia). In the present study a total of 454 procedures were done at a period of 6 years with average of 76 procedures per year with no primary procedures included. These figures help to confirm that OMFS conditions are very high at Muhimbili National Hospital (MNH). This is because there is lack of enough skilled manpower and equipments for the management of simpler OMF conditions in the regional hospitals; hence most of the patients with these surgical conditions are referred to MNH for treatment. Most of our referral centres in the country were without OMF specialists during the period of this study. We started training OMF surgeons in our institution in 2005. We suggest the Government should enhance the state of medical infrastructure in the regional hospitals in terms manpower and facilities for prevention and curative health activities. This will reduce the volume of OMFS surgical conditions experienced by MNH, enabling us to concentrate on a service for our own locality and continue to provide a tertiary referral service for OMFS country wide.

The result that (78.01%) of the pathologies occurred on the jaws reflects the high need of reconstruction materials and skilled manpower for the rehabilitation of these patients. The government should put in place a sound plan for training skilled manpower in maxillofacial reconstruction surgeries that will carry reconstruction procedures and set enough resources for the reconstruction materials. Remember most of the pathologies affected young age groups who are economically active and who are needed for the development of this country.

Conclusion

There is a burden OMFS conditions attending at MNH. We think the quality treatment for this significant health problem could be helped by the government enhancing the medical infrastructure in regional hospitals for the diagnosis and treatment of simpler disease as well as timely referral on to regional centers for the more complex issues. This will reduce the burden of OMF conditions experienced by this hospital and improve OMF services country wide. As most of the surgical conditions arise from the jaws the commonest post-operative morbidity were facial defects, malocclusion and drooling of saliva.

The government should put in place a sound plan for training skilled manpower in maxillofacial reconstruction surgeries in the selected referral center that will carry out reconstruction procedures with enough critical mass expertise and resources for the country and adequate audit of the results.

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