

Maxillofacial tumors and tumor-like lesions : a retrospective analysis

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Abstract:

Background: This paper reviews the types, prevalence and demographic distribution of maxillofacial tumors, cysts and tumor-like lesions in a Bangladeshiteaching Hospital. An observational descriptive study (January' 2014 to December' 2016) was performed at Oral and Maxillofacial Surgery department, Dental Unit, TMSS Medical College and Hospital. This study presents 55 cases of maxillofacial tumour & tumour like lesions collected over 3 years at a tertiary oral care centre in Bogra, Bangladesh. *Objectives:* To find out the distribution & pattern of maxillofacial tumours and to find out the age, sex, site, clinical presentation and the histological types of these tumors *Method:* A cross sectional descriptive study where the Histopathological types of the maxillofacial tumours were analyzed to indicate the numbers that occurred and also the pattern of occurrence according to age, gender, site and clinical presentation. *Result:* There were 55 maxillofacial tumour & tumour like lesions of which 44 (80.01%) were Benign tumours & 11 (19.81%) were malignant tumours. Among Eighteen histopathologic types were found of which Squamous cell carcinoma (18.18%), Ameloblastoma (16.36%), Odontogenic keratocystic tumour (10.90%), Dentigerous cyst (7.27%) & Radicular cyst (7.27%) were predominant. The male to female ratio was 1.29:1. Patients were between 10 years and 72 years with most patients (27.27%) in 51 to 60 years of life. Case presented with symptoms such as swelling (41.96%), pain (28.82%) and loose tooth (17.12%). *Conclusion:* Both malignant and benign tumours are seen. In the present study, SCC and ameloblastoma were the commonest malignant and benign odontogenic tumours seen respectively; the two representing more than 34.54% of all tumors. Tumour & tumour like lesions of the oral & maxillofacial region with late presentation still remains the main challenging factor in the early detection & management. Surgery was the main modality used for treatment while some patients had no treatment due to self discharge and late presentation.

Keywords: Tumors, Odontogenic tumors, Maxillofacial, Bangladesh

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Introduction:

The maxillofacial region including the jaw bones, tongue, cheek, floor of the mouth, palate & major salivary glands region especially parotid region & related tissues can be the site of multitude of neoplastic conditions. Mostly, the maxilla and the mandible are the sites of many cystic and neoplastic conditions which could be either benign or malignant.¹ The malignant lesions usually found in the lower face include sarcomas of soft and hard connective tissue, carcinomas of the salivary glands, with SCC accounting for more than 90% of reported malignant tumors of the oral cavity and rarely melanomas.^{3,4} Some of these cancers however are metastases from distant sites such as the breast, lungs, abdominal organs or even the prostate gland.⁵ Benign lesions found in the lower face are odontogenic or non-odontogenic tumors, predominantly ameloblastoma.⁶ Swellings in the orofacial region are unique due to the obvious cosmetic defect and functional impairment of the anatomically related aerodigestive tract. Orofacial tumors are known to exhibit geographic variations in prevalence and pattern due to cultural, social, occupational or climatic factors as shown by studies from Nigeria^{2,10}, other African countries^{11,12}, Asia¹³ and Western nations.^{14,15} Wakiaga et al.¹⁶ in a report from Kenya found ameloblastoma, Burkitt's lymphoma, ossifying fibroma and osteogenic sarcoma as the most common tumors in that order.

The orofacial region is made up of the facial skeleton supported by the covering soft tissue and encloses the oral cavity. The paired submandibular and sublingual salivary glands, the minor salivary glands of the lower lip, muscles and structures of the floor of the mouth are included in this region. Inferiorly, the mandible forms a boundary for the anterior triangle of the neck, which is only separated from the posterior triangle by the sternocleidomastoid muscle.⁷ These triangles contain lymph nodes into which malignant tumors spread primarily from the head and neck region and form channels through which malignancies also spread from lower parts of the body.⁷ Management of these tumors presents a challenge due to their sizes at presentation in the South Asian region, access for resection as well as reconstruction of both the soft tissue and bone.

The aim of this study was to determine the types,

prevalence and demographic distribution of maxillofacial tumors and tumor-like lesions in a tertiary health teaching Hospital located at Bogra in Bangladesh to compare these data with previous reports.

Materials & Methods:

A retrospective analysis of the medical records and histological reports of patients with oral and maxillofacial tumors, cysts and tumor-like lesions who presented to Oral and Maxillofacial Surgery department, Dental Unit, TMSS Medical College and Hospital from January' 2014 to December' 2016, a period of 3 years, was undertaken. Information on demographics, histological diagnosis and clinical presentation were obtained. The 2005 WHO criteria¹⁸ were adopted for the classification of odontogenic tumors and cyst of the jaws. The age limit for categorizations of tumor occurrence into pediatric or adult type was 19 years which is similar to that adopted by Aregbesola et al.¹⁰

Results:

Table: 1 Age Distribution of Oral & Maxillofacial tumors & tumor like lesions

Histological types	Age in Years						Frequency	Percentage
	1-10	11-20	21-30	31-40	41-50	51-60		
Odontogenic Tumour								
Ameloblastoma	1	1	2	2	1	2	9	16.36
Odontogenic keratocystic tumour		1	3	1	1		6	10.90
CEOT					1		1	1.81
Non-Odontogenic tumour								
Giant cell granuloma				1	1		2	3.64
Haemangioma		1	1		1	1	4	7.27
Fibroepithelial polyp	1					1	2	3.64
Ossifying fibroma			1				1	1.81
Langerhans cell Histiocytosis			1				1	1.81
Squamous papilloma			1			2	3	5.45
Pseudocarcinomatous hyperplasia						1	1	1.81
Fibroma					2	1	3	5.45
Cysts								
Dentigerous cysts		2	1		1		4	7.27
Radicular cysts			1	2	1		4	7.27
Dermoid cyst		1					1	1.81
Pleomorphic Adenoma			1				1	1.81
Malignant Tumour								
Squamous cell carcinoma			1	2	1	6	10	18.18
Mucoepidermoid carcinoma						1	1	1.81
Infectious Lesion								
Tuberculous Lesion				1			1	1.81
Total	2	6	13	9	10	15	55	100

Table: 2 Distribution of the respondents by sex

Histopathological diagnosis	Male (n%)	Female (n%)	Total (n%)
Ameloblastoma	9(16.36)		9(16.36)
Odontogenickeratocystic tumour	6(10.90)		6(10.90)
CEOT		1(1.81)	1(1.81)
Giant cell granuloma		2(3.64)	2(3.64)
Haemangioma	2(3.64)	2(3.64)	4(7.27)
Fibroepithelial polyp	2(3.64)		2(3.64)
Ossifying fibroma		1(1.81)	1(1.81)
Langerhans cell Histiocytosis	1(1.81)		1(1.81)
Squamous papilloma	2(3.64)	1(1.81)	3(5.45)
Pseudocarcinomatous hyperplasia		1(1.81)	1(1.81)
Fibroma	1(1.81)	2(3.64)	3(5.45)
Dentigerous cysts	4(7.27)		4(7.27)
Radicular cysts	1(1.81)	3(5.45)	4(7.27)
Dermoid cyst		1(1.81)	1(1.81)
Pleomorphic Adenoma		1(1.81)	1(1.81)
Squamous cell carcinoma	3(5.45)	7(12.73)	10(18.18)
Mucoepidermoidcarcinoma	1(1.81)		1(1.81)
Tuberculous Lesion		1(1.81)	1(1.81)
Total	31(56.36)	24(43.16)	55(100)

Among the 55 respondents 31(56.36) were male and rest 24(43.16) were female.

Table: 3Distribution of the Lesion in Maxillofacial region

Histopathological diagnosis	Mandible	Maxilla	Buccal mucosa	Sinus	Lip	Parotid	Tongue
Ameloblastoma	9						
Odontogenickeratocystic tumour	4	2					
CEOT	1						
Giant cell granuloma	1	1					
Haemangioma					3		1
Fibroepithelial polyp		1	1				
Ossifying fibroma	1						
Langerhans cell Histiocytosis	1	1					
Squamous papilloma			3		1		
Pseudocarcinomatous hyperplasia			1				
Fibroma	1	1	1				
Dentigerous cysts	1	2		1			
Radicular cysts	3	1					
Dermoid cyst					1		
Pleomorphic Adenoma		1					
Squamous cell carcinoma	4	3	5	1			
Mucoepidermoidcarcinoma						1	
Tuberculous Lesion			1				
Total (60)	26(43.33%)	13(21.66%)	12(20%)	2(3.33%)	5(8.33%)	1(1.66%)	1(1.66%)

Table: 4 Distribution of the lesion by Histopathological findings and Clinical features

Histopathological diagnosis	Swelling	Pain	Ulceration	Loose tooth	Paresthesia	Displaced tooth	Missing Tooth	Discharging Sinus
Ameloblastoma	8	5		5	1	1	1	
Odontogenic keratocystic tumour	6	4		1		2		
CEOT	1	1		1		1		
Giant cell granuloma	2	2		2				
Haemangioma	4							
Fibroepithelial polyp	2							
Ossifying fibroma	1			1		1		
Langerhans cell Histiocytosis		1		1				
Squamous papilloma	3	1						
Pseudocarcinomatous hyperplasia	1			1				
Fibroma	3							
Dentigerous cysts	4	3		2			2	1
Radicular cysts	3	2		1				
Dermoid cyst	1							
Pleomorphic Adenoma	1	1						
Squamous cell carcinoma	6	10	3	4	1			
Mucoepidermoid carcinoma	1	1						
Tuberculous Lesion		1			1			
Total(112)	47(41.96%)	32(28.82%)	3(2.70%)	19(17.12%)	2(1.80%)	5(4.50%)	3(2.70%)	1(0.90%)

Discussion:

Tumors and tumor like lesions affecting the oro-facial region are fairly common in the South Asian region. Studies,^{8,9} have also shown that these lesions are common in both adults and children and are more common in the mandible. Furthermore, benign as well as malignant lesions are found in the oro facial region.

Frequencies of Odontogenic tumour vary, partly because of differences in the parameters used by the authors. Some authors consider these tumors to be infrequent in children and adolescents, but base their estimate on the full range of diseases known to affect this population, or on oral and facial tumors and tumor-like lesions^{17, 18, 19, 20}. Adebayo et al²¹ attribute the high percentage of OT they observed in patients aged up to 18 years, and which accounted for 31% of buccomaxillary tumors and tumor like lesions, to the ethnic characteristics of the study population. However, Sato et al²² and Tanaka et al³⁹ observed a similar frequency in their respective series of Japanese patients when applying the same criteria to analyze their results. In this study we observed 16 cases of Odontogenic tumour accounts 29.07% of all Maxillo-facial tumour & tumour like lesions & mostly were cases 9(16.36%) of Ameloblastoma.

Several studies showed that Ameloblastoma occurs

with equal frequency in men and women^{23,24,25}. However Podtarand Farzad showed a male preponderance as male / female ratio 1.7:1.27 Ahmed M found that it is prevalent between 2nd to 4th decades of life but Haider IA²⁶ found that age distribution may vary widely from first to fifth decade of life and most commonly found in 21-30 years of age. Sadat, Ahmed M et al²⁷ found that the age ranged from 19 years to 58 year, and peak age was in the 2nd and 3rd decades. Molla MR et al²⁸ and Onguti MN et al²⁹ mentioned that about 80% of the tumours in the mandible. The molar and ramus area in the most frequently involved³⁰. Haider IA²⁶ reported that most common sites of Ameloblastoma in mandible, (94.28%) involved the molar region. Mehlich et al³¹ reported that the presenting clinical signs and symptoms of the Ameloblastoma vary from patient to patient. The most common symptoms were swelling which occurred in 75% of the patients, followed by pain and swelling which was about 33%. Sadat, Ahmed M et al (2005)²⁰ found swelling is the most common presenting feature 50% of Ameloblastoma, where swelling and pain are 29.16%. In this study, we found 9(16.36%) cases of Ameloblastoma occurred 1st decade to 6th decades, all occurred in mandible & all were male presented with mostly swelling associated with pain & loose teeth.

In recent WHO criteria²¹ odontogenic keratocysts categorized as odontogenic tumor (Keratocystic odontogenic tumor (KCOT) was the next most common lesion (8.2%) after ameloblastoma across the series. This is contrary to the findings in some studies where KCOT were reported as the most prevalent OT in studies that used the 2005 WHO classification.^{32, 33} Expectedly, inclusion of this cystic lesion as OT slightly (8.2%) increased the overall proportion of OT in the series but it was much lower than the almost 50.0% increment observed by Servato et al. in a recent Brazilian study.³³ In our study we observed 6 (10.90%) cases of Odontogenic keratocystic tumour, all were male & predominantly at mandible.

Jones et al¹⁷ found odontoma accounts for 73%. Conversely, Adebayo et al²¹ and Ajayi et al³⁴ found odontoma to account for 7.7 % and 4.3% of OT respectively. This marked difference could be attributed to the fact that this lesion is usually asymptomatic and therefore remains undetected. There are no cases of odontoma reported in the present work. The

series evaluated by Asamoah et al³⁵ in which adenomatoid odontogenic tumor were the most frequent. However, it must be pointed out that according to the latter authors adenomatoid odontogenic tumor is the most frequent true odontogenic neoplasm, and ameloblastoma is the second most frequent.

Jaw cyst is described as a pathological cavity that contains fluid, semi-fluid, or gaseous substance. Its frequency has been reported from 7.8% to 36% of jawbone biopsies⁴⁶. Radicular cyst, dentigerous cyst, and odontogenic keratocyst (OKC) are the three most common cysts in jawbones.⁴⁷ In this study, the most common cystic lesions were radicular cyst and dentigerous cyst (14.54%) that is consistent with results of other studies,^{48,49} However, Rezvani et al reported oral cystic lesions in decreasing frequency as radicular cyst (32.83%), dentigerous cyst (31.34%), and OKC (26.12%).⁵⁰ The study by Baghaei et al showed prevalence of dentigerous cysts 27.2%, radicular cysts 18.6% and OKC 18.6%.⁵¹ This variation indicates that the racial and environmental factors probably influence on development of these lesions. Radicular cysts were more common among patients in the third and fourth decade of life. This finding is consistent with a study in Italy.⁴⁷ Arotiba et al indicated that mean age of occurrence was 26.5 years for radicular cyst.⁵² In a study by Meningaud et al, patients with radicular cyst were 38.4 ± 17.9 years.⁵³ Nevertheless, Fomete et al reported second decade as peak age for radicular cysts among Nigerian patients.⁵⁴ Radicular cysts occurred most frequently in the anterior part of the maxilla (45%) as reported previously by Tortorici et al⁴⁷ Ramachandra et al⁴⁸ and Koseoglu et al⁴⁹.

Haemangiomas are benign vascular tumours common in childhood. Tanaka et al.³² in 1999, assessed the maxillofacial tumours of 105 patients younger than 15 years. They found 25 oral haemangiomas (36.2%), being the most common tumour in children. Corrêa et al.⁵⁷ in 2005, studied the prevalence of oral haemangiomas in a Brazilian population; out of 2419 lesions, 22 cases were oral haemangioma (0.9%), mostly in the adult population. Most haemangiomas are diagnosed at an early age⁵⁵. In this study we present 4 cases of oral haemangiomas were diagnosed 3 were on lip & one at tongue with equal sex predilection though the literature⁵⁶ shows a higher incidence in girls.

Fibro-osseous lesions occurred over the second to the sixth decade with peak age of second and third decade for fibrous dysplasia and ossifying fibroma respectively. The often observed female predominance^{29,30} and predilection for the maxilla^{29,30} reported in the literature. Ossifying fibroma detected prevalently localized in the mandible has been described by Lerda et al.⁴⁴ It has also been detected in the maxilla, paranasal sinuses and peripheral bones. Its growth is, however, very slow and it is usually asymptomatic, and for the later reason, it often reaches a considerable size. In the present study we found only one case of Ossifying fibroma at mandible of a 2nd decade female patient.

Malignant lesions usually found in the oro-facial region squamous cell carcinoma, carcinomas of the salivary glands, with SCC accounting for more than 90% of reported malignant tumors of the oral cavity, and also melanomas and those that metastasize from distant sites such as the breast, lungs, abdominal organs or even the prostate gland.^{3,40} Malignant tumors of the jaws are grouped into central and secondary lesions.¹³ Central as originating within the jaw bone and secondary, predominantly oral cancers and meta-static lesions that involve the bone secondarily. The observed SCC prevalence of 18.18% is lower to the 73.1% found in Zimbabwe⁴¹ and much lower than 90% prevalence reported by Sapp³ and Neville.⁴ SCC was formerly thought to be a tumor with a common presentation in the older age group. However, recent studies report the increasing occurrence of this tumor in the younger age group.⁴² In this study we found 10 (18.18%) cases of Squamous cell carcinoma among all maxillofacial tumours mostly occurred on buccal mucosa in between 2nd to 6th decades of life presented with ulceration & loose tooth.

Primary central mucoepidermoid carcinoma of the jaws is a rare lesion⁴³ often manifesting as a low grade lesion composed of well differentiated mucous and epidermoid cells forming cystic spaces, but invading adjacent tissues without encapsulation. It is usually associated with salivary glands and account for 5 – 10% of all salivary gland tumours.⁴³ In this study we found only one case of mucoepidermoid carcinoma of parotid gland of a 6th decade patient. Generally, studies from the developed countries reports higher proportion of malignant jaw lesions

than benign lesions when compared to reports from Africa. This observed difference may be explained in terms of relatively lower life expectancy among Africans compared to their Western counterparts.³¹ In this study we observed less frequent maxillofacial tumours were Pseudocarcinomatous hyperplasia, Langerhans cells Histocytosis, Dermoid cysts, Calcifying epithelial odontogenic tumour, Fibroma & an extra-pulmonary tuberculous lesion.

Conclusion:

The epidemiology of oral and maxillofacial tumors observed in this study is similar to previous reports from this part of the globe. Our observed age of occurrence varied from previous reports from Bangladesh. Late presentation still remains the main challenging factor in the early detection and management of maxillofacial tumors. More awareness campaign is necessary, especially at the primary health care level, to educate the populace on the need for early presentation at treatment centers.

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