

Tumors and Tumor – Like Lesions of the Oro – Facial Region at Mayo Hospital, Lahore – A Five Year Study

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Abstract

The oro-facial region including the oral cavity, the maxilla and mandible and related tissues can be the site of a multitude of neoplastic conditions. These tumours have a predilection for the entire facial region; however, odontogenic tumours tend to affect the mandible more than the maxilla. We report results from a retrospective study spanning five years on the frequency, clinical presentation, sites and character of oro-facial tumors seen in the main referral hospital of Pakistan.

Patients and Methods: Records of consecutive patients of all age and sex seen by the author's team at the Department of Oral and Maxillofacial Surgery, Mayo Hospital with tumours affecting the oro-facial region from January 2005 to December 2009 were retrieved, coded and entered into a database. The data were then analyzed by age, sex, presenting signs and symptoms, site of lesion, and their histology.

Results: A total of 237 patients with oro-facial swellings were retrieved from the registry. The complete data set was obtained for 189 patients, comprising 108 (57.9%) males and 81 (42%) females. The most common clinical presenting features were mandibular facial swelling (63%), intra-oral swelling (55%), and ulceration (29%). The tumors were found in the mandible 67 (35%), buccal mucosa 33 (17%), floor of

the mouth 22 (11%) and tongue 29 (15%). The remainder making up almost 20% was found in the palate, submandibular region, preauricular region and lips. Ninety three (49.2%) of the patients presented with lesions that were classified as malignant of which 64 (69%) were diagnosed as squamous cell carcinoma (SCC). seventy (37.0%) had benign odontogenic tumors and twenty six (13.7%) had non-odontogenic tumor – like lesions. Sixty – four (69%) of malignant tumors were squamous cell carcinoma; sixty four (86.4%) of the benign odontogenic tumors were classified as ameloblastoma. The mean age at presentation of all lesions was 40.4 years with over 50% of benign lesions in patients aged between 30 and 40 years. Malignant tumors were more commonly detected in patients between 41 and 70 years (63%).

Conclusion: Tumors and tumor – like lesions of the oro-facial region comprising the mandible tongue and adjacent structures are a diverse group of neoplasm and are seen commonly in practice of maxillofacial surgery. Both malignant and benign tumours are seen. In the present study, SCC and ameloblastoma were the commonest malignant and benign odontogenic tumors seen respectively; the two representing more than 65% of all tumors.

Introduction

The oro-facial region including the oral cavity and related tissues can be the site of a multitude of neoplastic conditions.¹ Tumors affecting the lower face are common whilst those affecting the mid face are uncommon.² These tumors can be either malignant or benign. The malignant lesions usually found in the lower face include sarcomas of soft and hard con-

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nective 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

The oro-facial 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

Thorough knowledge of regional anatomy is essential to understand the behavior of both malignant and benign lesions of this region and the pattern of spread of tumors to the lymph nodes. 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. There have been International reports on tumors of the oro-facial region from other parts of the world, but none from Pakistan. The oral and Maxillofacial Surgery Department of the Mayo Hospital in Lahore, Pakistan, is the main referral hospital in the country and receives patients from the whole country as well as from the neighbouring countries like Afghanistan. The aim of this study is to find the tumors and tumor – like lesion of the oro-facial region, their clinical and sites of presentation in all age groups. It is envisaged that results presented here will add to the depth of information on facial tumors in this region and in South Asia at large.

Patients and Methods

Records of patients seen at the Department of Oral and Maxillofacial Surgery, Mayo Hospital with tumors and tumor – like lesions affecting the oro-facial region over a period of 5 years (2006 – 2009) were retrieved. The clinical presentations, sites of lesions, histopatho-

logy and demographic information were gathered and statistically analyzed.

Results

Data of the patients of the department of oral and maxillofacial surgery of previous five years from January 2005 to December 2009 was scrutinized. A total of 237 patients with oro-facial swellings were retrieved from the registry but complete data was obtained for 189 patients.

The mean age at presentation was 40.4 years with the youngest and oldest patients being 4 and 85 years, respectively. Lesions were detected in all ages in both sexes, with males representing 57.9% (108 / 189) of all patients seen and the rest 42.0% (81 / 189) were females. The male to female ratio was 1.4 : 1. However, in males, tumors and tumor – like lesions were commonly detected between the ages 41 and 50 years (23.2%) whilst in females it was very common in the younger age of 11 to 20 years (23.6%), shown in figure 1.

Table 1 shows the most common presenting clinical features were mandibular facial swelling (63%), intra-oral swelling (55%), and ulceration (29%). Loosened and displaced teeth and enlarged lymph nodes were commonly associated with the malignant tumors (squamous cell carcinoma). Many patients had multiple presenting features; these included those listed above in addition to mobile, displaced or exfoliated teeth, enlarged or fixed submandibular or cervical lymph nodes, swollen tongue or lip. Displaced and loosened teeth were commonly associated with ameloblastoma while enlarged lymph nodes were associated with malignant tumors (Table 1).

Tumors were sited at every aspect however; the mandible was the most affected site. 75 / 189 (38%) patients had mandibular lesions followed by the buccal mucosa 39 / 189 (20%) and 23 / 189 (13%) patients had lesions involving floor of the mouth while 33 (19.5%) and 13 (6.5%) involved tongue and palate respectively. Lesion involving lips were found in 6 / 189 (3%) patients. Some lesions were so large that they involved numerous sites.

Ninety – three (49.2%) of these tumors were classified as malignant, seventy (37.0%) as benign odontogenic and twenty – six (13.7%) as benign non-odontogenic and tumor – like lesions. Malignant tumours were commonly detected in patients aged between 41 and 70 years (63%); whilst in the case of benign

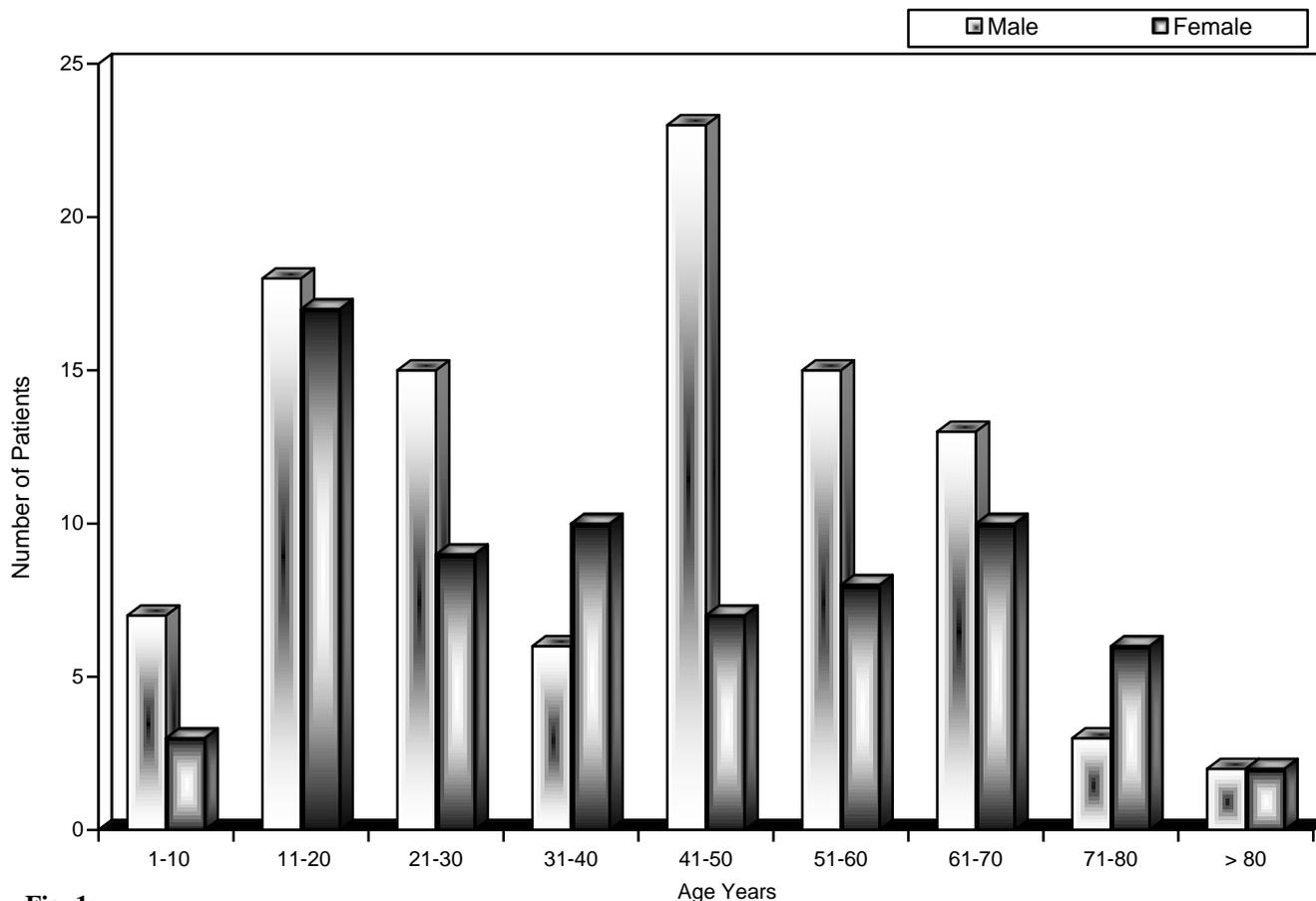


Fig. 1:

Table 1: Main presenting features.

Presenting Feature	No. of Cases (%)
Mandibular facial swelling	107 (63)
Intra-oral swelling	93 (55)
Ulceration of oral cavity	50 (29)
Loose teeth	20 (12)
Displaced teeth	17 (10)
Severe trismus and ulceration	50 (29)
Necrotic and Perforating ulcer	16 (9)
Submandibular swelling	18 (11)
Enlarged bilateral submandibular lymph nodes	7 (4)
Fixed tongue	2 (1)

tumours, the frequency was higher in patients aged between 11 and 30 and between 41 and 50 years. Sixty – four (69.2%) of the malignant tumors were

recorded in males and twenty – nine (30.8%) in females; a Male : Female ratio of 2.3 : 1.

Table 2: Sites of tumors.

Site	No of Cases (%)
Mandible	67 (35)
Buccal mucosa	33 (17)
Floor of mouth	22 (11)
Tongue	29 (15)
Palate / maxillary sinus	13 (7)
Lips	6 (3)
Peri-orbital region	5 (3)
submandibular region	7 (4)
Submental region	2 (1)
Preauricular region	5 (3)

Similarly, fifty – seven (58.1%) and thirty – nine (41.9%) of the benign tumors were in males and females, respectively, ratio of 1.4:1. The mean age of occurrence of malignant and benign tumours was 49.7 ± 21.5 and 32.5 ± 16.9 years, respectively.

Table 3: Malignant and benign tumors.

Tumor		No. (%)
A.	Malignant	
	Squamous cell carcinoma	64 (69)
	Salivary gland malignancies	15 (16.1)
	Osteosarcoma	3 (3.2)
	Rhabdomyosarcoma	5 (5.3)
	Chondrosarcoma	2 (2)
	Spindle cell carcinoma	3 (3)
	Ameloblastic carcinoma	1 (1)
	Total	93

Benign Odontogenic Tumours		
B	Ameloblastoma	61 (86.9)
	Pindborg tumor	3 (4.9)
	Odontoma	2 (2.8)
	Ameloblastic fibroma	2 (2.8)
	Myxofibroma	2 (2.8)

C	Benign Non-odontogenic Tumours and Tumour – Like Lesions	
	Fibro-osseous lesions	7 (26)
	Giant cell granuloma	9 (34)
	Pyogenic granuloma	2 (7.6)
	Pleomorphic adenoma	3 (11)
	Granular cell tumor of tongue	1 (3.8)
	Osteoma	2 (7.6)
	Fibroma	1 (3.8)
	Lipoma	1 (3.8)
	Total	26

Sixty – four (69.0%) of the malignant tumors were diagnosed as SCC and fifteen (16.1%) as salivary gland malignancies. Other malignant lesions encountered were osteosarcoma, chondrosarcoma, spindle cell carcinoma, ameloblastic carcinoma and rarely lymphoma.

Ninety – one percent (84 / 93) of the SCC were found in patients aged more than 40 years and was more common in males than females, a ratio of 1.5 : 1. The mean age of patients with SCC was 57.9 years. Seventy nine percent of the patients that presented with SCC were pan chwer and / or tobacco users.

Sixty – one (86.4%) of the benign odontogenic tumours were diagnosed as ameloblastoma which constituted 34% of all lesions seen during the period under observation. Fifty – one percent of the ameloblastoma were found in patients aged between 30 and 40 years. The mean age of patients with ameloblastoma was 33.5 years. The other benign odontogenic tumours recorded were odontoma, ameloblastic fibroma and myxofibroma.

Non-odontogenic benign tumors and tumor – like lesions found were fibro-osseous lesions, giant cell granuloma, pyogenic granuloma, pleomorphic adenoma, granular cell tumor of tongue, osteoma, fibroma and lipoma.

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.

We have shown in this retrospective study carried out at the Mayo Hospital in Lahore Pakistan which receives referrals predominantly from health institutions in the whole of Pakistan and neighboring countries that the frequency of malignant tumors is similar to that of malignant tumors reported in other studies.

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.^{3-5,12} 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 metastatic lesions that involve the bone secondarily. The malignant lesions in this study were mainly central or secondary invasion from related tissues and metastasis from distant sites.

The observed SCC prevalence of 69% in this study is closer to the 73.1% found in Zimbabwe¹⁴ but 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.¹⁵ Detection of SCC in the younger age group from our retrospective study supports the current thinking that SCC is no more a tumor only found in the aged but in all adult age groups. These figures, however, contrast with the overall incidence of 80% SCC detected in the aero-digestive tract as reported by Lund.¹⁶

More than 50% of subjects with SCC either consumed pan chewer or smoked tobacco; this is comparable with 45% in the Zimbabwe study¹⁴ admitting such habits. These habits have been described as risk factors for SCC^{15,17} and thus may have played a role in the high SCC prevalence seen in this study.

The clinical presentation of the other nonsquamous cell malignant lesions, their treatment and prognosis is known to be highly variable and dependent on the size of tumor, its histological variant and grade, and extent of spread at the time of biopsy.⁵ The incidence of metastatic adenocarcinoma from the prostate gland to the mandible is similar to what has been reported by Dequanter and Laski.^{19,20} Primary central mucoepidermoid carcinoma of the jaws is a rare lesion²¹ 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.²² Similarly, Chondrosarcoma (CS) is rare in the head and neck region and accounts for less than 2%²³ of malignancies in this region. This is consistent with the 2% found in this study, thus confirming that it is a rare tumour.

The detection rate of 37.0% benign tumors found to be odontogenic in this study is comparable with that of 32% reported by Adebayo et al in Nigeria,²⁴ but contrasts study from Zimbabwe of 8.6%.²⁵ Other studies have reported odontoma,^{10,26,27} or odontogenic myxoma²⁸ as the most common odontogenic tumours contrary to the findings of ameloblastoma predominating in this study. It is however consistent with

Nigerian studies in which ameloblastoma is the most common benign odontogenic tumour seen in children and adults^{8,24,28} and also in the study from Zimbabwe in which ameloblastoma comprised 79.1% of odontogenic tumours.²⁵ The predilection of this tumour for the lower face is in agreement with what has been observed in studies from Nigeria,^{9,29} Jordan¹⁰ and Zimbabwe.³⁰ Ameloblastic fibroma, a rare tumour of mixed connective and odontogenic tissue origin is found commonly in young age groups, between 15 and 25 years, with higher prevalence more common in males than females. The tumor presents more frequently in the mandible, usually in the canine to molar region. Radio graphically, it appears as unilocular area of radiolucency with smooth outline and it is difficult to distinguish from a unilocular ameloblastoma or dentigerous cyst.³¹ Chen et al have reported on the relationship between ameloblastoma and ameloblastic fibroma and suggested that the latter could transform into the former.³²

Ossifying fibroma detected in this study prevalently localized in the mandible is in agreement with what has been described by Lerda et al.³³ 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 as observed in our patients.

Osteomata of the bones including the jaws, present as bony hard swellings. Patients are known to sometimes develop impacted teeth and diffuse sclerosis of the whole mandible with this condition. These symptoms with intestinal polyposis depicts Gardner's syndrome.³⁴ Although the patients diagnosed in this study with osteoma of the mandible had bony swellings, they did not exhibit the other symptoms; indicating the possibility of occurrence of solitary osteomas of the mandible.

Conclusion

Tumors of the oro-facial region comprising the mandible, maxilla, oral cavity and adjacent structures are of a diverse group and are fairly common. We have demonstrated in this small study that both malignant and benign tumors and tumor – like lesions are seen in the Pakistani population. Squamous cell carcinoma and ameloblastoma being the most common malignant and odontogenic benign tumours seen respectively, the two representing more than 65% of all tumors detected

during the 5 – year study. The odontogenic tumours had a predilection for the mandible. It is evident that the development of certain tumours has a correlation with lifestyle. There is a need to investigate causes of these varied tumors, the prevalence of which cause some concern. We plan carrying out more surveillance studies on tumors from other parts of the country to ascertain the prevalence of the rare malignant tumors in Pakistan.

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