



1: Senior lecturer:
Department of Oral Pathology
Liaquat university of Medical &
health Sciences Jamshoro.

2: Professor & Dean:
Basic Sciences, Department of
Pathology, LUMHS Jamshoro.

3: Lecturer:
Department of Orthodontics
Liaquat University of Medical &
Health sciences Jamshoro.

4: Department of oral surgery,
Liaquat University of Medical &
Health sciences Jamshoro.

*=corresponding author

Demography and Histopathological presentations of oral and maxillo-facial region tumours in Jamshoro, Pakistan.

Munawar Ali Baloch^{*,1}, Ikramuddin Ujjan², Mehnaz Munawar³, Shafqat Hussain Khuwaja⁴

Abstract:

Introduction: Oral and Pharyngeal cancers are the sixth most common cancer globally. In developing countries, the annual incidence of oral cancer is around 275,000 cases while 130,300 cases of pharyngeal cancers excluding naso-pharynx. Salivary glands tumors are rare accounting for less than 5 % of tumors of head and neck region. The annual incidence of these tumors is 0.05 to 2 cases per 100,000 populations. Majority (over two third quarters) of salivary gland tumors occurs in the parotid glands of which most of them (2/3rd) of them are benign in nature. While most common parotid gland's benign tumor is Pleomorphic Adenoma.

Objective: To assess the morphology and histopathological features of oral and maxillo-facial region tumours among the patients in Liaquat University Hospital, Jamshoro, Sindh.

Methodology: A Cross-sectional study was conducted at Liaquat University Hospital, Jamshoro. Data was collected regarding socio-demographic features, anatomical location of tumours and relevant history of patients admitted at surgical, medical and ENT units of Liaquat University Hospital, Jamshoro from January 2016 to January 2018. Histopathological diagnostic record was collected from Research and Diagnostic Laboratory of Liaquat University Hospital, Jamshoro.

Results: A total of 160 biopsies were collected from surgical, medical and ENT units of Liaquat University Hospital with maximum (43%) of biopsies were from ENT unit. Most (51%) tumours were benign and 37% were malignant in nature. These tumours of oral and maxillo-facial region were mostly (38%) located in parotid region. Histopathological findings of this study revealed that majority (51%) tumours were Pleomorphic adenoma while (20%) of malignant tumours were Mucoepidermoid Carcinoma.

Conclusion: Based on findings of the study, we conclude that the most common anatomical location of oral and faciomaxillary tumours, in either gender, is parotid region. The majority of oral and faciomaxillary tumours were benign; frequently occurring benign tumour was pleomorphic adenoma while most frequent malignant tumour was Muco-epidermoid Carcinoma.

Key Words: Faciomaxillary tumours, Salivary glands, Pleomorphic adenoma.

Introduction:

Cancers of Oral and Pharyngeal regions are the sixth most commonly occurring cancers globally¹. These cancers are serious as well as fatal, mounting health issues that not only rising the toll of cancer morbidity but also badly effects the economies of countries¹. The annual incidence of oral cancer is around 275,000 cases, and 130,300 cases of pharyngeal cancers excluding naso-pharynx occurring in developing countries².

Regions of the world characterised by the higher incidence of oral cancer includes: South and Southeast Asia (e.g.; Pakistan, India etc.), Western and Eastern European regions (e.g.; France, Hungary etc.) parts of Latin America and the Caribbean and the Pacific regions³. Amongst South Asian countries India, Sri Lanka and Pakistan showed the highest incidence of oral cancer in the region^{3,4}.

Salivary glands tumours comprise of heterogeneous group of tumours include a wide range of benign as well as malignant

tumours which shows differences not only in their biological behaviour but also in the prognosis^{3,4}. These tumours are rare and accounts for less than 5 % of all tumours in this region³. The annual incidence of salivary gland tumours is 0.05 to 2 cases per 100,000 population^{1,2}. According to the morphology, the salivary glands are alienated into two types i.e. major and minor salivary gland¹. The major salivary gland tumours are comprising of parotid, submandibular and sublingual salivary gland while minor salivary glands are widely distributed in the upper aero-digestive tract^{1,3}. Most of the tumours occurring in salivary glands are benign in nature⁵. Majority of these benign tumours develops in the parotid gland alone (i.e. 2/3rd)⁶. Among these all benign tumours includes pleomorphic adenoma, onco-cytomas and Warthin tumours.⁶ These benign tumours are almost always curable but if left untreated or unattended may lead to malignancy^{5,6}. The carcinomas of salivary glands includes muco-epidermoid carcinoma (most common type and starts in parotid gland), adenoid cystic carcinoma, acinic cell carcinoma, polymorphous low grade adenocarcinoma, basal cell carcinoma and others.^{5,6} Despite the astounding advancements in research field, the diagnosis and treatment of this diverse group of salivary gland tumours still remain complex and challenging⁵.

Several aetiological factors may be involved in the development of tumours of oral and maxillo-facial region⁶. One or more of these factors are thought to be associated with the different salivary gland tumours^{5,6}. Strong evident association between parotid gland carcinomas with the use of alcohol and exposure to hair dyes has been reported by various studies^{1,4}. While there is no any predilection is obvious for any age or gender^{1,4,5}. Diverse morphological formation and unpredictable prognosis remains the major factor to attract considerable interest of researchers. Very limited studies and scanty data is available regarding condition of salivary gland tumours and its geographical distribution as well as environmental and hereditary factors involvement or impact upon the cancer. Therefore, this study is planned to contribute in developing a picture of distribution of salivary gland tumours in Pakistan. The current study is a profile analysis of 160 facial and buccal cavity tumours collected from January 2016 to January 2018.

Objective:

To assess the morphology and histopathological features of oral and maxillo-facial region tumours among the patients presenting at Liaquat University Hospital, Jamshoro, Sindh.

Methodology:

This cross-sectional study was conducted from January 2016 to January 2018 in three different units (surgical, medical and ENT) of Liaquat University Hospital, Jamshoro (LUH). Information of patients with tumours in oral and maxillo-facial regions, their socio-demographic features, anatomical location of tumours and addiction history was collected using a pre-designed structured questionnaire. Biopsy record for

histopathological information of each patients was drawn from Research and Diagnostic Laboratory of LUH, Jamshoro. All data regarding age, sex, addiction, site of biopsy and histopathological diagnosis were than reviewed by the authors in consultation with the pathologist. Permission and ethical approval were sought from the administration of LUH, Jamshoro. Patients with tumors other than oral and maxillo-facial region or other tumor like lesions were excluded from the study.

Results:

During the two-year period (2016-2018), 160 patients with tumours in oral and maxillo-facial regions were admitted in Liaquat University Hospital, Jamshoro. Biopsies of these patients were analysed at the Research and Diagnostic Laboratory Jamshoro. Majority (43%) of biopsies collected from the ENT unit of LUH while 31% and 26% were from surgical and medical units respectively.

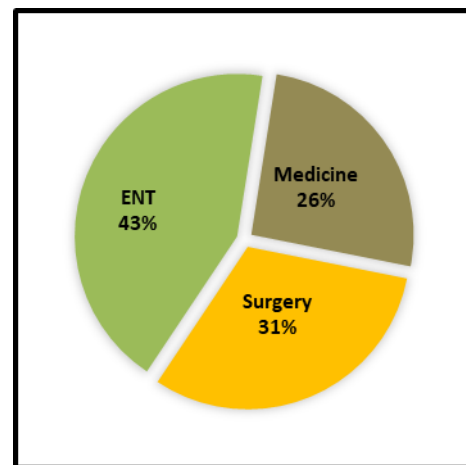


Chart1: Distribution of patients with tumours in different units of hospital (n=160)

Among study subjects, majority (58%) were male and 42% were female. While the age of study patients ranges from 18 years to 73 years, majority (33%) of the study patients belongs to age group of 28-37 years of age while 4% belongs to 18-27 years. The information regarding addiction practises was also gathered from the patients, of which more than two third (85%) of them were found to be addicted to some substance of addiction, whereas 15% of them were not addicted to any addiction substance (Table 1).

Table 1: Socio-demographic Distribution of Participants (n=160)

	n	%
Age Group		
18-27	7	(4%)
28-37	53	(33%)
38-47	36	(22.5%)
48-57	33	(20.5%)
58 and above	31	(19%)
Gender		
Male	93	(58%)
Female	67	(42%)
Addiction		

Yes	136	(85%)
No	24	(15%)

Addiction to ghutka was found to be the most commonly used as substance of addiction. As majority (39%) of the patients who use some substance of addiction were addicted to ghutka followed by mainpuri and beetle nut (17% and 15% respectively). While 15% of all patients were not addicted to any substance (Table 2).

Table 2: Addictive substance used by participants (n=160).

Addictive Substance	n	%
Ghutka	62	39%
Mainpuri	27	17%
Beetle Nut	22	14%
Smoking Tobacco	8	5%
Chewing Tobacco	14	9%
Alcohol Intake	3	2%
None	24	15%

Chart 2 shows the gender distribution of addictive substances used by the patients. Ghutka was found the most common substance of addiction among both female and male (31% and 44% respectively).

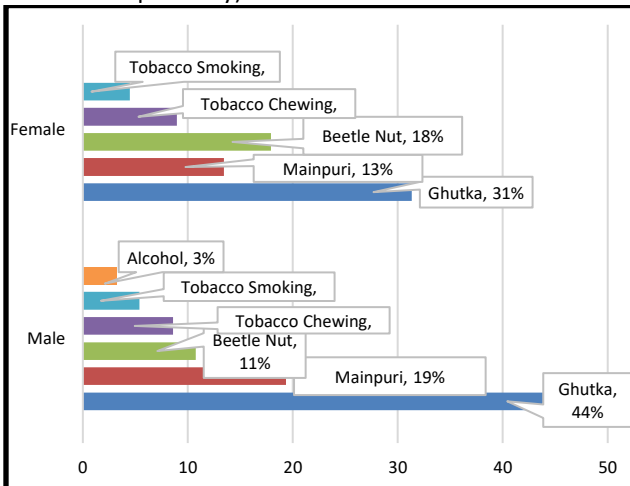


Chart 2: Gender distribution of addictive substance (n=136).

One of the objectives of current study was to collect information related to the morphology and anatomical location of tumours among patients. Majority (38%) of tumours were found to be situated on the parotid region whereas only 5% were found in hard palate region (Table 3)

Table 3: Anatomical distribution of tumour (n=160)

Tumour Location	n	(%)
Soft Palate	13	(8%)
Hard Palate	8	(5%)
Parotid	61	(38%)
Submandibular	30	(19%)
Post-auricular	11	(7%)
Sublingual	18	(11%)
Inner Cheeks	19	(12%)

Histopathological examination of biopsy showed that majority (51%) of the lesions were benign while 30% had malignant changes and 19% of remaining biopsies showed no histopathological changes at all.

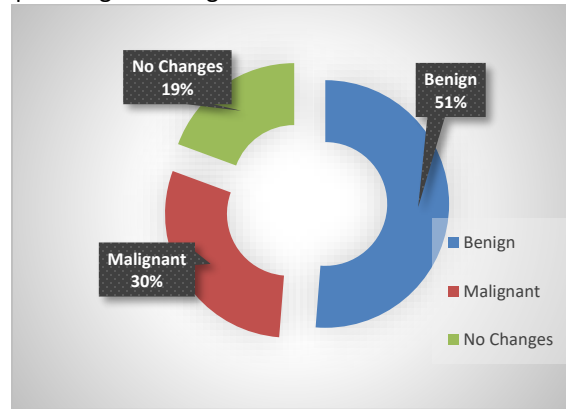


Chart 3: Histopathological findings (n=160)

Histopathological findings also showed that majority of patients were having pleomorphic adenoma, which accounted for 51% of all tumours in our study patients with benign changes in their biopsies, these findings were followed by Acinic cell tumours and Warthin’s tumour respectively (8% & 5%). Whereas, among those with the malignant changes, the most common malignant tumour was Muco-epidermoid Carcinoma (20%) in comparison with the Adenoid Cystic Carcinoma i.e. 16% of all malignant tumours (Table 4).

Table 4: Distribution of histopathological findings of tumours (n=129)

Type of Tumour	n	%
Pleomorphic Adenoma	66	(51%)
Warthin’s Tumour	6	(5%)
Acinic Cell Tumours	11	(8%)
Adenoid Cystic Ca.	21	(16%)
Muco-epidermoid Ca.	26	(20%)

Discussion:

The oral & maxillo-facial region comprises of oral cavity, the maxilla and mandible. Tumours of oral & maxillo-facial region are among the 10 most commonly occurring cancers in human body. Salivary glands tumours accounts for less than 5% tumours of oral and maxillofacial region.^{1,3} Most common (38%) anatomical site of salivary gland tumours was over parotid region among the patients in our study. These findings are in sharp contrast to the finding of Copelli C et al⁷ and Iqbal H. et al⁸, they reported most common anatomical site of tumours as Hard palate i.e. 53.5% and 69% respectively. However, the results of current study are in agreement with study by Masanja MI et al⁹, they also found that the parotid region is the commonest site of tumor occurrence in their patients.

Histopathological (biopsy) findings of tumours in the current showed that majority (51%) were benign while only 30% were malignant tumours. A study from Bangkok showed 47% benign tumors in comparison with the 53% of malignant.¹⁰ Almost same results have been reported by Masanja MI. et al⁹ and Buchner A. et al¹¹, they reported that among tumors of their patients, 54% & 59% were benign, and 46% & 41% were malignant respectively.^{9,11}

Pleomorphic adenoma is the most common type of benign tumour of salivary glands. In the present study, pleomorphic adenoma was also the most frequent histopathological diagnosis as more than 50% of the patient's biopsy's histopathological findings reported so. These findings are nearly consistent with finding of Buchner A. et al¹¹ & Neely MM et al¹² that reported 32.2% and 68% of pleomorphic adenoma in their patients respectively. While inconsistent findings were reported by Iqbal H. et. al.⁸

Although demographic data from few studies countrywide, gives an insight of the biological and clinical characteristics of the tumours in head and neck region. Lack of appropriate population-based cancer registry system in Pakistan, makes it difficult and almost impossible so far to give an exact prevalence of tumours in Head and neck region.

Conclusion:

Majority of patients with maxillofacial tumours admitted at LUH are male, parotid being the most common site irrespective of the gender. Whereas, most of tumours were benign in nature and most frequently occurring tumour was pleomorphic adenoma.

References:

- Guzzo M, Locati LD, Prott FJ, Gatta G, McGurk M, Licitra L. "Major and minor salivary gland tumors". *Crit Rev Oncol Hematol*. 2010;74(2) 134-48.
- K. Subhashraj Salivary gland tumors: a single institution experience in India. *Br J Oral Maxillofac Surg*. 2008 Dec;46(8):635-8.
- Bell D, Hanna EY. Salivary Gland Cancers: Biology and Molecular Targets for Therapy. *Curr Oncol Rep*. 2012 Apr;14(2):166-74
- Tariq Sarfraz, Sana Mehmood Qureshi, Saqib Sarfraz Khan, Omer Safvan Janjua, Wajiha Alamgir et al. Clinicopathological aspects of malignant salivary gland neoplasms – a study of 150 cases at AFIP, Rawalpindi (Pakistan). *PAFMJ* ; 2018: 61(2):191-4-
- American Society of Cancer, available at <https://www.cancer.org/cancer/salivary-gland-cancer/about/what-is-salivary-gland-cancer.html> (last accessed 7th June 2018)
- Shahrokh C. Bagheri (Ed), R. Bryan Bell (Ed), Husain Ali Khan (Ed) "Current Therapy In Oral and Maxillofacial Surgery" 2012; Publisher Elsevier SciencesDirect. Chapter 56 - Salivary Gland Tumors: The Parotid Gland. Author Curtis Gregoire. Pages 450-460.
- Copelli C, Bianchi B, Ferrari S, Ferri A, Sesenna E. Malignant tumours of intraoral minor salivary glands. *Oral Oncol*. 2008 Jul;44(7):658-63.
- Hassan Iqbal, Abu Bakar Hafeez Bhatti, Raza Hussain, Arif Jamshed. Survival outcome of malignant minor salivary tumours in Pakistani population. *South Asian J Cancer*. 2014; 3(3): 163–165.
- Masanja MI, Kalyanyama BM, Simon EN. Salivary gland tumours in Tanzania. *East Afr Med J*. 2003;80(8):429-34
- Dhanuthai K1, Boonadulyarat M, Jaengjongdee T, Jiruedee K. A clinico-pathologic study of 311 intra-oral salivary gland tumours in Thais, Intra-oral salivary gland tumours in Thailand. *J Oral Pathol. Med*. 2009; 38(6): 495–500
- Buchner A, Merrell PW, Carpenter WM. Relative frequency of intra-oral minor salivary gland tumors: a study of 380 cases from northern California and comparison to reports from other parts of the world. *J Oral Pathol Med*. 2007 Apr;36(4):207-14
- Neely MM, Rohrer MD, Young SK.; Tumours of minor salivary glands and the analysis of 106 cases. *J Okla Dent Assoc*. 1996 Spring;86(4):50-2