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Histopathological study of Salivary gland lesions

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Abstract
Introduction: There is a wide spectrum of salivary gland lesions with morphologically and clinically diversity which is a difficult task for histopathological interpretation. There are three major salivary glands-parotid, submandibular, and sublingual as well as minor salivary glands distributed throughout the mucosa of the oral cavity. Neoplastic and non-neoplastic disease may develop within any of these**.**
Aims: (1) To study the histopathological features of salivary gland lesions, (2) To study the prevalence of salivary gland lesions in tertiary care hospital, (3) To evaluate the incidence, age at the occurrence, and sex ratio among the patients with salivary gland lesions, (4) To compare the result of our study with other studies**.**
Material and Method: Retrospective study was done from January 2016 to June 2018. The study was done on 55 specimens from patients with salivary gland lesions which are referred to the Department of Pathology from Department of ENT and Surgery, P.D.U. Medical college, Rajkot. Salivary gland specimens were immediately fixed in 10% formalin and processed by paraffin embedding. Sections were stained by hematoxylin and eosin stain. Finally, microscopic examination was done to diagnose
Result: In present study, out of 55 cases, 05 cases (9.1%) were inflammatory, 41 cases (74.5%) were benign and 09 cases (16.4%) were malignant. Most common benign tumor of salivary gland was pleomorphic adenoma followed by Warthin's tumor. Most common malignant tumor of salivary gland was mucoepidermoid carcinoma.
Conclusion: Histopathological study of salivary gland lesions is the most important method in establishing the final diagnosis and subtyping. Salivary gland tumors are relatively less common and they exhibit a wide variety of microscopic appearances even within one particular lesions.

Keywords: Mucoepidermoid carcinoma, pleomorphic adenoma, salivary gland

Introduction
Salivary gland lesions constitute <1% of all tumors and about less than 4% of all epithelial neoplasms in head and neck region and are therefore relatively rare [1]. These comprise a wide variety of benign, malignant neoplasm and non-neoplastic lesions. Salivary gland tumors are 12 times more frequent in parotid gland than in submandibular gland. The majority are benign and largely represented by pleomorphic adenoma [2, 3]. Mucoepidermoid carcinoma is the most common salivary gland malignancy, most cases are found in parotid gland [5]. As a general rule in clinical practice, the smaller the salivary gland is, the more likely the tumor is malignant. Tumors of minor salivary glands can be found anywhere in oral cavity, including hard and soft palate, cheek, gingiva, tonsillar area and tongue [4]. Adenoid cystic carcinoma is the most common tumor in minor salivary gland. In the parotid glands, 20–25% of the tumors are malignant. This rises to 40% for the submandibular glands, and more than 90% of sublingual gland tumors are malignant [6, 7].

Material & methods
Retrospective study was done for 1.5 years from January 2016 to 2018 June. The study was done on 55 specimens from patients with salivary gland lesions which were referred to the Department of Pathology from Department of ENT and Surgery, P.D.U. Medical college, Rajkot. Salivary gland specimens were immediately fixed in 10% formalin and processed by paraffin embedding. Sections were stained by hematoxylin and eosin stain. Finally, microscopic examination was done for the further typing.

Result
A total of 55 cases from salivary gland lesions were analyzed per age, gender and histology.

Table 1: Basic demographics

	Category	No of cases	percentage	Total
Gender	Male	33	60%	55 (100%)
	Female	22	40%	
Type of lesion				
Inflammatory	Male	02	3.6%	05 (9.1%)
	Female	03	5.5%	
Benign	Male	24	43.7%	41 (74.5%)
	Female	17	30.9%	
Malignant	Male	07	12.7%	09 (16.4%)
	Female	02	3.6%	
Total		55	100%	55 (100%)

In present study of 55 cases, 33 cases (60%) were male and 22 cases (40%) were female.

Out of 55 cases, 41 cases (74.5%) were benign, 05 cases (9.1%) were inflammatory and 09 cases (16.4%) were malignant. In both benign and malignant neoplasms, there was male predominance. [Table-1 & 2]

Table 2: Age wise distribution of various lesions of salivary gland

Age group	Sialadenitis	Benign Cystic lesions	PA*	Warthin tumor	Basal cell adenoma	MEC*	Adenoid cystic carcinoma	Acinic cell carcinoma	Basal cell carcinoma	Polymorphous low-grade adenocarcinoma	Total
0-10	01	01	01	-	-	-	-	-	-	-	03 (5.5%)
11-20	-	-	04	-	-	-	-	-	-	-	04 (7.3%)
21-30	-	01	11	-	-	01	-	-	-	-	13 (23.6%)
31-40	-	-	02	01	-	01	-	-	01	-	05 (9.1%)
41-50	-	02	06	01	-	02	-	01	-	-	12 (21.8%)
51-60	-	-	02	02	-	-	01	-	-	-	05 (9.1%)
61-70	-	-	04	05	01	01	-	-	-	01	12 (21.8%)
71-80	-	-	-	01	-	-	-	-	-	-	01 (1.8%)
Total	01	04	30	10	01	05	01	01	01	01	55 (100%)

*PA- Pleomorphic adenoma, *MEC – Mucoepidermoid carcinoma.

The maximum number of cases were found in 21-30 years of age group, followed by 41-50 years and 61-70 years of age group. [Table 3]

Out of 55 cases, 50 cases were neoplastic and 05 cases were non-neoplastic. Among 50 neoplastic lesions, 41 cases (74.6%) were benign and 09 cases (16.4%) were malignant. [Table 2]

In present study, out of 55 cases, 05 cases (9.0%) were inflammatory, in which 01 (1.8%) case was of sialadenitis and 04 cases (7.3%) were of benign cystic lesions. Maximum number of benign cases were of Pleomorphic adenoma (54.5%) followed by Warthin's tumor (18.2%), while maximum number of malignant cases were of mucoepidermoid carcinoma (9.1%), followed by 01 case of adenoid cystic carcinoma, 01 case of acinic cell carcinoma, 01 case of basal cell adenocarcinoma and 01 case of polymorphous low-grade adenocarcinoma.

Table 3: Distribution of various lesions in salivary gland

Histopathological features of lesions	Parotid gland	Submandibular gland	Minor salivary gland	Total
Sialadenitis	-	01	-	01 (1.8%)
Benign Cystic lesions	02	02	-	04 (3.6%)
PA	19	07	04	30(54.5%)
Warthin tumor	10	-	-	10(18.2%)
Basal cell adenoma	01	-	-	01 (1.8%)
MEC	04	-	01	05 (9.1%)
Adenoid cystic carcinoma	-	-	01	01 (1.8%)
Acinic cell carcinoma	-	01	-	01 (1.8%)
Basal cell carcinoma	01	-	-	01 (1.8%)
Polymorphous low-grade adenocarcinoma	-	-	01	01 (1.8%)
Total	37(67.3%)	11 (20%)	07 (12.7%)	55(100%)

Parotid gland was the most common site of salivary gland tumors, constituting 37 cases (67.3%) followed by submandibular gland constituting 11 cases (20%) and minor salivary gland constituting 07 cases (12.7%).

Pleomorphic adenoma was the most common salivary gland tumor, consisting 30 cases (54.5%) of all cases and maximum number of cases (19 cases) were seen in parotid gland, followed by 07 cases in submandibular and 04 cases in minor salivary gland.

However, Warthin tumor [10 cases (18.2%)] were exclusively seen in parotid gland which was the second most common benign salivary gland tumor. Smoking habits were the main etiological factor affecting the elderly males, 4th decade onwards.

04 cases of MEC were seen in parotid gland while 01 case was in minor salivary gland. 01 case of basal cell

adenocarcinoma was found in parotid gland and 01 case of acinic cell carcinoma was found in submandibular gland, while 01 case of Adenoid cystic carcinoma and 01 case of polymorphous low-grade adenocarcinoma were found in minor salivary gland.

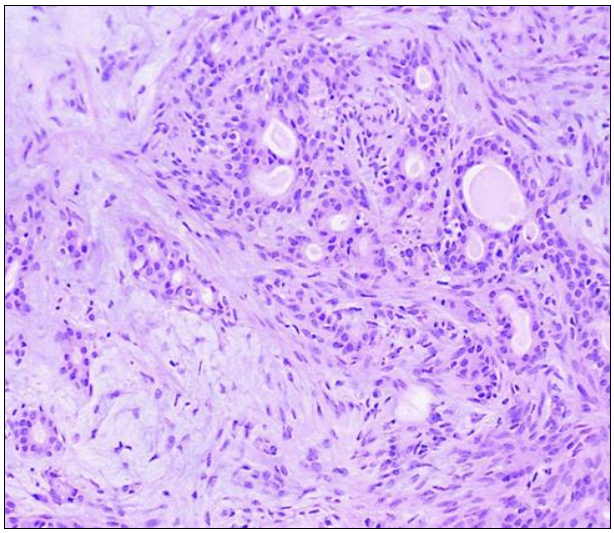

Fig 1: Pleomorphic adenoma (H&E stain, 10x)

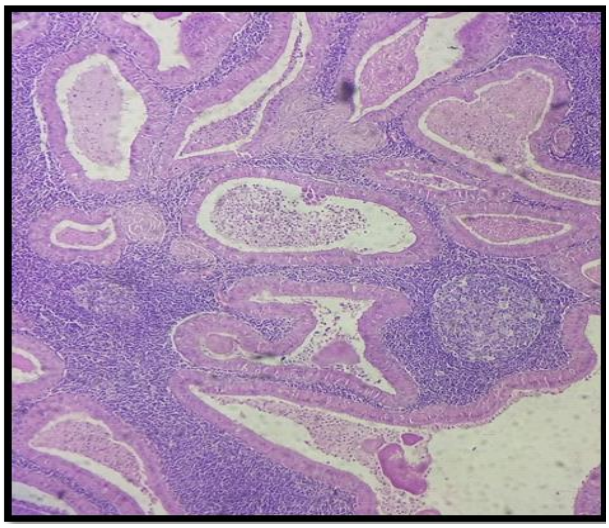

Fig 2: Warthin's tumor (H&E stain, 4x)

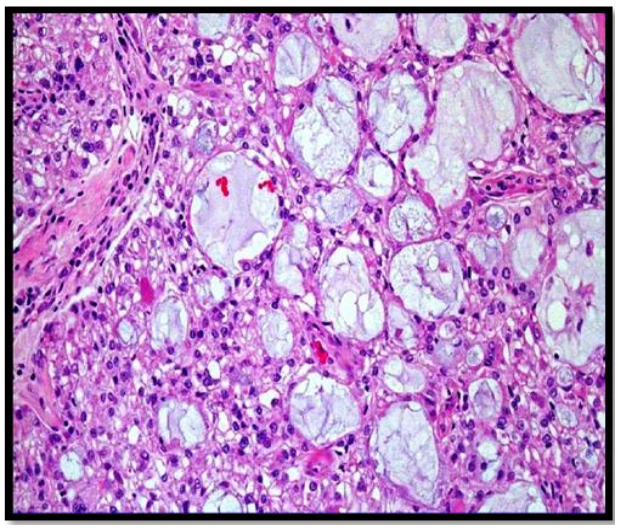

Fig 3: Mucoepidermoid carcinoma (H&E stain, 10x)

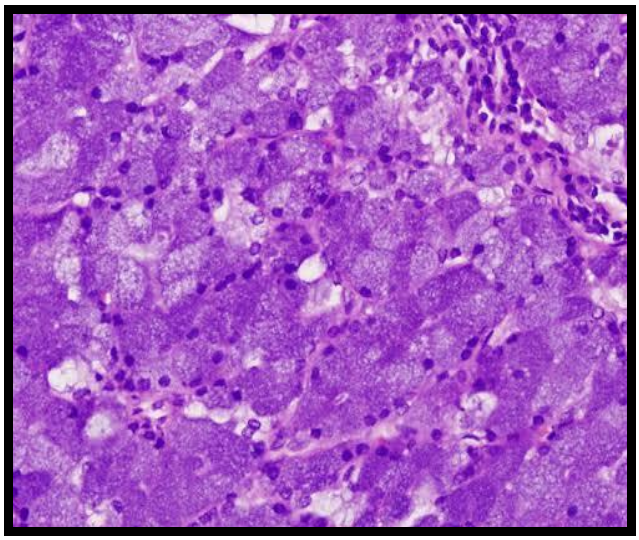

Fig 4: Acinic cell carcinoma (H&E stain, 10x)

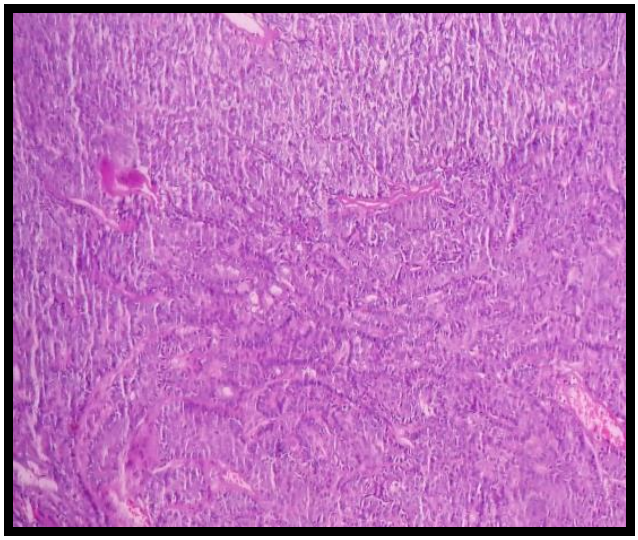

Fig 5: Basal cell adenoma (H&E stain, 10x)

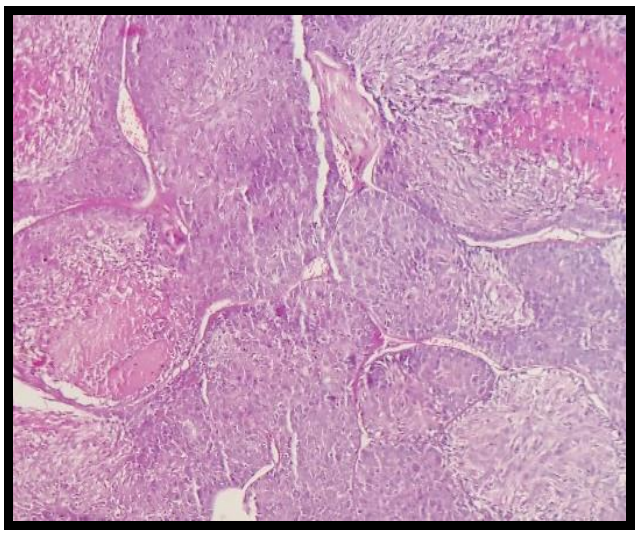

Fig 6: Basal cell adenocarcinoma (H&E stain, 10x)

Discussion

The salivary gland disorders represent a distinct group of various lesions affecting both the major and minor salivary glands. Salivary glands tumors are relatively uncommon constituting about 3-10% of all the head and neck neoplasms. 0.19 [2, 8].

In the present study, there was predominance of benign tumors [41 cases (74.6%)] over malignant tumors which was similar to Vargas *et al.* [9] and Shrestha S. *et al.* [11]. There was highest incidence of benign tumors in 3rd and 4th decades while highest incidence of malignant tumors was in 5th decade onwards which was similar to Ahmad *et al.* [10].

The maximum number of cases [37 cases (67.3%)] were found in parotid gland, followed by 11 cases (20%) in submandibular gland and 07 cases (12.7%) in minor salivary gland, these findings were comparable to other studies like Bashir. S. *et al.* [12], Erik G. Cohen *et al.* [13] and T. Chatterjeet *et al.* [14] [Table 5]

Table 4: Comparison of site of salivary lesions

	Bashir. S. *et al.* [12]	**Erik G. Cohen *et al.* [13]**	**T. Chatterjeet *et al.* [14]**	**Present study**
Parotid gland	65.3%	74%	77.0%	67.3%
Submandibular gland	20.4%	26%	9.0%	20.0%
Minor salivary gland	4.0%	-	14%.0	12.7%

Out of 55 cases, pleomorphic adenoma was the most common benign tumor [30 cases (54.5%)], which was comparable to other studies like Sando Z *et al.* [15]. Subhashraj K *et al.* [16] and Kalburge JV *et al.* [17]. Warthin's tumor was the second most common salivary gland tumor [10 cases (18.2%)], which was comparable to Lingen MW *et al.* [18]. Mucoepidermoid carcinoma was the commonest malignant tumor [05 cases (9.1%)], which was comparable to Kalburge JV *et al.* [17] and Ochicha O *et al.* [19].

Conclusion

The present study was a single institutional experience where analysis of 55 cases of salivary gland tumors were carried out. The findings of age, sex, site distribution and pathologic features encountered in our study were comparable with other studies. Most common benign tumor of salivary gland was Pleomorphic adenoma followed by Warthin's tumor. Most common malignant tumor of salivary gland was Mucoepidermoid carcinoma. Salivary gland tumors are relatively less common and they exhibit a wide variety of microscopic appearances even within one particular lesions. Accurate diagnosis is essential as salivary gland neoplasms have diverse clinical and prognostic outcomes.

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