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Original Research Paper

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# SPECTRUM OF NON-MALIGNANT CYSTIC LESIONS OF THE SALIVARY GLAND - CASE SERIES AND REVIEW OF LITERATURE.

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**ABSTRACT** Cystic lesions are estimated to account for 8% of all salivary gland masses (1). The lesions range from non-neoplastic lesions like mucocele to benign tumours with cystic change like Warthin's tumour and malignant cystic tumours, including low grade mucoepidermoid carcinoma and cyst adenocarcinoma. The recent WHO Classification 2017 has added sclerosing polycystic adenosis and lympho epithelial lesions to WHO 2005. This article provides an insight into non-malignant cystic lesions and most commonly encountered differential diagnostic problems in ruling out malignant lesions with cystic change.

**KEYWORDS :** Salivary gland, cystic, non-neoplastic, adenoma.

## INTRODUCTION:

Cystic lesions of the salivary gland account for 8% all salivary gland lesions. They can be classified as true cysts lined by epithelium, retention cysts due to obstruction of ducts and cystic change in benign and malignant tumours. Rarely dermoid cysts or branchial cysts can be present in salivary gland too. WHO Classification of salivary gland tumours 2017, has introduced few new entities of which cystic lesions like sclerosing polycystic adenosis and lympho epithelial cysts are included. It is very important to recognize the benign nature of the cystic lesions and this article gives insight into the various non-malignant cystic lesions and diagnostic challenges faced in differentiating them from cystic change in malignant tumors.

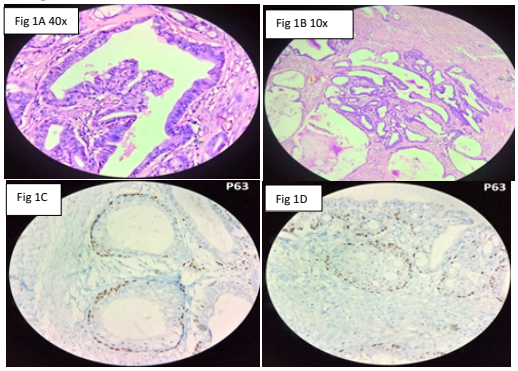
## METHODS:

This study is a retrospective study involving different types of salivary gland non-malignant cystic lesions over a period of 2 years from January 2018 to January 2020. As this is a case series, we chose to describe each type of cystic lesions received during this study period in HISTOLAB, Coimbatore and Karuna Medical College, Palakkad.

## CASE SERIES:

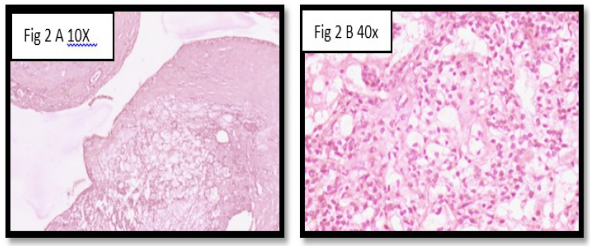
### CASE 1:

28 years male with right sided parotid mass. Slides and blocks were received for second opinion. Histology showed cystic spaces lined by papillary projections with underlying fibrous connective tissue and 1 - 3 layers of cuboidal to columnar to mucinous epithelium. Immunohistochemistry with P63 was carried out and a diagnosis of Papillary cyst adenoma was made(fig 1 A ,B C & D).



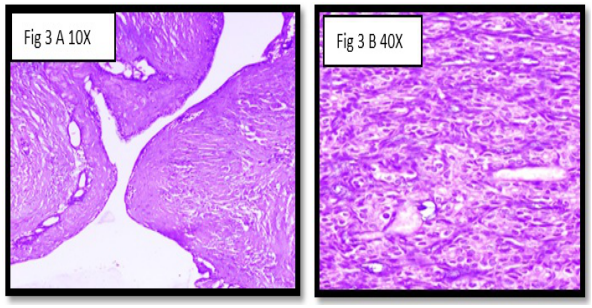

### CASE 2:

38 years female with right sided parotid tumour. As USG showed a well circumscribed anechoic area and as FNAC revealed a benign lesion, superficial lobe was received which grossly showed partially cut opened irregular soft tissue measuring 7x4x2.5cm. Cut section showed an encapsulated tumour mass measuring 2.5x2.5x2cm. Mass was greyish white with tiny haemorrhagic areas. Rest of the tissue showed multiple lymphnodes largest measuring 1.2x1cm. Histology confirmed pleomorphic adenoma with cystic change(FIG 2 A& B).



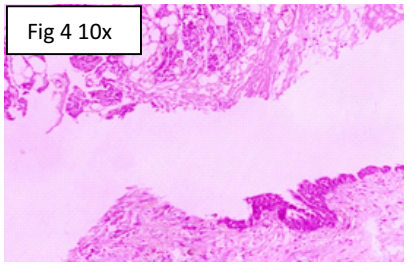

### CASE 3:

61 years female with right side parotid cyst. Clinical examination showed a mobile mass with no fixity to underlying structure. Excision biopsy showed grossly a cystic well circumscribed tumour and histology showed monomorphic adenoma with cystic change( FIG 3 A & B).



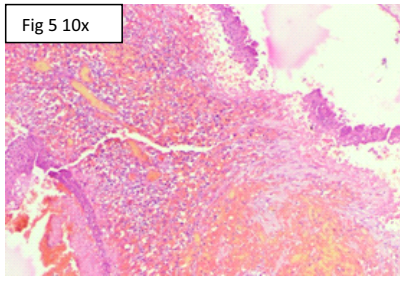

### CASE 4:

72 years male with left parotid gland with tumour. Sialography showed tree in winter appearance and FNAC showed only cystic macrophages. Excision biopsy showed a cystic lesion filled with shaggy material and histology showed cystic cavity lined by single layer of columnar cells confirming salivary duct cyst(FIG 4).



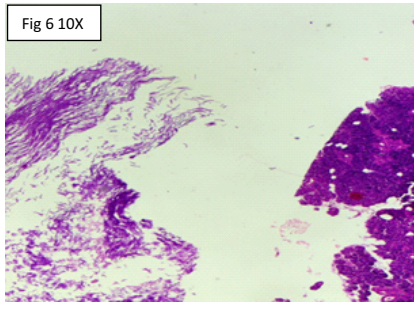

**CASE 5:**

72 years male with left parotid gland swelling. USG showed a cystic lesion in the gland and a differential diagnosis of a benign cyst versus malignant tumour with cystic change was offered radiologically. Excision biopsy revealed a lympho epithelial cyst (FIG 5).



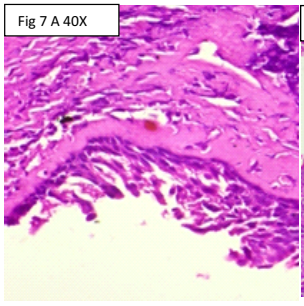

**CASE 6:**

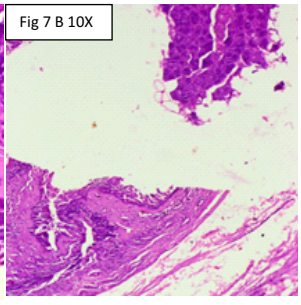
33 years male presented with a 3 years history of painless swelling in the right side of the face. O/E a fluctuant soft mass was seen in the parotid region. USG showed a cystic lesion with intraluminal contents. Excision biopsy showed grossly a cystic lesion filled with pultaceous material and histology revealed a Dermoid Cyst (FIG 6).




**CASE 7:**

52 years female presented with a long history of painless swelling in the neck, just below the ear on left side. Gross examination showed a soft freely movable lesion and a cystic lesion. Superficial Parotidectomy showed a cystic mass with features of Branchial Cyst(FIG 7 A & B)



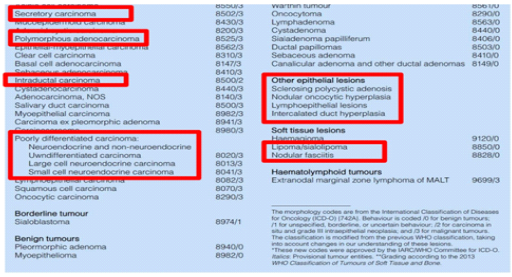

**DISCUSSIONS:**

Cystic lesions are estimated to account for 8% of all salivary gland lesions (1) and they represent mostly non-neoplastic cystic lesions like retention cysts, cyst adenoma and Warthin's tumours and rarely benign tumours with cystic change and developmental cysts. Primary hydatid cyst has also been reported (2).

In WHO classification of salivary gland tumours 2017, new entities included, sclerosing polycystic adenosis and lymphepithelial lesions are cystic lesions.

**Table 1**

WHO Classification of Salivary Gland Tumors 2017




Non-neoplastic cysts of salivary gland can be divided into true cysts (eg - lympho epithelial cysts) and non development alcysts (eg - retention cysts). The rate of inadequate sampling and false negative results is increased in cystic lesions compared with solid tumours. FNACs though contributory in many lesions do not help much in predominantly cystic lesions.

These are the broad differential diagnosis to consider in FNA of cystic lesions of salivary glands as per 'The Milan System for Reporting Salivary Gland Cytopathology'.

**Table 2**

The Milan System for reporting salivary gland cytopathology for cystic lesions

| Diagnostic category | Example of cystic salivary gland lesion |
|---|---|
| Non-diagnostic | Cystic non-mucinous fluid only |
| Non-neoplastic | Inflammatory cyst with amylase crystalloids |
| Atypia of undetermined significance | Histiocytes ± scant epithelial cells in a background of abundant mucin (cannot exclude low-grade mucoepidermoid carcinoma) |
| Benign neoplasm | Warthin tumor, or cystic pleomorphic adenoma |
| Salivary gland neoplasm of uncertain malignant potential (SUMP) | Cellular oncocytic/oncocytoid neoplasm with cystic background (differential includes Warthin tumor or oncocytic cystadenoma) |
| Suspicious for malignancy | Atypical cells in a mucinous background, suspicious for low-grade mucoepidermoid carcinoma |
| Malignant | Keratinizing squamous cell carcinoma |

**Cyst adenoma - Papillary cyst adenoma:**

Cyst adenomas of the salivary gland is a rare entity, (3) divided into mucinous cyst adenoma and papillary cyst adenoma with a polycystic growth with epithelial component showing adenomatous hyperplasia. Though it was described in 1990 by WHO as an entity as a subtype of salivary gland tumour, it was defined as a separate entity in 2005.

Histology showed cystic spaces lined by papillary projections with underlying fibrous connective tissue with lining epithelium showing columnar mucinous epithelium with 1 - 3 layers of epithelium. Though differential diagnosis includes Warthin's tumour and Intraductal Papilloma, IHC is essential to rule out Low Grade Mucoepidermoid Carcinoma. The most important IHC marker is P63, which stains only the basal layer of cystic spaces in Papillary cyst adenoma and the suprabasal layers in diffuse pattern in Low Grade Mucoepidermoid Carcinoma with cystic change. (4)

**Pleomorphic adenoma with cystic change:**

Pleomorphic Adenoma forms the majority of salivary gland neoplasms and cystic change in them is a diagnostic dilemma (5) and can mimic mucoepidermoid carcinoma, mucocele or carcinoma ex pleomorphic adenoma. (6)

Histologically, biphasic population of epithelial mesenchymal cells are seen in a chondroid / myxoid stroma with cystic spaces lined by cuboidal to metaplastic epithelial cells with chronic inflammatory cells and haemorrhage with cholesterol clefts.

On review of literature, to the best of our knowledge only a few cases of Pleomorphic Adenoma with cystic change have been reported. (7,8,9,10)

**Monomorphic adenoma with cystic change:**
Monomorphic adenoma histologically shows pleomorphic adenoma with no stromal changes with 4 patterns- Solid, Trabecular, Tubular and Membranous. Our case showed a tubular pattern. (11) According to Batsakis and Brannan, monomorphic adenomas are classified into tumours of terminal duct origin, tumours of terminal or striated duct origin and tumour of excretory duct origin. (12) Cyst formation may be (1) from squamous metaplasia of tumour cells (2) from enlargement of duct like structures by secretion from tumour cells or normal salivary gland tissue (3) from haemorrhagic infarction of tumour due to ischaemia.Florid squamous metaplasia with adnexal differentiation in the form of keratin filled cysts have been reported and should not be misinterpreted as mucoepidermoid carcinoma / squamous cell carcinoma.

**Salivary duct cyst / Lympho epithelial cyst:**
Histologically, salivary duct showed cystic cavity lined by cuboidal to columnar epithelium (13) - true cysts. Though it may be congenital or acquired, majority are acquired and are due to obstruction. Sialography showed a typical tree in winter appearance. (14)Mucocele, which is very common (13, 14) is a differential diagnosis for this lesion, does not have a true lining and shows nonspecific granulation tissue.

Lympho epithelial cysts, histologically shows a cyst lined by squamous or glandular lining with underlying fibrous connective tissue with polyclonal lymphoid tissue with lymphocytes permeating the cyst wall and epimyoepithelial islands. There is a lymphnode inclusion theory considered in formation of these cysts, which is as a result of cystic alterations of epithelium trapped in the cervical lymphnodes.

Though, these cysts are usually seen in HIV and auto immune patients, our patients were negative for both.

**Dermoid cysts:**
Histologically, salivary gland tissue was seen with a cyst lined by stratified squamous epithelium with pilosebaceous unit and plenty of keratotic material. (15, 16)

Dermoid cysts are benign lesions composed of tissues originating from ectoderm and mesoderm and head and neck is the 3rd most common site after coccyx and ovary. (17)

Though 7% of all dermoid cysts are seen in the head and neck area, parotid gland is an extremely rare location. Batsakis described 3 histological types of head and neck cysts - Epidermal, Dermoid and Teratoid Cysts with a broad discussion into congenital and acquired cysts.Congenital cysts are from embryonic epithelial nests and acquired cysts are from traumatic or iatrogenic displacement of skin into deeper layers. (18)

New and Erich classified these cysts into 3 categories as - (1) Congenital dermoid cysts of teratoma type (2) Acquired dermoid cysts and (3) Congenital inclusion dermoid cysts, which develops from inclusion of displaced epidermal cells along the lines of embryologic fusion.

Our cyst in this case is difficult to classify, though 2nd category may be the most likely and total parotidectomy is treatment of choice.

**Branchial cleft cyst:**
Histologically - Showed cyst lined by pseudostratified columnar epithelium with underlying fibrous tissue. (19) Batsakis considered this as embryonic epithelial nests with pseudostratified lining derived from branchial arch pouch endoderm and stratified squamous epithelium derived from branchial ectoderm. (20) These remnants remain dormant until an external stimulation causes cystic proliferation. (21) Remnants of the first branchial clefts occur along an imaginary line extending from the auditory canal behind and below the angle of mandible to mid point. Second branchial cleft remnants are found anywhere along a line extending from the tonsillar fossa down to a point on lower third of anterior border of sternocleidomastoid.

As our lesion is in the lower part of the parotid, it is likely that is derived from 1st or 2nd clefts.

## CONCLUSION:
Cystic lesions accounting to 8% of salivary gland lesions are rare and always throws a diagnostic dilemma as it can mimic malignant tumours with cystic change. In order to avoid unnecessary aggressive therapy, awareness of this rare benign lesions are essential so that misinterpretation of the pathological findings as malignant lesions is avoided.

## REFERENCES:

(1) *Salivary Gland Cytopathology pp 159 - 181 - Springer link.*
(2) *Arora VK, Chopra N, Singh P, Venugopal VK, Narang S. Hydatid cyst of parotid: report of unusual cytological findings extending the cytomorphological spectrum. Diagn Cytopathol. 2016;44:770-773.*
(3) *World J Clin Cases. 2019 Feb 6; 7 (3): 366 - 372. Published online 2019 Feb 6. doi: 10.12998/wjcc.v7.i3.366*
(4) *Oral Surg Oral Med Oral Pathol Oral Radiol. 2013 Jan; 115(1):79 - 86.doi: 10.1016/j.oooo.2012.09.005.*
(5) *J Clin Diagn Res. 2015 Nov; 9(11): ED07 - ED08 Published online 2015 Nov 1. doi: 10.7860/JCDR/2015/14101.6764*
(6) *Sudheendra US, Shashidara R, Chakki AB, Sreeshyla HS. Cystic Pleomorphic Adenoma of Minor Salivary Glands. International Journal of Dental Clinics. 2011:3(2): 107-08*
(7) *Lim S, Cho I, Park JH, Lim SC. Pleomorphic Adenoma of Exuberant Squamous Metaplasia and Keratin Cysts Mimicking Squamous Cell Carcinoma in Minor Salivary Gland. Open Journal of Pathology. 2013;3:113-16.*
(8) Chen Y, Lin C, Lai S, Chen C, Wang W, Lin Y, et al. Pleomorphic adenoma with extensive necrosis: report of two cases. Oral Diseases. 2004; 10(1): 54-9.
(9) Maji J, Soniya A, Jagadish C. Pleomorphic adenoma with extensive cystic degeneration: A rare presentation. Indian Journal of Stomatology. 2011;2: 123.
(10) Ellis GL, Auclair PL. Atlas of tumour pathology: tumours of the salivary glands. Washington: Armed Forces Institute of Pathology. 1996:39 - 153.
(11) Nagao K, Matsuzaki O, Saiga H, Sugano I, Shigematsu H, Kaneko T, et al. Histopathologic studies of basal cell adenoma of the parotid gland. Cancer 1982;50:736-45.
(12) Batsakis Brannon. The histologic classification of monomorphic adenomas. Clin Otolaryngol 1981; 97:251-9.
(13) Oral surgical, oral medical, oral path - 1964.
(14) Head Neck Pathol 2017.
(15) Int. J. Oral Maxillo Facial Surgery 2007.
(16) Head Neck Pathol. 2015 Jun; 9(2): 286-292. Published online 2014 Aug 13. doi: 10.1007/s12105-014-0563-3.
(17) Alfred D, Katz MD. Midline dermoid tumours of the neck. Arch Surg. 1974; 109:822-823. doi: 10.1001/archsurg. 1974.01360060088024.
(18) Batsakis JG. Teratomas of the head and neck. In: Tumours of the head and neck: clinical and pathological considerations. 2nd ed. Baltimore: Williams & Wilkins; 1979. P. 226-32.
(19) Head Neck Oncol. 2012; 4:24. Published online 2012 May 18. doi: 10.1186/1758-3284-4-24.
(20) Aronsohn RS, Balsakis JG, Rice DH, Work WP. Anomalies of the first branchial cleft. Arch Otolaryngol. 1976; 102: 737. doi: 10.1001/archotol. 1976.00780170055008.
(21) Work WP, Hecht DW. Non -neoplastic lesions of the parotid gland. Ann Otol Rhinol Larynogol. 1968;7:p462.