



Research Paper

Non-Neoplastic Salivary Gland Diseases –A Review

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ABSTRACT:

Salivary glands are group of organs that secrete saliva and are important to maintain various physiological functions of the oral cavity. Saliva is secreted by salivary glands which are of two types :- The major salivary glands and minor salivary glands. Any disturbance or disruption in the normal physiology or anatomy can cause increased or decreased salivary flow or lesions in the oral cavity. The salivary gland disorders could be due to inflammation, abnormal development, age and other factors. These disorders could be neoplastic and non-neoplastic. This review provides an overview of the various Non-neoplastic salivary gland diseases of the oral cavity.

KEYWORDS: Non neoplastic, Salivary gland, Lymphoepithelial, Salivary cyst, Ranula, Mucocele, Dysgenetic disease.

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I. INTRODUCTION

Non-neoplastic diseases of salivary glands comprises of many conditions varying from developmental to inflammatory disorders. Commonly, the major salivary organs are influenced by these conditions although minor salivary organ inclusion is additionally observed.

Diagnosis of salivary disorders can be done with a proper medical history and later followed by careful examination. Certain salivary gland disorders may or may not be present with symptoms. Hence, proper and routine examination of salivary function must be a part of any head and neck, and oral examination. Dentist play an important role in identifying patients who are at a risk for developing salivary dysfunction, and it is very important to provide the correct and appropriate preventative and interventive methods from this we can preserve the health, function and the quality of the person's life. This review article will provide an overview of various non-neoplastic cystic lesions of the salivary glands^(1,4).

TRUE CYSTS OF MAJOR SALIVARY GLANDS

LYMPHOEPITHELIAL CYST^{(5),(11),(1),(7)}

CLINICAL FEATURES:

- Uncommon acquired parotid gland cyst.
- More common in men than in women.
- Occurs during birth to the eighth decade of life.
- It is the Most common cause of parotid swelling in HIV patients.
- It is present as a painless swelling of the parotid gland.
- Majority are unilateral but bilateral lesions may occur.
- May be tender or painful, which may be due to secondary infection⁽⁵⁾.

PROPOSED THEORIES :

1. **Branchial apparatus theory:** The cysts are the remnants of the pharyngeal pouches or branchial cleft or it could be due to the fusion of both the elements.

2. **Cervical sinus theory:**The cyst are remains of the Cervical Sinus which is formed when the second brachial arch grows caudally to meet the fifth brachial arch.
3. **Thymopharyngeal Duct Theory :** The cysts are the remnants of the original connection between the thymus and the third brachial pouch from which it derives.
4. **The Lymph Node Inclusion Theory :**The cysts are due to cystic alteration of epithelium trapped in the cervical lymph node present in the upper one third of the neck where parotid epithelial inclusions occur⁽²⁵⁾. The first two theories are the classic theories. However , in most cases lymph node inclusion theory gave the most feasible explanation for the cyst formation.

PATHOGENESIS IN HIV PATIENTS :

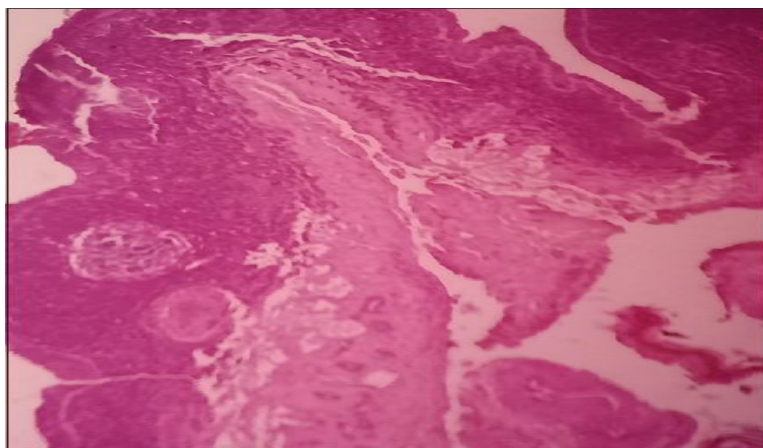
The cyst is associated with the migration of HIV-infected cells into the lymphoid tissue of the salivary glands which leads to metaplasia and lymphoid hyperplasia in the salivary duct and causes ductal obstruction leading to dilation and cyst formation.

HISTOLOGY :

- Lined by a variety of epithelial cell types- squamous, cuboidal, columnar, and pseudostratified types: mucous cells, sebaceous cells, and oncocytic metaplasia may be present(figure 1).
- Cyst wall composed of an abundant mature lymphoid cell proliferation with germinal centers⁽¹⁾.

FIGURE 1:

A high power image showing cystic cavity lined by a thin epithelium and connective tissue present with germinal centres⁽²⁸⁾.



DIFFERENTIAL DIAGNOSIS :

- Warthin's tumor
- Intramuscular benign hemangioma (IMH)
- Branchial cleft cyst
- Lymphoma

INVESTIGATION:

- Computed tomography and ultrasound is used to differentiate solid from cystic lesions of the parotid gland.
- Fine needle aspiration Cytology useful in diagnosing parotid masses and ruling out malignancy, particularly in HIV positive patients⁽²⁵⁾.

TREATMENT AND PROGNOSIS :

- HAART Therapy
- FNA drainage
- Radiotherapy
- Sclerotherapy
- Surgical excision⁽¹⁾.

SIMPLE SALIVARY DUCT CYST⁽¹¹⁾

SYNONYMS: Acquired, simple, and retention cyst .

CLINICAL FEATURES:

- Most common salivary gland cysts.
- No gender predilection and seen from early childhood to older adults.
- Clinical presentation includes unilateral painless swelling.
- Approximately 85% occur in the parotid gland with 10% in submandibular gland and in other salivary glands.
- Obstructive changes that result in the development of the salivary duct cyst are neoplasm's, post inflammatory strictures, calculi, and mucus plugs⁽¹¹⁾.

HISTOLOGY :

- It is demarcated from the adjacent salivary gland parenchyma.
- Epithelium lining maybe single or multilayered cuboidal, columnar, or squamous epithelium ,mucus-containing goblet cells and oncocytic metaplasia may be seen.
- Cyst wall is consists of connective tissue which is collagenised.
- Minimal chronic inflammatory cell infiltrate may also be present.
- Granulomatous inflammation may be present in the cyst wall⁽¹⁾ .

DIFFERENTIAL DIAGNOSIS:

- Lymphoepithelial cyst

TREATMENT:

- Surgical excision is curative.

POLYCYSTIC (DYSGENETIC) DISEASE

CLINICALFEATURES:

- Women are almost always affected and most of the cases occur in childhood.
- Mostly bilateral involvement is present occasionally there can be unilateral involvement.
- The clinical presentation includes recurrent, painless swelling with abnormalities in the flow of saliva⁽¹⁾.

ETIOPATHOGENESIS:

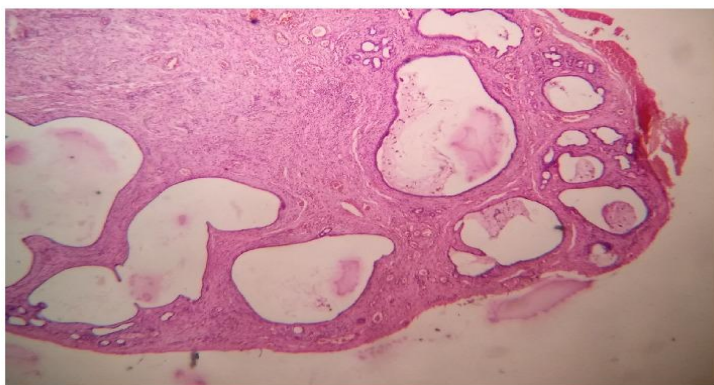
- **Genetic susceptibility:** Smyth et al. (1993) reported this condition to be familial Where a mother and daughter were diagnosed with DPD.Ficarra et al. (1996) reported a case where a woman, her mother, and her maternal grandmother were present with this condition suggesting an autosomal dominant inheritance.
- **Histological causes :** The lesion shows multiple ductal ectasias which resembles a mucous retention cyst. The presence of microliths/spheroliths histologically have been reported by Seifert et al. (1981), Batsakis et al. (1988), Brown et al. (1995), and Layfield and Gopez (2002).The presence of multiple sialoliths may lead to mucous retention phenomenon presenting with a “polycystic” nature histologically.
- **Hormonal influence:** Hormones are found to exacerbate the underlying condition. Brown et al. (1995) reported a bilateral parotid swelling in a 31-year-old, 4-month pregnant woman which regressed 4-6 months after parturition.
- **Alternative theory:** includes the developmental malformation of the intercalated duct system⁽²⁶⁾.

HISTOLOGY :

- There is presence of numerous ducts of variable sizes are interspersed in a fibrocellular connective tissue stroma .
- The ductal spaces showed mucin pooling with abundant muciphages.
- Acinar atrophy with squamous metaplasia of the excretory ducts are present.
- Certain areas of hemorrhage were also seen(figure 2).

FIGURE 2:

Connective tissue stroma that supports multiple cystic spaces⁽²⁷⁾.



DIFFERENTIAL DIAGNOSIS :

- Sclerosing polycystic adenosis
- Cystic salivary gland neoplasms including cystadenoma, cystadenocarcinoma, mucoepidermoidcarcinoma⁽¹⁾.

TREATMENT AND PROGNOSIS :

- The treatment of choice is complete excision.
- Cases with Parotid involvement are treated with lobectomy or superficial parotidectomy⁽²⁶⁾.
- Polycystic disease can be managed without surgical resection conservatively.
- This is a benign disorder with excellent long-term prognosis but follow up is required⁽¹¹⁾.

NONDEVELOPMENTAL CYSTS

MUCUS EXTRAVASATION PHENOMENON⁽⁵⁾

SYNONYMS:

- Mucus escape phenomenon
- Extravasation mucocele⁽¹⁾

CLINICAL FEATURES:

- Relatively common lesion.
- No gender predilection and occur in all age groups.
- Most common site is lower lip.
- A painless swelling developing from days to week, then ruptures and disappears only to recur within several weeks⁽¹⁾.
- Superficial lesions are present as raised swellings which is fluctuant on palpation.
- The epithelium may be thin.
- The lesion has a translucent, bluish appearance.
- Superficial lesions are smooth and movable , soft to firm in consistency , raised vesicles.
- Deeper-seated lesions are movable, firm, nodular, and covered by normal-appearing mucosa⁽¹⁹⁾.

ETIOPATHOGENESIS:

- They are caused due to trauma to the salivary duct which is produced due to lip or cheek biting or pinching by extraction forceps .
- This leads to spillage of mucin into the surrounding tissues⁽¹⁾.

HISTOLOGY:

- There is extravasation of mucus into adjacent tissue and granulation tissue and inflammatory cells are intermixed .
- Minor salivary glands show variable degree of atrophy, ductal dilatation, fibrosis, and a chronic inflammatory cell infiltrate⁽⁵⁾.

DIFFERENTIAL DIAGNOSIS :

- Epithelial-lined cystic lesions.

TREATMENT AND PROGNOSIS :

- Surgical excision is the treatment⁽⁵⁾.

MUCUS RETENTION CYST⁽³⁾

SYNONYMS:

- Retention mucocele, oral sialocyst

CLINICALFEATURES:

- Uncommon but more common in men.
- Usually slow-growing and painless, appearing as a circumscribed and often fluctuant swelling, associated pain or a burning sensation may be present⁽³⁾.

ETIOLOGY :

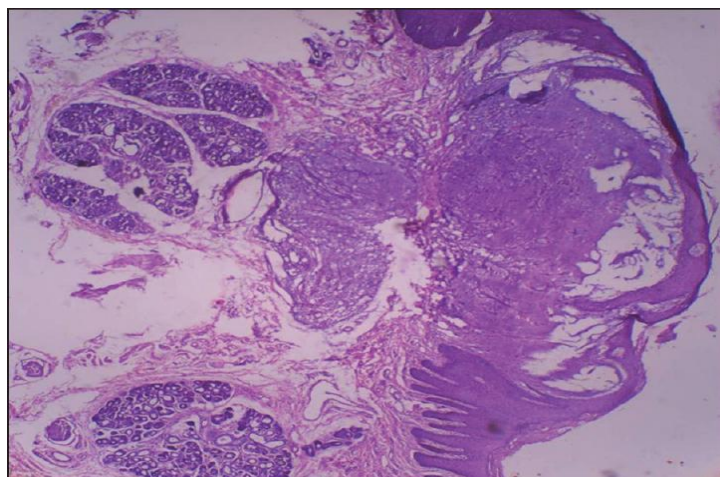
- Chronic or partial obstruction of the salivary duct .
Partial obstruction could result from a small piece of intraductal calculi.
- Narrowing of ductal opening cannot adequately accommodate the exit of saliva that is produced which later leads to ductal dilation .

HISTOLOGY:

- Cysts usually unilocular but may be convoluted simulating a multilocular or multicystic pattern⁽⁵⁾.
- The wall of the cavity consists of a lining of compressed fibrous connective tissue and fibroblasts.
- Presence of polymorphonuclear leukocytes, lymphocytes and plasma cells infiltrates are seen.
- The lumen is filled with the spilled mucin and consists of variable numbers of cells, mainly leukocytes and foamy histiocytes (figure 3).

FIGURE 3:

Mucocele with spillage of mucin underneath the epithelium⁽²⁹⁾.



DIFFERENTIAL DIAGNOSIS:

- Mucoepidermoid carcinoma.

TREATMENT:

- Surgical excision⁽¹⁾.

RANULA

CLINICAL FEATURES:

- Rare as compared with the mucus escape phenomenon.
- Most commonly a unilateral lesion but may be bilateral.
- Ranulas are divided into two types:
-Simple ranula: – Considered a true cyst based on the presence of an epithelial lining.

-Plunging ranula: – Considered a pseudocyst based on absence of an epithelial lining⁽¹⁾.

SIMPLE RANULA (SUBLINGUAL RANULA)

- It usually occurs in the lateral aspect of the floor of the mouth.
- Most frequently associated with sublingual gland:
- Occasionally may be associated with submandibular gland .
- Presenting symptoms include loud snoring and a painless mass; if large, deviation of the tongue may occur⁽⁵⁾.
-

ETIOLOGY:

- Obstruction of one of the salivary glands.
- Essentially a Retention cyst.
- Spontaneous or results from surgery to the floor of mouth, especially sub-mandibular duct relocation.

HISTOLOGY:

- It maybe a unilocular or multilocular cystic lesion.
- It is often associated with an epithelial lining..
- Cysts contain amorphous eosinophilic material⁽²⁰⁾.

DIFFERENTIAL DIAGNOSIS:

- Epidermoid cyst
- Pleomorphic adenoma
- Lipoma

TREATMENT AND PROGNOSIS :

- Surgical excision.
- Inadequate excision may results in recurrence^{(1),(11)}.
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PLUNGING RANULA (DEEP RANULA)

- Extends beyond mucous membranes through the mylohyoid muscle into the neck.
- Clinical presentation is that of a painless neck mass in the submental or submandibular triangle with or without a lesion in the floor of the mouth⁽⁵⁾.

ETIOLOPATHOGENESIS:

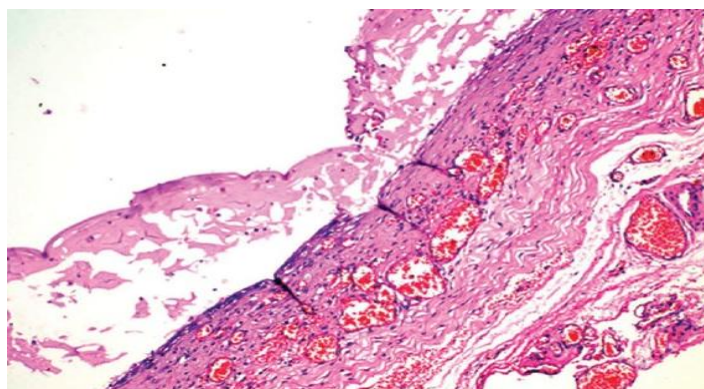
- It is due to the extravasation of saliva from the sublingual gland because of trauma and obstruction of the duct.
- The Fluid accumulated due to obstruction dissects between the fascial planes and muscle of the base of the tongue to the submandibular space.
-

HISTOLOGY :

- Appear as pools of mucus surrounded by fibrous tissue, chronic inflammatory cells, including histiocytes⁽²⁾ (figure 4).

FIGURE 4:

A low power image of the cyst wall filled with mucin and lined by granulation tissue⁽³⁰⁾.



DIFFERENTIAL DIAGNOSIS:

- Epidermoid cyst
- Thyroglossal duct cyst
- Cystic hygroma
- Branchial cleft cysts

TREATMENT AND PROGNOSIS:

- Meticulous excision.
- Laser ablation, cryosurgery is also possible.
- Failure to include resection of the salivary gland results in recurrence⁽¹¹⁾.

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