



## A LITERATURE REVIEW ON SALIVARY GLAND DISORDERS

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### Abstract : -

Saliva is secreted by salivary glands, and saliva plays an important role in oral cavity as saliva helps in various manners in the normal functioning of the oral cavity, as it helps in preparation of the food for swallowing, it helps in appreciation of the taste of the food, saliva helps in digestion of the food, saliva also plays cleansing and protective function in the oral cavity, saliva helps in the process of normal speech of the individual, saliva plays an excretory function, saliva plays an important role in regulation of the body temperature. There are different salivary glands which are present in the oral cavity. Any disturbance or injury to the salivary glands leads to dysfunctioning of the gland which can lead to altering the oral health condition.

**Keywords :** - Salivary glands, salivary gland disorders, xerostomia, diagnosis of salivary glands.

### Introduction: -

The nature of the salivary glands are complex. Salivary glands are found to be of different types, tubulo acinar, exocrine glands, which are secreting mainly saliva. Glands which help in secretion of the saliva are found to be one of the main soft tissue structures in the maxillofacial area. Saliva is a mucous serous fluid, which is clear in nature, it coats the teeth present in the oral cavity, coats the mucosa there by helps and maintain the healthy environment of the oral cavity. Salivary gland can be affected by local cause or it can be affected by a systemic disease. Salivary glands can be affected by viral etiological factors, bacterial etiological factors, fungal infection to the salivary glands are rare some time painful swellings can occur in the salivary glands due to the obstruction of the salivary ducts. Tumors also affect the salivary glands functioning<sup>1-7</sup>.

Specialized types of different cells are present in the salivary glands. Salivary glands are complex, tubulo acinar, exocrine or merocrine that help in secretion of saliva mainly. There are different major and minor salivary glands which are dispersed in the oral cavity, and saliva is found to be the product of major and minor salivary glands. Three pairs of major salivary glands are present in the

oral cavity, namely parotid, submandibular and sublingual salivary glands, in addition to its various minor salivary glands are also present in the oral cavity, namely, labial and buccal gland, glossopalatine gland, and palatine and lingual glands<sup>12, 13, 14</sup>.

#### **Anatomy and development of the salivary glands :-**

Parotid gland starts developing between 4<sup>th</sup> to 6<sup>th</sup> week of intrauterine life, the submandibular gland starts developing by the 6<sup>th</sup> week of intrauterine life, minor glands along with sublingual glands start developing by 8<sup>th</sup> to 12<sup>th</sup> week of intrauterine life. Parotid gland is found to be ectodermal in origin and submandibular and sublingual glands are endodermal in origins. The parotid gland is the largest salivary gland which is present in the oral and the maxillofacial region. It is composed of fat tissue and is encapsulated and the cells of the parotid gland secrete only serous fluid, the duct of the parotid gland is known as the Stensen's duct, which opens opposite to the maxillary second molar. Parotid gland is mainly serous gland and secretes mainly watery serous saliva<sup>5-11</sup>.

The submandibular gland is located along the side of the lower jaw bone in the anterior aspect of the digastric triangle. The major duct of the submandibular gland is known as the Wharton's duct which opens in the floor of the mouth at the side of the lingual frenum. It gives mixed secretions i.e. both serous and mucous. Sublingual gland is the smallest among the major salivary glands, it is present above the mylohyoid and below the floor of the mouth. The secretions from the sublingual salivary glands drain into the oral cavity via duct known as Bartholin's duct. The secretion from the sublingual salivary gland is being mixed in nature<sup>9-12</sup>.

Salivary glands are classified into two different types, first is according to the size, they are classified as major salivary glands and minor salivary gland. Parotid, submandibular, sublingual come under the category of major salivary glands. And labial, buccal, glossopalatine, palatine and lingual glands come under the category of the minor salivary glands.

And according to type of secretion of the salivary glands, they are classified as serous, mucous and mixed, depending on the type of the secretion. Parotid and von Ebner glands fall under the category of the purely serous glands, on the other side glossopalatine, palatine and anterior lingual glands fall under the category of the purely mucous glands. And the submandibular, sublingual, labial, buccal and posterior lingual glands fall under the category of the mixed salivary glands<sup>15</sup>.

#### **Various disorders of the salivary glands are as follows :-**

Atresia comes under developmental disorders, it is the absence of salivary gland duct congenitally or occlusion of the salivary gland duct congenitally, which may lead to conditions known as xerostomia and mucous retention cyst. Other than this, second condition is aplasia, which is congenital missing of one or more salivary gland, which also leads to condition in which there is reduced salivary flow in the oral cavity, condition known as xerostomia. In this condition patient is more prone to develop dental caries. According to a recent study, mutation of FGF10, which results in affecting the signaling of the receptor has been linked with this condition.

Aberrancy is the other developmental condition in which the salivary gland develops normally, but in an abnormal position, for example Stafne's bone cyst or Stafne's bone cavity, which is found on the lingual surface of the mandible in the depression. This lesion can not be diagnosed in routine examination as it causes no discomfort to the patient<sup>8-14</sup>.

Conditions which come under functional disorders are as follows :-

Xerostomia, it can be defined as the subjective sensation of dryness of the oral cavity, that may be associated with reduction of the salivary flow or may not be associated with the reduction of the salivary flow. There are various etiological factors, which are responsible for this condition, like psychological causes, depression and anxiety. There are various drugs which result in the reduction of the salivary flow, which includes anti-cholinergic drugs, anti-hypertensive drugs, anti-histamines, anti-depressants like amitriptyline, anti-psychotic drugs like diazepam, anti-parkinsonian drugs like procyclidine, hyoscine which comes under the category of anti-emetics, anti-spasmodic drugs like tizandine. Some drugs that produce more viscous saliva with reduced salivary volume are nasal decongestants, bronchodilators and amphetamines.<sup>6-9</sup>

Other conditions like sialadenitis, in which there occur inflammation of the salivary gland, acute infections like mumps, post operative parotitis, swelling of the gland related to nutritional deficiency, and hypersensitivity to iodine leads to the situation of hypo salivation.

Permanent causes includes aplasia of the salivary gland, sjogrens syndrome, which includes dryness of the eyes, dryness of the mouth and often associated with rheumatoid arthritis. Other disorders which may cause permanent dryness of the mouth includes parkinson's disease, cystic fibrosis of the gland, deficiency of vitamin A, deficiency of riboflavin, deficiency of nicotinic acid. Surgery to the salivary gland duct or trauma to the duct of the salivary gland results in permanent hyposalivation. Radiotherapy also results in hyposalivation of the gland, when radiation dose is more than 3000cGy, irreversible effects occurs if the dose is more than 6000cGy. It has been seen that changes has been observed in the composition of the saliva after the radiotherapy, decreased secretory IgA in saliva along with decreased buffering capacity of the saliva<sup>11-16</sup>

#### **Different signs and symptoms : -**

Atrophic lips and the lips are often cracked, mucosa on the buccal side is found to be pale and corrugated, tongue can be cracked or fissured or even smooth, but the tongue is inflamed along absence of papillae, appearance of dental caries, erythematous form of candidiasis is so common with hyposalivation, the saliva is viscous and sticky which results in difficulty in speaking as well as patient complaints of bad breathe from the mouth, otherwise known as halitosis, patient also complaints of altered taste sensation with inflammation of the gingiva. Patient complaints of burning sensation over the tongue and over the buccal mucosa. There will be enlargement of the salivary glands, dental prosthesis like complete denture, removable partial dentures are difficult to hold, due to hyposalivation or due to absence of saliva<sup>7-11</sup>.

#### **Various diagnostic approaches for salivary gland disorders are as follows : -**

Salivary gland is one of the main soft tissue which is presented in the oral and maxillofacial region, imaging plays an important role in the diagnosis of the salivary gland disorders.

Conventional radiography plays limited role in the diagnosis of the salivary gland disorder, conventional radiography helps in only detecting any type of obstruction like salivary stone in the ducts of the glands. Sialography can be used as an alternative in the detection of salivary gland disorders, this technique utilizes contrast medium to delineate the ductal system of the gland, due to the usage of contrast medium this technique is contraindicated in acute cases of salivary gland disorders. However technique of sialography can be used in assessment of salivary gland dysfunction. Magnetic resonance sialography can be used in assessment of the hypo functioning of the salivary gland. Sialoendoscopy helps in detecting anomalies related to ductal system of the salivary gland.

Other techniques like ultrasonography, computed tomography and magnetic resonance imaging is found to be so much effective in detecting the parenchyma of the salivary gland.

#### **Conclusion: -**

Saliva itself reflects the physiological state of the body. Definitive treatment depends on the definitive diagnosis. Treatment depends upon the size, extent, cause and severity along with other clinical consideration. Saliva can be used as a diagnostic tool for the detection of early disease of the oral cavity like, dental caries, periodontal diseases, salivary gland disorders. Clinician should have a thorough knowledge of all the various diagnostic tools. Their limitations and contraindications to come to the final and exact problem to establish the treatment plan.

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