# **Oral Histology Assignment**

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# **Topic : General pathology of salivary glands**

#### **Salivary gland anatomy**

We differentiate between the paired major salivary glands

parotid gland, submandibular gland and sublingual gland

They are the single minor salivary glands (approx. 700-1,000) in the mucosa of lips, cheeks and throat.

All of them have a similar histological structure with combined ductal and acinic units in common.

The glands are differentiated on the basis of the structure of the acini (acini produce saliva);

1. **serous** [parotid gland, posterior serous glands of the tongue (Ebner)],
2. **sero-mucous** [submandibular gland, sublingual gland, anterior mixed lingual glands and minor salivary glands of the lips and cheeks
3. **mucous** salivary glands [in the palate, posterior mucous lingual glands (Weber)].

 Myoepithelial cells with their contractile properties are an important histological element.

#### **Physiology of saliva production**

The production of saliva is subject to numerous factors influencing both the quantity and the composition of saliva.

The average volume of secretion amounts to 1.5 l / day.

Saliva contains immunoglobulins, electrolytes and enzymes (such as α amylase etc.).

The main functions of saliva are to transport and digest food and to protect the oral mucosa and the teeth, especially against infection. Furthermore, salivary flow prevents periodontitis and caries. In old age, the production of saliva decreases and the quality of the saliva is changed.

### **Clinical Consideration:**

### **Disturbed saliva secretion**

Too little production or atypical composition of saliva, above all associated with diseases of the large salivary glands, and subsequent disturbed secretion are generally referred to as **dyschylia**.

Increased secretion of saliva (**hypersalivation, ptyalism or sialorrhoea**) are associated with sialadenitis, occur following tooth extraction and are associated with psychiatric and neurological disorders (Parkinson's disease, schizophrenia, epilepsy, mercury poisoning).

Decreased secretion of saliva is referred to as **hyposialia**, lack of secretion as **asialia**; the result is dry mouth (**xerostomia**). A deficient amount of saliva favours stone formation (sialolithiasis) in and inflammation (sialadenitis) of the salivary glands. Oral cavity infection, periodontosis and caries are further complications.

#### **Some causes of xerostomia**

* Central conduction disorders (e.g. depression)
* Drug abuse
* Medication
* Malnutrition
* Radiotherapy
* Auto-immune diseases
* Various forms of anaemia
* Heavy fluid loss
* Highly febrile diseases
* Salivary gland deformities

#### **Medication possibly influencing salivary secretion**

* Analgesics
* Anorexigenics
* Acne preparations
* Antiarthritic agents
* Anticholinergic and spasmolytic agents
* Antidiarrhoic agents
* Anti-emetic agents
* Anti-histaminic agents
* Anti-hypertensive agents
* Anti-Parkinson drugs
* Diuretics
* Psychopharmaceuticals
* Anti-psychotic agents

#### **Clinical symptoms of xerostomia**

* Reddening and atrophy of the oral mucosa
* Caries
* Periodontosis
* Burning tongue (glossodynia; part of burning mouth syndrome)
* Impaired gustatory sense (dysgeusia)
* Disturbed mastication and swallowing

#### **Changes of salivary secretion associated with systemic disorders**

* Diseases of the immune system
- Sjögren's syndrome
- Rheumatoid arthritis
- Graft-versus-host reaction
- Sarcoidosis
- Myasthenia gravis
- Lupus erythematosus
* Metabolic disorders
- Chronic alcoholism
- Liver cirrhosis
- Hyperlipidaemia
- Malnutrition
* Hormonal dysfunction
- Diabetes mellitus
- Thyroiditis
- Acromegaly
- Adrenopathy
* Neurologic and psychiatric diseases
- Parkinson's disease
- Stroke
* Other
- Cystic fibrosis
* The most common problems in the salivary gland occur when the ducts become blocked and saliva cannot drain. Causes include dehydration,
* smoking and exposure to radiation. Most salivary tumors are noncancerous, and small blockages may pass without treatment. Severe cases may require the removal of a salivary gland.
* C**auses**
* The three most common known causes of salivary gland dysfunction are medication usage,radiation therapy and Sjogren's syndrome. Current therapeutic options to treat salivary dysfunction are limited.

**Treatment**

For stones and other blockages of the ducts, treatment often begins with measures such as manual removal of stones, warm compresses, or sour candies to increase the flow of saliva. If simple measures don't relieve the problem, surgery may be required to remove the blockage and/or the affected gland.

##### **Problems with the ducts**

**Sialolithiasis** is a condition in which tiny salivary stones form in the glands. The stones, called sialoliths, are made of calcium.

Some stones do not cause any symptoms, but some block the ducts. The saliva flow is partially or completely stopped. The gland might enlarge, and an infection can develop.influenzae or anaerobic bacteria are usually the cause. The condition is common with elderly people who have salivary gland stones, but infants can develop sialadenitis during the first few weeks of life.

Sialadenitis can become a severe infection if not treated properly.

**Viral infections** such as mumps, flu, Coxsackie viruses, echovirus and cytomegalovirus can make the salivary glands enlarge.

**Cysts** can develop in the salivary glands after injuries, infections, stones or tumors. Sometimes babies are born with cysts in the parotid gland because of a problem with early development of the ears.

##### **Tumors**

Most salivary tumors are benign (noncancerous), but they can also be cancerous. Most salivary tumors grow in the parotid gland.

**Pleomorphic adenomas** are the most common parotid tumor. It grows slowly and is benign. A pleomorphic adenoma begins as a painless lump at the back of the jaw, just below the earlobe. These are more common in women.

**Benign pleomorphic adenomas** can also grow in the submandibular gland and minor salivary glands, but less often than in the parotid.

**Warthin's tumor** is the second most common benign tumor of the parotid gland. It is more common in older men.

**Cancerous (malignant) tumors** are rare in the salivary glands and usually occur between ages 50 to 60. Some types grow fast, and some are slow-growing.

##### **Other salivary gland conditions**

**[Sjögren's](https://www.cedars-sinai.edu/Patients/Health-Conditions/Sjogrens-Syndrome.aspx)****[syndrome](https://www.cedars-sinai.edu/Patients/Health-Conditions/Sjogrens-Syndrome.aspx)** is chronic disease. White blood cells attack the moisture-producing glands such as the salivary glands, the tear-producing glands, and sometimes the sweat and oil glands. Middle-aged women are most affected. Sjögren's syndrome is frequently seen in people who have [rheumatoid arthritis](https://www.cedars-sinai.edu/Patients/Health-Conditions/Arthritis---Rheumatoid-Arthritis-Osteoarthritis-and-Spinal-Arthritis.aspx), [lupus](https://www.cedars-sinai.edu/Patients/Health-Conditions/Lupus.aspx), [scleroderma](https://www.cedars-sinai.edu/Patients/Health-Conditions/Scleroderma.aspx) and [polymyositis](https://www.cedars-sinai.edu/Patients/Health-Conditions/Polymyositis-and-Dermatomyositis.aspx).

**Sialadenosis** is a painless enlargement of the salivary gland without a known cause. The parotid is usually the affected gland.