

Sri Aurobindo College of Dentistry

Indore, Madhya Pradesh
INDIA



MODULE PLAN

- TOPIC :SALIVARY GLAND DISORDERS
- SUBJECT: OMDR
- TARGET GROUP: UNDERGRADUATE DENTISTRY
- MODE: POWERPOINT – WEBINAR
- PLATFORM: INSTITUTIONAL LMS
- PRESENTER: DR.NAVDEEP JOHAR

CLASSIFICATION OF SALIVARY GLAND DISEASES

I. *Developmental*

1. Aplasia—absence of the gland
2. Atresia—absence of the duct
3. Aberrancy—ectopic gland

II. *Enlargement of the gland*

A. Inflammatory

1. Viral: Mumps, coxsackie A, CMV, echovirus, parainfluenza virus I and influenza virus
2. Bacterial
3. Allergic
4. Sarcoidosis
5. Obstructive

B. Non-inflammatory

1. Autoimmune: Sjögren's syndrome and Mickulicz's disease
2. Alcoholic cirrhosis
3. Diabetes mellitus
4. Nutritional deficiency
5. HIV associated

III. *Cysts*

1. Extravasation cysts
2. Retention cysts
3. Ranula

IV. *Tumours of salivary glands*

A. *Benign tumours:*

- Pleomorphic adenoma
- Warthin's tumour
- Basal cell adenoma
- Myoepithelioma
- Canalicular adenoma

- Ductal papilloma

B. *Malignant tumours :*

- Mucoepidermoid carcinoma
- Adenoid cystic carcinoma
- Malignant pleomorphic adenoma

V. *Necrotizing sialometaplasia*

VI. *Salivary gland dysfunction*

1. Xerostomia
2. Sialorrhea

SIALORRHOEA OR PTYALISM

- It is excessive salivation seen in affected patients.
- It can be mild, intermittent or continuous profuse drooling.
- This condition is not so common and can occur due to various causes.
- Minor sialorrhoea can be seen due to local irritation like aphthous ulcers or ill fitting dentures.
- Idiopathic paroxysmal sialorrhoea will have short episodes for 2- 5 minutes.

Profuse salivation is seen in :

- Rabies,
- Heavy metal poisoning
- Certain medications like lithium and cholinergic agonists.
- Mentally retarded children
- Neurologically disabled persons (cerebral palsy)
- After the resection of the mandible, because of poor neuromuscular control.

Treatment :

- The treatment is conservative.
- Anticholinergic medication (atropine).
- Behavioural modification, physical therapy.

XEROSTOMIA

- This is a subjective sensation of a dry mouth.
- It affects women more than the men, and seen more commonly in older people, because of decreased glandular secretion due to ageing as well as due to some medications which reduce the secretion.

Causes :

1. Drugs such as antihistamines, decongestants, antidepressants, antipsychotics, antihypertensives, anticholinergics
2. salivary gland aplasia
3. ageing
4. excessive smoking
5. mouth breathing
6. local radiation therapy
7. Sjögren's syndrome
8. HIV infection

Clinical Features :

- Dry mouth with foamy, thick, ropy saliva can be noticed.
- The tongue may have leathery appearance and fissures with atrophy of the filiform papillae.
- These patients are more prone for oral candidiasis due to reduction in cleansing and antimicrobial action of saliva.
- Dental decay is more with more of cervical and root caries.

Treatment :

- It is mainly conservative which includes maintenance of oral hygiene, use of sialagogues(pilocarpine), modification of medications in elderly patients may help to improve the condition.

SIALOLITHIASIS

- It is the formation of sialolith (salivary calculi, salivary stone) in the salivary duct or the gland resulting in the obstruction of the salivary flow.
- The sialolith is a calcified mass within laminated layers of the inorganic material. It results from the crystallization of salivary solutes.
- The sialolith is yellowish white in color, single or multiple, may be round, ovoid or elongated.

- Though any of the salivary duct may be obstructed by the formation of the sialolith, about 90% of the sialoliths form in the submandibular gland.
- The minerals are various forms of calcium phosphate like hydroxyapatite, octacalcium phosphate etc.

Clinical Features :

- May occur at any age; common in the middle aged persons.
- When a duct of the major gland is involved, there is pain with the psychic stimulation of the salivary flow.
- Patients complain of pain and swelling during and after eating the food.
- The obstruction of the duct by the sialolith causes prevention of salivary flow and increased pressure producing the pain.

Investigation :

A. Radiographs :

1. AP view, Lateral, Lateral Oblique or
2. Occlusal view.

B. Sialography :

The radiographs demonstrate the presence of salivary calculi; which can be appropriately located by the sialography.

Complications :

1. Bacterial infection of the gland may result in the obstruction of long duration.
2. Sialoangiectasis: Dilatation of the gland and the duct system can happen because of the stasis of the saliva.
3. The retention of the saliva may result in the formation of mucoceles, especially the mucous retention phenomenon.
4. Rarely, the complete obstruction of the duct may result in the atrophy of the gland.

Management :

- The smaller sialoliths, which are located peripherally near the ductal opening may be removed by manipulation. (Called milking the gland)
- Larger sialoliths are surgically removed.
- Sometimes, the stones, which are not impacted, may be extracted through the intubation of the duct with fine soft plastic catheter and application of the suction to the tube.
- Multiple stones or stones in the gland require the removal of the gland.
- Piezo electric shockwave lithotripsy can be used to fragment the salivary stones. The fragments pass through the duct, as the salivary flow is stimulated and enhanced by the use of sialogogues.

MUCOCELE

- The cysts of the salivary glands are known as “MUCOCELES”.
- This is a swelling due to the accumulation of saliva, as a result of obstruction or trauma to the salivary gland ducts.
- **Types**
 1. Extravasation type
 2. Retention type.
- These two types differ in the pathogenesis. The extravasation type is the common one.

Pathogenesis

- **Mucous extravasation cyst** : is caused by trauma leading to the laceration of the duct, commonly of the minor salivary glands, resulting in extravasation of the mucin into the connective tissue.
- The mucin leads to inflammation , which result in the formation of the granulation tissue, which actually forms the wall of these extravasation cysts (no epithelial lining is

- **Mucous retention cyst** :In this case, it is the obstruction of the salivary duct commonly because of a sialolith or may be due to peri ductal scar, or impinging tumour, resulting in the accumulation of the saliva in the duct.
- This leads to the dilatation of the duct resulting in a cyst like lesion.
- These cysts may show the presence of ductal epithelium histologically.

Clinical features :

- Mucocoeles occur as painless swellings, which may be recurrent.
- The common sites of occurrences of mucocoeles, especially the extravasation type, are the lower lip and tongue, as they are the common sites for the trauma of the minor salivary glands.
- The retention type of mucocoele is less common and rarely occurs in the lower lip. Instead, it occurs in palate, cheek, floor of the mouth and maxillary sinus.
- The extravasation type occurs in 2nd decade and also in children. The retention type occurs in the middle aged persons.

Based on the location clinically, there are 2 types of mucoceles:

1. Superficial

2. Deep type.

- The superficial mucocele resembles a vesicle or a bulla. bluish translucent in colour. They are fluctuant. Usually these cysts are 4 mm to 1 cm in size. The wall is very thin and they rupture easily.
- The deep mucoceles are covered by normal appearing mucosa. They are firm, well-circumscribed lesions and are present for longer period. Some lesions regress and enlarge periodically.

Differential Diagnosis

1. Salivary gland neoplasms
2. Vascular malformation
3. Neurofibroma
4. Lipoma

Treatment

Mucoceles are treated by surgical excision.

RANULA

- It is a special type of mucocele, which occurs in the floor of the mouth.
- Since the lesion appears like the belly of a frog, it is called 'ranula'. (Rana-frog)
- Ranula is formed because of the trauma to sub-mandibular or sub-lingual ducts.

- It starts as a painless swelling on one side of the floor of the mouth.
- The swelling is fluctuant, and non-pitting on pressure.
- It may be superficial or deep to the mylohyoid muscle.
- Superficial ranulas have bluish translucency, the deep ones have the colour of the mucosa, soft in consistency and freely movable.
- When the size of the lesion is significantly large, it may produce the medial deviation and superior elevation of the tongue.
- A rare variety, which herniates through the mylohyoid muscle resulting as the swelling of the neck is called “plunging ranula”.

Treatment :

- Large ranulas may be marsupialized.
- Due to large size of the ranulas, the mucosa, which is thinned out ultimately, ruptures when injured.
- The mucoid fluid spills into the connective tissues. As the area heals, the fluid accumulates, thus ranula may show remissions and reappearances.

SIALADENITIS

- Inflammation of the salivary glands is known as sialadenitis.
- Causes :
 1. Viral infections,
 2. Bacterial infections,
 3. Allergic reactions
 4. Systemic diseases.
- It may be acute or chronic.

VIRAL INFECTIONS

- Mumps (epidemic parotitis) is the most common viral infection affecting the salivary glands; which is caused by a paramyxovirus.
- It is an acute, contagious disease, usually affecting the parotid gland.
- This disease is self-limiting and not dangerous.
- It is a disease of the childhood, but when it affects the adults, it leads to greater complications.
- Incubation period : 2-3 weeks.

CLINICAL FEATURES :

Initially

- mild fever,
- headache,
- chills,
- vomiting,

followed by

- pain below the ear
- sudden onset of firm, rubbery or elastic swelling of the salivary glands, frequently elevating the ear lobe.
- In viral parotitis, glands of both the sides enlarge, which may be simultaneous or one following the other in 24-48 hrs.

Complications

- 1. In adults, this viral disease may lead to the inflammation of gonads and central nervous system.
- 2. In case of secondary infection, it leads to bacterial sialadenitis.

Investigations:

- In acute phase, the serum amylase level is increased.
- Demonstration of the antibodies may confirm the disease.

Management

- It is self-limiting.
- Symptomatic relief can be given by antipyretics. Antibiotics can be given to prevent the secondary infection.

ACUTE BACTERIAL SALADENITIS

- The commensal organisms such as Staph. aureus, Staph. pyogenes, Strep. viridans, Pnuemococcus, Actinomycetes, etc. can cause the bacterial sialadenitis.
- It affects either the neonate and children or debilitated adults with poor oral hygiene.

Clinical features :

- Sudden onset of pain at the angle of the jaw, which is unilateral.
- The affected gland is enlarged and tender and extremely painful.
- The inflammatory swelling is very tense.
- The overlying skin is warm and red.
- There is purulent discharge from Stenson's duct, which can be seen upon pressing the papilla.
- Fever and other symptoms of acute inflammation may be present.

CHRONIC BACTERIAL SIALADENITIS

- Seen in children and adults.
- It may be idiopathic or with factors like duct obstruction, congenital stenosis, Sjögrens syndrome and viral infection.
- The microorganisms are Strep. viridans, E coli, Proteus or Pneumococci. Because these have low virulence, the changes are not sudden.

CLINICAL FEATURES :

- The disease starts as an unilateral swelling at the angle of the jaw.
- The recurrent sialadenitis shows periods of remissions.
- The gland may undergo atrophy, which results in decreased salivary flow

PLEOMORPHIC ADENOMA

- Constitutes 90% of all the benign tumours of the salivary glands.
- It can affect both the major and minor salivary glands; it commonly affects the parotid gland.
- It is believed that the tumour arises from the myoepithelial cell of the salivary gland.
- The different tissue types of both epithelial and connective tissue elements are seen in the tumour giving the name “mixed tumour”.

Clinical features :

- Pleomorphic adenoma most commonly affects the parotid gland, followed by minor salivary glands of the palate, lip, less frequently affects the submandibular gland.
- Majority of the lesions are seen between 4th to 6th decades, more commonly in females.
- The tumour starts as a small painless nodule, either at the angle of the mandible or beneath the ear lobe.

- The nodule slowly increases in size, which may characteristically show intermittent growth.
- The tumour is well-circumscribed, encapsulated, firm in consistency, and may show areas of cystic degeneration.
- The tumour is readily movable without fixity to the deeper tissues or to the overlying skin.
- The tumour can grow to a very large size, but doesn't ulcerate.
- Intraoral tumours such as palatal pleomorphic adenoma are noticed early as they pose problem in speech and swallowing.

Differential diagnosis

1. Other adenomas like Warthin's tumour
2. Lipoma
3. Hyperplastic lymph nodes
4. Neurilemmoma of the facial nerve.

Confirmation of the diagnosis is done by biopsy.

Treatment :

- Surgical excision.
- The parotid tumours are removed with adequate margins, whereas the intraoral lesions can be treated little more conservatively.
- In case of submandibular tumours, excision of the gland with the tumour is performed.

WARTHIN'S TUMOUR (PAPILLARY CYSTADENOMA LYMPHOMATOSUM)

- This benign tumour affects the parotid glands.
- Usually males are affected more commonly; in the 5th decade.

Clinical features :

- The tumour is seen as a firm non-tender, circumscribed mass in the region of angle or ramus of the mandible or beneath the ear lobe.
- Though both side parotid glands may be affected, the swelling might start on one side following the other.

MUCOEPIDERMOID CARCINOMA

- This malignant tumour of the salivary glands is famous for its varied biologic activity.
- It is graded into low grade, intermediate grade and high grade .
- The low-grade tumour behaves almost like a benign tumour with very good prognosis, whereas the high-grade tumour behaves very aggressive.
- It occurs with an equal distribution between males and females.

- The clinical features depend upon the grade of the tumour.
- It may grow slowly or rapidly; usually as a painless swelling of the parotid or other major salivary gland, or in the minor salivary glands.
- Intraorally, it may affect the minor glands of the palate, buccal mucosa, tongue and retromolar areas.
- The high grade tumour may produce pain, ulceration or facial paralysis, local destruction and metastasis to regional lymph nodes and distant metastasis to the lung, bone and to the brain in later stages.
- It's common for intraoral mucoepidermoid carcinoma to undergo cystic degeneration thus mimicking a mucocele clinically.

INTRAOSSEROUS MUCOEPIDERMAL CARCINOMA

- Mucoepidermal carcinoma can occur intraosseously within the jawbones; commonly in the mandible.
- The entrapped mucous glands, the epithelial cells of the odontogenic cysts or aberrant salivary glands present intraosseously may undergo neoplastic transformation.
- These tumours are similar in the behavior to the extraosseous variety.

Treatment :

- The tumour should be surgically excised,
- The excision should be more radical than for pleomorphic adenoma.

NECROTIZING SIALOMETAPLASIA

- It is an inflammatory lesion of unknown aetiology, which affects the minor salivary glands.
- Trauma leading to ischaemia, acinar necrosis and squamous metaplasia of the ductal epithelium is thought to be the pathogenesis.
- Since the lesion mimics a malignant lesion, both clinically and histologically, the diagnosis should be carefully done.

Clinical Features:

- Commonly occurs in men in 5th and 6th decade.
- Minor salivary glands of the palate; lip or retromolar pad may be affected.
- The lesion occurs as a large ulcer or ulcerated nodule, which is well demarcated from the normal tissue.
- The edge of the lesion presents with an inflammatory reaction.

Management

- 1. Debridement by hydrogen peroxide or saline
- 2. Application of gentian violet
- 3. The lesion is self-limiting one and heals in 6-8 weeks.