Swellings of the Palate: A Review

Srishti Chatterjee

Intern, Institute of Dental Sciences, Siksha O Anusandhan (Deemed to be University), Bhubaneswar, Odisha, India,751003

Abstract

The palate which forms the roof of the mouth can be divided anatomically into hard and soft palates. These areas are actively involved with feeding and speech. The posterior part of the hard palate consisting of the minor salivary glands is a common site for palatal swellings. However, these are quite challenging for the clinician to diagnose and because of the importance of the oral cavity in terms of both function and cosmetics, management of such swellings requires a thorough understanding of the lesion and its progression. This article reviews the various palatal swellings in terms of their etiologies, clinical features, diagnosis, and management.

Keywords: *Mouth, Soft Palate, Hard Palate, Minor Salivary Glands, Speech.*

Introduction

The palatal anatomy comprising of the hard and soft palate is actively involved with feeding and speech. The hard palate consisting of the minor salivary glands is a common site for palatal swellings.[1]

The palatal swellings may originate from various structures within or beyond the palate and have different etiologies. They are painful when infected or painless when benign. The congenital swellings are associated with unerupted teeth and torus palatinus. The acquired conditions would include – salivary gland neoplasms, dental abscesses, epithelial and connective tissue neoplasms, and fibro-osseous lesions. These swellings are examined clinically by inspection and palpation. Further radiographic aids using panoramic radiographs and histological examination with a biopsy helps to arrive at a specific diagnosis.[2]

Corresponding Author:
Srishti Chatterjee
Intern, Institute of Dental Sciences, Siksha O Anusandhan (Deemed to be University), Bhubaneswar, Odisha, India,751003
e-mail: srishti29897@gmail.com

A review of the various palatal swellings has been discussed here based on the classification of palatal swellings as given in the table below:

Palatal torus (Plural–Palatal Tori): It is an overgrowth of bone that is seen on the palatal midline on the cruciform suture that joins palatal and maxillary bones.

Etiology: Idiopathic and multifactorial with the involvement of both genetic and environmental factors such as masticatory hyperactivity and parafunction.

Clinical features: Palatal Tori is asymptomatic, unless secondarily infected and is generally discovered during routine clinical examination. It is more common than the mandibular tori with a predilection for females than males in the age group of 10 – 30 years. The shapes may vary between flat, nodular, fusiform, or lobular with a size range of 2–6 mm. The most common, however, is flat shaped one with a smooth and symmetrical distribution. The overlying mucosa is thin and less vascularized.[2]

Radiographic features: For radiographic identification, CT is the preferred choice. Radiographically, it appears denser with limited narrow space & less osteoblastic activity. Cloudyradiopacities can also be seen superimposed on teeth contour.

Treatment: Palatal tori is a benign maxillary bone tumor which is slow-growing & painless. Thus, it can be left as it is. In case of problems such as ulceration during mastication, inadequate maintenance of oral hygiene due to food accumulation, psychological fear of malignant transformation, and difficulty in speech, surgery can be opted followed by prosthesis.

Table 1: Classification of palatal swellings

Etiology	Associated swelling
1. Developmental	Palatal Torus
2. Inflammatory/Reactionary	1. Palatal abscess 2. Inflammatory papillary hyperplasia 3. Fibroepithelial polyp 4. Pyogenic Granuloma 5. Adenomatous Hyperplasia 6. Atypical lymphoproliferative disorder/Follicular lymphoid hyperplasia
3. Cyst	1. Radicular Cyst (Periapical cyst) 2. Dentigerous cyst 3. Median anterior maxillary cyst (Nasopalatine cyst) 4. Median palatal cyst 5. Incisive canal cyst 6. OKC
4. Neoplasms	**a. Salivary gland** 1. Pleomorphic Adenoma 2. Adenoid Cystic Carcinoma 3. Mucoepidermoid carcinoma 4. Polymorphous Low-Grade Adenocarcinoma 5. Carcinoma ex-pleomorphic adenoma 6. Necrotizing sialometaplasia **b. Odontogenic** 1. Ameloblastoma 2. Adenomatoid odontogenic tumour 3. Odontogenic myxoma **c. Others** 1. Fibrous Histiocytoma 2. Schwannoma 3. Neurofibroma 4. Lymphoma 5. Osteosarcoma 6. Chondrosarcoma 7. Fibrosarcoma

Palatal Abscess: These abscesses generally involve the palatal roots of the posterior teeth, being bounded by the cortical plates of hard palate inferiorly, periosteum of bone superiorly and alveolar process of maxilla and teeth laterally. They may occur because of periodontal abscesses in the palatal pockets or apical abscess in the palatal roots of posterior teeth.

Clinical Features: It appears as a well-circumscribed fluctuant or tense palatal swelling associated with pain, fever and poor oral hygiene. It is located in premolar – molar region, mostly laterally and rarely towards the midline of the palate which then becomes difficult to diagnose.

Treatment: Treatment involves incision and drainage through the mucosa of the bone. Hopeless teeth may require extraction followed by antibiotic therapy.

Inflammatory papillary hyperplasia (also Palatal epithelial hyperplasia, papillary hyperplasia of the palate, palatine papillomatosis)

It may occur due to – poor denture hygiene, frictional irritation due to ill-fitting dentures, suction chamber in palatal seating, amalgam filling material, and *Candida albicans*.

Clinical features: It does not have any predilection for age or sex, appearing exclusively on palatal mucosa under dentures with a warty appearance. They are small, painless, papular, or polyploid masses which can be red and soft (inflammatory stage) or firm and pale pink (fibroid), thus giving an 'overripe berry appearance' or 'cobblestone appearance'.

Treatment: This involves – removal of dentures at night to rest tissues or use of tissue liners; and surgical removal by curettage, electro/cryosurgery and microabrasion in fibrosed cases.

Pyogenic granuloma[6,7,8]: (Also granuloma pyogenium)

It is the most common benign growth, first described by Huliken in 1844. It is considered to be a clinical entity that resembles a tumor originating due to the response of tissues to minor trauma or any specific infection in which there is a proliferation of fibrovascular connective tissue. It is mostly caused by the microorganisms – Streptococci and Staphylococci during trauma to gingiva. Other causes include local irritants like calculus and hormonal changes.

Clinical Features: It usually occurs between the 2nd and 4th decade with a predilection for females. The most common site is gingiva, followed by the tongue, lips, buccal mucosa, and interdental papilla. The symptom includes nodular growth with a smooth, lobulated, or warty surface. The color varies from red to reddish-purple depending upon the vascularity of the lesion. It has a moderately soft consistency which bleeds readily. The Surface is mostly ulcerated with a discharge of pus sometimes.

Diagnosis: Clinical manifestation of a Reddish-purple lesion which is soft inconsistency. The laboratory diagnosis by biopsy would show the presence of localized granulation tissue with the overlying epithelium being thin, atrophic & hyperplastic.

Treatment: The adjacent tooth should be scaled properly to remove calculus as irritation might lead to recurrence.

Radicular cyst (Also special periodontal cyst, Dental root end cyst, Periapical cyst)

Radicular cyst is the most common inflammatory cyst of odontogenic origin which is a common sequela of bacterial invasion and death of the pulp. It can be defined as "Slowly growing epithelial sac at the apex of a tooth lining a pathologic cavity in alveolar bone whose lumen is filled with a low concentration of proteinaceous fluid".[9]

Clinical Features: It occurs during the 3rd – 4th decade of life with a predilection for males. It is more common in the maxillary anterior teeth due to the occurrence of caries and trauma. The patient reports with a non-vital tooth which is non-tender on percussion and has no response to electrical/thermal stimuli. There is a previous history of pain. The signs include – non-tender expansion of cortical bone in curved/circular shape with the presence of intra-oral & extra-oral swelling where consistency is bony hard with crepitations. The adjacent tooth might be displaced due to pressure from the cyst and become mobile.

Radiographic Features: Appearance of a unilocular rounded/pear-shaped radiolucency at the apex of the affected tooth on the mesial/distal root surface at the opening of an accessory canal about 1.5 – 3 cm in diameter with smooth well-defined borders.

Treatment: Root canal treatmentis the treatment of choice to establish drainage which subsides the inflammation and fibroblast starts producing collagen again which decreases the blood supply to epithelial cells, ultimately getting degenerated and removed by macrophages. Other options include – Extraction of hopeless tooth or enucleation and marsupialization of large lesions.

Dentigerous cyst (Also known as Follicular cyst, pericoronal cyst)

It is the most common type of odontogenic cyst enclosing the crown of the unerupted teeth. Discovered by intra-oral radiograph because of a missing tooth or tilted tooth or tooth out of alignment. Its origin can be traced to fluid accumulation in the Reduced Enamel Epithelium. This causes the proliferation & cystic transformation of epithelial islands in the connective

tissue wall of the dental follicle.

Clinical Features: It is most common in children and adolescents in the 2nd and 3rd decade with a predilection for males. The most commonly involved sites are mandibular 3rd molar & maxillary canines. It is usually asymptomatic unless secondarily infected. The cyst may expand to compress sensory nerves resulting in referred pain which may be perceived as headache. There is progressive painless enlargement of jaws with facial asymmetry. Displacement of teeth and pathologic fracture might occur.[11]

Radiographic Features: A mostly unilocular well-defined radiolucency around the unerupted tooth with hyperostotic well-defined borders unless infected.

Treatment:

i. Surgical treatment:
   a. If small, it should be removed.
   b. If large, surgical drainage should be done followed by marsupialization.
ii. Orthodontic treatment should be done to keep the tooth in place.

Odontogenic Keratocyst (OKC): OKC can be defined as "a cyst derived from the remnants of the dental lamina with a biologic behavior similar to a benign neoplasm with a distinctive lining of 6 – 10 cells in thickness that exhibits a basal cell layer of palisaded cells & a surface of corrugated parakeratin". It was first described by Mikulicz in 1876.

Clinical Features: This is more common in males between 10 – 20 years of age with a predilection for blacks and mandible with its ramus and body amongst sites. The common symptoms are pain, swelling in antero-posterior detection, soft tissue drainage, and at times paresthesia of lower lip. There may be chances of downward displacement of the alveolar canal along with teeth being deflected into ascending ramus or orbital floor.[12]

Radiological Findings: Radiolucency is mostly unilocular with a scalloped border. Multilocular radiolucency representing a central cavity with satellite cysts can also be present.

Management:

i. Enucleation – followed by vigorous curettage of the cystic cavity is the most satisfying method of removal of cysts without damaging any adjacent structure.
ii. Marsupialization – indicated in the case of large cysts.
iii. Peripheral osteotomy – is done to reduce recurrence.
iv. Chemical cauterization – with Carnoy's solution.
v. Decompression with the help of polyethylene drainage tube kept in the bony cavity.

OKC has a high recurrence rate because of – the presence of satellite cysts, difficulty in the enucleation of thin and friable lining, intrinsic growth potential, and basal cell proliferation.

Median anterior maxillary cyst (Also nasopalatine duct cyst, nasopalatine canal cyst, and vestigial cyst)

Its etiology can be – developmental, due to trauma, bacterial infection, mucous retention, or genetic factors. The nasopalatine duct degenerates progressively during development and the presence of epithelial remnants give rise to nasopalatine duct cyst.

Clinical Features: It is among the most common developmental, non-odontogenic cysts with a 3:1 male predominance and affecting people between 40 – 60 years of age. It is located specifically in the midline of the anterior maxilla and appears as a swelling associated with pain, discharge, and salty taste in the mouth. It may perforate the palatal bony plate and cause tooth displacement. It is often associated with burning sensation and numbness as the nasopalatine nerve is affected.

Radiographic Features: A heart-shaped radiolucency can be observed superimposed over apices of the central incisors along with erosion of bone posterior to the canal.

Treatment: Enucleation through a palatal or buccal approach is advised unless there are clinical symptoms.

Median palatal cyst: It can be described as a posterior extension of the incisive canal cyst which arises due to entrapment of epithelium along the line of fusion of the palatal process of the maxilla.

Clinical Features: Its incidence is rare and without any sexual predilection, mostly occurring in adults. It is situated along the midline of the palate to produce an

asymptomatic but definite clinically visible swelling which on aspiration gives an amber-colored fluid.

Radiographic features: It shows a well-circumscribed radiolucent area opposite to bicuspid, molar region, and bordered by sclerotic bony layer.

Treatment: Treatment involves surgical removal of the cyst followed by curettage.

Pleomorphic adenoma (Also Iceberg tumor, Endothelioma, Branchioma, Endochondroma)

It is benign and the most common salivary gland tumor. It was named pleomorphic because of the unusual mixed histologic feature of the lesion. The genetic etiology is a putative pleomorphic adenoma gene (PLAG1) on chromosomes 12.

Clinical Features: It occurs between 30 – 50 years of age with a 3:2 predilection for females. The lower side of the superficial lobe of the parotid gland is the most common site. The palate is involved if minor salivary glands are affected.

The tumor starts as a round/oval painless nodule which slowly increases in size. When the lesion grows medially between ascending ramus and stylomandibular ligament, it acquires a dumb-bell shape. A palatal tumor is generally dome-shaped with a smooth surface found on the lateral aspect of the palate. Sialography provides a ball in hand appearance.[13]

Management: Surgical excision of the tumor along with the involved salivary gland or the overlying mucosa in case of palatal involvement with a 5 – 30% recurrence.[14]

Necrotizing Sialometaplasia: (Also called salivary gland infarction)

First reported by Abrams in 1973, it is a benign, inflammatory, self-healing reaction of salivary gland tissues which manifests itself as a swelling with or without ulceration which both clinically and histologically mimics a salivary gland malignancy. Trauma leading to vascular ischemia, ill-fitting dentures, tobacco intake or spontaneous are some of the etiologies for the disease.

Clinical features: The disease is more prevalent in the 4th and 5th decade of life with a predilection for males. The most common sites are palate, lip, retromolar pad, buccal mucosa and labial mucosa. It begins as a mild swelling which is painless, causing numbness or an area of looseness in palate from where pieces of tissues might fall. It commonly occurs unilaterally, but may also occur bilaterally or in the midline with clean, sharp and indurated margins. The lesion is covered by inflammatory exudate and necrotic debris.

Treatment: It is a self-limiting disease that does not require any treatment with periodic evaluation of the affected site.

Ameloblastoma (also Ademantinoma epithelium, adamantinoblastoma, epithelial odontoma, multilocular cyst)

Robinson defined ameloblastoma as "Benign tumor that is usually unicentric non – functional, intermitted in growth, anatomically benign and clinically persistent". It is the 2nd most common odontogenic neoplasm. It originates from – cells of the enamel organ, cell rests of Malassez, Hertwig's epithelial rest sheath, and epithelium of odontogenic cysts. The etiologies include – irritation, infection, trauma, dietary deficiencies and virus.

Clinical features: It accounts for 11% of all odontogenic tumors, occurring between 20 – 50 years of age with a predilection for males.

Maxillary ameloblastoma spreads more rapidly due to porous bone. Patients report with gross facial asymmetry, pain, paraesthesia and tooth mobility. Eggshell cracking of surrounding thin bone occurs on palpation.[15,16]

Radiologic Features: It appears as a multilocular bony septa described as 'Honeycomb appearance/Soap bubble appearance'.

Treatment: Radicular and conservative surgical excision in combination with Radiotherapy is usually recommended. Chemical or electrocautery can also be preferred.

Lymphoma: It is a neoplastic proliferation within the reticuloendothelial system occurring as a primary tumor of lymph nodes, but not as common as a metastatic tumor. It can be – Hodgkin's lymphoma and Non-Hodgkin's lymphoma.

Clinical Features: Non-Hodgkin's lymphoma is more common, occurring in children and young adults. It appears as firm, elastic swelling with or without

ulceration in gingiva and palate. It may be present unilaterally or bilaterally as a rubbery mass with painful and tender lymph nodes, mostly occurring in the palate. The risk is higher in patients with HIV.

Treatment: Radiotherapy or chemotherapy are the treatments of choice.

Conclusion

Various palatal swellings may have similar clinical features. Thus, the clinician needs to have a thorough knowledge of each of them and alongside make use of other diagnostic aids judiciously to zero in on a specific diagnosis and render appropriate treatment for each of them.

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