
Normal Oral Cavity Findings and Variants of Normal

Foliate papillae/lingual tonsil

Lymphoid aggregates

Varicosities

Fordyce granules

Leukoedema

Exostosis

Torus Palatinus

Torus Mandibularis

Hairy Tongue

Fissure Tongue

Physiologic Pigmentation

1. Foliate papillae/lingual tonsil

Description: The foliate papillae are vertical ridges of lingual papillae located on the posterior lateral surfaces of the tongue. At the base of the tongue are the lingual tonsils, which consist of normal lymphoid tissue. Similar to other lymphoid aggregates, the lingual tonsils may become hyperplastic or tender secondary to local inflammation or infection.

Etiology: The foliate papillae and lingual tonsils are normal anatomic structures

Treatment: No treatment is indicated

Prognosis: Occasionally, inclusion cysts known as oral lymphoepithelial cysts develop in association with foliate papillae and lingual tonsils. These, however, are benign and treated by simple surgical excision.

Differential Diagnosis: Squamous cell carcinoma.



2. Lymphoid aggregates

Description: Lymphoid aggregates are collections of normal or focally hyperplastic lymphoid tissue that may occur anywhere within the oral cavity, but most commonly involve the regions of Waldeyer's ring, which includes the oropharynx, lateral tongue, soft palate and floor of mouth.

Etiology: Oral lymphoid aggregates are relatively common and normal.

Treatment: No treatment is indicated, although biopsy is sometimes necessary to rule out other soft tissue lesions.

Prognosis: As with the lingual tonsils and other lymphoid tissue, oral lymphoid aggregates may become inflamed and tender upon local antigenic challenge. These are typically self-limiting or resolve after management of infection or inflammation.

Differential Diagnosis: Other benign lesions



3. Varicosities

Description: Varicosities are abnormally dilated veins, which are commonly seen in the elderly. They may be seen in any location, but often involve the lips, buccal and labial mucosa and ventral tongue.

Etiology: Unknown, but may be associated with weakening of the vessel wall consequent to aging.

Treatment: No treatment is necessary except for esthetic reasons.

Prognosis: Occasional lesions may become thrombosed. Otherwise, the prognosis is good

Differential Diagnosis: Varicosities at lips may sometimes resemble mucoceles



4. Fordyce granules

Description: Fordyce granules are one of the more common oral abnormalities. In fact, they may best be considered as a variation of normal. They represent ectopic lobules of sebaceous glands.

Etiology: Unknown

Treatment: No treatment is indicated, although biopsy is sometimes performed to rule out other pathology or for patient reassurance.

Prognosis: Excellent

Differential Diagnosis: None



5. Leukoedema

Description: Leukoedema is a benign mucosal abnormality characterized by thickened, edematous epithelium. The condition is recognized most often in African-Americans, although this may be a consequence of background pigmentation. While the condition most commonly involves the buccal mucosa, other sites such as the floor of mouth, lateral and ventral tongue and soft palate may be affected.

Etiology: Unknown

Treatment: The condition is benign and requires no treatment.

Prognosis: Excellent

Differential Diagnosis: While other mucosal alterations may be considered, eversion of the mucosa will result in disappearance of leukoedema and serve as a helpful diagnostic clue.



6. Exostosis

Description: Exostoses are benign projections of bone that arise from the cortex (most often buccal) of the maxillary or mandibular alveolus (While torus palatinus and torus mandibularis are considered to be a variant of exostoses, each is unique and will be presented separately). They are dynamic structures which may slowly change in size in response to stimuli, such as occlusal forces. Exostoses are frequently bilateral.

Etiology: Unknown, although genetic and local factors are believed to play a role in the development of exostoses.

Treatment: Treatment is often unnecessary, although may be indicated in preparation of removable prosthesis or when traumatized and inflamed. If treatment is indicated, surgical removal is curative.

Prognosis: Occasionally, the mucosa overlying exostoses becomes ulcerated and may lead to the development of osteomyelitis. Otherwise, the prognosis is excellent.

Differential Diagnosis: Osteomas, although these are neoplastic processes and show progressive enlargement.



7. Torus palatinus (palatal toru)

Description: The torus palatinus is a variant of the exostosis which develops from the cortical bone of the palatal vault. Like exostoses, they are dynamic structures that may slowly respond to external stimuli and may be quite variable in size and morphology. While some palatal tori present as single bony nodules others may appear nodular or lobular.

Etiology: Similar to exostoses

Treatment: Unnecessary unless characterized by chronic ulceration, osteomyelitis or in preparation for maxillary prosthesis.

Prognosis: Palatal tori are subjected to significant trauma, which may lead to chronic ulceration of the overlying mucosa. Subsequently, osteomyelitis is not uncommon. Otherwise, the prognosis is excellent.

Differential Diagnosis: Typically, the torus palatinus is unique enough to preclude a differential diagnosis.



8. Torus mandibularis (mandibular torus)

Description: Mandibular tori are variants of exostoses that occur, often bilaterally, along the lingual surface of the mandible and arise from the cortex. Like their palatal counterpart and exostoses, they are dynamic structures.

Etiology: Similar to exostoses

Treatment: Unnecessary unless characterized by chronic ulceration, osteomyelitis or in preparation for mandibular prosthesis.

Prognosis: Like palatal tori, the torus mandibularis is subjected to significant trauma, which may lead to chronic ulceration of the overlying mucosa and subsequent osteomyelitis. Otherwise, the prognosis is excellent.

Differential Diagnosis: Osteoma, although a bilateral presentation and lack of progressive enlargement is typically diagnostic for mandibular tori.



9. Hairy tongue

Description: Hairy tongue is a clinical term describing significant elongation of the filiform papillae. The elongation is due to an accumulation of keratin. The condition is often discolored from exogenous sources like coffee or tobacco, or from bacterial pigments. The condition is benign.

Etiology: Hairy tongue often arises in patients with poor oral hygiene in combination with the use of irritants such as hot beverages or smoking. A predominantly soft diet may also be a contributing factor.

Treatment: The condition will often improve by brushing the tongue or with the use of commercial "tongue scrapers." An inverted spoon may also be used to gently remove the superficial keratin.

Prognosis: The prognosis of hairy tongue is excellent, although it may be associated with a bad taste or halitosis.

Differential Diagnosis: There is no significant differential diagnosis to hairy tongue.



10. Fissured tongue

Description: Fissured tongue is a benign condition of the tongue, characterized by the presence of fissures and grooves along the dorsal surface. These may be variable in number, depth and orientation. The condition is seen more commonly in adults than in children. Interestingly, fissured tongue is often seen in combination with erythema migrans (geographic tongue), to be discussed in section 5.

Etiology: Unknown, but heredity seems to play a role in its development.

Treatment: No treatment is necessary for fissured tongue, although optimal hygiene should be encouraged to eliminate food or debris that may become trapped in the deeper grooves.

Prognosis: Excellent, although occasional patients may experience mild burning or irritation.

Differential Diagnosis: Fissured tongue is rather distinct in its clinical presentation and would not likely be mistaken for other entities.



11. Physiologic (racial/ethnic) pigmentation

Description: Physiologic pigmentation is a benign melanosis of the oral mucosa seen in individuals of primarily African or African-American descent. The condition may occasionally be noted in Hispanic and other ethnic populations. The pigmentation is typically generalized and symmetrical, and does not show any abrupt change in size or coloration.

Etiology: The pigmentation is a normal physiologic process.

Treatment: None necessary, although ruling out any of a number of other sources of pigmentation may be necessary.

Prognosis: Excellent

Differential Diagnosis: Addison's disease, smoker's melanosis, drug-related pigmentation, intentional tattooing.



Additional reading

Foliate Papillae/Lingual Tonsil

Fehrenbach MJ, Herring SW. Illustrated Anatomy of the Head and Neck. 2nd ed. W. B. Saunders Company 2002.

Lymphoid Aggregates

Bradley G, Main JHP, Birt BD et al. Benign lymphoid hyperplasia of the palate, J Oral Pathol 16:18-26, 1987.

Neville BW, Damm DD, Allen CM, Bouquet JE. Oral and Maxillofacial Pathology. 3rd ed. Saunders 2009.

Varicosities

Jainkittivong A, Aneksuk V, Langlais RP. Oral mucosal conditions in elderly dental patients. *Oral Dis* 8:218-223, 2002.

Kleinman HZ. Lingual varicosities. *Oral Surg Oral Med Oral Pathol* 23:546-548, 1967.

Fordyce Granules

Daley TD. Pathology of intraoral sebaceous glands. *J Oral Pathol Med* 22:241-245, 1993.

Sewerin I. The sebaceous glands in the lip and cheek mucosa of man. *Acta Odontol Scand* 22(suppl 68):13-226, 1975.

Leukoedema

Martin JL. Leukoedema: an epidemiological study in white and African Americans. *J Tenn Dent Assoc* 77:18-21, 1997.

Van Wyk CW, Ambrosio SC. Leukoedema: ultrastructural and histochemical observations. *J Oral Pathol* 12:319-329, 1983.

Exostoses

Jainkittivong A, Langlais RP. Buccal and palatal exostoses: prevalence and concurrence with tori. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 90:48-53, 2000.

Torus Palatinus (Palatal Torus)/Torus Mandibularis (Mandibular Torus)

Kolas S, Halperin V, Jefferis K et al. The occurrence of torus palatinus and torus mandibularis in 2,478 dental patients. *Oral Surg Oral Med Oral Pathol* 6:1134-1141, 1953.

Suzuki M, Sakai T. A familial study of torus palatinus and torus mandibularis. *Am J Phys Anthropol* 18:263-272, 1960.

Hairy Tongue

Danser MM, Mantilla Gomez S, Van der Weijden GA. Tongue coating and tongue brushing: a literature review. *Int J Dent Hygiene* 1:151-158, 2003.

Sarti GM, Haddy RI, Schaffer D et al. Black hairy tongue. *Am Fam Physician* 41:1751-1755, 1990.

Fissured Tongue

Eidelman E, Chosack A, Cohen T. Scrotal tongue and geographic tongue: polygenic and associated traits. *Oral Surg Oral Med Oral Pathol* 42:591-596, 1976.

Kullaa-Mikkonen A, Sorvari T. Lingua fissurata: a clinical, stereomicroscopic and histopathological study. *Int J Oral Maxillofac Surg* 15:525-533, 1986.

Physiologic (racial/ethnic) Pigmentation

Talebi M, Farmanbar N, Abolfazli S, Sarraf Shirazi A. Management of physiological hyperpigmentation of oral mucosa by cryosurgical treatment: a case report. *J Dent Res Dent Clin Dent Prospects* 6:148-51, 2012.

INTECH

INTECH