



Anatomic findings that are commonly misinterpreted as pathologic entities

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Introduction

Today, more so than at any other time, the dental professional faces an ever increasing emphasis on a thorough clinical examination of each patient.¹ As a result, the dentist is often confronted with a decision to biopsy a lesion exhibiting marginal indicators for a biopsy procedure. In order to avoid any unnecessary procedures and treatments, it is essential to be aware of the many variations in anatomic structures that could be mistaken as pathologic. In so doing, the dentist can avoid patient distress and treatment planning alterations. The intent of this article is to reacquaint the dentist with selected normal anatomic findings that are commonly misinterpreted as pathologic entities.

Soft tissue structures

Fordyce granules, also known as Fordyce spots, are one of the most common soft tissue variations that may be misinterpreted by the clinician. Fordyce granules show no sex or racial predilection and are characteristically yellow-white papular lesions that may be misdiagnosed as fibromas, mucoceles or other minor salivary gland lesions. Fordyce granules, however, are nothing more than intraoral sebaceous glands, located throughout the oral cavity. The buccal mucosa is the most common site with 71 percent of all patients exhibiting signs in this area compared with 53 percent in the retromolar region and 49 percent in the lips.² Additionally, sebaceous glands may be present in the vermilion border of the lips. In this location they may become occluded producing a keratin filled cyst-like structure that may be mistaken for a localized skin infection.³ Unlike the sebaceous glands of hair bearing skin, Fordyce granules rarely undergo pathologic change.^{2,3} No treatment is indicated and, as always, the presence of any unusual or distinctive anatomy should be documented in the patient's record.

Another and perhaps one of the most commonly biopsied normal anatomic structures is the main secretory duct of the parotid gland, Stenson's duct. This duct, with its orifice generally located between the maxillary first and second molars in the buccal vestibule, may be misdiagnosed as a mucocele or any other buccal mucosal soft tissue lesion. Leading to further confusion, Stenson's duct can appear in a variety of sizes, shapes and colors.⁴ Additionally, the duct orifice may show signs of trauma due to its proximity to the teeth resulting in an ulcer or a leukoplakic lesion. When identifying a soft tissue lesion in this area, Stenson's duct should be included in the differential diagnosis. The surgical manipulation of Stenson's duct should be avoided if possible.

Leukoplakia is a clinical description for any white lesion of the oral cavity not further defined. Most patients will at some point have white lesions that are the result of normal function.

However, mucosal leukoplakia may be suspicious for precancerous or cancerous lesions. A logical approach to white lesions of the oral mucosa will assist the dentist to determine whether a lesion needs biopsy to rule out malignancy. One such condition is linea alba. Found in almost every individual to some degree, it is the response of the buccal mucosa to food deflection during mastication. Linea alba presents clinically as a highly variable white lesion and is the result of an increase in the hyperkeratotic layer of epithelium. Extreme cases may take on a strikingly pathologic appearance.⁴ The suspicious area should be closely examined for a potential cause of irritation or friction, such as a rough dental restoration or removable appliance. Removal of the local irritation should result in the reduction of the white lesion and help to confirm the etiology. While linea alba can generally be diagnosed clinically with confidence, a biopsy may be indicated if the lesion is erosive or shows a suspicious outline.

The tongue is another structure that can present diagnostic challenges to the dentist. The surface appearance can vary considerably in both texture and color due partially to the different types of papilla on its surface. Of these, the circumvalate papilla may be confused with a soft tissue neoplasm such as a fibroma or granular cell tumor, the latter having a high predilection for the dorsal tongue. The circumvalate papillae are characterized by their large size and are found on the posterior dorsum of the tongue, anterior to the sulcus terminalis. These papillae, generally numbering 8 to 12, may be distinguished from an abnormality by their characteristic location, distribution, and the distinct deep circular grooves surrounding each papilla. Biopsy of normal papillae should be avoided to prevent damage to the associated taste buds and minor salivary gland ducts.

Commissural lip pits should also be appropriately identified as normal structures of the oral cavity. These pits, usually found on routine examination, present as small depressions at the corners of the mouth near the vermilion border. They are invariably bilateral, show a familial tendency, and are slightly more common in black males.¹ While lip pits are considered developmental, they are more commonly seen in adults and occur in approximately 12% of the population. Commissural lip pits may measure up to 1mm in diameter and in some cases may contain the products of minor salivary glands.¹ Because of their clinical appearance and the fact that they may express fluid, these invaginations may be misinterpreted as infectious sinus tracts. The lack of other signs and symptoms of infection should suggest otherwise, however. These structures have not been shown to have any pathologic significance and unlike lip pits in other locations of the oral cavity, these have no association with syndromes of the head and neck.

Osseous and osseous associated structures

Tori are localized bony protuberances of the jaws with mandibular tori observed in 27% of all researched skulls, and 42% of dentate skulls. A high prevalence is seen among African-Americans as

well as males.⁵ Palatal tori have been found in 20% of the population and are significantly more frequent in Caucasian females at 27% of the population.⁶ Another type of exostosis, the palatal tubercle, is found in 69% of the population as a large, mid-palatal broad-based bony projection.⁵ Other exostoses, formed in various numbers and shapes, are the result of heavy masticatory forces placed on the jaws. Affected patients will often present unaware of their condition as an older adult with extensively worn dentition. The clinician should be aware of the various presentations of exostoses and perform a complete clinical examination. All lesions should be palpated, as those lesions that are not bony hard are more likely to be pathologic. For example, a mass on the midline of the palate that is hard may clinically be diagnosed as torus. In contrast, a mass in the same location that is soft is likely to represent a salivary gland neoplasm. The most common salivary gland neoplasm in this location is a mixed tumor, closely followed by mucoepidermoid carcinoma. This example underscores the difference in patient outcome in relation to a simple diagnostic technique: palpation. While exostoses are occasionally treated, usually in preparation for prosthetics, no treatment is required and they are usually distinctive enough to ensure proper diagnosis without biopsy. Salivary gland neoplasms on the other hand, require treatment potentially incurring morbidity on the patient.

A Stafne defect, or lingual mandibular salivary gland depression, is no longer considered rare and has been reported with some regularity since Stafne's original description in 1942.⁷ The occurrence of the Stafne defect is reported as 0.48% of the population⁸ with the location of these cavities being nearly equally distributed on the right and left sides, and potentially bilaterally.⁸ Most are associated with the angle of the mandible / molar region of the mandible on the lingual aspect. The contents of the defect range from salivary gland tissue, to fibrous connective tissue, to adipose tissue. The defect is asymptomatic and has a predilection for middle-aged or older men.⁹ Rarely, the Stafne defect has been observed in the mandibular anterior and premolar regions and a thorough examination for the possibility of odontogenic lesions or manifestations of systemic disease should be considered. Radiographically, these cavities appear as a unilocular radiolucency with well defined margins below the apical portion of tooth roots. The differential diagnosis for this defect is extensive and may include odontogenic tumors, cysts, or even metastatic disease. Further radiographic or clinical examination of the Stafne defect may assist in ruling out more ominous entities but biopsy is not indicated for characteristic lesions and no treatment is indicated.

Subpontic osseous hyperplasia (SOH) is an entity that deserves mention. SOH is a non-neoplastic proliferation of bone similar to tori but is associated with the pontic of a fixed partial denture. It is believed to be a reactive lesion, however, other radiodense conditions in the jaw may be considered. The differential diagnoses include: benign fibro-osseous lesions, osteomas, osteomyelitis, Gardner's syndrome, and even osteosarcoma.¹⁰ The distinct location of under a pontic, and historical radiographs will help to confirm the diagnosis.

Unusual lesions may require biopsy to confirm the diagnosis but no treatment is required.

Conclusion

Given the possible clinical presentation of the various structures described, it is important for the dentist to be aware of the existence of these anatomic variations in the examination process. Awareness of these entities can save the patient from unnecessary treatment and unwarranted procedures.

References

1. Baker BR. Pits of the lip commissures in Caucasoid males. *Oral Surg Oral Med Oral Pathol.* 1966 Jan;21(1):56-60.
2. Halperin VA, Kolas S, Jefferies KR, Huddleston SD, Robinson HB. The Occurrence of Fordyce Spots, Benign Migratory Glossitis, Median Rhomboid Glossitis, and Fissured Tongue in 2,478 Dental Patients. *Oral Surg Oral Med Oral Pathol.* 1953 Feb;33(4):1072-1075.
3. Sewerin I, Praetorius F. Keratin filled pseudocyst of ducts of sebaceous glands in the vermilion border of the lip. *Journal of Oral Pathol* 1974;3(6):279-283.
4. Marx, RE. *Oral and maxillofacial pathology: a rational for diagnosis and treatment.* Carol Stream, Ill.: Quintessence Publishing Co. Inc.; 2003.
5. Sonnier KE, Horning GM, Cohen ME. Palatal tubercles, palatal tori, and mandibular tori: prevalence and anatomical features in a US population. *J Periodontol.* 1999 Mar;70(3):329-36.
6. Bouquot JE, Gundlach KK. Oral exophytic lesions in 23,616 white americans over 35 years of age. *Oral Surg Oral Med Oral Pathol.* 1986 Sep;62(3):284-91.
7. Miller AS, Winnick M. Salivary gland inclusion in the anterior mandible. Report of a case with a review of the literature on aberrant salivary gland tissue and neoplasms. *Oral Surg Oral Med Oral Pathol.* 1971 Jun;31(6):790-7.
8. Correll RW, Jensen JL, Rhyne RR. Lingual cortical mandibular defects: a radiographic incidence study *Oral Surg Oral Med Oral Pathol.* 1980 Sep;50(3):287-91.
9. Buchner A, Carpenter WM, Merrell PW, Leider AS. Anterior lingual mandibular salivary gland defect. Evaluation of twenty-four cases. *Oral Surg Oral Med Oral Pathol.* 1991 Feb;71(2):131-6.
10. Wasson DJ, Rapley JW, Cronin RJ. Subpontic osseous hyperplasia: a literature review. *J Prosthet Dent.* 1991 Nov;66(5):638-41.

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