

A Solitary Gingival Nodule

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The following Case Challenge is provided in conjunction with the American Academy of Oral and Maxillofacial Pathology.

Case Summary

A 38-year-old Hispanic female presented for evaluation of a gingival nodule of eight months duration. The nodule, which was slightly painful to palpation, had increased in size over time. The patient denied any history of trauma to the area.

After you have finished reviewing the available diagnostic information, make the diagnosis.

Diagnostic Information

Oral Findings

Intraoral examination revealed a one centimeter in diameter, fluctuant, translucent nodule located on the facial gingiva and alveolar mucosa between her mandibular left canine and first premolar (Figure 1). The nodule was slightly tender to palpation. Vitality testing and periodontal probing depths of the adjacent teeth were all within normal limits.



Figure 1. A slightly translucent nodular mass of the facial gingiva between the mandibular left canine and first premolar.

Radiographic Findings

A periapical radiograph of the area was obtained, but no obvious radiographic changes could be identified (Figure 2).

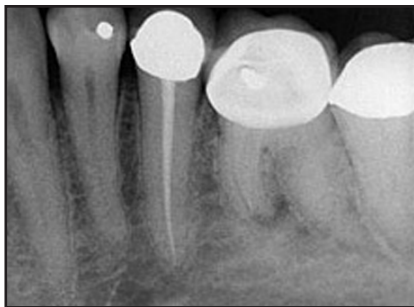


Figure 2. A periapical radiograph of the area failed to show any associated bony changes in the area of the lesion.

Medical History

A review of the patient's past medical history was significant for gastroesophageal reflux disease (GERD) and inflammatory bowel disease. She

took lansoprazole (a proton pump inhibitor) daily for control of her GERD.

Excisional Biopsy and Photomicrograph

A biopsy of the mass was performed under local anesthesia. Upon incision, the swelling deflated and released a small amount of watery fluid. Multiple small, irregular fragments of tissue were removed and submitted for microscopic examination.

The microscopic sections showed a cavity that was lined by a thin layer of epithelial cells (Figure 3). This lining was only one to two cells thick in most areas, but it also demonstrated occasional plaque-like epithelial thickenings (Figure 4).

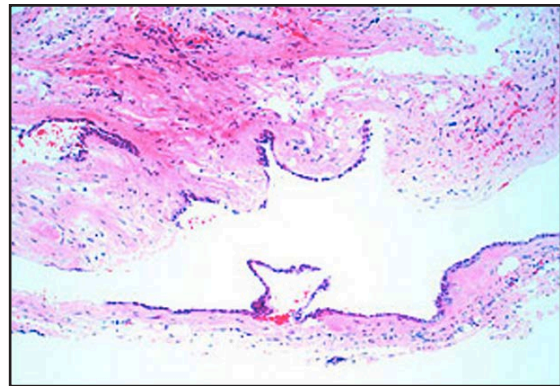


Figure 3. Low-power photomicrograph showing a central cavity lined by a thin layer of epithelial cells. (Hematoxylin and eosin stain)

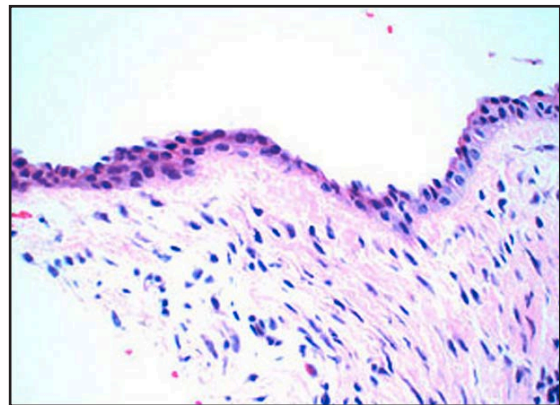


Figure 4. Medium-power photomicrograph showing a thin epithelial lining that is only one to two cells thick. (Hematoxylin and eosin stain)

In some areas the lining included cells with a clear, vacuolated cytoplasm (Figure 5). The cavity was surrounded by a wall of fibrous connective tissue with minimal inflammation.

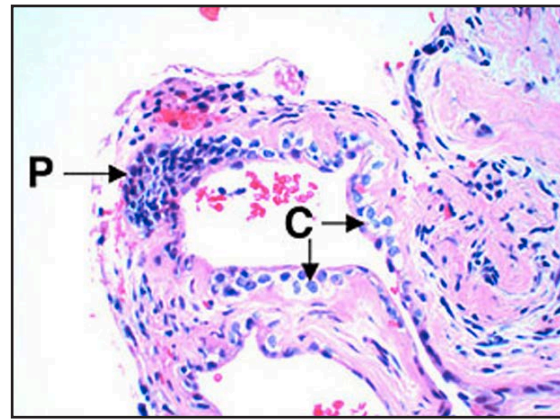


Figure 5. High-power photomicrograph showing the thin epithelial lining with a small plaque-like thickening (P). Shorter arrows (C) point out several glycogen-rich clear cells. (Hematoxylin and eosin stain)

Can you make the diagnosis?

A 38-year-old Hispanic female presented for evaluation of a gingival nodule of eight months duration.



Select the Correct Diagnosis

- A. Mucocele
- B. Gingival Cyst of the Adult
- C. Fibroma
- D. Traumatic Neuroma

Mucocele

Choice A. Sorry, this is not the correct diagnosis.

A dome-shaped, fluctuant swelling of the mucosa, the mucocele (mucus escape reaction; mucus retention phenomenon) is a common oral lesion that is seen most frequently in children and young adults but can occur in individuals of all ages. The lesion is the result of mucin accumulation in the soft tissue following rupture of a salivary gland duct. Both the color and level of fluctuance are determined by the depth of the mucin spillage. Deeper lesions often are normal in color and firmer to palpation, whereas superficial lesions tend to appear bluish or translucent and are quite soft. Many patients report a history of swelling followed by rupture and recurrence.

The lower lip mucosa is by far the most common site for mucoceles, but the buccal mucosa, anterior ventral tongue, and floor of the mouth may also be affected.^{1,2,3} For unexplained reasons, the upper lip is an exceedingly rare site for this lesion. Large mucoceles may occur in the floor of the mouth, usually due to rupture of one of the sublingual ducts. Such lesions are known as

ranulas because the large swelling may resemble the belly of a frog (*rana* is the Latin word for frog). Another variant of the mucocele, the superficial mucocele, occurs on the palate, the posterior buccal mucosa, or the retromolar pad. These recurring lesions present as single or multiple small, tense vesicles which can be mistaken for a vesiculobullous disorder. Superficial mucoceles rupture leaving shallow, painful ulcerations.^{1,2}

Histopathologic examination of the mucocele reveals a cyst-like cavity filled with mucin. Unlike a true cyst, which is lined by epithelial cells, mucoceles are surrounded by granulation tissue containing foamy histiocytes and neutrophils. Sometimes a ruptured salivary duct is identified.¹

Some mucoceles rupture and heal by themselves, whereas others require surgical excision. If the lesion is removed surgically, great care should be taken to include the adjacent salivary glands which may be feeding into the area. All tissue removed should be submitted for microscopic examination to rule out the possibility of a salivary gland tumor.^{1,2,3}

Please re-evaluate the information about this case.

Gingival Cyst of the Adult

Choice B. Congratulations! You are correct.

The clinical and microscopic findings are both consistent with this diagnosis.

Discussion

The gingival cyst of the adult is an uncommon developmental cyst of odontogenic origin arising from rests of the dental lamina (rests of Serres). It is thought to be the soft tissue counterpart of the intraosseous lateral periodontal cyst. Gingival cysts of the adult most frequently occur on the facial gingiva or alveolar mucosa of mandibular canines or premolars. They are less frequently seen in the maxillary arch. Most cases are diagnosed in patients in their fifth or sixth decade of life.⁴

Clinically, gingival cysts of the adult appear as painless, smooth, dome-shaped nodules arising from the gingiva or alveolar mucosa. They may be normal in color or have a bluish hue due to fluid in the lumen. Radiographic examination of the lesion is usually normal, but “cupping out” or a pressure resorption defect of the underlying alveolar bone may be noted during surgical excision of the cyst.^{5,6,7}

Microscopic features of the gingival cyst of the adult are similar to that of the lateral periodontal cyst and consist of a thin, flattened lining of squamous or cuboidal epithelium ranging from one to three cells in thickness. In many examples, this lining will demonstrate focal thickened plaques including cells with clear cytoplasm due to their glycogen content. The treatment of choice for the gingival cyst of the adult is simple excision, and the lesion should not recur.⁴

Fibroma

Choice C. Sorry, this is not the correct diagnosis.

The fibroma (irritation fibroma; traumatic fibroma; focal fibrous hyperplasia; fibrous nodule) is the most commonly occurring soft tissue growth of the oral cavity.⁸ A reactive lesion, fibromas are composed of dense fibrous connective tissue covered by surface mucosal epithelium. Clinically, they usually appear as pink, smooth, sessile or slightly pedunculated nodules. Some fibromas may appear white in color due to chronic irritation and resultant hyperkeratosis of the overlying epithelium.

Fibromas can occur anywhere in the mouth, but they are seen most often on the buccal mucosa adjacent to the plane of occlusion. Other areas frequently affected include the tongue, gingiva, and labial mucosa. Lesions can range in size

from a few millimeters to several centimeters in diameter.^{8,9,10}

Microscopic examination reveals a nodular mass of fibrous connective tissue covered by stratified squamous epithelium. Hyperkeratosis of the surface epithelial layer may be evident. Atrophy of the rete ridges is also common. The connective tissue mass is usually densely collagenized, although some examples may consist of looser fibrous tissue.

Treatment for the fibroma consists of excisional biopsy of the mass, and recurrence is rare.^{9,11} If an obvious source of irritation is present, it should also be corrected. Because other benign or malignant oral tumors may mimic the fibroma, all such lesions should be submitted for microscopic examination and confirmation of the diagnosis.^{9,12}

Please re-evaluate the information about this case.

Traumatic Neuroma

Choice D. Sorry, this is not the correct diagnosis.

Traumatic (amputation) neuromas are reactive lesions that occur at the site of nerve damage. After trauma has occurred, the proximal portion of a damaged nerve attempts to regenerate axons in an attempt to repair itself and re-establish innervation. A traumatic neuroma is formed when these new axons are blocked by scar tissue or are otherwise unable to re-establish innervation with the distal segment of the nerve.^{13,14}

Oral traumatic neuromas occur most frequently in middle-aged adults and in females. Frequently patients can relate a history of dental treatment such as an extraction in the area. Common intraoral sites include the alveolar mucosa surrounding the mental foramen, the tongue, and the lower lip.

Clinically, traumatic neuromas present as smooth-surfaced nodules. Although pain is often considered a characteristic finding, fewer than half of all diagnosed traumatic neuromas

are actually reported to be painful. If pain is present, the symptoms range from mild discomfort to severe radiating pain. In the case of an intraosseous neuroma, a lytic defect may be detected upon radiographic examination.¹⁴

Microscopic examination of the traumatic neuroma reveals a haphazard proliferation of mature, myelinated nerve bundles within a fibrous connective tissue stroma. In some cases an associated chronic inflammatory cell infiltrate is present.

The treatment of choice for a traumatic neuroma is surgical excision. Recurrence is uncommon, but the pain may continue or reappear at a later date.^{14,15}

In this case the lesion in question was located superior to the area of the mental foramen. Furthermore, the patient related no history of trauma or dental treatment in the area preceding the appearance of the lesion.

Please re-evaluate the information about this case.

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Note: Bio information was provided at the time the case challenge was developed.

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