

Non-Ulcerated Mass of the Hard Palate

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

Case Summary

A 66-year old white male presented with a raised lesion on the left hard palate. The patient had been aware of the lesion for approximately two weeks, and there was no history of recent or past trauma. The patient's medical history was remarkable for a long history of epilepsy; however, the patient was not taking any prescription medication at the time of presentation.

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

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Diagnostic Information

History of Present Illness

The patient had noticed a swelling in his palate for approximately two weeks. He had not experienced any previous swellings in his palate and did not recall any trauma prior to the onset of the swelling. He had not received any recent dental treatment. The swelling was completely asymptomatic and the patient had no other complaints.

Past Medical History

The patient reported a history of epilepsy, but he apparently was not receiving any anti-seizure medication at the time of examination. The remainder of his medical history was unremarkable and review of systems did not reveal any other abnormalities.

Clinical and Radiographic Findings

Clinical examination revealed a 2.5 x 3.0 cm raised firm nonindurated mass on the left hard palate. The epicenter of the mass was adjacent to the maxillary left first molar and the lesion extended to the midline (Figure 1). The lesion was compressible to palpation and demonstrated

a slight bluish hue. The remainder of the oral cavity was within normal limits. The patient's dentition was in good repair and several cast gold restorations were present. Radiographs of the left maxilla were negative for any pathology and all teeth in the area tested vital.

Incisional Biopsy and Photomicrographs

An incisional biopsy was performed by obtaining a full-thickness wedge of mucosa taken from within the confines of the mass down to the periosteum. Microscopic examination revealed a wedge of mucosa surfaced by keratinized stratified squamous epithelium overlying minor salivary gland tissue. An area of necrosis was also identified (Figure 2).

In areas, numerous islands of squamous epithelium were identified adjacent to minor salivary gland acini and ducts (Figure 3).

Closer inspection revealed lobular (coagulation) necrosis of numerous salivary gland acini (Figure 4) and squamous metaplasia involving salivary gland ducts (Figures 5 and 6). In addition, granulation tissue admixed with neutrophils, lymphocytes, and foamy histiocytes was identified.



Figure 1. Smooth-surfaced raised lesion of left hard palate.

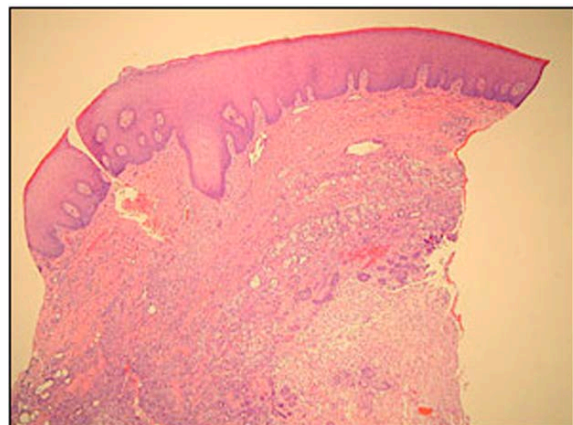


Figure 2. Low power photomicrograph showing non-ulcerated mucosa overlying fibrous connective tissue and minor salivary glands. Necrosis can be seen in the lower right aspect.

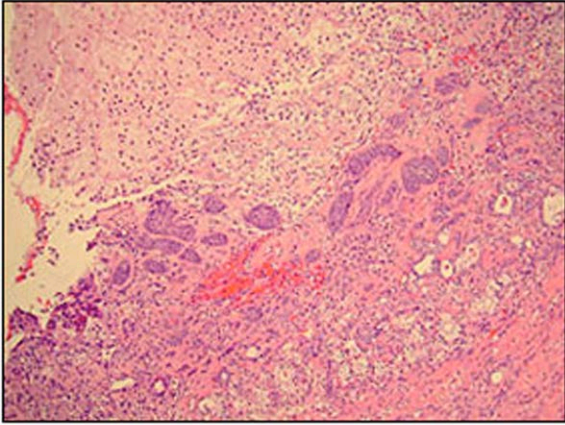


Figure 3. Low power photomicrograph showing numerous islands of squamous epithelium adjacent to minor salivary gland tissue.

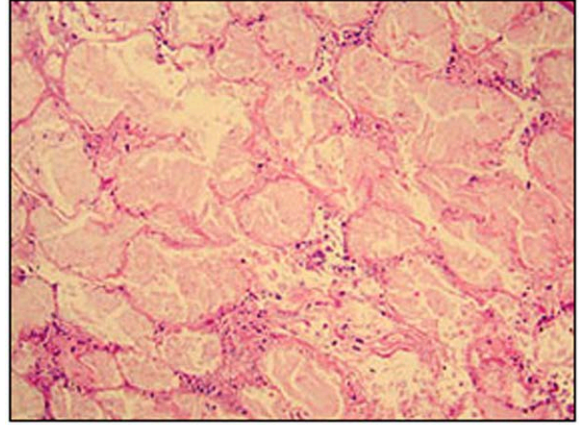


Figure 4. Medium power photomicrograph showing lobular necrosis of minor salivary gland acini.

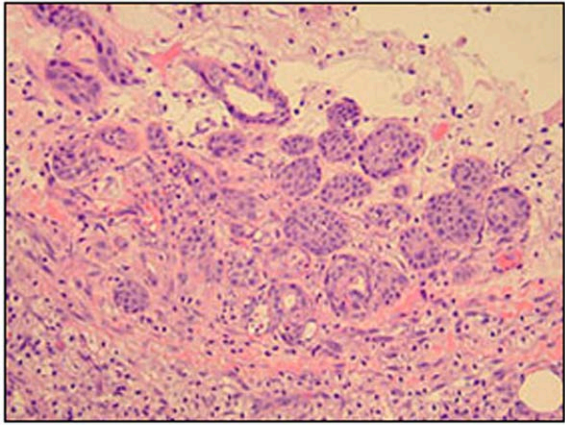


Figure 5. Medium power photomicrograph showing squamous metaplasia of minor salivary gland ducts.

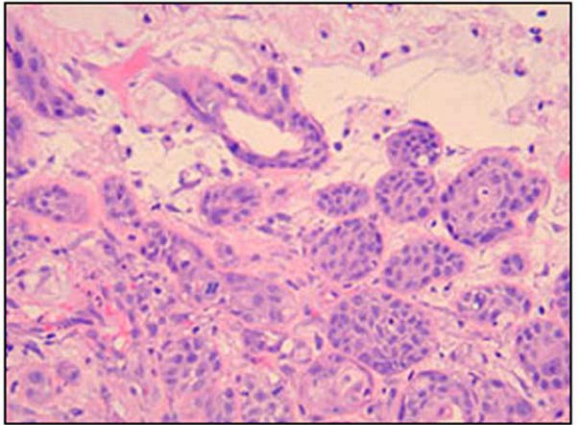


Figure 6. High power photomicrograph of squamous metaplasia. A residual lumen is still evident in one of the ducts.

Can you make the diagnosis?

A 66-year old white male presented with a raised lesion on the left hard palate. The patient had been aware of the lesion for approximately two weeks, and there was no history of recent or past trauma.



Select the Correct Diagnosis

- A. Palatal Abscess
- B. Mucoepidermoid Carcinoma
- C. Squamous Cell Carcinoma
- D. Necrotizing Sialometaplasia
- E. Mucus Retention Phenomenon

Palatal Abscess

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

Occasionally, periapical abscesses associated with necrotic pulp tissue in maxillary molar teeth will present on the palate, especially if the palatal root is involved.¹ Palatal abscesses may also

be periodontal in origin. In this case, all teeth in the area tested vital, probing depths were within normal limits, and no radiographic pathology was noted. A periapical or periodontal abscess would demonstrate liquefaction necrosis with a focal collection of neutrophils rather than coagulation necrosis as seen in this case.

Please re-evaluate the information about this case.

Mucoepidermoid Carcinoma

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

Mucoepidermoid carcinoma is the most common malignancy affecting minor or major salivary glands.² It is particularly common on the palate

and is typically a low-grade malignancy displaying well-differentiated epidermoid or squamous cells, mucous goblet cells, and intermediate cells. Necrosis is not usually seen in low-grade mucoepidermoid carcinomas and the lesion in this case did not demonstrate any mucous goblet cells.

Please re-evaluate the information about this case.

Squamous Cell Carcinoma

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

The hard palate is not a high-risk area for the development of squamous cell carcinoma (SCC). Most SCCs of the oral cavity are located on the lateral or ventral tongue.³ The floor of mouth and soft palate/tonsillar complex are also frequent sites

for SCC. Because it arises from the squamous epithelium lining in the oral cavity, oral SCC does not typically present as a nonulcerated submucosal mass. In addition, the squamous islands in this case are composed of uniform cells and do not show keratin pearl formation, nuclear pleomorphism, hyperchromatism, or atypical mitoses as in most cases of SCC.

Please re-evaluate the information about this case.

Necrotizing Sialometaplasia

Choice D. Congratulations! You are correct.

Necrotizing sialometaplasia (NS) is a non-neoplastic reactive inflammatory condition of salivary glands, which is most likely caused by ischemia.⁴ Although NS most often affects minor salivary glands of the palate, it may be seen in other oral sites where minor salivary glands are present and has also been reported in major salivary glands, the nasal cavity, paranasal sinuses, nasopharynx, larynx, and the trachea.⁵ Most cases of NS present as deep crater-like ulcers (Figure 7), but non-ulcerated lesions as in this case may also be seen. In fact, many cases of ulcerative NS are preceded by a somewhat fluctuant non-ulcerated swelling.⁶

Symptoms such as pain and even paresthesia may accompany lesions of NS and, along with the ominous clinical appearance of a deep-seated non-healing ulcer, may cause concern regarding the possibility of malignancy. The average age at diagnosis is 46 years and there is a 2:1 male to female ratio. Duration of signs and symptoms prior to diagnosis may range from 4 days to 6 months; however, the average duration is about 21 days.⁶

NS may also mimic a malignancy microscopically and must be differentiated from mucoepidermoid carcinoma (MEC) and SCC. The principal histologic features of NS consist of (1) lobular (coagulation) necrosis of salivary gland acini, (2) squamous metaplasia of salivary gland ducts, and (3) inflammation.⁴ Typically there is also liberation of mucus with an accompanying granulation tissue and inflammatory response. Some cases may also demonstrate pseudoepitheliomatous hyperplasia of the overlying mucosal surface, which may add to the difficulty in differentiating NS from SCC. Features which may help distinguish NS from SCC are: (1) maintenance of the overall lobular architecture of the involved gland, (2) the generally bland appearance of the squamous islands or nests, and (3) evidence of residual



Figure 7. Clinical photograph of a more typical example of necrotizing sialometaplasia demonstrating deep ulceration with raised, rolled borders. Notice that lesions are present bilaterally. About 20% of reported cases of NS are bilateral.⁶ (Courtesy of Michael A. Kahn, DDS)

ductal lumina in one or more of these nests.⁷ Although reactive atypia and mitotic figures can occasionally be seen in the metaplastic islands, the presence of coagulation necrosis, the usually intense inflammatory response, and the overall lobular morphology favor a benign interpretation. NS can be differentiated from MEC by the lack of incorporated mucous cells within the squamous islands and the absence of cystic areas, both of which are commonly encountered in MEC.

Even though it is well established that ischemia is the underlying pathogenetic mechanism in the development of NS, the specific cause of such ischemia is unknown in most cases. Possible predisposing factors include trauma, dental injection, ill-fitting dentures, upper respiratory infection, smoking, and alcohol use.^{6,8} Most cases of NS in major salivary glands are associated with previous surgical procedures.^{6,9} Occasionally, NS may be caused by ischemic necrosis due to the presence of an associated adjacent neoplasm, which may be either benign or malignant.^{7,10} Accordingly, all patients with NS should be followed until the lesion is completely resolved. Because NS is a non-neoplastic condition, no further treatment is indicated after initial biopsy, other than patient reassurance and follow-up. The average healing time is 5-6 weeks.⁶

Mucus Retention Phenomenon

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

Although mucoceles can occasionally occur on the soft palate, they are extremely unusual on the hard palate.¹¹ The most common location for mucoceles is the lower lip.¹² Mucoceles are caused by traumatic severance of a minor salivary gland duct with subsequent extravasation or escape of mucus out of the duct into the

soft tissue. Microscopic sections of a mucocele typically demonstrate a well-circumscribed collection of mucus surrounded by a granulation tissue wall. Numerous inflammatory cells, especially macrophages, are also present. The associated minor salivary glands exhibit chronic inflammation, fibrosis, and ductal dilatation - features indicative of chronic partial obstruction of salivary flow.

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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