Asymptomatic Alveolar Swelling After a Tooth Extraction

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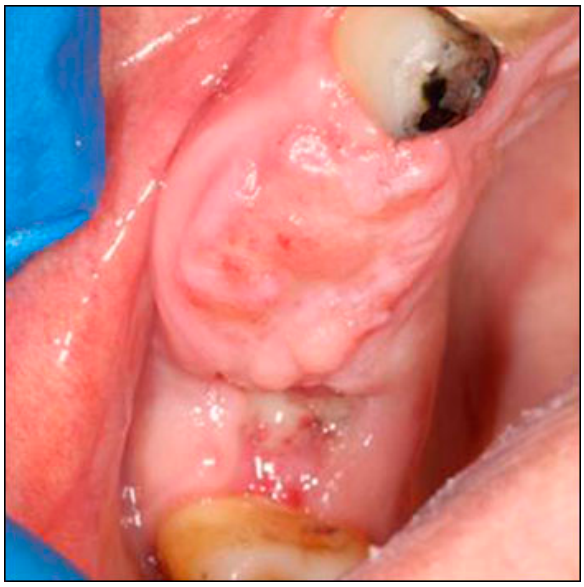
Online Case: *www.dentalcare.com/en-us/professional-education/case-challenges/case-challenge-064*



The following Case Challenge is provided in conjunction with the UT Health San Antonio School of Dentistry faculty.

Carmen is a 53-year-old female who presents with an asymptomatic alveolar swelling and a history of a recent extraction.

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

Diagnostic Information

History of Present Illness

Carmen is a 53-year-old female who presents for routine dental care. She is accompanied by her son who wants to take care of her after all of the years she was not able to take care of herself. Carmen moved to the United States from Mexico with her international banker husband in 1986. For 12 years she worked as an agriculture inspector in Ohio. In 1988 she lost her job and her husband abandoned her, took their life savings and moved back to Mexico. For the past 15 years she has been essentially living "on the street" in Ohio. Three months ago she moved in with her son who is determined to take care of her. She had an upper right molar extracted 2 weeks ago at a charity dental clinic due to a "crack." She is currently in no discomfort.

Medical History

- Adverse drug effects: none
- Medications: metformin 1000 mg bid, losartan 50 mg bid
- Pertinent medical history: diabetes type 2, hypertension
- Pertinent family history: paternal - fatal stroke age 62; maternal - DM type 2, fatal MI age 71. No siblings
- Social history: denies alcohol, tobacco, and recreational drug use

Clinical Findings

Extraoral examination reveals normal TMJ function, no facial muscle tenderness, and no cervical lymphadenopathy. Intraoral examination reveals a normal healing extraction site #3, and missing #4 and #5. There is a distinct firm ovoid expansion of the alveolar process in the area of #4-5 (Figures 1 and 2). The occlusal aspect of the lesion is slightly ulcerated and exhibits an uneven pebbly surface. There is no pain on palpation. A panoramic radiograph reveals increased tissue density with unusual osseous expansion in the area of #4-5 (Figure 3). Incidental periradicular radiolucencies are also noted on #11 and on the mesial root of #19. An incisional biopsy was performed and the specimen was submitted for histologic assessment.

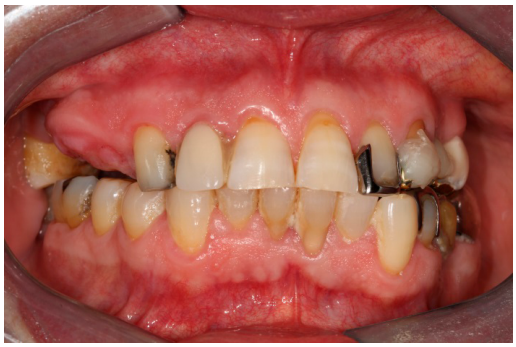


Figure 1. Visible enlargement alveolar process in the right maxillary premolar area.

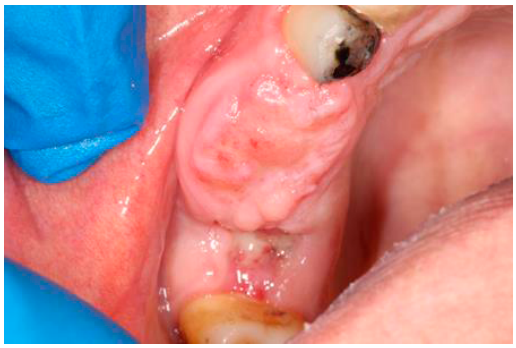


Figure 2. Ovoid alveolar mass with a pebbly surface and focal ulceration.

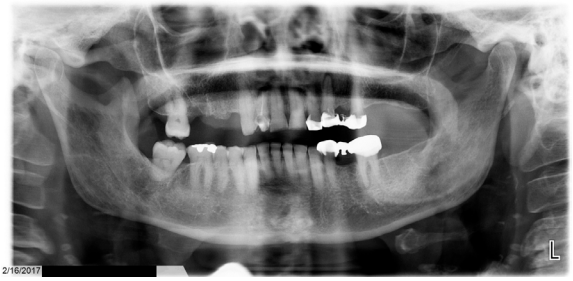


Figure 3. Increased tissue density with unusual osseous expansion in the area of #4-5.

Histopathologic Findings

The histopathologic examination reveals infiltrating cords and islands of atypical squamous epithelium arising from dysplastic surface mucosa. The supporting fibrous connective tissue is well vascularized and contains a chronic inflammatory infiltrate. The epithelial cells displays pleomorphic round to oval shaped nuclei with finely dispersed to vesicular chromatin, prominent nucleoli, increased nuclear to cytoplasmic ratios, and pink focally, dyskeratotic cytoplasm. There are numerous abnormal mitotic figures and focal single apoptotic cells.

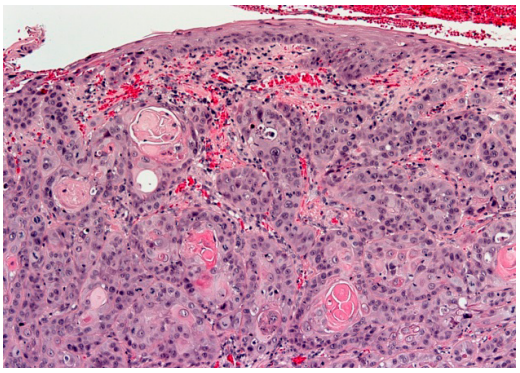


Figure 4. Low power histologic image showing invasive cords and islands of squamous epithelium extending into chronically inflamed fibrous connective tissue. The surface mucosa is dysplastic.

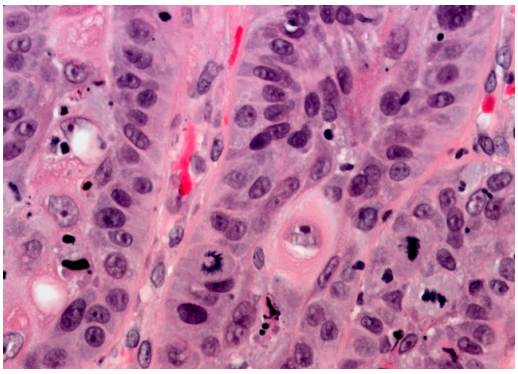
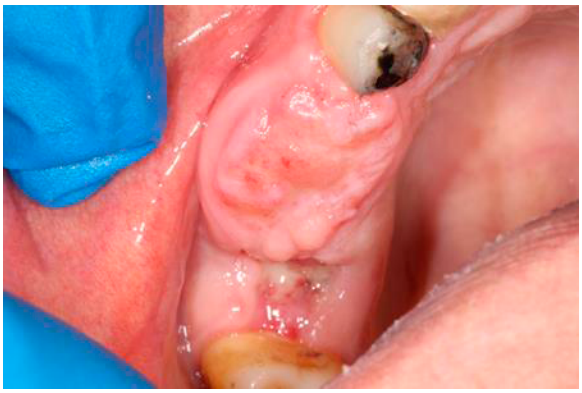


Figure 5. High power histologic image showing atypical epithelial cells with pleomorphic round to oval shaped nuclei, finely dispersed to vesicular chromatin, prominent nucleoli, increased nuclear to cytoplasmic ratio, and pink focally dyskeratotic cytoplasm. There are interspersed abnormal mitotic figures.

Select Diagnosis

Can you make the diagnosis

A 53-year-old female presents with an asymptomatic alveolar swelling and a history of a recent extraction.



Select the Correct Diagnosis

A. Blastomycosis
B. Squamous cell carcinoma
C. Osteosarcoma
D. Peripheral giant cell granuloma

Blastomycosis

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

Blastomyces dermatitidis is a dimorphic fungus and a normal inhabitant of soil. Agricultural and construction workers exposed to this fungus are at risk of infection, typically through inhalation.[1,2] Others at particular risk are individuals who are immunosuppressed. The course of the illness often mimics that of tuberculosis (e.g. dyspnea, weight loss, hemoptysis).[1] Oral blastomycosis is uncommon and likely occurs as a consequence of either dissemination of pulmonary disease or local inoculation. Oral lesions may present a variable appearance, often mimicking squamous cell carcinoma.[2] Patients typically present with intraoral pain and a progressively enlarging growth, often affecting the tongue.[3] Histopathologic findings include yeast cells surrounded by a mixed acute and granulomatous inflammatory response. *Blastomyces* organisms range in size from 8 to 20 µm and demonstrate a characteristic doubly refractive cell wall. The overlying epithelium may exhibit pseudoepitheliomatous hyperplasia, which could be mistaken for squamous cell carcinoma.[2] Therapy for mild disease consists of prolonged itraconazole therapy (> 3 months) while more severe disease is treated with amphotericin B followed by itraconazole therapy.[2] The prognosis is good. The histopathologic findings in this case do not support this diagnosis.

Please re-evaluate the information about this case.

Squamous cell carcinoma

Choice B. Congratulations! You are correct.

Eighty nine percent of oropharyngeal caricinomas are of the squamous cell type.[4] The typical presentation is that of a persistent mass, nodule, or indurated ulcer.[2,4] Pain or discomfort is the most frequent symptom that leads the patient to seek an evaluation, but early disease is often asymptomatic. Symptoms of more advanced disease include pain, dysphagia, otalgia, weight loss, fixation to the adjacent tissues, and trismus.[4] The findings of paresthesia and anesthesia, in the absence of a history of trauma, strongly suggest an invasive malignancy.[4,5] Risk factors for oral cavity and pharyngeal carcinomas include: tobacco and alcohol use, ultraviolet radiation, human papillomavirus, immunosuppression, areca nut (betel nut or quid), and maté.[4] Histopathologic examination reveals dysplastic surface stratified squamous epithelium exhibiting transition to an infiltrating malignant epithelial neoplasm. The malignant epithelial cells demonstrate nuclear enlargement and pleomorphism, nuclear hyperchromaticity, atypical mitotic figures, and individual cell keratinization. Infiltration into striated muscle, vascular channels, and nerve bundles often occurs.[2] Treatment is dependent upon the results of clinical staging and may include a combination of wide surgical excision, radiation therapy, or combined chemoradiation therapy.[2] The overall 5 year survival rate for oral squamous cell carcinoma is 64%.[6]

Osteosarcoma

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

Osteosarcoma of the jaws account for approximately 6% of all osteosarcomas and most commonly affects young adults with a mean age of onset of 34 years.[2,7] Men and women appear to be equally affected.[8] Swelling and pain are the most common presenting signs and symptoms.[2] Radiographic findings are variable and include radiopaque, mixed, or radiolucent presentations. Lesion margins are often ill-defined and cortical destruction or expansion may be present. The classic "sunburst" appearance occurs in approximately 25% of cases.[2] Widening of the periodontal ligament space and tooth mobility may be evident. The histopathologic findings reveal atypical osteoid production from a malignant mesenchymal stroma. Depending on the amount of osteoid, cartilage, or collagen produced by the tumor, osteosarcoma may be further classified as osteoblastic, chondroblastic, or fibroblastic.[2,7] Treatment consists of wide excision and the use of radiotherapy remains controversial.[2,8] The overall 5-year and 10-year survival rates are 53% and 35% , respectively.[8] The histopathologic and clinical findings in this case do not support this diagnosis.

Please re-evaluate the information about this case.

Peripheral giant cell granuloma

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

Peripheral giant cell granuloma (PGCG) is a hyperplastic reactive lesion that originates from the connective tissue of the periodontal ligament or periosteum of the jaw in response to local irritation or trauma.[2,9] The mean range of occurrence is 31-46 years of age.[2] The PGCG typically presents as a red or red blue, sessile or pedunculated, nodule or tumor arising from the gingiva or alveolar ridge. Radiographic features are nonspecific but may reveal evidence of osseous resorption, sometimes presenting as a "cupping" pattern.[2,9] Histologically, PGCG is characterized as a non-encapsulated mass composed of a reticular and fibrillar connective tissue stroma containing abundant ovoid or fusiform-shaped connective tissue cells and numerous multinucleated giant cells.[9] Abundant capillaries are present, particularly at the periphery of the lesion, and hemorrhagic foci with hemosiderin deposits are often observed. Treatment of a PGCG consists of surgical excision down to bone with attention to remove any source of irritation. An estimated 10%-18% of PGCGs recur; most likely due to inadequate initial excision.[2] The prognosis is good. The histopathologic and clinical findings in this case do not support this diagnosis.

Please re-evaluate the information about this case.

References

1. Huber M, Redding R, Sankar V, Woo S-B. Infectious diseases. In: Glick M, editor. Burket's Oral Medicine Diagnosis and Treatment, ed 12. Shelton: People's Medical Publishing House. 2015. 543-62.
2. Neville BW, Damm DD, Allen CM, et al. Oral and Maxillofacial Pathology. 4th ed. St. Louis, MO. Elsevier. 2016.
3. Rucci J, Eisinger G, Miranda-Gomez G, et al. Blastomycosis of the head and neck. Am J Otolaryngol. 2014 May-Jun;35(3):390-5. doi: 10.1016/j.amjoto.2013.12.013. Epub 2014 Jan 2.
4. Huber MA, Tantiwongkosi B. Oral and oropharyngeal cancer. Med Clin North Am. 2014 Nov;98(6):1299-321. doi: 10.1016/j.mcna.2014.08.005. Epub 2014 Sep 20.
5. Epstein J, Elad S. Oral and oropharyngeal cancer. In: Glick M, editor. Burket's Oral Medicine Diagnosis and Treatment, ed 12. Shelton: People's Medical Publishing House. 2015. 173-199.
6. Siegel RL, Miller KD, Jemal A. Cancer Statistics, 2017. CA Cancer J Clin. 2017 Jan;67(1):7-30. doi: 10.3322/caac.21387. Epub 2017 Jan 5.
7. ALQahtani D, AlSheddi M, Al-Sadhan R. Epithelioid Osteosarcoma of the Maxilla: A Case Report and Review of the Literature. Int J Surg Pathol. 2015 Sep;23(6):495-9. doi: 10.1177/1066896915591273. Epub 2015 Jun 24.
8. Lee RJ, Arshi A, Schwartz HC, et al. Characteristics and prognostic factors of osteosarcoma of the jaws: a retrospective cohort study. JAMA Otolaryngol Head Neck Surg. 2015 May 1;141(5):470-7. doi: 10.1001/jamaoto.2015.0340.
9. Chaparro-Avendaño AV, Berini-Aytés L, Gay-Escoda C. Peripheral giant cell granuloma. A report of five cases and review of the literature. Med Oral Patol Oral Cir Bucal. 2005 Jan-Feb;10(1):53-7; 48-52.

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