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Case Challenge
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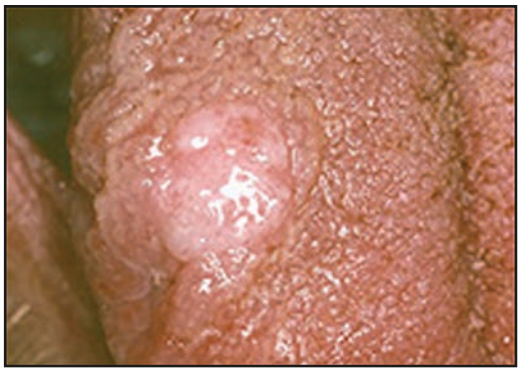
A Nodular Lesion of the Tongue

Robert D. Kelsch, DMD



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

Case Summary

A 45-year old white male was referred with a chief complaint of a solitary, occasionally painful soft tissue nodule that had been present for approximately 6 months on the right tongue dorsum. He stated he initially noted the lesion after minor trauma to the site. He anticipated spontaneous resolution, but the lesion has persisted and remained stable in size for the past 4 months.

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

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Diagnostic Information

Medical History

The patient reported that aside from mild hypertension, for which he receives a calcium channel blocker, he is in excellent health. He takes no other medications. His social history is significant due to his 20-pack per week history of cigarette smoking and occasional alcohol consumption.

Oral Findings

The patient exhibited a solitary, yellowish-white nodule on the right dorsum of the tongue. (Figure 1)

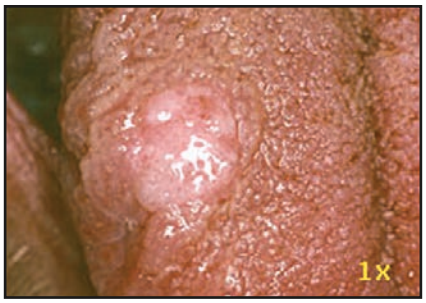


Figure 1. Raised nodular lesion of the dorsum of the tongue.

The overlying mucosa was intact, without ulceration, although it was firmly adherent to the submucosal mass. On palpation, the lesion was firm and fixed with moderately well-defined borders. The mass was nontender, and the surrounding tongue mucosa was normal in appearance. The remainder of the oral soft tissue examination did not reveal evidence of additional lesions.

Incisional Biopsy and Photomicrographs

An incisional biopsy was performed, which included a representative sample of both lesional and normal-appearing tissue. The overlying surface mucosa consisted of orthokeratinized stratified squamous epithelium (Figure 2) with focal areas of pseudoepitheliomatous hyperplasia. (Figures 3 and 4)

In the underlying connective tissue, syncytial sheets of large cells with coarse cytoplasmic granularity extended from the lamina propria into the striated muscle layer (Figures 5 and 6). The tumor cells had regular, basophilic nuclei, and there was no evidence of mitotic activity. (Figure 5)

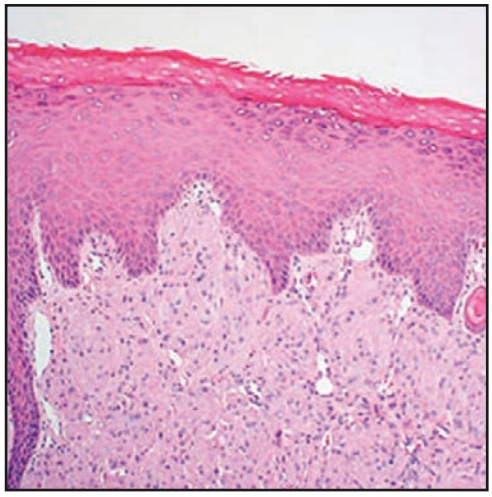


Figure 2. Low-power photomicrograph of the lesion within the lamina propria and adjacent to the surface mucosa.

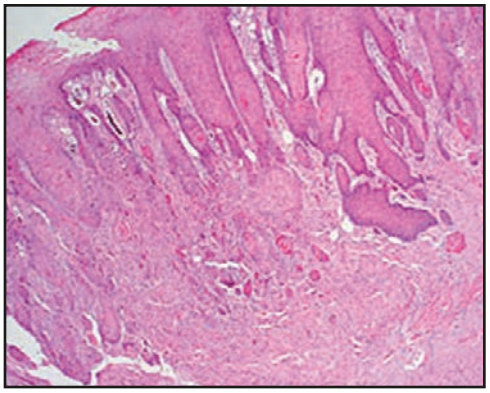


Figure 3. Low-power photomicrograph of the lesion showing pseudoepitheliomatous hyperplasia of the overlying epithelium.

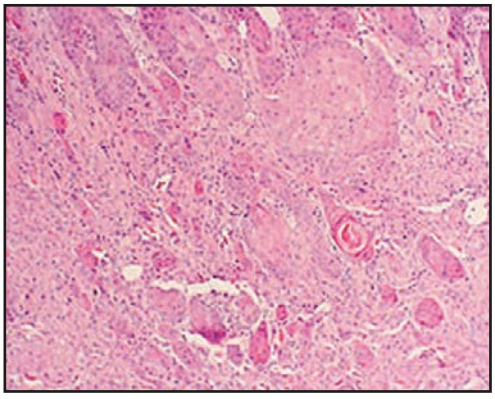


Figure 4. Medium-power photomicrograph showing pseudoepitheliomatous hyperplasia.

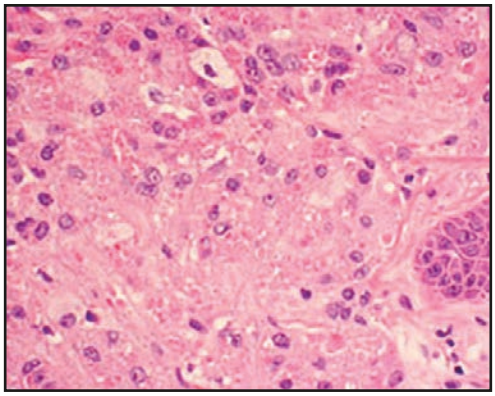


Figure 5. High-power photomicrograph of lesional cells exhibiting coarse eosinophilic granular cytoplasm with indistinct cell borders.

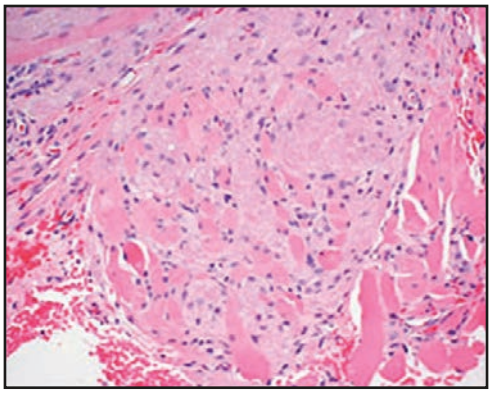


Figure 6. Medium-power photomicrograph showing lesion infiltrating striated muscle.

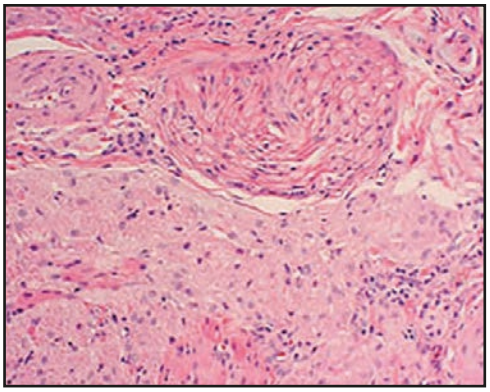
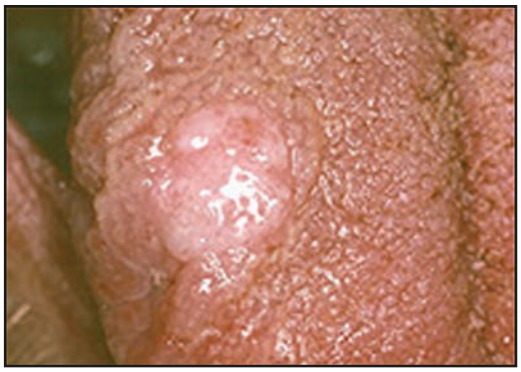


Figure 7. Medium-power photomicrograph showing lesion adjacent to peripheral nerve fibers.

The tumor cells infiltrated among the muscle bundles and around the peripheral nerve fibers. (Figure 7) Microscopically, lesional tissue extended to the margins of the specimen.

Can you make the diagnosis?

A 45-year old white male was referred with a chief complaint of a solitary, occasionally painful soft tissue nodule that had been present for approximately 6 months on the right tongue dorsum.



Select the Correct Diagnosis

A. Fibroma
B. Pyogenic Granuloma
C. Lipoma
D. Granular Cell Tumor

Fibroma

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

Fibromas, one of the most common benign lesions affecting the oral mucosa, can occur almost anywhere in the mouth, but they are seen with greatest frequency on the buccal mucosa. Most are thought to arise secondary to chronic irritation to the affected site; therefore, these lesions are not considered to be true neoplasms but are felt to represent reactive hyperplastic entities. Although the tongue is also a common site of occurrence, fibromas more commonly involve the lateral border of the tongue and not the dorsum, as was seen in the present patient. Clinically, fibromas present as raised, often sessile, soft tissue enlargements with a smooth intact mucosal surface. They are firm to palpation and usually asymptomatic, unless repeatedly traumatized. They may appear mucosal-colored or slightly yellow or white. Most lesions are under 2.0 cm in greatest dimension and do not increase in size significantly over time.

Microscopically, fibromas consist of collagenous fibrous connective tissue with slender fibroblasts interspersed. Fibromas are nonencapsulated and the lesional tissue blends into the underlying connective tissue. Variable numbers of chronic inflammatory cells are present among the bundles of collagen. Treatment consists of conservative local excision and recurrence is not expected.

Please re-evaluate the information about this case.

Pyogenic granuloma

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

Pyogenic granulomas are benign proliferative lesions of the mucosal soft tissues with a marked preference for the gingiva. These lesions are most often seen in children and young adults with a predilection for women. During pregnancy these lesions may develop and have been referred to as "pregnancy tumors." In this special group of patients these reactive vascular lesions may arise spontaneously and increase in size rapidly, possibly due to hormonal changes during pregnancy.[1] Pyogenic granulomas present clinically as lobulated, compressible soft tissue masses that are red in color with mucosal thinning or ulceration. Typically, these soft tissue enlargements are nontender, but they may bleed readily when manipulated due to their significant vascular component.

Microscopically, pyogenic granulomas are composed of extensive collections of endothelial-lined channels of variable caliber that contain red blood cells. Within the thin connective tissue stroma, a mixed inflammatory infiltrate of neutrophils, plasma cells, and lymphocytes may be identified. This histopathologic pattern is reminiscent of healing tissue or granulation tissue.[2-5] It has been suggested these lesions represent a variant of the hemangioma, and the term granulation tissue-type hemangioma has been suggested.[6] Treatment consists of local surgical excision to the base of the lesion to prevent recurrence, which is common if the lesion is incompletely excised.

Please re-evaluate the information about this case.

Lipoma

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

Although lipomas are the most common benign mesenchymal tumor, they occur relatively infrequently in the mouth. When identified in the oral cavity, they tend to be asymptomatic yellowish, smooth-surfaced masses usually measuring 1-2 cm in size. The most common intraoral sites include the buccal mucosa and vestibule in older adults.

Several microscopic subtypes of lipoma have been described, but most tumors are composed of mature adipocytes resembling adjacent normal fat. These lesions tend to be well-circumscribed; despite their neoplastic nature, local excision is curative and recurrence is rare.[7] On rare occasions, malignant counterparts (liposarcomas) have been diagnosed in the mouth.

Please re-evaluate the information about this case.

Granular Cell Tumor

Choice D. Congratulations! You are correct.

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

Discussion

The granular cell tumor is a benign neoplasm that may be seen throughout the body, but it is most frequently identified in the oral cavity.[8-11] The most common location for this tumor is the tongue dorsum, as demonstrated in the present patient. (Figure 1) The buccal mucosa is also a frequent site of occurrence. (Figure 8)

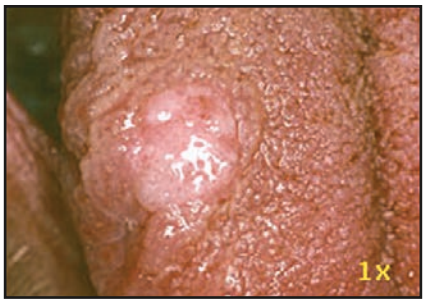


Figure 1. Raised nodular lesion of the dorsum of the tongue.

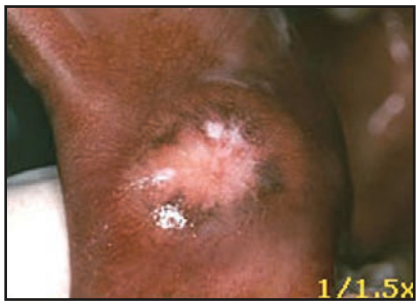


Figure 8. Granular cell tumor of right anterior buccal mucosa.

The granular cell tumor is a lesion of adulthood, and it has been reported to be more common in females. These tumors usually present as asymptomatic, firm, raised, submucosal enlargements. Often they are reported to be present for months prior to clinical diagnosis. They are usually less than 2.0 cm in greatest dimension and often appear yellow or white in color due to the close proximity of the tumor cells to the surface epithelium. Although these tumors are localized, the lesion tends to infiltrate into the surrounding connective tissue and muscle bundles. As a consequence, the margins are not well defined and the tumor appears fixed to the underlying stromal tissue. The granular cell tumor is usually solitary, but multiple concurrent lesions have been reported.[12]

Microscopically, granular cell tumors are characterized by sheets of cells exhibiting granular eosinophilic cytoplasm. These cells are large and the cell borders are often indistinct. Upon excision, lesional tissue is frequently observed extending to the deep and lateral margin. The tumor cells often infiltrate around muscle bundles and peripheral nerve fibers. (Figures 6 and 7)

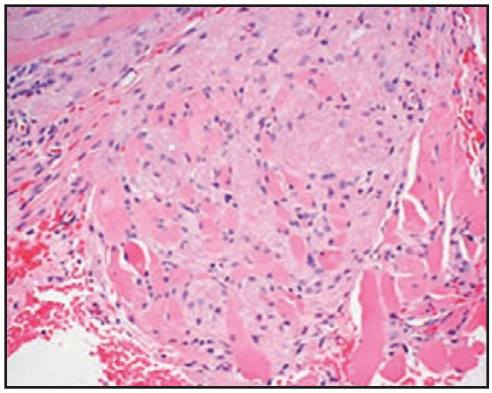


Figure 6. Medium-power photomicrograph showing lesion infiltrating striated muscle.

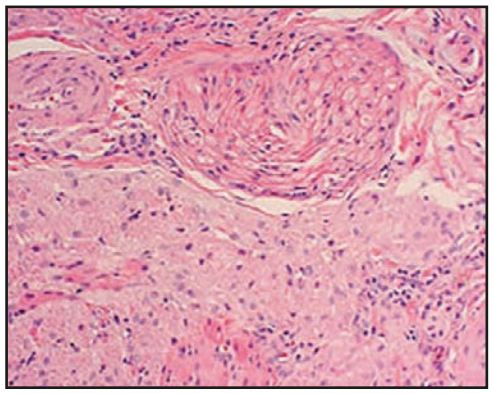


Figure 7. Medium-power photomicrograph showing lesion adjacent to peripheral nerve fibers.

This behavior initially led to confusion as to the origin of the tumor, which was once thought to arise from muscle cells (granular cell "myoblastoma"). Currently, they are thought to be of neural origin, which is supported by immunohistochemical studies showing the

presence of S-100 protein.[13] Superficially, the lesion extends into the lamina propria and often abuts the basement membrane zone of the overlying normal epithelium. A benign, reactive change to the overlying epithelium is also noted in many granular cell tumors and is referred to as pseudoepitheliomatous hyperplasia. It is important to distinguish this reactive feature of the epithelium because it mimics squamous cell carcinoma. Also, the location of granular cell tumors is significant because squamous cell carcinoma rarely occurs on the tongue dorsum.

Treatment of granular cell tumors consists of local surgical excision. Recurrence is uncommon, even if remnants of the lesion remain at the base of the excisional biopsy.

An entity that shares microscopic similarity to the granular cell tumor is the congenital epulis. These lesions are usually identified at birth and occur almost exclusively on the alveolar ridges, especially the maxillary ridge. The congenital epulis usually presents as a lobulated, exophytic, often pedunculated, pink mass of the alveolar ridge. (Figure 9)[14] Most tumors are 1-2 cm in size but larger lesions have been identified. (Figure 10) A striking female predilection has been noted.

Microscopically, these tumors are composed of sheets of large granular cells but they do not exhibit pseudoepitheliomatous hyperplasia and the tumor cells are nonreactive for S-100 protein.[15] The congenital epulis may be treated by surgical excision, which is curative, but occasionally no surgery is necessary because spontaneous regression has been reported.

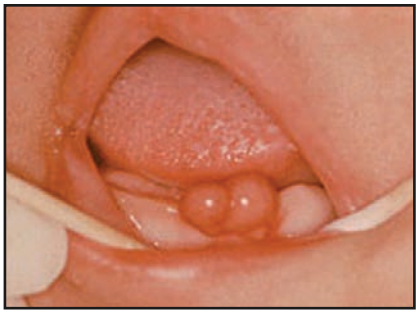


Figure 9. Congenital epulis of the mandibular alveolar ridge.

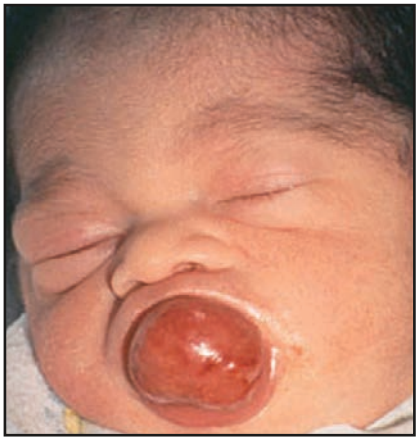


Figure 10. Massive congenital epulis of the mandibular alveolar ridge, which was detected in utero.

References

1. Daley TD, Nartey NO, Wysocki GP. Pregnancy tumor: an analysis. Oral Surg Oral Med Oral Pathol. 1991 Aug;72(2):196-9.
2. Fantasia JE, Damm DD. Red nodular lesion of tongue. Pyogenic granuloma. Gen Dent. 2003 Mar-Apr;51(2):190, 194. No abstract available.
3. Akyol MU, Yalciner EG, Dogan AI. Pyogenic granuloma (lobular capillary hemangioma) of the tongue. Int J Pediatr Otorhinolaryngol. 2001 May 11;58(3):239-41.
4. Binnie WH. Periodontal cysts and epulides. Periodontol 2000. 1999 Oct;21:16-32. Review. No abstract available.
5. Mills SE, Cooper PH, Fechner RE. Lobular capillary hemangioma: the underlying lesion of pyogenic granuloma. A study of 73 cases from the oral and nasal mucous membranes. Am J Surg Pathol. 1980 Oct;4(5):470-9.
6. Weiss SW. Pyogenic Granuloma (Granulation Tissue-type Hemangioma). In: Enzinger and Weiss's Soft Tissue Tumors, 4th ed. St. Louis: Mosby; 2001: 864-865.
7. Epivatianos A, Markopoulous AK, Papanayotou P. Benign tumors of adipose tissue of the oral cavity: a clinicopathologic study of 13 cases. J Oral Maxillofac Surg. 2000 Oct;58(10):1113-7; discussion 1118. Review.
8. Neville BW, Damm DD, Allen CM, et. al. Granular Cell Tumor. In: Oral and Maxillofacial Pathology, 2nd ed. Philadelphia: W.B. Saunders; 2002: 465-466.
9. Stewart CM, Watson RE, Eversole LR, et. al. Oral granular cell tumors: a clinicopathologic and immunocytochemical study. Oral Surg Oral Med Oral Pathol. 1988 Apr;65(4):427-35.
10. Williams HK, Williams DM. Oral granular cell tumours: a histological and immunocytochemical study. J Oral Pathol Med. 1997 Apr;26(4):164-9.
11. Gross VL, Lynfield Y. Multiple cutaneous granular cell tumors: a case report and review of the literature. Cutis. 2002 May;69(5):343-6. Review.
12. Collins BM, Jones AC. Multiple granular cell tumors of the oral cavity: report of a case and review of the literature. J Oral Maxillofac Surg. 1995 Jun;53(6):707-11. Review. No abstract available.
13. Dhillon AP, Rode J. Immunohistochemical studies of S100 protein and other neural characteristics expressed by granular cell tumour. Diagn Histopathol. 1983 Jan-Mar;6(1):23-8.
14. Kaiserling E, Ruck P, Xiao JC. Congenital epulis and granular cell tumor: a histologic and immunohistochemical study. Oral Surg Oral Med Oral Pathol Oral Radiol Endod. 1995 Dec;80(6): 687-97.
15. Damm DD, Cibull ML, Geissler RH, et. al. Investigation into the histogenesis of congenital epulis of the newborn. Oral Surg Oral Med Oral Pathol. 1993 Aug;76(2):205-12.

About the Author

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

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Dr. Kelsch is an attending in the Division of Oral Pathology of the Department of Dental Medicine at the Long Island Jewish Medical Center in New Hyde Park, New York. He completed his training in Oral Pathology at Long Island Jewish Medical Center. Currently he is engaged in the practice of Clinical Oral Pathology and is actively involved in the Oral pathology residency training program and biopsy service. He is also an attending at St. Barnabas Hospital Department of Dentistry, Bronx, New York.