Pyogenic Granuloma in the Tongue in a Five Year Old: A Case Report

Scott M Peters*/David A Koslovsky**/ Angela J Yoon***/ Elizabeth M Philipone****

Pyogenic granuloma, also called lobular capillary hemangioma, is a benign vascular lesion of the skin and mucous membranes. While the majority of pyogenic granulomas in the oral cavity involve the gingiva, they also infrequently present at other sites including lips, oral mucosa, palate, and tongue. We report a case of a pyogenic granuloma of the tongue in a five-year old female patient.

Key words: Pyogenic granuloma, lobular capillary hemangioma, tongue, children

INTRODUCTION

Pyogenic granuloma (PG) is a relatively common hemorrhagic lesion that is believed to be an inflammatory hyperplastic response to local irritation[1], physical trauma[2], hormonal factors[2], or medication-induced, such as the drug, cyclosporine[3]. Despite its name, pyogenic granulomas are not associated with infection or pus and do not resemble granulomas histologically[4].

Although pyogenic granuloma has been reported in all age groups, peak incidence is observed in teenagers and young adults with a female predilection of two to one[5]. In the pediatric age group, males are affected more frequently than females and pyogenic granuloma is more likely to occur in early childhood than during adolescence[6]. Pyogenic granuloma also tends to occur with increased frequency in pregnant women; they have been colloquially called "pregnancy tumors" or "granuloma gravidarum"[7].

Clinically, pyogenic granuloma presents as a dull red nodule with either a smooth or lobulated surface. Pyogenic granulomas often bleed spontaneously but become progressively less vascular as they mature[5]. While most lesions range in size from a few millimeters to several centimeters, there have been reported cases of pyogenic granulomas greater than 2.5 cm in size[8]. Oral pyogenic granulomas occur most commonly within the keratinized gingiva, with anterior sites affected more often than posterior ones, and the maxilla more commonly affected than the mandible[9]. Gingival pyogenic granulomas account for approximately 75-85% of all oral pyogenic granulomas. Other intra-oral sites, such as the buccal mucosa, tongue, and lips, are less frequently involved[10]. We report a case of a pyogenic granuloma occurring on the tongue of a five-year old girl.

Case Report

A five-year old female patient was referred by her pediatrician to an oral surgeon for evaluation and treatment of a dorsal tongue lesion. The patient's mother stated that six months prior she injured her tongue on a wooden Popsicle® stick. Shortly thereafter, she developed a red "spot" on her tongue, which became a progressively larger "growth." The patient's mother reported that the site would periodically bleed while the patient was eating. She was otherwise asymptomatic. The patient's overall medical history was unremarkable.

Clinical examination revealed benign migratory glossitis as well as a soft, non-tender, pedunculated, ulcerated mass of the middle third of the dorsal surface of the tongue (Figure 1). The lesion measured 0.6 x 1.2 cm. Considering the history and presentation following trauma, a presumptive clinical diagnosis of an ulcerated pyogenic granuloma was offered and complete excision was recommended.

Three milliliters of 1% xylocaine with 1:100,000 epinephrine were administered at the base of the lesion for local anesthesia and vasoconstriction. With the tongue maximally retracted and other soft tissue landmarks protected, a #15 Bard-Parker® blade was used to create an elliptical incision through mucosa to the underlying muscle. A wedge-like excisional biopsy was performed (Figure 2). Wound edges were undermined and two 3-0 chromic gut sutures

Scott M Peters, DDS, Division of Oral and Maxillofacial Pathology, Columbia University College of Dental Medicine, New York, NY
David A Koslovsky, DDS, FACS, Division of Oral and Maxillofacial Surgery, Department of Surgery, Weill Cornell Medical Center, New York, NY
Angela J Yoon, DDS, MAMSc, MPH, Division of Oral and Maxillofacial Pathology, Columbia University College of Dental Medicine, New York, NY.
Elizabeth M Philipone, DMD, Division of Oral and Maxillofacial Pathology, Columbia University College of Dental Medicine, New York, NY

Send all correspondence to:
Elizabeth M. Philipone
Columbia University Medical Center
630 West 168th Street
PH15W-1562
New York, NY 10032
E-mail: ep2464@cumc.columbia.edu

Figure 1: Pre-operative clinical photograph demonstrating a red-tan, ulcerated, exophytic, lobular mass of the dorsal tongue. The patient also has unassociated geographic tongue.

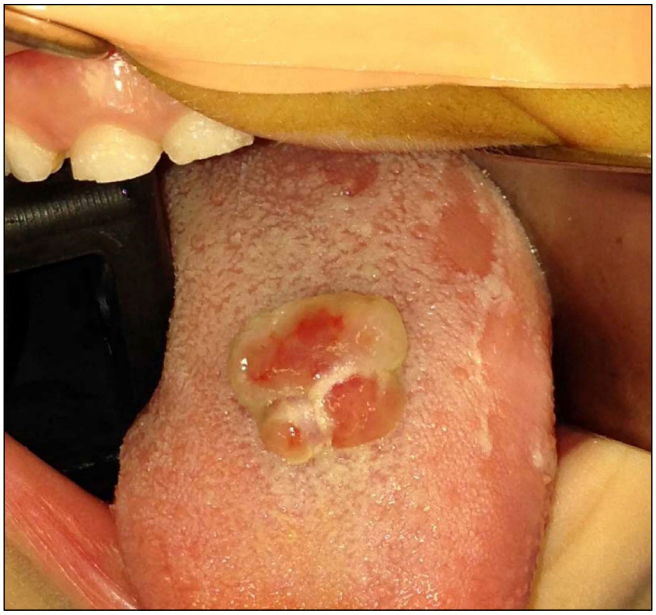


Figure 2: Excised tissue specimen received for histologic analysis.

in simple interrupted buried fashion were placed. Hemostasis was achieved and the patient was discharged. The postoperative course was uneventful, and a one-week post-operative evaluation displayed proper healing and normal tongue function.

Histologic evaluation of the mass revealed a lesion with an overlying, focally ulcerated, layer of stratified squamous epithelium. The underlying fibrous connective tissue was infiltrated by inflammatory cells and demonstrated a proliferation of small and thin-walled vascular channels with a lobular arrangement (Figure 3). These vessels were lined by plump endothelial cells (Figure 4). These findings were consistent with the clinical diagnosis of pyogenic granuloma.

Figure 3: Pyogenic granuloma with focally ulcerated stratified squamous epithelium (arrow) and underlying fibrous connective tissue with mixed inflammatory and vascular infiltrate with a lobular arrangement (starred) (H&E, X20).

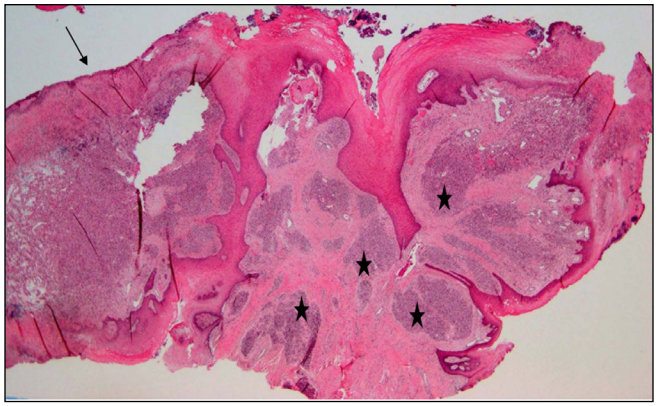
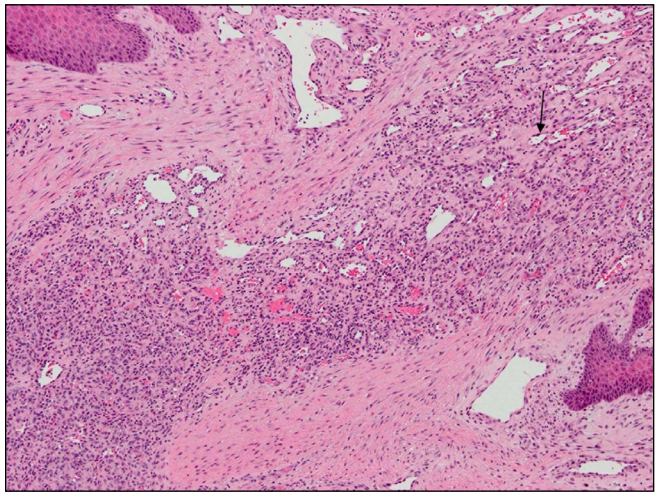


Figure 4: Pyogenic granuloma with mixed inflammatory infiltrate and multiple small, thin walled vessels. Plump endothelial cells line the vascular channels (arrow) (H&E X200).



DISCUSSION

Pyogenic granuloma, also called lobular capillary hemangioma, is a benign vascular lesion of the skin and mucous membrane. Lesions can occur externally or within the oral cavity. The majority of intra-oral pyogenic granulomas involve the gingiva, although sites such as the tongue, lips, and buccal mucosa can be infrequently affected[11]. While pyogenic granuloma of the oral cavity is not uncommon, only four percent of oral pyogenic granulomas occur on the tongue[12]. The pathogenesis and etiology of the pyogenic granuloma are unclear, although factors such as trauma, infection, and hormonal influences have been suggested. While pyogenic granuloma was initially regarded as a neoplasm, it is now generally agreed that pyogenic granulomas are formed as a result of an exaggerated inflammatory tissue response[13]. Extragingival pyogenic granulomas are associated with prior trauma to the site[5], and multiple studies have concluded that the most likely etiology for development of pyogenic granuloma is trauma[2,5,14]. In this case, the patient's trauma to her tongue from a Popsicle® stick appears to be the causative factor in the development of the pyogenic granuloma.

Pyogenic granulomas do not resolve spontaneously, and therefore surgical excision is indicated for the majority of cases. Pyogenic granulomas have also been treated with alternative therapies such as corticosteroids[8], laser treatment[15], and cryotherapy[15]. While recurrence after simple excision for gingival pyogenic granulomas is approximately 15%, recurrence after excision on extragingival sites is unlikely[14].

The clinical differential diagnosis for an ulcerated smooth surfaced exophytic soft tissue mass of the dorsal tongue of a child includes both reactive and neoplastic entities. The most likely reactive lesions to occur are irritation fibromas and pyogenic granulomas. The spectrum of benign neoplastic lesions to consider include hemangioma, neurofibroma, schwannoma, myofibroma, leiomyoma, rhabdomyoma, and granular cell tumor. All of these lesions can present with clinical features of secondary ulceration and inflammation. Although rare, solid malignant tumors of childhood do occur – rhabdomyosarcoma is the most common of the soft tissue sarcomas in children[16]. Kebudi *et al* conducted a review of the literature and presented 13 cases including their reported case of rhabdomyosarcoma of the tongue in children[17]. Clinical features such as lesion duration, rate of growth, and history of trauma play a role in streamlining the differential.

CONCLUSION

Although pyogenic granulomas are benign, non-neoplastic lesions, proper medical management is required to prevent excessive growth of the lesion that could interfere with normal mastication and oral function. Our case adds an additional report of pyogenic granuloma, but in the less frequently affected location of the dorsal tongue.

REFERENCES

1. Regezi, J.A., Sciubba, J.J. & Jordan, R.C.K. Oral Pathology: Clinical Pathological Considerations, 7th edition. St. Louis, MO: Elsevier, 2017.
2. Bhaskar, S.N. & Jacoway, J.R. Pyogenic granuloma, clinical features, incidence, histology and result of treatment: Report of 242 cases. J Oral Surg 24: 391-398, 1981.
3. Lee, L., Miller, P.A., Maxymiw, W.G., Messner, H.A. & Rotstein, L.E. Intraoral pyogenic granuloma after allogenic bone marrow transplant. Report of three cases. Oral Surg, Oral Med, Oral Pathol 78: 607-610, 1994.
4. Mills, S.E., Cooper, P.H. & Fechner, R.E. Lobular capillary hemangioma: the underlying lesion of pyogenic granuloma. A study of 73 cases from the oral and nasal mucous membrane. Am J Surg Pathol 4: 470-479, 1980.
5. Amirchaghmaghi, M., Falaki, F., Mohtasham, N. and Mazafari, P.M. Extragingival pyogenic granuloma: A case report. Cases J 1: 3713, 2008
6. Patrice, S.J., Wiss, K., & Mulliken, J.B. Pyogenic granuloma (lobular capillary hemangioma): Aclinicopathological study pf 178 cases. Pediatr Dermatol 8: 267-276, 1991.
7. Daley, T.D., Nartey, N.O. & Wysocki, G.P. Pregnancy tumor: an analysis. Oral Surg, Oral Med, Oral Pathol 72: 196-199, 1991.
8. Parisi, E., Glick, P. & Glick, M. Recurrent intraoral pyogenic granuloma with satellitosis treated with corticosteroids, Oral Diseases 12: 70-72, 2006.
9. Zain, R.B., Khoo, S.P. & Yeo, J.F. Oral pyogenic granuloma (excluding pregnancy tumor)—a clinical analysis of 304 cases. Singapore Dent J 20: 8-10, 1995.
10. Neville, B.W., Damm, D.D., Allen, C.M. & Chi, A.C. Oral and Maxillofacial Pathology, 4th edition. St. Louis, MO: Elsevier, 2016.
11. Butler, E.J. & Macintyre, D.R. Oral pyogenic granulomas. Dental Update 18: 194-195, 1991.
12. Saravana, G.H.L. Oral pyogenic granuloma: A review of 137 cases. Br J Oral Maxillofac Surg 47: 318-319, 2009.
13. Mathur, L.K., Bhalodi, A.P., Manohar, B., Bhatia, A., Rai, N. & Mathur, A. Focal fibrous hyperplasia: a case report. Int J Dent Clin 2: 56-57, 2010.
14. Vilmann, A., Vilmann, P. & Vilmann, H. Pyogenic granuloma: Evaluation of oral condition. Br J Oral Maxillofac Surg 24: 376-382, 1986.
15. Jafarzadeh, H., Sanatkhani, M. & Mohtashham, N. Oral pyogenic granuloma: A review. J Oral Sci 48: 167-175, 2006.
16. Liebert, P.S. & Stool, S.E. Rhabdomyosarcoma of the tongue in an infant: Results of combined radiation and chemotherapy. Ann Surg 178: 627-634, 1973.
17. Kebudi, R. & Ozdemir, G.N. Rhabdomyosarcoma of the tongue: report of a case and review of the literature. Pediatr Hematol Oncol 28: 60-64, 2011.