Journal of Iranian Medical Council, Volume 6, Issue no. 4
http://dx.doi.org/10.18502/jimc.v6i4.13439

Mini Review

The Main Differential Diagnosis of Swellings in the Posterolateral Part of the Hard Palate: A Mini Review

Hamed Mortazavi[1], Parham Hazrati [2*] and Ali Azadi[3]

1. Department of Oral Medicine, School of Dentistry, Shahid Beheshti University of Medical Sciences, Tehran, Iran
2. Dental Research Center, Research Institute of Dental Sciences, School of Dentistry, Shahid Beheshti University of Medical Sciences, Tehran, Iran
3. School of Dentistry, Shahid Beheshti University of Medical Sciences, Tehran, Iran

Abstract

Oral lesions consist of ulcerations, red-white lesions, pigmentations, and exophytic lesions. Exophytic lesions include swellings that project over the normal contours of the mucosa. In addition to a swelling's surface texture, the type of base, and consistency, its location is also of significant importance in limiting the differential diagnosis and reducing the time needed to achieve it in some cases. According to the literature, one of the locations whose lesions are not readily and quickly diagnosed is the palate. Our review of the PubMed/MEDLINE, Scopus, and Google Scholar databases revealed that the lesions of the posterolateral portion of the palate, which account for the majority of the palate's lesions, can be divided into four main categories, including 1) odontogenic infections or dental abscesses, 2) salivary gland neoplasms, 3) palatal mesenchymal tumors, and 4) maxillary sinus malignancies, which are discussed in this study. When clinicians face a swelling located at the palate's posterolateral segment, they should consider the abovementioned entities as the most probable differential diagnosis, respectively.

Keywords: Mucous membrane, Oral ulcer, Palatal neoplasms, Palate, Salivary gland neoplasms

*** Corresponding author**

Parham Hazrati, DDS.
Dental Research Center, Research Institute of Dental Sciences, School of Dentistry, Shahid Beheshti University of Medical Sciences, Tehran, Iran
Tel: +98 9125283477
Email: parham.hazrati@sbmu.ac.ir

Received: 7 Nov 2022
Accepted: 3 Apr 2023

Citation to this article:
Mortazavi H, Hazrati P, Azadi A. The Main Differential Diagnosis of Swellings in the Posterolateral Part of the Hard Palate: A Mini Review. *J Iran Med Counc*. 2023;6(4):609-14.

Introduction

Oral lesions generally manifest as ulcerations, red-white lesions, pigmentations, or exophytic lesions (1). In this regard, the term "oral swelling" represents any pathological exophytic lesion that projects over the normal contours of the oral mucosa (2). Due to the varied pathogenesis of the lesions, the diagnosis of oral swellings is difficult. It has been noted that oral swellings often provide a greater chance of misdiagnosis compared to the other types of lesions (2,3).

A swelling in the oral cavity is usually classified according to its surface texture (smooth or rough), type of base (pedunculated, sessile, nodular, or dome shape), and consistency (soft, cheesy, rubbery, firm, or bony hard) (1). However, it seems that the location of the lesion can aid clinicians in the faster and more accurate diagnosis of oral lesions, as a clinical finding along with other features mentioned earlier (4); for example, it is well understood that the palatal swellings can pose a difficult diagnostic dilemma for the clinician (5). In some populations, the palate, particularly the hard palate, accounts for the location of the majority of oral mucosal lesions (6,7). Palatal lesions occur more frequently in elderly patients, and therefore they have substantial clinical importance (8,9).

The palate separates the oral cavity from the nasal cavity and is composed of soft and hard parts, anatomically. The hard palate comprises keratinized mucosa and minor salivary glands located between the superficial mucosa and the underlying bone. On the contrary, the soft palate is formed by non-keratinized squamous mucosa, muscle, and fibers, and contains a lower number of minor salivary glands than the hard palate does (10). Palatal lesions consist of a wide variety of malignant and benign lesions with squamous cell carcinoma being the most common one (11,12).

The differential diagnosis of the palatal swellings can be divided into four subgroups: 1) odontogenic infections (dental abscesses), b) palatal salivary gland neoplasms, c) palatal mesenchymal tumors, and d) maxillary sinus malignancies (10,13,14). To this end, based on a review of the literature, we introduce the lesions that should be initially considered as a differential diagnosis of swellings in the posterolateral portion of the hard palate.

Materials and Methods

This review summarizes selected articles obtained through an electronic search in PubMed/MEDLINE, Scopus, and Google Scholar via the keywords: palate, maxillary sinus, swelling, exophytic lesion, abscess, expansion, infection, and neoplasm. All types of articles, including case reports or series, original and review articles, which were published between 2000 and 2022 were included, although duplicates, non-English studies, and articles that we were incapable of retrieving were excluded. Finally, the four most frequently mentioned groups of lesions that pertained to the goal of this study were achieved, which will be discussed in the following.

Odontogenic infection/dental abscess

An abscess is a nonspecific inflammatory response to the presence of bacteria in a normally sterile tissue (15). A dental abscess is characterized as a collection of pus in the jawbone at the root apex of an affected tooth. It usually occurs secondary to dental caries, trauma, deep filling, or failed dental root canal therapy (16). The palatal abscess typically represents the palatally-directed drainage of an infection of pulpal or periodontal origin. The most common source of this entity is the involvement of a palatal root of an infected maxillary molar tooth, which commonly presents as a compressible mass or swelling, usually lateral to the midline (Figure 1) (15). Other manifestations, including erythema (usually localized to the affected tooth), fever, tenderness to palpitation, trismus, and drooling, are also included (17). Tooth extraction, pulpectomy, drainage, and antibiotic therapy have been suggested for the treatment of palatal abscesses (15).

Salivary gland neoplasm

In the oral cavity, there are three pairs of major salivary glands and 600–1000 minor salivary glands, about half of which are located in the palate, with lips, buccal mucosa, tongue, and the floor of mouth being the other common sites (18,19). Minor salivary gland tumors are the most common neoplasms found in the hard palate (20,21). Malignant tumors were seen in 78%, and benign tumors were found in 22%

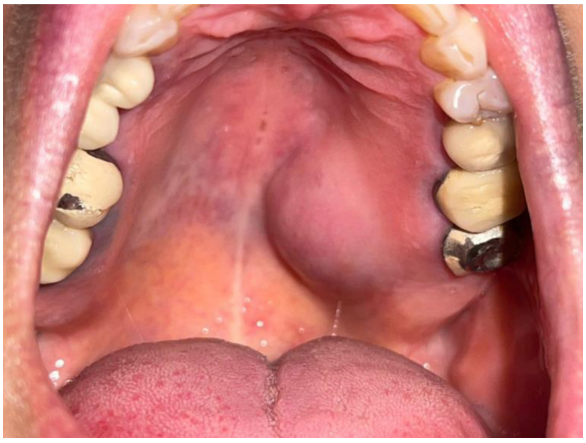

Figure 1. A dental abscess presenting as a dome-shaped swelling with an intact and smooth surface at the left side of the posterolateral part of the palate.

Figure 2. A salivary gland neoplasm (adenoid cystic carcinoma) presenting as a dome-shaped exophytic lesion with a smooth surface, located at the posterolateral section of the hard palate.

of cases (21). Adenoid cystic carcinoma (41 to 51%) (Figure 2) and mucoepidermoid carcinoma (26-40%) are the two most common malignant minor salivary gland neoplasms found on the hard palate (20). Pleomorphic adenoma is the palate's most common benign tumor of minor salivary glands, accounting for 39.8% –51.9% of all cases (18,21,22). Clinically, the majority of palatal salivary gland tumors appear as firm, asymptomatic, single, well-delineated, smooth, and uniform swellings with a normal overlying surface color (19). Surgery, radiotherapy, chemoradiation, and combinations of these modalities have been suggested to treat hard palate salivary gland tumors (23).

Palatal mesenchymal tumors

Various types of mesenchymal tumors, such as fibromas, lipomas, schwannomas, neurofibromas, haemangiomas, and lymphangiomas, might involve the palate (10). Among them, lymphomas are the most common non-epithelial malignant neoplasm of the oral cavity and maxillofacial region and represent the third most frequent group of malignant lesions in the oral cavity, followed by squamous cell carcinoma and salivary gland tumors (24). The most frequently affected site in the cases of oral lymphoma is the gingiva, followed by the palate, tongue, buccal mucosa, vestibule, lip, and the floor of the mouth (24). Clinically, it presents as a non-tender, having a smooth surface, soft to firm swelling with pink, purplish, or normal coloration (Figure 3) (1). The surface of this lesion may be intact or ulcerative (1). In terms of clinical appearance, this lesion can resemble a palatal abscess or a salivary gland tumor. Therefore, these lesions should be considered in the differential diagnosis of each other as posterolateral swellings of the hard palate (25,26). Surgery and radiation are treatment modalities in oral lymphoma patients (24-26).

Maxillary sinus malignancies

The most common malignant tumor of the maxillary sinus is squamous cell carcinoma, followed by sarcomas, adenoid cystic carcinomas, lymphoma, and adenocarcinoma (27). Due to the tumor's localization and absence of early symptoms, these entities are usually diagnosed in the late stages when they have perforated the sinus walls. These lesions may extend medially to the nasal cavity, superiorly invade the orbit, anterolaterally reach soft tissue and cheek, inferiorly involve dental alveolus and palate, and posteriorly affect the pterygopalatine fossa and pterygoid muscles (Figure 4) (28). Clinically, these lesions can be similar to all the lesions mentioned above, such as dental abscesses or salivary gland tumors (14,27,28). Surgery and postoperative

Figure 3. A swelling in the posterolateral portion of the palate with a smooth surface and no color difference with its surrounding mucosa, diagnosed as a lymphoma.

Figure 4. A swelling in the posterolateral portion of the palate, emerged due to palatal expansion and perforation by a primary maxillary sinus malignancy, whose overlaying mucosa has been ulcerated.

radiation are treatments of choice in most cases; however, radiotherapy is suggested as a palliative method in inoperable patients (14).

Discussion

Regarding what was mentioned earlier, it could be concluded that the differential diagnosis of a posterolateral palatal swelling is composed of two main groups: 1. infectious processes (dental abscess) and 2. neoplastic processes (salivary gland tumors, mesenchymal tumors (more likely lymphoma), and maxillary sinus malignancies). Since infectious processes are much more prevalent than neoplastic ones, which are related to mutations and complex cellular alterations, clinicians encountering a swollen lesion at the posterolateral palate, firstly, should rule out the possibility of an infectious-related swelling by pulp vitality testing and radiographic assessment (29). Secondly, because of the higher prevalence of salivary gland tumors, compared to mesenchymal tumors, the conjecture that the lesion might be rooted in a salivary gland neoplasm should be given priority. Typically, salivary gland tumors present as a nodular or dome-shaped swelling with a smooth surface, and there is no discrepancy between their color and adjacent natural area. These lesions' covering mucosa is usually intact; nevertheless, secondary trauma or the malignant and progressive trend of the lesion may lead to some ulcers on the surface of the swelling (1). Whether the situation is painful or not is not a clinically significant sign in these cases, although in some cases, especially the ones affected by adenoid cystic carcinoma, pain could be reported by patients. As mentioned earlier, one of the most common sites of intraoral lymphoma is the posterolateral palate, and unfortunately, this lesion cannot be clinically distinguished from salivary gland tumors. Its rapid and progressive progression and, sometimes, its rubber-like to hard consistency might assist in accurate diagnosis. At the initial stages of the disease, patients may not exhibit any aberrant systemic or laboratory signs; nonetheless, with the development of the disease, this condition will change.

Lesions that are related to the maxillary sinus, which emerge as a bulk in the posterolateral portion of the palate as a consequence of perforation and expansion of palatal bone, are usually accompanied by a number of signs and symptoms, such as obstruction of the nasal airway, feeling heaviness in the middle-third of the face and congestion in the nasal cavity, pain, tenderness, extra-oral swelling, nasal bleeding, difficulty swallowing, unintentional weight loss, lymphadenopathy, paresthesia, and nasal regurgitation (14,30-33). In fact, because the lesion grows to a considerable size freely in the empty space of the sinus prior to perforation into the oral cavity,

patients most probably experience the mentioned symptoms before or during having the lesion in their mouth; in addition, specific radiographic assessment of the sinus could be enormously helpful in these patients.

Conclusion

Facing a swelling in the posterolateral palate, clinicians should consider dental abscess, salivary gland tumor, mesenchymal tumors, most frequently lymphoma, and maxillary sinus malignancy as the most probable differential diagnosis, respectively.

Acknowledgements

We thank Dr. Fahimeh Anbari for referring patients to us so that we could take photographs presented in this study.

References

1. Mortazavi H, Safi Y, Baharvand M, Rahmani S, Jafari S. Peripheral exophytic oral lesions: a clinical decision tree. Int J Dent 2017;2017:9193831.

2. Santosh AB, Boyd D, Laxminarayana KK. Proposed clinico-pathological classification for oral exophytic lesions. J Clin Diagn Res 2015;9(9):Ze01-8.

3. Bermejo-Fenoll A, López-Jornet P. Differential diagnosis of exophytic lesions of soft oral tissue. Med Oral Patol Oral Cir Bucal. 2005;10(5):471; 0.

4. Shen Y, Yoon MN, Ortiz S, Friesen R, Lai H. Evaluating Classification consistency of oral lesion images for use in an image classification teaching tool. Dent J (Basel) 2021;9(8):94.

5. Houston GD, Brown FH. Differential diagnosis of the palatal mass. Compendium 1993;14(10):1222-4, 6, 8-31; quiz 32.

6. Patil S, Doni B, Maheshwari S. Prevalence and distribution of oral mucosal lesions in a geriatric Indian population. Can Geriatr J. 2015;18(1):11-4.

7. Intapa C, Ayudhya CCN, Puangsombat A, Boonmoon B, Janyasurin T, Tonum U. Prevalence of oral mucosal lesions in geriatric patients living in lower Northern Thailand: a 10 years retrospective study. J Int Dent Med Res 2017;10:868-71.

8. Rohini S, Sherlin H, Jayaraj G. Prevalence of oral mucosal lesions among elderly population in Chennai: a survey. J Oral Med Oral Surg 2020;26:10.

9. Naveed N. Prevalence of oral mucosal lesions and their correlation to adverse habits− A pilot study. Int J Dev Res 2017;7:8845.

10. Yuan Y, Tang W, Jiang M, Tao X. Palatal lesions: discriminative value of conventional MRI and diffusion weighted imaging. Br J Radiol 2016;89(1059):20150911.

11. Waldron CA, El-Mofty SK, Gnepp DR. Tumors of the intraoral minor salivary glands: a demographic and histologic study of 426 cases. Oral Surg Oral Med Oral Pathol 1988;66(3):323-33.

12. Sugimura M, Sakamoto T, Tsubakimoto M, Mori M, Kawakatsu K. Analysis of 102 lesions diagnosed as “palatal tumor” in a spot diagnosis. Int J Oral Surg 1975;4(4):143-50.

13. Marques KD, Andrade FR, Castro LA, Vêncio EF, Mendonça EF, Ribeiro-Rotta RF, et al. Slow-growing palatal mass: a challenging differential diagnosis. J Oral Maxillofac Surg 2010;68(8):1884-9.

14. Ramachamparambathu AK, Vengal M, Mufeed A, Siyo N, Ahmed A. Carcinoma of maxillary sinus masquerading as odontogenic infection. J Clin Diagn Res 2016;10(9):Zd11-zd3.

15. Sumer AP, Celenk P. Palatal abscess in a pediatric patient: report of a case. Eur J Dent 2008;2(4):291-3.

16. Sanders JL, Houck RC. Dental Abscess. Treasure island (FL): StatPearls Publishing StatPearls Publishing LLC.; 2022.

17. Shweta, Prakash SK. Dental abscess: A microbiological review. Dent Res J (Isfahan) 2013;10(5):585-91.

18. Wu YC, Wang YP, Cheng SJ, Chen HM, Sun A, Chang JY. Clinicopathological study of 74 palatal pleomorphic adenomas. J Formos Med Assoc 2016;115(1):25-30.

19. Rawson K, Kallali B, George A, Nair AK. Minor salivary gland neoplasms of palate: Case series with differential diagnosis and review of literature. J Indian Acad Oral Med Radiol 2017 Oct 1;29(4):321-4.

20. Young A, Okuyemi OT. Malignant Tumors of the Palate. StatPearls. Treasure Island (FL): StatPearls Publishing; StatPearls Publishing LLC.; 2022.

21. Beckhardt RN, Weber RS, Zane R, Garden AS, Wolf P, Carrillo R, et al. Minor salivary gland tumors of the palate: clinical and pathologic correlates of outcome. Laryngoscope 1995;105(11):1155-60.

22. Al-Abri R, Kumar S, Al-Sudairi S. A palatal mass. Oman Med J 2010;25(1):55-6.

23. Hammouda Y, Halily S, Oukessou Y, Rouadi S, Abada R, Roubal M, et al. Malignant tumors of the hard palate: Report of 4 cases and review of the literature. Int J Surg Case Rep 2021;78:228-34.

24. Tseng CH, Wang WC, Chen CY, Hsu HJ, Chen YK. Clinical manifestations of oral lymphomas - Retrospective study of 15 cases in a Taiwanese population and a review of 592 cases from the literature. J Formos Med Assoc 2021;120(1 Pt 2):361-70.

25. Hassona Y, Almuhaisen G, Almansour A, Scully C. Lymphoma presenting as a toothache: a wolf in sheep's clothing. BMJ Case Rep 2017;2017:bcr2016218686.

26. Sharma P, Wadhwan V, Kumar KV, Venkatesh A, Thapa T. Indolent palatal swelling: Catch 22. Natl J Maxillofac Surg 2016;7(2):221-4.

27. Daryani D, Gopakumar R, Nagaraja A. High-grade mucoepidermoid carcinoma of maxillary sinus. J Oral Maxillofac Pathol 2012;16(1):137-40.

28. Souza R, De F, Cordeiro B, Gonzalez F, Yamashiro I, José A, et al. Maxillary sinus carcinoma: An analysis of ten cases. Radiol Bras 2006;39:397-400.

29. Chen E, Abbott PV. Dental pulp testing: a review. Int J Dent 2009;2009:365785.

30. Mahdavi O, Boostani N, Karimi S, Tabesh A. Intraoral mass presenting as maxillary sinus carcinoma: a case report. J Dent (Tehran) 2013;10(6):562-8.

31. Mughal MS, Kaur IP, Akbar H, Abbas SH, Angi P. Hard palate perforation in an elderly man with dementia. Cureus 2021;13(6):e15872.

32. Praveena NM, Maragathavalli G. Carcinoma of the maxillary antrum: A case report. Cureus 2018;10(5):e2614.

33. Shah SN, Mistry PR, Chauhan GR, Chauhan V, Pillai J. Nasal NK/T cell lymphoma presenting with perforation of palate: a case report and review of literature. J Clin Diagn Res 2017;11(3):Md01-md3.