Osteolytic nasal polyp of the maxillary sinus mimicking malignancy

Arvind Karikal, Sampathila Mahalinga Sharma, Anju Gopinath, Arathi Karikal

Abstract

We present an osteolytic nasal polyp of the maxillary sinus with clinical features and radiographic features mimicking that of a malignancy. Maxillary sinusitis being a common inflammatory condition progressed to cause destruction of the maxillary bone and spread into the facial soft tissue, which is quite a rare occurrence. We have discussed in detail the clinical, radiological, histopathology and management of this uncommon presentation of a common case.

Keywords: Maxillary sinusitis, nasal polyp, osteolytic

Introduction

Maxillary sinus, also known as Antrum of Highmore, is the largest of all paranasal sinuses. Inflammatory sinus conditions are one of the most common disease processes that can affect the maxillary sinus. Congestion of the sinus occurs frequently in case of otolaryngeal infection, common cold (viral coriza), allergies and inflammatory conditions, with the other causes being dry season with dust, atmospheric pollution and an odontogenic origin. Odontogenic sinusitis accounts for approximately 10-12% cases of maxillary sinusitis. The common causes of odontogenic sinusitis include dental abscesses, periodontal disease perforating the Schneiderian membrane, sinus perforations during tooth extraction, irritation and secondary infection caused by intra-antral foreign bodies.

Case Report

A 41-year-old female reported to us with the chief complaint of swelling on the left side of her face since 1 month, which gradually increased in size and was observed by her and her relatives. She also complained of facial discomfort. Her motivation to seek treatment was due to the increase in the size of the swelling as observed by her relatives. During history taking, she revealed undergoing extraction of the second premolar in the second quadrant 2 months prior to the present swelling in her face. The tooth was extracted as it was grossly decayed, for which she had experienced pain and discomfort for a long time. The patient had ignored the initial tooth decay and had not sought any treatment till she developed pain and discomfort.

On physical examination, a swelling was noticed on the left side of the face [Figure 1]. This extended superiorly from the ala region of the nose to the malar prominence and inferiorly from the infra-orbital region to the upper part of the angle of the mouth approximately measuring 3 × 2 cm. The swelling was diffuse, but gave a firm feel on palpation. Intraoral examination showed a swelling corresponding to the second premolar region obliterating the upper buccal vestibule. It was firm on palpation and smooth in consistency. Dental and medical examination was not contributory. Lymph nodes could not be appreciated on palpation.

Nasal endoscopic examination revealed a congested maxillary sinus with a suspected nasal polyp.

Computer tomography was subsequently performed with axial and coronal sections. This showed an abnormal mucosal thickening of the left maxillary sinus along with a breach in the anterior wall of the maxilla [Figures 2 and 3]. A soft tissue mass was seen to breach the sinus cavity and spilling over to the soft tissues of the facial region.

An incisional biopsy [Figure 4] was performed and the tissue was subjected to histopathological examination. The histopathology [Figure 5] showed epithelium and connective tissue. The epithelium showed pseudostratified ciliated columnar cells and connective tissue component with dense chronic inflammatory cells like plasma cells, Russell bodies and lymphocytes. The specimen also showed bony trabaculae.
blood vessels with extravasated RBCs. This gave an impression of chronic nonspecific inflammatory tissue. A functional endoscopic sinus surgery would be an ideal choice to approach a chronic sinus, but choice of surgical approach should be tailor made for each patient depending on the type of lesion encountered. Hence, observing the extent of the lesion, we decided to go for a conventional approach to this patient. The patient was then taken up under general anesthesia for a total excision of the lesion. The patient was intubated, painted and draped under standard aseptic conditions. A vestibular incision was placed and, on raising a sub-periosteal flap, we observed that the anterior wall of the maxillary sinus had been eroded and breached by the thick mucosal tissue of the maxillary sinus. The lesion was approached through this existing bony window. The entire mucosal lining was removed. A certain amount of lesional tissue was seen between the fibers of the levator labii superioris and the fibers of the zygomaticus minor muscle [Figure 6]. A blunt dissection was performed and the lesion was removed. The specimen was sent for histopathological diagnosis [Figure 7]. After achieving hemostasis, a bismuth iodine paraffin pack was placed and wound closure was done in with 4-0 monocryl. The patient was extubated uneventfully. She was prescribed an antibiotic, analgesic and nasal de-congesting medication.
Karikal, et al.: Osteolytic nasal polyp

Figure 6: Excision of the lesion under general anesthesia by approaching through the existing bony defect

Figure 7: Excised mass from the maxillary sinus

Figure 8: The histopathology slide shows polypoidal mass surrounded by pseudostratified ciliated columnar epithelium with stroma of dense infiltrate of chronic inflammatory cells surrounded by fibrocollagen (low power)

Figure 9: The histopathology slide shows polypoidal mass surrounded by pseudostratified ciliated columnar epithelium with stroma of dense infiltrate of chronic inflammatory cells surrounded by fibrocollagen (high power)

Figure 10: The defect that was created by the excision of the lesion was rectified with temporary removable prosthesis made from heat cure acrylic resin

Figure 11: Postoperative healing after 3 months
The histopathology diagnosis was given as chronic inflammatory tissue of the left maxillary sinus [Figures 8 and 9]. Gomori-methenamine silver staining and Periodic acid Schiff staining were being performed for fungal hyphae, which turned out to be negative.

The patient was recalled after 1 week for suture removal and follow-up. The defect, which was created by the excision of the lesion, was rectified with acrylic prosthesis [Figure 10]. The patient has been on regular follow-up without any complications [Figure 11].

**Discussion**

Acute sinusitis is usually self-limiting and is easily managed by conservative medication,[1] whereas chronic sinusitis requires more extensive treatment and sometimes surgical intervention.[3-5] Chronic maxillary sinusitis with or without nasal polyp is a symptom-based diagnosis that entirely depends on the patient’s subjective description of their illness for its diagnosis.[6-9] According to the European position paper on rhinosinusitis and nasal polyps 2007, a general diagnosis of chronic sinusitis (including nasal polyps) can be confirmed if any two of the following signs/symptoms are fulfilled. These include either nasal blockage-obstruction/congestion or nasal discharge (anterior/posterior nasal drip) +/- facial pain/pressure +/- reduction or loss of smell, and either endoscopic signs of polyps and/or mucopurulent discharge primarily from the middle meatus and/or edema/mucosal obstruction primarily in the middle meatus and/or computed tomographic changes showing mucosal changes within the ostiomeatal complex and/or sinuses.[10]

Nasal polyp is the most common and prevalent pathologic entity associated with chronic sinusitis according to the available literature. A combined medical and surgical approach has been advocated by other studies to be an efficient option in its management.[11-13]

Surgical treatment of the chronic maxillary sinus can be undertaken either through the Cadwell-Luc/traditional approach or through newer techniques as functional endoscopic sinus surgery (FESS). The FESS approach aims to preserve the functional integrity and physiological function of the maxillary sinus and causes minimal trauma to the patient thus helping the patient to recover faster.[14] Endoscopic sinus surgery needs skilful operators and has the potential for complications.[15] The traditional Caldwell-Luc operation involves opening a bony window just above the root of the maxillary canine and to remove the entire sinus lining. Although this method gives good access, the functionality of the sinus is lost for a considerable time.[16]

We choose to perform the conventional approach as the anterior wall of the maxillary sinus had already been breached by the lesion; therefore, we could enter the sinus without creating a new window.

Erosion of the maxillary sinus is quite unheard of in simple chronic maxillary sinusitis. Destruction of the anterior wall of the maxilla with a picture of soft tissue mass in the facial plains gives an image of a destructive and invasive disease process. Bony erosion and destruction of adjuvant tissue are typical signs of a malignant process, which on radiologic investigations may show opacification of the sinus. Fungal disease, granulomatous diseases or a malignant process destroy the walls of the maxillary sinus, but simple chronic maxillary sinusitis causing such erosion is uncommon.[17-20]

The clinical features and imaging techniques help us in reaching a provisional diagnosis, but a histopathologic examination remains the mainstay for making a final, definitive diagnosis.[21]

As the histopathological report of this patient is seen to be chronic inflammatory tissue, the destructive nature of an inflammatory process is unique. The possible explanation for the breach in the bone, and the subsequent expansion of the soft tissue mass in to the facial spaces, may be put forward as follows:

1. The dento-alveolar bone and the floor of the maxillary sinus may have been weakened due to a periapical lesion in the premolar, which also might have contributed to an odontogenic sinusitis and caused a breach in the floor of the maxillary sinus during the process of extraction. This event may have allowed the inflamed sinus mucosa to spill into the facial tissue as the path of resistance was minimal.

2. The second possibility would be erosion of the thin anterior wall of the maxillary sinus due to the chemical mediators of inflammation[22] being released by the ongoing chronic maxillary sinusitis, which in turn activates osteoclastic activity in that area.[23] This osteolytic process has been recorded in other chronic inflammatory processes such as otitis media,[22] osteomyelitis and acute fungal rhinosinusitis.[19]

**Conclusion**

Osteolysis of the maxillary bone can be related to the release of osteolytic chemical mediators of inflammation. Recognition of this possibility is important because bone erosion can be interpreted as an indication of invasive pathology. In the presence of bone erosion or disease extension, the clinical features and imaging techniques help us in reaching a provisional diagnosis, but a histopathologic examination remains the mainstay for making a final, definitive diagnosis.

**References**

1. Yehouessi-Vignikin B, Vodouhe SJ. Maxillary sinusitis: 1752 cases at the ear-nose-throat department of a teaching hospital in Cotonou Benin. Eur Ann Otorhinolaryngol Head Neck Dis 2013:pil: S1879-7296 (13) 00026-4. [Epub ahead of print].
2. Mehra P, Murad H. Maxillary sinus disease of odontogenic origin. Otolaryngol Clin North Am 2004;37:347-64.
3. Smith TL, Kern R, Palmer JN, Schlosser R, Chandra RK, Chiu AG, et al. Medical therapy vs surgery for chronic rhinosinusitis: A prospective, multi-institutional study with 1-year follow-up. Int Forum Allergy Rhinol 2013;3:4-9.
4. Lindahl L, Melén I, Ekedahl C, Holm SE. Chronic maxillary sinusitis. Differential diagnosis and genesis. Acta Otolaryngol 1982;93:147-50.
5. Melén I, Lindahl L, Andréasson L. Short and long-term treatment results in chronic maxillary sinusitis. Acta Otolaryngol 1986;102:282-90.
6. Orlandi RR, Terrell JE. Analysis of the adult chronic rhinosinusitis working definition. Am J Rhinol 2002;16:7-10.
7. Arango P, Kountakis SE. Significance of computed tomography pathology in chronic rhinosinusitis. Laryngoscope 2001;111:1779-82.
8. Stankiewicz JA, Chow JM. Nasal endoscopy and the definition and diagnosis of chronic rhinosinusitis. Otolaryngol Head Neck Surg 2002;126:623-7.
9. Stewart MG, Donovan DT, Parke RB Jr, Bautista MH. Does the severity of sinus computed tomography findings predict outcome in chronic sinusitis. Otolaryngol Head Neck Surg 2000;123:81-4.
10. Fokkens W, Lund V, Mullol J. European Position Paper on Rhinosinusitis and Nasal Polyposis Group. European position paper on rhinosinusitis and nasal polyposis 2007. Rhinol Suppl 2007;20:1-136.
11. Bonfils P, Norès JM, Halimi P, Avan P. Corticosteroid treatment in nasal polyposis with a three-year follow-up period. Laryngoscope 2003;113:683-7.
12. Norès JM, Avan P, Bonfils P. Medical management of nasal polyposis: A study in a series of 152 consecutive patients. Rhinology 2003;41:97-102.
13. Garrel R, Gardiner Q, Khudjadze M, Demoly P, Vergnes C, Makeieff M, et al. Endoscopic surgical treatment of sinonasal polyposis-medium term outcomes (mean follow-up of 5 years). Rhinology 2003;41:91-6.
14. Dalziel K, Stein K, Round A, Garside R, Royle P. Endoscopic sinus surgery for the excision of nasal polypos: A systematic review of safety and effectiveness. Am J Rhinol 2006;20:506-19.
15. Al-Mujaini A, Wall U, Alkhabori M. Functional endoscopic sinus surgery: Indications and complications in the ophthalmic field. Oman Med J 2009;24:70-80.
16. Huang YC, Chen WH. Caldwell-Luc operation without inferior meatal antrostomy: A retrospective study of 50 cases. J Oral Maxillofac Surg 2012;70:2080-4.
17. Aher AR, Gujarathi UP, Shinde KJ. Incidence of fungal infections in chronic maxillary sinusitis. Indian J Otolaryngol Head Neck Surg 2000;52:122-4.
18. Nussenbaum B, Marple BF, Schwade ND. Characteristics of bony erosion in allergic fungal rhinosinusitis. Otolaryngol Head Neck Surg 2001;124:150-4.
19. Kohanski MA, Reh DD. Chapter 11: Granulomatous diseases and chronic sinusitis. Am J Rhinol Allergy 2013;27 Suppl 1:S39-41.
20. Silver AJ, Baredes S, Bello JA, Blitzer A, Hilal SK. The opacified maxillary sinus: CT findings in chronic sinusitis and malignant tumours. Radiology 1987;163:205-10.
21. Zafar U, Khan N, Afroz N, Hasan SA. Clinicopathological study of non-neoplastic lesions of nasal cavity and paranasal sinuses. Indian J Pathol Microbiol 2008;51:26-9.
22. Jung JY, Chole RA. Bone resorption in chronic otitis media: The role of the osteoclast. ORL J Otorhinolaryngol Relat Spec 2002;64:95-107.
23. Everts V, de Vries TJ, Heefrich MH. Osteoclast heterogeneity: Lessons from osteopetrosis and inflammatory conditions. Biochim Biophys Acta 2009;1792:757-65.

How to cite this article: Karikal A, Sharma SM, Gopinath A, Karikal A. Osteolytic nasal polyp of the maxillary sinus mimicking malignancy. Contemp Clin Dent 2014;5:397-401.

Source of Support: Nil. Conflict of Interest: None declared.