

Iceberg lesion—A rare case of chronic osteomyelitis of the jaw with underlying radicular cyst: A case report

Smriti Ticku¹, Lakshmi Shetty¹, Karishma Desai^{1,2}, Ravina Dharamsi¹

¹Department of Oral and Maxillofacial Surgery, Dr. D. Y. Patil Dental College and Hospital, Dr. D. Y. Patil Vidyapeeth, Pune, Maharashtra,

²Department of Oral Pathology, KLE VK Institute of Dental Sciences, Belagavi, KLE Academy of Higher Education and Research (KLE University), Karnataka, India

Abstract

Osteomyelitis is an inflammatory condition of the bones that often starts with an infection of the medullary cavity and swiftly extends to the haversian system and periosteum. If drainage and antimicrobials are ineffective, acute osteomyelitis may progress to chronic osteomyelitis. Here, we offer a unique case that analyzes the radiographic and clinical characteristics of osteomyelitis with underlying disease. Cysts and cyst-like lesions of the jaws must be diagnosed and evaluated using radiographic findings in conjunction with clinical complaints. This case study examines the circumstances that led to the diagnosis of osteomyelitis and demonstrates several noteworthy lessons. As decortication is less invasive and more effective at treating primary chronic osteomyelitis than peripheral or segmental excision of the jaw, and the use of vancomycin as local hard and soft tissue dressing over the surgical site, we emphasize its significance.

Keywords: Decortication and saucerization, osteomyelitis, radicular cyst, vancomycin local dressing

Address for correspondence: Dr. Smriti Ticku, Assistant Professor, Department of Oral and Maxillofacial Surgery, Dr. D. Y. Patil Dental College and Hospital, Dr. D. Y. Patil Vidyapeeth, Pimpri, Pune - 411 018, Maharashtra, India.

E-mail: smrititicku28@gmail.com

Submitted: 22-Dec-2022, **Revised:** 05-Jan-2023, **Accepted:** 25-Jan-2023, **Published:** 12-Sep-2023

INTRODUCTION

Osteomyelitis of the jaws is a common disease in maxillofacial clinics, despite the introduction of antibiotics and the improvement of dental and medical care. The literature on this disease is extensive. Different terminologies and classification systems are used based on a variety of features such as clinical course, pathological–anatomical or radiological features, etiology, and pathogenesis. Diagnosing such cases is a challenge for clinicians.

Because mandibular lesions can occur from both odontogenic and nonodontogenic sources, making a differential diagnosis based on radiographic examinations

can have a negative impact on treatment planning.^[1] Because odontogenic and nonodontogenic tumors have similar radiological appearances, diagnosis can be difficult.^[2] This article will discuss the importance of information derived from radiologic examinations and compare it to clinical symptoms which is critical step in diagnosis and planning for surgical procedure.

CASE PRESENTATION

A 44-year male with a known history of diabetes and on medication for the same for 5 years presented with swelling, pain and pus discharge from the left lower back region of the mandible for 6 months [Figure 1].

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: WKHLRPMedknow_reprints@wolterskluwer.com

How to cite this article: Ticku S, Shetty L, Desai K, Dharamsi R. Iceberg lesion—A rare case of chronic osteomyelitis of the jaw with underlying radicular cyst: A case report. *J Oral Maxillofac Pathol* 2023;27:604.

Access this article online

Quick Response Code:



Website:

<https://journals.lww.com/JPAT/>

DOI:

10.4103/jomfp.jomfp_533_22

The patient underwent an extraction of 36, 6 months back after which he developed a painful swelling along with pus discharge in relation to 34,35,36. The pain was mild, continuous, and localized which aggravated on talking and relieved on medication. Intraoral examination showed an opening along the alveolar ridge extending deep into the cortex in relation to 36 involving 34,35,36 [Figure 1]. The orthopantomogram (OPG) revealed radiolucency



Figure 1: Denuded bone



Figure 2: OPG reveals radiolucency over lower left back side of jaw

extending from the alveolar ridge to the mandibular lower border 36 [Figure 2]. The patient was advised for a computed tomography (CT) scan [Figure 3] and excisional bone biopsy, and the tissue specimen was sent for microscopic examination [Figure 2].

On the basis of clinical and radiological findings, a diagnosis of primary chronic osteomyelitis with an underlying pathology was made. Extraction of 34,35 along with enucleation of cystic lining, surgical decortication and saucerization of the affected bone was performed [Figure 4a-4b and Figure 5a], the upper segmental arch bar was placed from 22 to 27 and the lower segmental arch bar was placed from 32 to 37 region [Figure 4] and Later vancomycin was packed with the surgical site [Figures 5b and 6]. Post-operative elastics were placed for 4 weeks and the patient was put on follow-up. Patient reported after 1 month and 3 months post-operative with repeat OPG [Figures 7 and 8]. Histopathological examination revealed infected and necrotic bone with empty lacunae and irregular margins and partially ulcerated squamous mucosa. In addition, radicular cyst exhibiting arcading pattern with underlying stroma consisting of chronic inflammatory cell infiltrate was also evident [Figures 9 and 10]. On the basis of clinical, radiological, and histological findings, a diagnosis of primary chronic osteomyelitis along with underlying radicular cyst was given.

DISCUSSION

It might be challenging to diagnose a cyst-like lesion in the mandibular region when it exhibits a variety of non-specific symptoms.

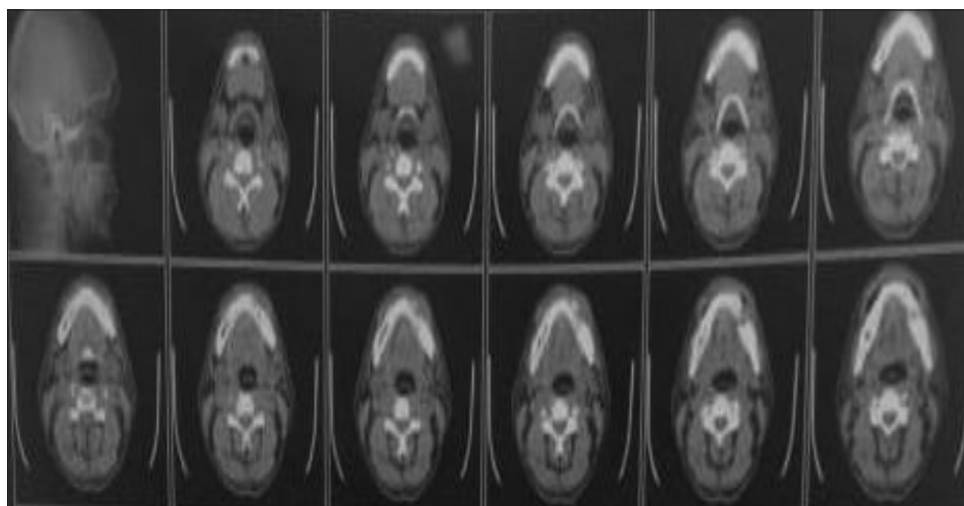


Figure 3: CT Scan showing involvement of buccal plate and thinning out of lingual plate of mandible over left side

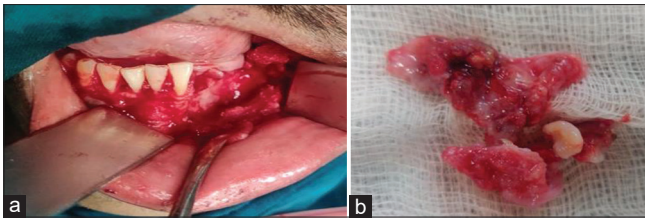


Figure 4: (a) Mucoperiosteal flap raised and lesion located (b) Enucleation and decortication of denuded bone flap raised and lesion located

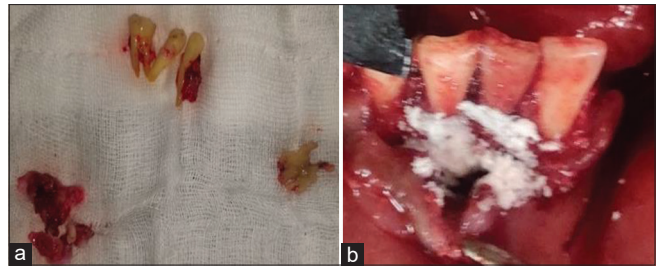


Figure 5: (a) Extraction of 34,35 (b) Vancomycin powder placed over surgical site



Figure 6: Post-operative arch bar placed

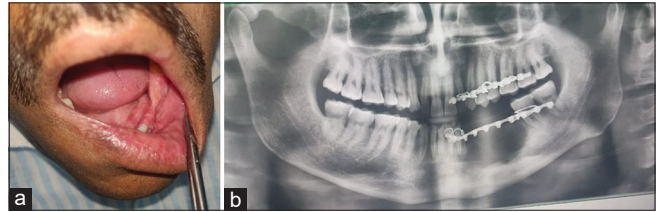


Figure 7: 1 month Post-Operative (a) clinical image; (b) radiographic image



Figure 8: 3 months Post-operative

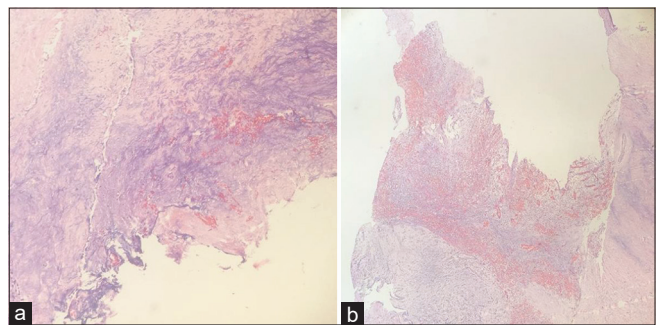


Figure 9: (a) Infected and necrotic bone (b) Partially ulcerated squamous mucosa

Osteomyelitis is a rare, complex disease with a wide variety of clinical traits that, in severe cases, can leave a patient permanently disabled or cognitively impaired. Comparing various forms is still challenging due to the numerous classifications based on origin, pathology, anatomical variances, clinical history, and radiologic pattern.

Both acute and chronic osteomyelitis are defined as lasting ≤ 4 weeks.^[3] The same condition, acute osteomyelitis, causes subsequent chronic osteomyelitis. Numerous factors, such as bacterial inoculum, trauma, ischemia, or foreign objects, can cause osteomyelitis.^[1]

The Zurich classification, which divides osteomyelitis into acute, secondary chronic, and primary chronic,

is acknowledged as the most accurate classification method.^[4]

The host's local immune response, the virulence and load of the bacteria present, as well as blood flow to the tissues, all influence the likelihood of infection. In the bone marrow, the bacteria multiply and poison the bone. Through the Haversian and Volkmann canals, it enters the periosteum and creates edema, which reduces blood flow to the bone and causes a sequestrum to form.^[5,6]

With a 70% incidence rate, secondary chronic osteomyelitis is now thought to be the most common type of osteomyelitis, whereas primary chronic osteomyelitis has a 10% incidence rate and acute osteomyelitis has a 17% incidence rate. When osteomyelitis is suspected, plain radiography, similar to a panoramic radiograph, is the first-line imaging test because it provides simultaneous information on the maxilla and mandible and helps distinguish osteomyelitis from other possible diagnoses, such as a fracture. Although it is unable

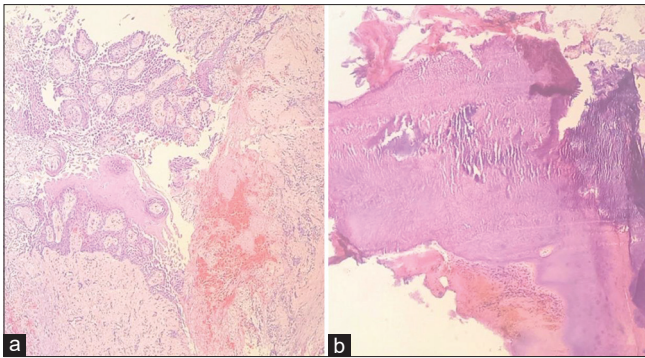


Figure 10: (a) Photomicrograph of Radicular cyst exhibiting arcading pattern with underlying stroma consisting of chronic inflammatory cell infiltrate (b) Associated necrotic bone with empty lacunae and irregular margins

to identify osteomyelitis on its own, it is crucial in the process.^[7-9]

The thickening of the alveolar lamina dura, the variance in the maxillary bone's sclerotic pattern, and the simultaneous resorption and destruction of bone tissue on radiographs are all indications of osteomyelitis.

Vancomycin is typically administered intravenously; however, systemic delivery of antibiotics results in low local concentrations in or near the bone.^[10]

It is shown that the use of vancomycin powder at the surgical site has been shown to reduce the incidence of infection.^[11]

Clinical differential diagnosis is a cognitive process that involves using reasoning and information to make a sequence of deliberate choices to generate a list of potential diagnoses. To focus on the differential diagnosis, exclusion should be used as the starting point. A comprehensive examination of the oral cavity ought to be included in the clinical assessment. In the diagnosis and evaluation of dual lesions, radiographic evidence in combination with clinical complaints is crucial. In our case, it was a challenge in diagnosing as the patient was diagnosed with chronic osteomyelitis preoperatively, but later postoperatively an underlying cyst was noted [Figure10]. These can be a serious maritime hazard mimicking much like an iceberg which leads to the expression "Tip of the iceberg" to illustrate a small part of a larger unseen issue.^[12]

CONCLUSION

Since there are already therapy options available to improve the quality of life for affected people, early osteomyelitis detection is essential. Initially, the condition was thought to be osteomyelitis of the left side of the jaw, imaging

and CT scanning revealed a focal cortical defect opening laterally into the adjacent soft tissue and a sclerotic perifocal mandibular body later a cystic lining was seen underlying. Understanding the information received from radiologic studies and correlating them with clinical symptoms is a critical step in diagnosis and treatment planning. However various imaging modalities can put you in a dilemma about the actual severity of the disease, mimicking like iceberg hence the diagnosis should be made by correlating imaging, and histopathology and comparing it with pre-operative and post-operative reports.^[11]

We emphasize the importance of decortication and saucerization over peripheral or segmental excision of the jaw and the use of vancomycin at the surgical debridement site in the treatment of primary chronic osteomyelitis for better hard tissue and soft tissue healing since it is less invasive and functionally and aesthetically more acceptable showing encouraging results. However post-operative reconstruction and rehabilitation were advised for this patient given an option for implants, a fixed prosthesis which the patient did not agree due to financial issues, so a removable denture was given as a prosthesis from 33 to 36 to maintain the functional integrity of the patient.

Declaration of patients consent

The authors certify that patient consent forms have been obtained appropriately. The patient has/have given his consent for his images and other clinical information to be reported in this journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity.

Author's contribution

ST wrote the paper with revision and the corresponding author.

ST, LS, KD, and RD put the study design, idea and collected the patients' data.

ST and LS did the surgery and followed the patients postoperatively. All authors have read and approved the final version of the manuscript.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. Rajendiran R, Marimuthu M, Wahab A, Sridharan G. A rare case of

- osteomyelitis presenting as cyst-like lesion in the coronoid process: A diagnostic challenge. *Cureus* 2021;13:e18616.
- Özgür A, Kara E, Arpacı R, Arpacı T, Esen K, Kara T, *et al.* Nonodontogenic mandibular lesions: Differentiation based on CT attenuation. *Diagn Interv Radiol* 2021;20:475-80.
 - Mercuri LG. Acute osteomyelitis of the jaw. *Oral Maxillofac Surg Clin North Am* 1991;3:355-65.
 - Andre CV, Khonsari RH, Ernenwein D, Goudot P, Ruhin B. Osteomyelitis of the jaws: A retrospective series of 40 patients. *J Stomatol Oral Maxillofac Surg* 2017;118:261-4.
 - Schmitt SK. Osteomyelitis. *Infect Dis Clin North Am* 2017;31:325-38.
 - Pineda C, Espinosa R, Pena A. Radiographic imaging in osteomyelitis: The role of plain radiography, computed tomography, ultrasonography, magnetic resonance imaging, and scintigraphy. *Semin Plast Surg* 2009;23:80-9.
 - Dudhia R, Monsour P. Consideration of positioning errors in the assessment of distortion in the mandibular third molar region on panoramic radiographs. *Oral Surg Oral Med Oral Pathol Oral Radiol Endodontology* 2011;112:415.
 - Schuknecht BF, Carls FR, Valavanis A, Sailer HF. Mandibular osteomyelitis: Evaluation and staging in 18 patients, using magnetic resonance imaging, computed tomography and conventional radiographs. *J Craniomaxillofac Surg* 1997;25:24-33.
 - Momodu II, Savaliya V. *Osteomyelitis*. Treasure Island (FL): Stat Pearls Publishing; 2022.
 - Crawford T, Rodvold KA, Solomkin JS. Vancomycin for surgical prophylaxis? *Clin Infect Dis* 2012;54:1474-9.
 - O'Neill KR, Smith JG, Abtahi AM, Archer KR, Spengler DM, McGirt MJ, *et al.* Reduced surgical site infections in patients undergoing posterior spinal stabilization of traumatic injuries using vancomycin powder. *Spine J* 2011;11:641-6.
 - Shetty L, Gangwani K, Kulkarni D, Londhe U. Odontome, cyst, impacted tooth, and space infection in a single patient: All-in-one diagnostic Dilemma. *Surg Ann Maxillofac Surg* 2018;8:127-30.