Content available at: https://www.ipinnovative.com/open-access-journals

IP International Journal of Maxillofacial Imaging

Journal homepage: https://www.ijmi.in/

Case Report

Calcifying odontogenic cyst mimicking dentigerous cyst in a 36 year old male: A case report

Richa Wadhawan[1,*], Piyush Dua[2], Gopal Krishna[3], Sabanaz Mansuri[4], Laishram Memory Devi[4]

[1]*Dept. of Oral Medicine, Diagnosis & Radiology, Institute of Dental Education & Advance Studies, Gwalior, Madhya Pradesh, India*
[2]*Dept. of Oral and Maxillofacial Surgery, I.T.S Centre for Dental Studies & Research Muradnagar, Ghaziabad, Uttar Pradesh, India*
[3]*CARE India Solutions for Sustainable Development, Patna, Bihar, India*
[4]*Institute of Dental Education and Advance Studies, Gwalior, Madhya Pradesh, India*

ARTICLE INFO

Article history:
Received 13-04-2022
Accepted 17-05-2022
Available online 20-07-2022

Keywords:
Calcifying Odontogenic cyst
Cone beam computed tomography
Calcified bodies
Unilocular
multilocular
Impacted third molar
Intraosseous

ABSTRACT

Odontogenic and nonodontogenic cystic lesions of the mandible have wide range of pathologic features but similar imaging findings. Their locations in the mandible and prevalence rate often help narrow the differential diagnosis. Histological findings are crucial and direct the workup and treatment of a lesion. This case report presents calcifying odontogenic cyst mimicking dentigerous cyst involving left angle of mandible in a 38 year old male.

1. Introduction

Gorlin in 1962 first introduced the clinic pathological entity calcifying odontogenic cyst.[1] It accounts for 0.3-0.8% of all odontogenic cysts.[2]Extreme diversity is shown in its clinical, histopathological as well as in its biological characteristics. This cystic lesion arises from odontogenic epithelial remnants confined within maxilla and mandible or gingival tissues. It mostly arises intraosseously, but it may also occur extraosseously. Both jaws are affected with equal frequency, no gender predilection with peak incidence in the second and sixth decade of life.[3] Roentographically cysts commonly occur in the mandible and appear as unilocular or multilocular radiolucencies. Cystic lining demonstrating characteristic "Ghost" epithelial cells with a disposition to calcifation is a noteworthy histopathological feature of these entity.[4] On the contrary dentigerous cysts arises as a result of cystic change in the remains of the enamel organ after the process of enamel formation is complete.[5] They entrench an unerupted tooth crown as fluid collects between layers of epithelium or between the epithelium and enamel and are attached to the cemento enamel junction. Dentigerous cysts are mostly considered developmental cysts. Their size varies and cysts have ample potential to grow large enough to cause consequential expansion of the jaw, displacement of adjacent teeth and anatomical structures, pathological fractures; however resorption of the root apex is rare.[6]

2. Case Report

A 36 year old male reported to department of Oral Medicine, Diagnosis and Radiology, Institute of Dental Education and

* *Corresponding author.*
E-mail address: richawadhawan@gmail.com (R. Wadhawan).

https://doi.org/10.18231/j.ijmi.2022.017

Advance Studies, Gwalior, Madhya Pradesh with a chief complaint of pus discharge in lower left back jaw region for the past 2.5-months duration. The patient did not have any symptoms such as pain or paresthesia. Medical and family histories were noncontributory. This was patient first dental visit. On extra oral examination, no facial asymmetry was evident. On intraoral examination hard tissue findings revealed.

Teeth present 18 17 16 15 14 13 11 21 22 23 24 25 26 27 48 47 46 45 44 43 42 41 51 52 53 54 55 56 57

Fig. 1: Panoramic radiograph depicting well defined homogenous unilocular radiolucency present in 37 38 region. It also reveals inverted impacted 38.

Generalized extrinsic stains were present. Soft tissue findings revealed no intra swelling or sinus evident and no tenderness was present in left molar region. The mucosa around the lesion area had normal color. Radiographic investigations were evident. A panoramic radiograph revealed a unilocular radiolucent lesion with well-defined sclerotic margins involving apices of 37 and extending posteriorly till inverted impacted 38. The third molar was dislocated distally. Other findings were congenitally missing 12 and 28. Radiographic investigations also revealed generalized interdental bone loss (Figure 1). Provisional diagnosis of dentigerous cyst was given. Ameloblastoma was considered as differential diagnosis. Patient was sent to department of Oral and Maxillofacial Surgery for surgical intervention. Prior to surgical intervention cone beam computed radiography was advised for a more complete evaluation. It revealed a well-defined circumscribed hypodense expanding lesion involving 37 38 region with thin underlying inferior border of mandible. (Figure 2). Surgical enucleation of lesion, bone curettage along with extraction of 37 38 is carried out under local anesthesia (Figures 3, 4 and 5). The surgical specimen was fixed in formalin and was sent to department of Oral Pathology. Tissue sections were routinely processed and were embedded in paraffin. Haematoxylin and eosin staining was carried out. Histological findings revealed collection of ghost cells replacing the stellate reticulum layers of the cyst lining. Focal area of ghost cells with giant cell reaction and calcification in the connective tissue (Figure 6). Final diagnosis was given as calcifying odontogenic cyst.

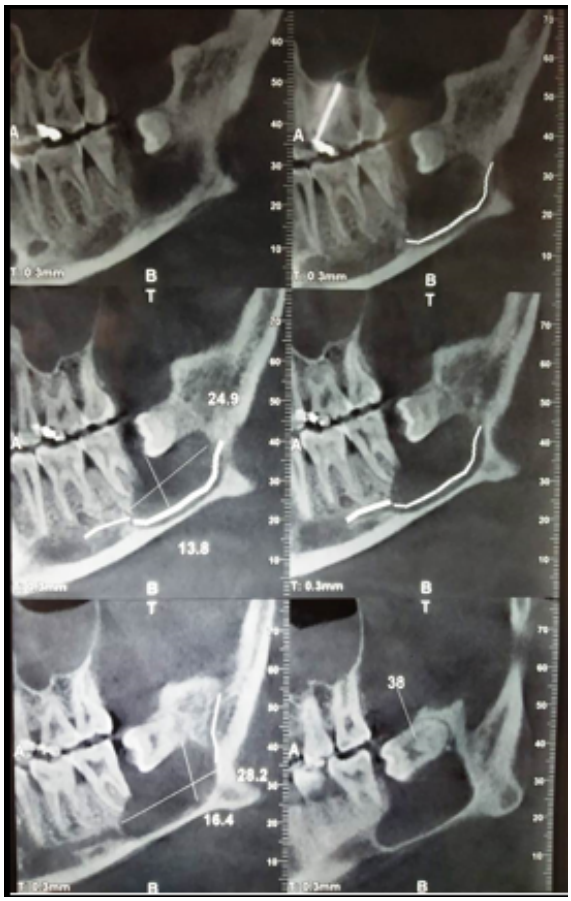

Fig. 2: Cone beam computed tomography taken prior surgery

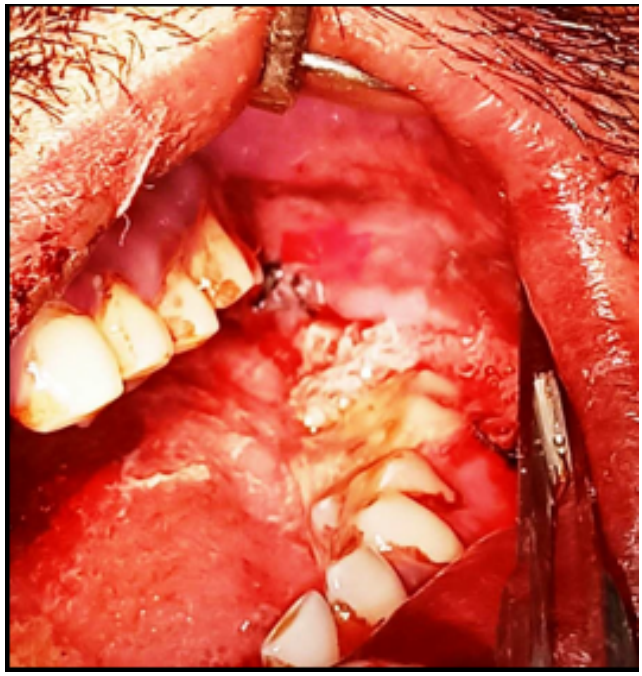

Fig. 3: Intraoral picture of surgical site

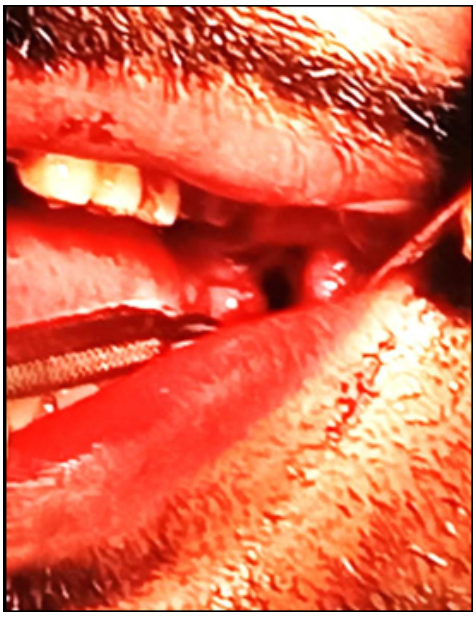

Fig. 4: Intraoral picture of surgical site after extraction of 37 38

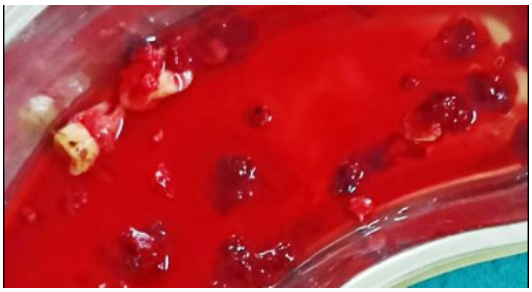

Fig. 5: Specimen showing extracted 37 38

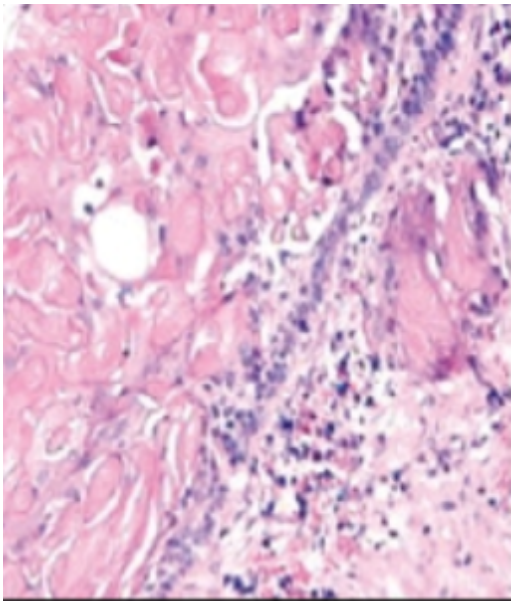

Fig. 6: Histological specimen showing ghost cells

3. Discussion

Calcifying odontogenic cyst is an uncommon odontogenic lesion. It is arduous to diagnose this entity as it exhibits various clinical and roentographic presentations.[7] It emerges within the follicle of impacted teeth and this stresses the importance of histopathological examination of all dental follicles.[8] Both calcifying and dentigerous cysts can arise at any site in the oral cavity with former cases occurring mostly prevalent in anterior maxilla, followed by the posterior mandible whereas later mainly prevalent in posterior mandible.[9] Our case report illustrates calcifying odontogenic cyst in posterior mandible. Cystic lesions that arise within the mandible can cause bony remodelling that can enfeeble the bone, leading to altered functional characteristics and making patient susceptible to superimposed infection and pathologic fracture.[10] This applies to both calcifying and dentigerous cysts making them as strong differential diagnosis. One of common presentation of both calcifying odontogenic cysts and dentigerous cysts is asymptomatic swelling. This clinical feature is associated with lesions occurring in both extra osseous and intra osseous sites with an expansion of buccal and/or lingual cortical plates frequently appearing with the latter.[11] Most of calcifying odontogenic cysts and dentigerous cysts are asymptomatic, often an incidental finding revealed on radiographic examination. Roentographic features of calcifying odontogenic cysts includes well circumscribed unilocular radiolucency with calcifications of varying density and in some cases it may present as multilocular lesion.[12] The present case exhibits unilocular variant without opacification. Dentigerous cyst mainly exhibits unilocular pattern but multilocular variant is also found in few cases. Multiplanar imaging is an essential tool for precise visualization of the internal structure of the lesion and the involvement of contiguous structures, with high reproducibility of measurements for all dimensions. It has been considered very helpful for clinical diagnosis and treatment planning.[13] Incidence of root divergence and root resorption are high in calcifying odontogenic cysts as they are frequently situated in the periapical or lateral periodontal area of the dentition whereas in dentigerous cysts root resorption is rare. But in present case root resorption is not evident.[14] Microscopic features of calcifying odontogenic cyst includes amorphous structures with well-defined borders without nucleus known as ghost cells, and the eosinophilic dentinoid like material and basophilic round to irregular calcified masses where about histopathological findings of dentigerous cyst includes fibrous connective tissue, hyperplastic non-keratinized epithelium, elongated interconnecting rete ridges, chronic inflammatory cells, cholesterol clefts, possibly formation of cholesterol granuloma, Rushton bodies, scattered mucous, or ciliated or sebaceous cells, small, inactive appearing odontogenic epithelial rests and dystrophic calcifications

occasionally.[14] In our case report ghost cells were main histopathological finding.

4. Conclusion

In order to achieve a definitive diagnosis thorough pathologic analysis of the epithelial lining and contents and clinical and radiographic findings are mandatory. Dentists should be careful about the radiolucencies associated with impacted third molars.

5. Source of Funding

None.

6. Conflicts of Interest

None.

References

1. Gorlin RJ, Pindborg JJ, Odont, Clausen FP, Vickers RA. The calcifying odontogenic cyst-a possible ana-logue of the cutaneous calcifying epithelioma of Mal-herbe. An analysis of fifteen cases. *Oral Surg Oral Med Oral Pathol*. 1962;15:1235–78.
2. Figueiredo NR, Meena M, Dinkar AD, Khorate M. Calcifying epithelial odontogenic cyst of the mandible. *J Oral Res Rev*. 2014;6:57–603.
3. Ide F, Muramatsu T, Miyazaki Y, Kikuchi K, Kusama K. Calcifying odontogenic cyst showing a varied epithelial lining: an additional case with implications for the divergent differentiation capacity of the cyst epithelium. *Head Neck Pathol*. 2019;13(2):251–5.
4. Irani S, Foroughi F. Histologic variants of calcifying odontogenic cyst: A study of 52 cases. *J Contemp Dent Pract*. 2017;18(8):688–94.
5. Rakprasitkul S. Pathologic changes in the pericoronal tissues of unerupted third molars. *Quintessence Int*. 2001;32(8):633–41.
6. Daley TD, Pringle GA. Relative incidence of odontogenic tumors and oral and jaw cysts in Canadian population. *Oral Sur Oral Med Oral Patho*. 1994;77(3):276–84.
7. De Arruda JA, Monteiro JL, Abreu LG, De Oliveirasilva LV, Schuch LF, De Noronha MS. Calcifying odontogenic cyst, dentinogenic ghost cell tumor, andghost cell odontogenic carcinoma: a systematic review. *J Oral Pathol Med*. 2018;47(3):721–51. doi:10.1111/jop.12727.
8. Fejerskov O, Krough J. The calcifying ghost cell odontogenic tumor or the calcifying odontogenic cyst. *J Oral Pathol*. 1972;1(6):273–87.
9. Resende RG, Brito JA, Souza LN, Gomez RS, Mesquita RA. Peripheral calcifying odontogenic cyst: a case report and review of the literature. *Head and Neck Pathol*. 2011;5(1):76–80.
10. Nagao T, Nakajima T, Fukushima M. Calcifying odontogenic cyst with complex odontoma. *J Oral Maxillofac Surg*. 1982;40(12):810–81.
11. Buncher A. The central (intraosseous) calcifying odontogenic cyst: an analysis of 215 caes. *J Oral Maxillofacial Surg*. 1991;49(4):330–9.
12. Freedman PD, Lumerman H, Gee JK. Calcifying odontogenic cyst. A review and analysis of seventy cases. *Oral Surg Oral Med Oral Pathol*. 1975;40(1):93–106. doi:10.1016/0030-4220(75)90351-5.
13. Gadipelly S, Reddy V, Sudheer M. Bilateral Calcifying Odontogenic Cyst: a rare entity. *J Maxillofac Oral Surg*. 2015;14(3):826–31.
14. Li BB, Gao Y. Ghost cell odontogenic carcinoma transformed from a dentinogenic ghost cell tumor of maxilla after multiple recurrences. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod*. 2009;107(5):691–5. doi:10.1016/j.tripleo.2009.01.008.

Author biography

Richa Wadhawan, Reader

Piyush Dua, Post Graduate

Gopal Krishna, Assistant Medical Officer

Sabanaz Mansuri, Dental Surgeon

Laishram Memory Devi, Dental Surgeon

Cite this article: Wadhawan R, Dua P, Krishna G, Mansuri S, Devi LM. Calcifying odontogenic cyst mimicking dentigerous cyst in a 36 year old male: A case report. *IP Int J Maxillofac Imaging* 2022;8(2):73-76.