

Multilocular Radicular Cyst – A Common Pathology with Uncommon Radiological Appearance

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ABSTRACT

Radicular cyst is the most common odontogenic cyst of inflammatory origin. It is almost all the times associated with pulpal necrosis leading to inflamed periapical tissues. The cyst is usually asymptomatic unless infected. Radiographically, it presents as a well defined unilocular radiolucency. Although, multilocular radiolucent radicular cysts have also been reported, which is extremely rare and there are very few reported cases. Here, we present a rare case of radicular cyst periapical to the first molar of third quadrant, presenting clinically as a painless, bony hard swelling and radiographically presented as a multilocular radiolucency.

Keywords: Cone beam computed tomography, Odontogenic cysts, Periapical cyst, Rests of Malassez

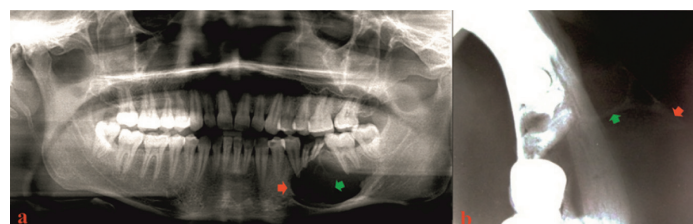
CASE REPORT

A 21-year-old male patient reported to the Department of Oral Medicine & Radiology with a chief complaint of swelling on the lower left side of face since 10 days; it was sudden in onset and gradually progressed to present size. There was no history of pain and other associated symptoms. Medical, past dental and family history were not significant.

On extraoral examination, there was a diffuse swelling in the lower 3rd of face measuring about 3x3cm extending supero-inferiorly from 1 cm inferior to ala tragus line to the lower border of mandible, and anteroposteriorly from 1.5cm posterior to corner of mouth to 1cm front of tragus. Surface over swelling was normal [Table/Fig-1a&b]. On palpation swelling was hard, nontender with no local rise in temperature. Intraorally, a solitary circumscribed dome shaped swelling was present in the left buccal vestibule wrt. 35, 36, 37, measuring about 3x3cm extending antero-posteriorly from the medial aspect of 34 to the distal aspect of 36, super inferiorly from marginal gingiva to vestibular area. Mucosa over swelling was smooth with normal colour [Table/Fig-1c] On palpation swelling was non tender, hard in the periphery, firm to soft in the centre with

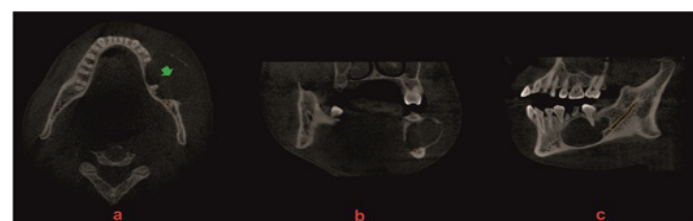
cortical expansion, fluctuant, non-mobile, non compressible, and non reducible, 36 tooth was found to be decayed.

Aspiration yielded a straw coloured fluid. Based on clinical examination, provisional diagnosis of radicular cyst i.r.t. 36 was given. On radiological investigation, IOPA radiograph showed a multilocular radiolucency with a sclerotic border in the apical region irt 35, 36, 37. OPG showed the presence of multilocular radiolucency with a sclerotic border in the apical region with respect to 35, 36, 37, measuring about 4x3cm extending anteroposteriorly from apex of 35 to apex of 38. Superoinferiorly extending from the interdental area between 46, 47 to 0.5cm superior to the lower border of mandible. The internal structure was multilocular, three locules were seen measuring about 1.5cm each. Inferior displacement of mandibular canal is seen, with mesially displaced 36 [Table/Fig-2a]. On occlusal radiograph, a multilocular radiolucency was noted with expansion of buccal cortical plate [Table/Fig-2b].



[Table/Fig-2]: Showing the images of conventional radiographs obtained in a middle age male patient with radicular cyst: 2a) An OPG showing a multilocular radiolucency (Green arrow) with sclerotic margin (Red arrow) periapical to 36 & 37; 2b) An occlusal radiograph showing an expansile multilocular radiolucency (Green arrow) with buccal cortical plate expansion (Red arrow)

CBCT confirmed the findings of panoramic radiography [Table/Fig-3a-c].



[Table/Fig-3]: Figure showing the cone beam computed tomography images of a middle aged male patient with radicular cyst: 3a) Axial slice showing an expansile lesion involving the left mandibular body with multilocular radiolucency (Green arrow); 3b) Coronal slice showing an expansile radiolucent lesion of the mandible; 3c) Oblique sagittal slice showing a radiolucent lesion periapical to 36 & 37



[Table/Fig-1a-c]: Figure showing the clinical extraoral profile and intraoral picture of a middle aged male patient with radicular cyst: 1a) Front profile of the patient showing facial asymmetry due to swelling over left lower one-third of face (Red arrow); 1b) Intraoral picture showing the asymmetry on the left side of face due to swelling (Red arrow); 1c) Intraoral picture showing a diffuse obliteration of left lower buccal vestibule associated with a root stump i.r.t. 36 (Black arrow)

Based on the radiological findings, the radiographic diagnosis was given as ameloblastoma. The differential diagnoses included were odontogenic keratocyst, aneurysmal bone cyst, haemangioma, central giant cell granuloma. Incisional biopsy was performed & the specimen was submitted for the histological examination. Histopathological examination revealed the presence of fibrous connective tissue with a discontinuous overlying epithelium. The epithelium was stratified squamous nonkeratinized without rete ridge formation. The connective tissue stroma showed mature collagen bundles with sparse inflammatory infiltrate of the chronic type suggestive of a Radicular cyst. On the basis of the history, clinical, radiographic and histopathological examination the final diagnosis was given as Radicular cyst in relation to the tooth no. 36. The patient was referred to department of oral and maxillofacial surgery where enucleation of the cyst was done. The patient was followed up for two year post operatively, and no recurrence of the cyst in the same region was observed.

DISCUSSION

The cyst is defined as “a pathological cavity having a fluid, semi fluid or gaseous contents and which is not created by the accumulation of pus” [1]. Radicular cyst accounts for about 52% to 68% of all the cysts of the jaw in human. These are mostly seen in the third and fourth decade of life and shows male predilection [2]. Cysts occur in the jaw bones with variable frequencies, which are classified by Shear as either lined with epithelium or non-epithelium. These were further divided into developmental and inflammatory, and which were again re-divided into odontogenic and non-odontogenic. Here, odontogenic refers to the cysts arising from the dental (odontogenic) tissues [3]. Radicular cyst is an epithelial lined odontogenic cyst of inflammatory origin, which can be defined as “A cyst arising from the epithelial residues (rests of Malassez) in the periodontal ligament as a consequence of inflammation, usually following the death of the dental pulp” [4]. The most common aetiology is dental caries with pulp involvement, with periapical inflammation, which is of long duration [5].

In the present case, the cyst was asymptomatic with noticeable swelling extraorally, which is similar to that reported by Shear M, et al., that radicular cyst is the most common cause for a slow enlargement of the jaw. They are painless unless infected secondarily. The expansion is at first bony hard, but due to the increase in size, the cyst exhibits springiness and egg shell crackling [3]. In cases, where the outer cortex is lost the swelling becomes rubbery and fluctuant [6].

Radiographically, this cyst appears as a well defined unilocular radiolucency located periapical to a tooth with pulp involvement with dental caries [7], the size of which should be over 2 cm and should be surrounded by radio-opaque sclerotic border, which may be lost in cases of secondary infection [6]. In the present case, the radiographic appearance was that of a multilocular radiolucency, similar to that reported by Narsapur Sulabha A et al., and Lustmann J et al., that apart from the usual unilocular radiolucency, there has been very few cases reported of radicular cyst with multi-locular radiolucency [8,9]. Uloopi KS reported that histopathologically, stratified squamous epithelial lining is seen, which may show exocytosis, hyperplasia or spongiosis. The lumen is usually filled with fluid and cellular debris. And, the wall consists of dense fibrous connective tissue, usually with an inflammatory infiltrate containing lymphocytes mixed with neutrophils, plasma cells, histiocytes, and occasionally mast cells and eosinophils [10]. Similar findings were observed in the present case.

There are several treatment modalities available for the radicular cyst, these include: endodontic treatment, extraction of the tooth,

enucleation, and marsupialisation. The treatment option depends on several factors, size and location of the cyst, integrity of the wall, and proximity of the cyst with vital structures [10]. In our case enucleation was performed, whereas, marsupialization is favoured due to lower morbidity, preservation of the tooth, better bony contour following shrinkage [10] [Table/Fig-4,5].

Features	Present Case Findings	Published Literature
Sex	Male	Gadda Rohit B et al., [6], Uloopi KS et al., [10]
Age	21 Years	Shear et al., [3]
Site	Posterior Mandible	Gadda Rohit B et al., [6], Uloopi KS et al., [10]
Radiographic appearance	Multilocular radiolucency	Gadda Rohit B et al., [6]
Histopathological findings	Fibrous connective tissue with stratified squamous nonkeratinized & infiltration of chronic inflammatory cells	Joshi NS et al., [2], Shear et al., [3], Uloopi KS et al., [10]
Treatment	Surgical enucleation	Joshi NS et al., [2], Shear et al., [3]

[Table/Fig-4]: Table comparing the findings of the present case with previous published literature.

Lesions	Differentiating features
Keratocystic odontogenic tumor	Buccolingual cortical expansion is unusual Can cross the midline
Central giant cell granuloma	Thin and wispy septa
Giant cell lesion of hyperparathyroidism	Associated with underlying hyperparathyroidism
Cherubism	Present bilaterally Found in young age
Odontogenic myxoma	Tennis racket appearance
Aneurysmal bone cyst	Ill defined & wispy septa
Metastatic tumors of the jaw	Primary tumor should be present
Central haemangioma	No history of prolonged or excess bleeding No calcification in the lesion
Ameloblastoma	Scalloped margin Thick septa

[Table/Fig-5]: Differential Diagnosis of Multilocular Radiolucencies of The Jaws [3,4,6].

CONCLUSION

The authors conclude from the present case, that although radicular cyst is considered to be a unilocular radiolucent lesion, its multilocular variant is much rare. The present case serves as an evidence for the fact that the radicular cyst should always be considered as a differential diagnosis, for the periapical lesions appearing as a multilocular radiolucency.

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