

# CONE BEAM COMPUTER TOMOGRAPHY IN MAXILLARY CYST DIAGNOSIS – CASE PRESENTATION

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**ABSTRACT.** A case report of a 34 years old patient with a giant superior left maxillary cyst (diameter of 6.5 cm/13 cm). The patient was investigated through panoramic view a CBCT. The treatment consisted in cystectomy and bone replacement by bone substitute material (Bio-OSS). The histopathology confirmed the diagnosis.

**Keywords:** radicular cyst, cone beam computer tomography, panoramic view, bone substitute

## INTRODUCTION

A radicular cyst is a cyst that most likely results when rests of epithelial cells in the periodontal ligament are stimulated to proliferate and undergo cystic degeneration by inflammatory products from a non-vital tooth.

Radicular cysts are the most common type of cyst in the jaws. They arise from non-vital teeth. Often radicular cysts produce no symptoms unless secondary infection occurs. A cyst that becomes large may cause swelling. On palpation the swelling may feel bony and hard if the cortex is intact, crepitant as the bone thins, and rubbery and fluctuant if the outer cortex is lost (Asnani S, et al., 2012, Bahadure RN, et al., 2013).

A cyst should be considered with any evidence of tooth displacement or considerable expansion of the involved bone. The size of the normal follicular space is 2 to 3 mm. If the follicular space exceeds 5 mm, a dentigerous cyst is more likely. If uncertainty remains, the region should be re-examined in 4 to 6 months to detect any increase in size or any influence on surrounding structures characteristic of cysts.

"The differential diagnosis also may include an odontogenic keratocyst, an ameloblastic fibroma, and a cystic ameloblastoma. An odontogenic keratocyst does not expand the bone to the same degree as a dentigerous cyst, is less likely to resorb teeth, and may attach further apically on the root instead of at the cemento-enamel junction. It may not be possible to differentiate a small ameloblastic fibroma or cystic ameloblastoma from a dentigerous cyst if there is no internal structure. Other rare lesions that may have a similar pericoronal appearance are adenomatoid odontogenic tumors and calcified odontogenic cysts, both of which can surround the crown and root of the involved tooth. Evidence of a radiopaque internal structure should be sought in these two lesions. Occasionally a radicular cyst at the apex of a primary tooth surrounds the crown of the developing permanent tooth positioned apical to it, giving the false impression

of a dentigerous cyst associated with the permanent tooth. This occurs most often with the mandibular deciduous molars and the developing bicuspids. In these cases the clinician should look for extensive caries or large restorations in a primary tooth that would indicate a radicular cyst." (Stuart C. 2009).

A radicular cyst has a propensity to displace and resorb adjacent teeth. It commonly displaces the associated tooth in an apical direction. The degree of displacement may be considerable. For instance, maxillary third molars or cuspids may be pushed to the floor of the orbit, and mandibular third molars may be moved to the condylar or coronoid regions or to the inferior cortex of the mandible. The floor of the maxillary antrum may be displaced as the cyst invaginates the antrum, and the cyst may displace the inferior alveolar nerve canal in an inferior direction. This slow-growing cyst often expands the outer cortical boundary of the involved jaw (Nagarathna C. et al., 2013).

## MATERIALS AND METHODS

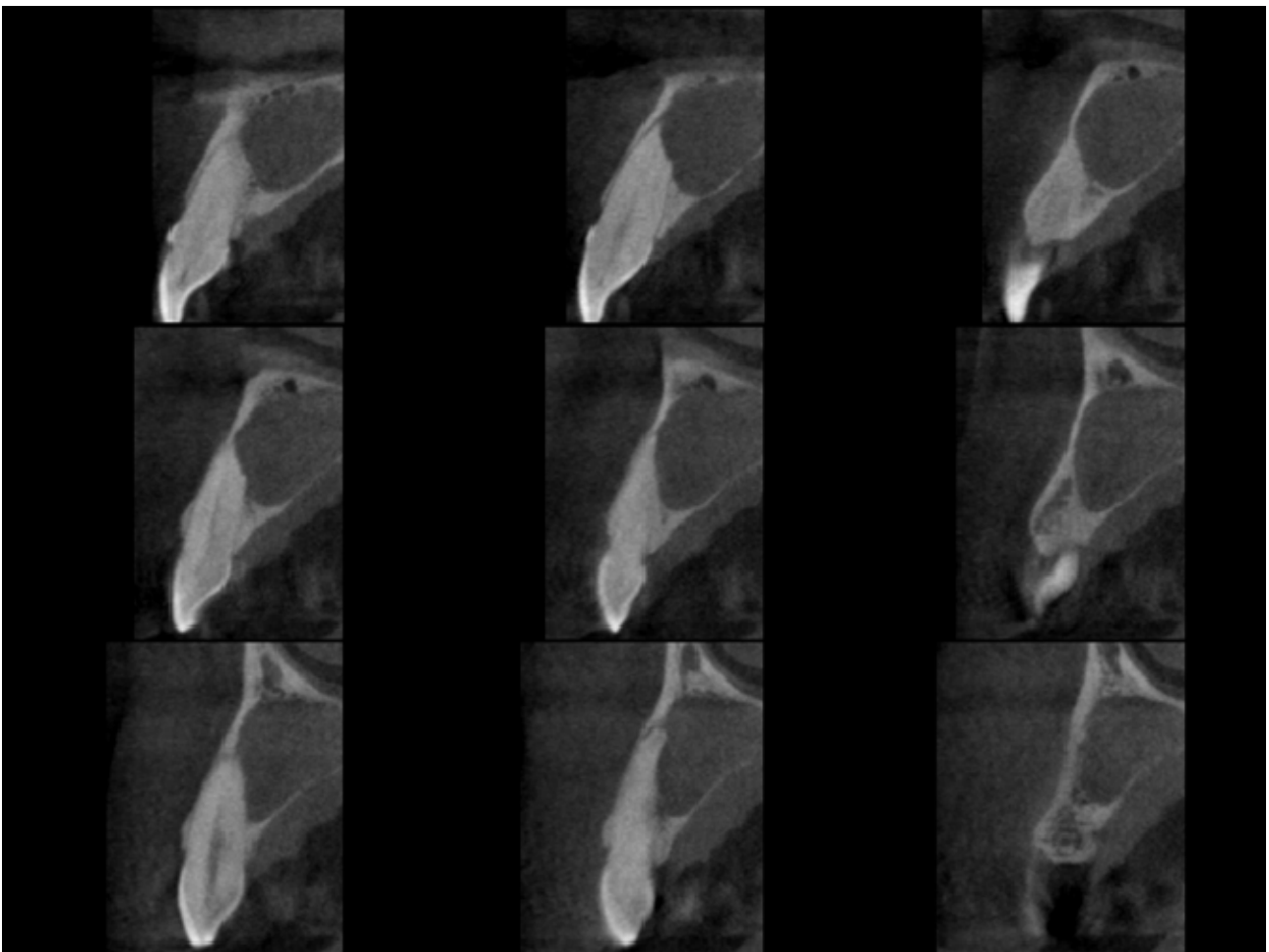
Patient was 34 years old male, who underwent anteriorly an obturation at the level of the first molar, left superior maxillary. The tooth was devitalized. The patient had a history of maxillary sinusitis, and a skin infection with *Staphylococcus aureus*.

The symptoms were: swelling, pain in the left maxillary area. First it was performed a panoramic view. It shows a completely radiolucent formation in the left superior maxillary area, except for the crown of the involved tooth. Then we performed a CBCT scan with a 3D reconstruction. The cyst had a transversal diameter of 6.5 cm, an anterior–posterior diameter of 13 cm and an oval shape. Radicular cysts of this size are uncommon so we consider it might be an old one which grows asymptomatic over a period of a few years.

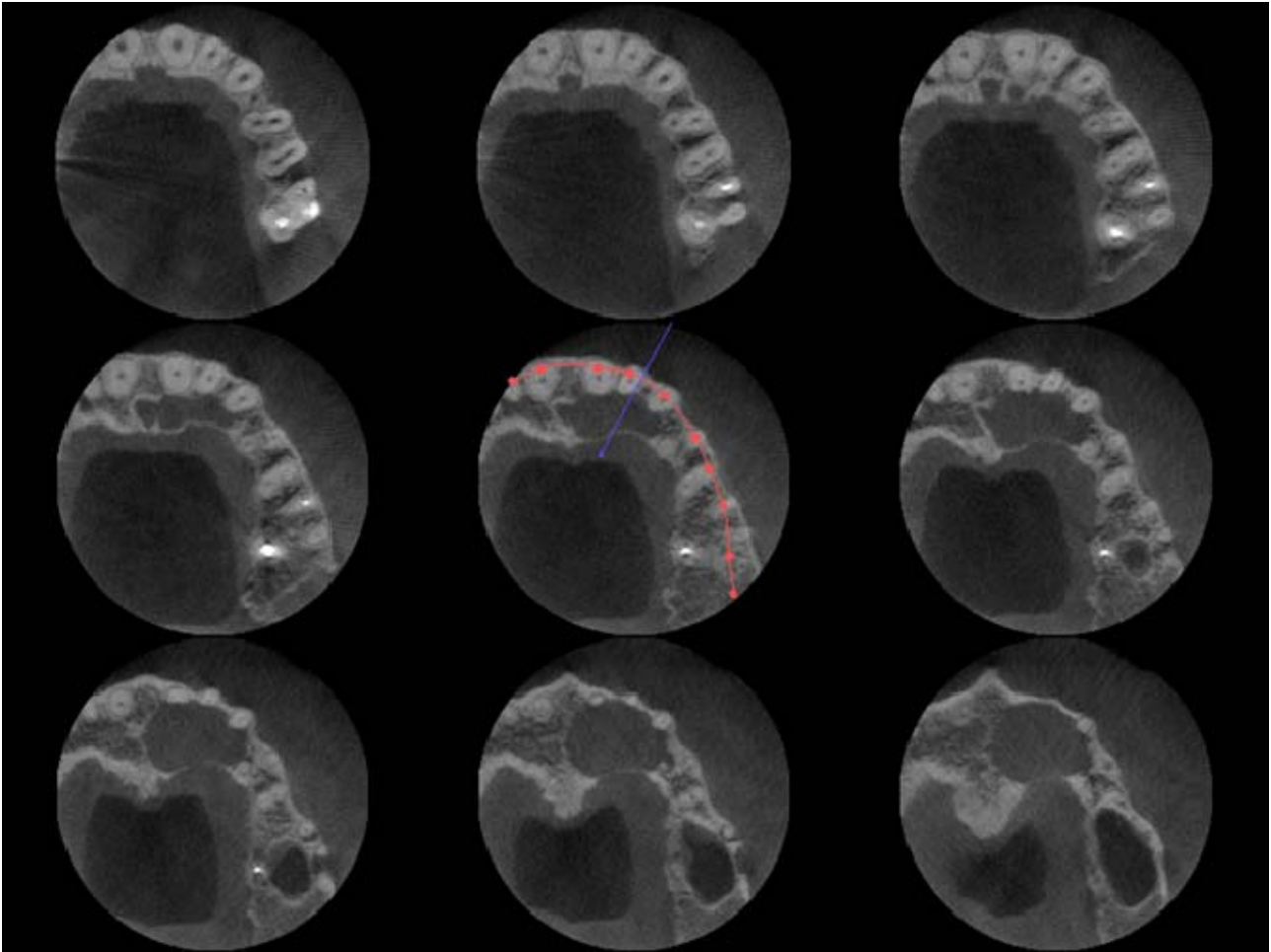
The diagnosis was radicular cyst based on the radiological and imagistic findings.



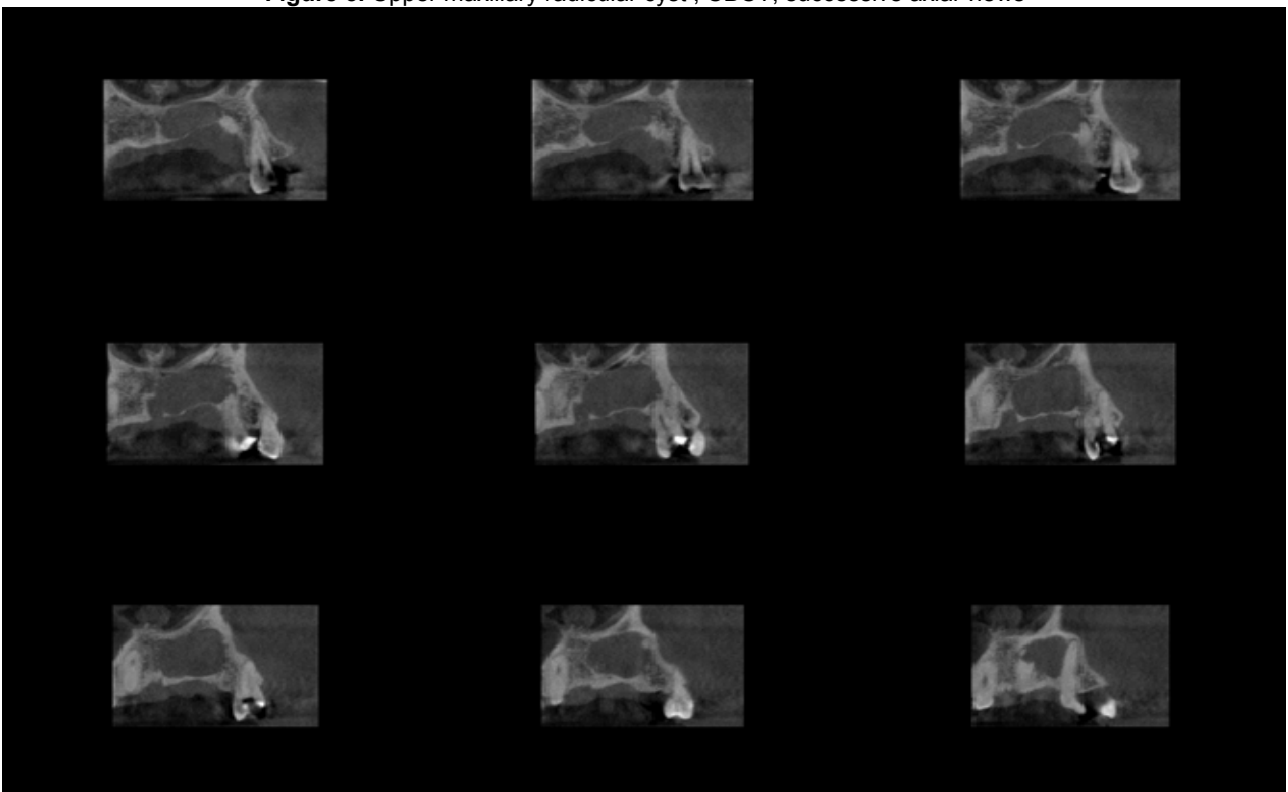
**Figure 1.** Radio transparent formation shows radicular cyst, upper left maxillary region (Panoramic view)



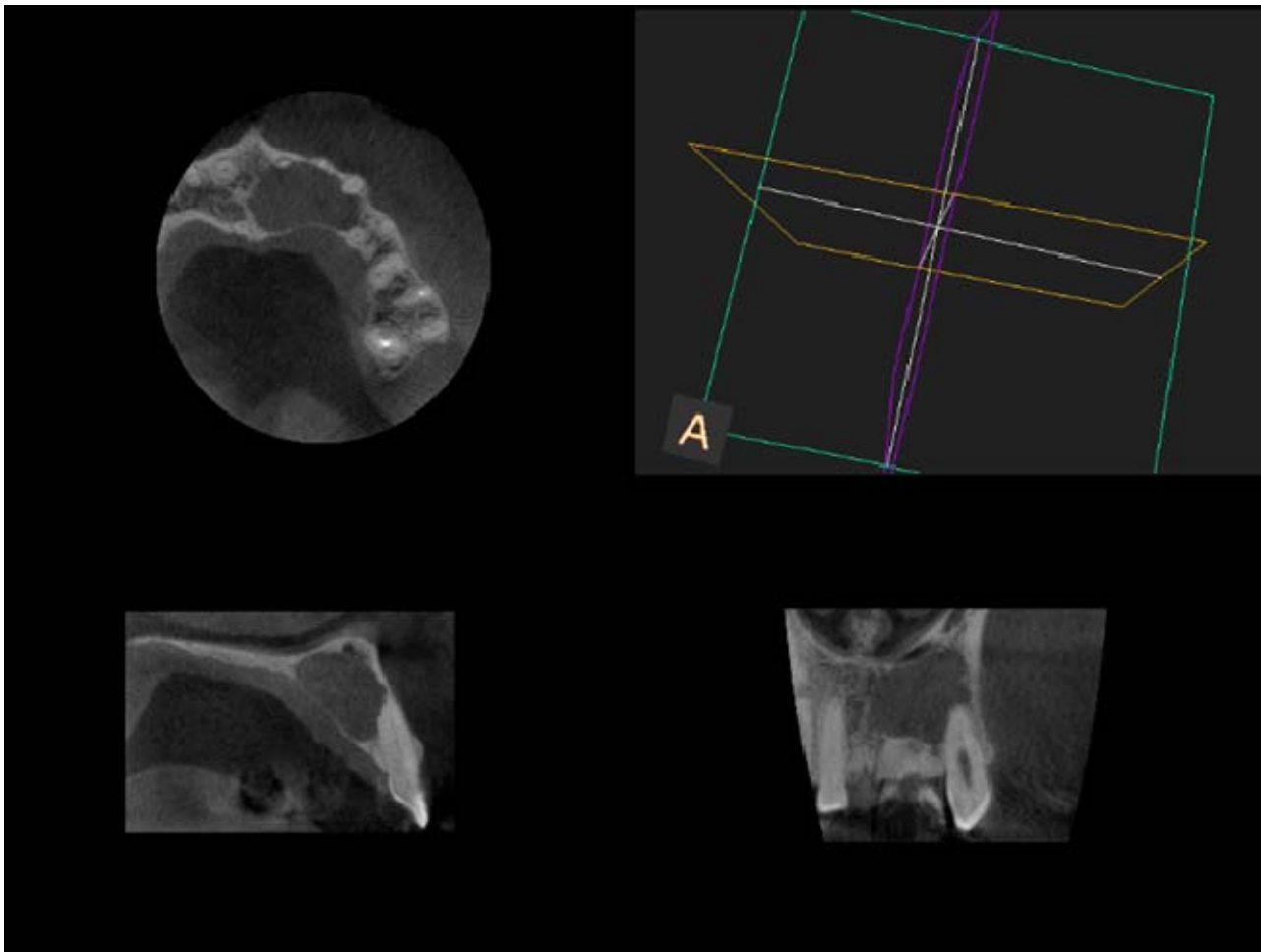
**Figure 2.** Upper maxillary radicular cyst, CBCT, sagittal view, tooth area



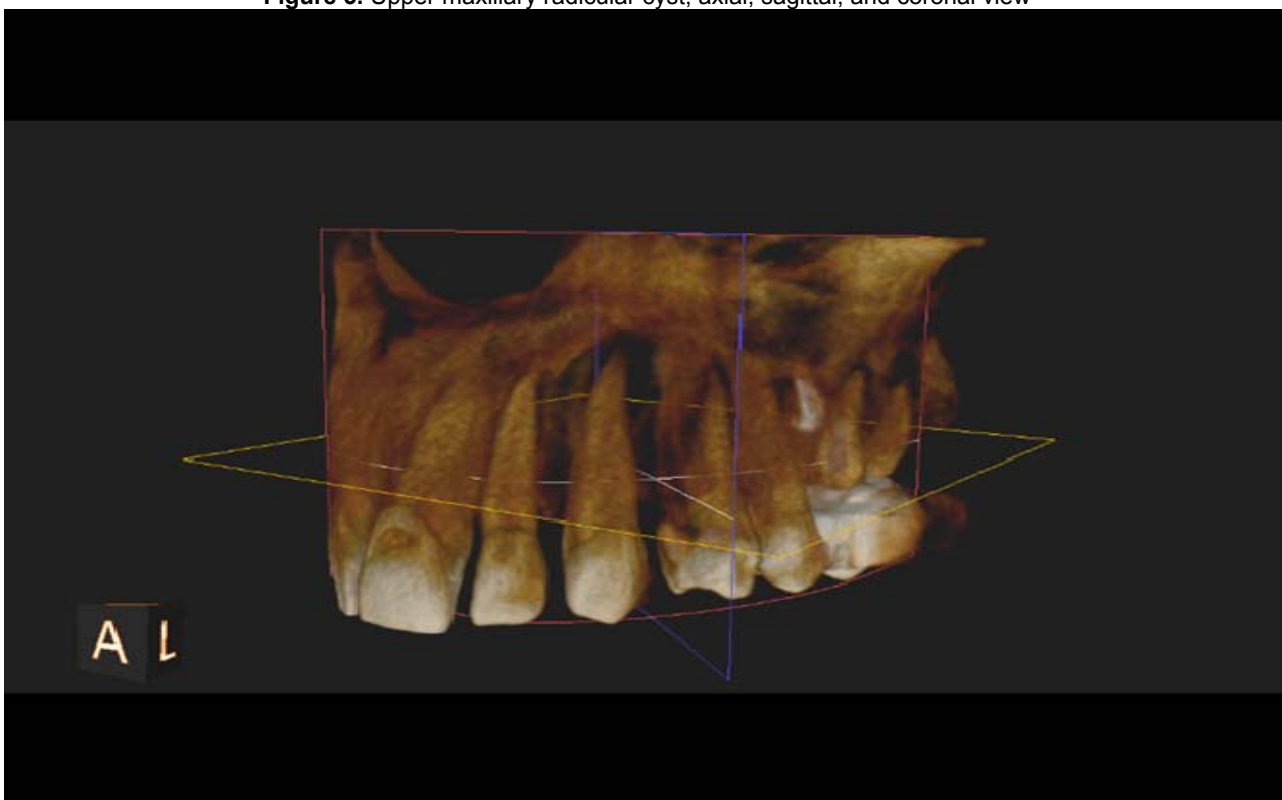
**Figure 3.** Upper maxillary radicular cyst , CBCT , successive axial views



**Figure 4.** Upper maxillary radicular cyst , CBCT , successive coronal views, sinus area



**Figure 5.** Upper maxillary radicular cyst, axial, sagittal, and coronal view



**Figure 6.** Upper maxillary radicular cyst, CBCT, 3D reconstruction, anterior – lateral (left) view

The treatment was done by cystectomy. First it was performed an incision by oral - vestibular approach. Then the cyst membrane was removed and it was practiced a bone curettage, apical resection of the teeth and a retrograde root obturation of these teeth. Guided bone regeneration was done by bone substitute material (Bio-Oss) and the filling of the fault bone part for regeneration. Finally was practiced the closing suture. The removed part was examined by the histopathology department. The diagnosis was confirmed. The bacteria found in the cyst was *Escherichia Coli*. This bacteria is found rarely in radical cyst. According to the literature the predominant bacteria found in radicular cyst are: *Streptococcus milleri* Group (SMG) (23.8%) *Streptococcus constellatus* (19.1%) and *Streptococcus anginosus* (4.7%], *Streptococcus sanguis* (14.3%), *Streptococcus mitis* (4.7%), *Streptococcus cremoris* (4.7%), *Peptostreptococcus pevotii* (4.7%), *Prevotella buccae* (4.7%), *Prevotella intermedia* (4.7%), *Actinomyces meyeri* (4.7%), *Actinomyces viscosus* (4.7%), *Propionibacterium propionicum* (4.7%), *Bacteroides capillosus* (4.7%), *Staphylococcus hominis* (4.7%), *Rothia denticariosa* (4.7%), *Gemella haemolysans* (4.7%), and *Fusobacterium nucleatum* (4.7%).

The prognosis is good, but the patient is slowly recovering. In the first three month he had pain when eating, speaking was difficult and has also a persistent anesthesia in the superior lip, left side (Tek M. et al., 2013).

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