

## Two Way Approach For Enucleation Of Maxillary Radicular Cyst.

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**Summary:** Radicular cyst is the most common odontogenic cystic lesion of inflammatory origin. It is also known as periapical cyst, apical periodontal cyst, root end cyst or dental cyst. It arises from epithelial residues in periodontal ligament as a result of inflammation. The inflammation usually follows death of dental pulp. Radicular cysts are found at root apices of involved teeth. The treatment of radicular cyst depends on the condition of the teeth involved, the extent of the bone destroyed and accessibility of treatment. We report a case of Maxillary radicular cysts which requires a complete enucleation of the cyst because of its presenting features and extent. This article highlights the two surgical approaches possible for enucleating the same cyst one being the conventional enucleation through oral cavity whereas other being the endoscopic approach through median maxillary antrostomy.

**Background:** Radicular cysts are the most common (52%-68%) among the inflammatory types and occur solely at the apices of non-vital teeth as a reactive process, especially in adults.<sup>1</sup> Their prevalence is higher among the population in their third decade with more predilection for males. They form as a result of the stimulation of the odontogenic epithelium (Rests of Malassez) in the vicinity of the root tip, by the necrotic pulp, and the contents of the root canal system.<sup>2</sup> Different forms of treatment of jaw cysts have been described, such as enucleation, curettage, decompression, marsupialisation and resection with or without jaw continuity. However, in large cysts that extend into the maxilla, difficulties may be encountered due to the limited exposure and access for the enucleation unless a generous incision is made.<sup>3</sup> The purpose of publishing this case report is to show that though the enucleation was done intraorally through a large sulcular incision and reflecting a flap there is also possibility of enucleating the same cyst through Functional Endoscopic Sinus Surgery (FESS) via Median Maxillary Antrostomy (MMA) which was done later in this case to rule out any residual pathology as the patient had to undergo septoplasty to treat his nasal obstruction caused by deviated nasal septum.

**Key Words:** Radicular Cyst, Enucleation, Functional Endoscopic Sinus Surgery (FESS), Median Maxillary Antrostomy (MMA)

### I. Case Presentation:

A 39yr old male patient came with a complaint of pain in the left upper back tooth region since two weeks. Pain was also associated with swelling which was gradual in onset since past two weeks attaining the size shown in (Fig. 1) on clinical presentation. Mild facial asymmetry was present due to swelling. Patient was febrile around the area of swelling with no other signs of inflammation except calor seen extra orally.



Fig:1

Fig:2

Fig. 1: Extra oral examination showing facial asymmetry on the left side and Fig. 2: Intra oral examination showing diffuse buccal swelling extending from upper left canine to the third molar.

On intraoral examination (Fig. 2) it was observed that solitary swelling was extending from the left upper canine region till the third molar region buccally obliterating the buccal vestibule measuring 2.5 cm in length and 1 cm in height, there was no sign of surface discharge or change in colour of the over lying tissues, there was no signs of swelling in the palatal region . On palpation the swelling was bony hard in consistency, mild tenderness with neither any discharge nor bleeding.

A provisional clinical diagnosis of odontogenic cyst was arrived based on clinical presentation

**Investigations:**

**Panoramic radiograph:** It revealed a well-defined unilocular radiolucent lesion extending anteriorly from apical end of lateral incisor till distal aspect of third molar posteriorly. OPG also showed root stumps of first molar which was the causative factor for the cyst formation. Calcification was not evident on radiograph (Fig. 3).



**Fig. 3: OPG View**

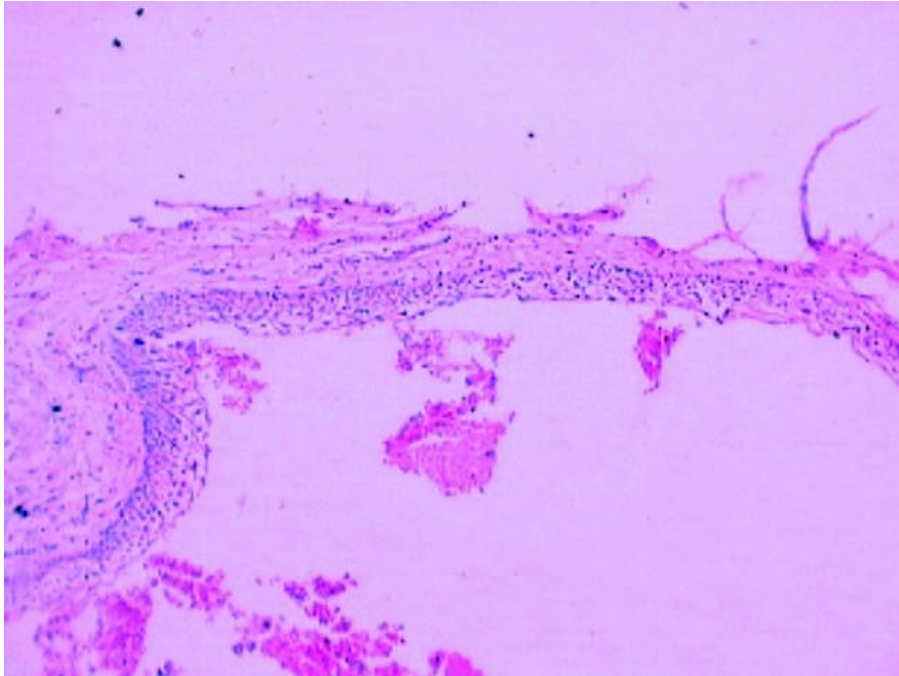
**Paranasal Sinus View (PNS View):** It revealed altered shape of left maxillary sinus. It also showed deviated nasal septum to the left (Fig. 4).



**Fig. 4: PNS View**

**Histopathological examination:** Hand E stained slides shows a lumen lined by epithelium and surrounded by connective tissue capsule (Fig. 5). The lining epithelium shows parakeratnised stratified squamous epithelium. The connective tissue capsule shows collagen fibres, chronic inflammatory cells like lymphocytes and plasma cells, blood vessels, extravasted RBCs and cholesterol clefts .

Histological diagnosis of infected radicular cyst was arrived at.



**Fig. 5 :** Histopathological examination

**Differential Diagnosis**

- Periapical Granuloma
- Traumatic Bone Cyst
- Surgical Ciliated Cyst
- Globulomaxillary Cyst
- Aneurysmal Bone Cyst
- Periapical Cemental Dysplasia
- Periapical Cemento-osseous Dysplasia
- Pumice Cyst
- Periapical Scar
- Periapical Surgical Defect

**treatment**

Enucleation of the lesion along with extraction of 26 was performed through the buccalsulcular approach (Fig. 6). The entire cystic lining was removed In Toto and was sent for histopathological examination. (Fig. 7). The dead space was then packed with strip of gauze impregnated with tincture of benzoin and antibiotic ointment. Primary Closure was achieved with a piece of gauze projecting out of the cavity so it can be replaced with a new pack on the following post-operative visits.



**Fig. 6:** Enucleation of the cyst via buccalsulcular approach.

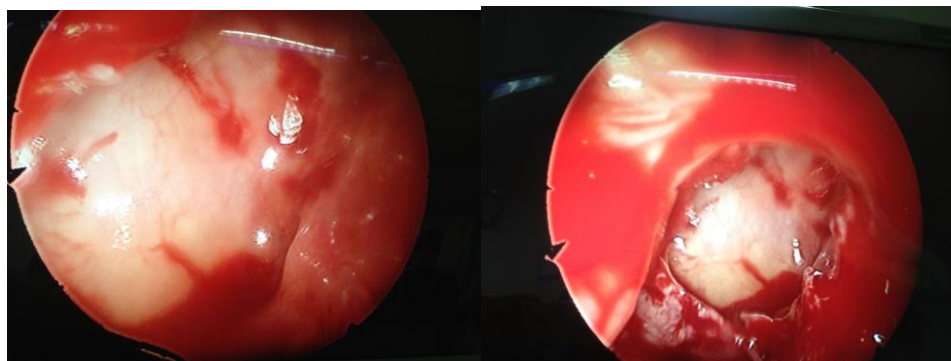


**Fig. 7:** Cystic lining sent for histopathological examination

Dressing was changed after post-operative day four and a new dressing of smaller size was placed till post-operative day seven following which the area was sutured completely for good healing.

The patient was on close follow up every fortnight for first one month followed by once every month.

Three months post operatively patient came with complaint of nasal obstruction and nasal discharge. As there was presence of deviated nasal septum as it is clearly seen in the PNS view (Fig. 5) patient was referred to the Dept. of Otorhinolaryngology. On ENT examination patient was diagnosed to have “Gross Deviated Nasal Septum to the Left Side with a Spur Touching the Inferior Turbinate”. Patient was posted for Septoplasty under General Anaesthesia. Even Left Uncinectomy and Medial Maxillary Antrostomy (MMA) was performed to rule out if any pathological tissue is remaining from the enucleated cyst. Functional Endoscopic Sinus Surgery (FESS) was done to have direct visual view of the maxillary lining (Schniderian Membrane) which didn't show any Pathologic remnants (Fig.8 & 9).



**Fig. 8 & 9:** FESS view showing Schneiderian Membrane free of pathological cystic remnants

### **Outcome And Follow-Up**

After correction of deviated septum and FESS a close follow up of every 3 months is done. Follow up after one year shows patient is asymptomatic with no signs of recurrence neither there is difficulty in breathing nor any nasal discharge.

## **II. Discussion**

Radicular cyst arise from the cell Rest of Malassez present in the periodontal tissue as a result of proliferation of the inflammatory process cause by an infected tooth whose root canal system is irreversibly affected.<sup>4</sup>Traditionally larger cystic lesions of the jaws can be treated more conservatively by a decompress technique, aiming to reduce the size of the lesion for further performing of total enucleation in a less invasive manner. With marsupialization, the cystic lesion is decompressed allowing new bone to fill the defect, leading to substantial reduction in the size of the cystic cavity. It shows lower morbidity compared to enucleation in terms of preservation of important anatomical structures as the maxillary sinus, the adjacent teeth and the inferior alveolar nerve.<sup>5-6</sup>However, marsupialization is a time-consuming treatment that can only be performed in a compliant patient.<sup>7</sup>In our case looking at the size of the bone involvement and patient compliance it was decided to go ahead with enucleation.The affected teeth are extracted along with the cyst walls. The complications, such as oroantral fistulas and chronic rhino sinusitis, may be caused by dental extractions in odontogenic cysts which involve the maxillary sinus, even inadequate dental treatment may cause the recurrenceof the cyst.<sup>8</sup>In our case also the affected upper left first molar was extracted.

For the treatment of patientswith odontogenic maxillary cysts, endoscopic treatment hasbeen used in addition to the dental procedure.Cedin et al first removed the cyst wallsfrom the maxillary sinus using small clamps with an endoscopethrough a 10 mm circumferential hole of the canine fossa.<sup>9</sup>

Trans nasal removal of large radicular cysts of the maxillary sinus has been also reported using the endoscopic approach through the maxillary sinus and opening of inferior meatus, authors of this literature also suggest that partial resection of the cyst wall may be sufficient for the endoscopic treatment of the radicular cysts.<sup>10</sup> As in our case endoscopy was only used to visualise the residual cystic lining we support Satoshi Seno et al<sup>10</sup> that endoscopy can be used as the primary treatment of choice for enucleation of the radicular cyst but the entire cystic lining needs to be enucleated completely as it can further act as a nidus for future pathology.

Endoscopy assisted enucleation is an innovative upcoming method for enucleation of the radicular and various other odontogenic cyst causing even lesser morbidity than marsupialization, allowing preservation of important anatomical structures and reduced healing period.<sup>11</sup>

#### **Learning Points/Take Home Messages :**

1. Maxillary Radicular Cyst can primarily be enucleated by FESS through MMA
2. As FESS is done under general anaesthesia it is a more comforting treatment plan rather to excise cyst intraorally under local anaesthesia.
3. FESS is less invasive than conventional dental procedures, and it prevents oroantral fistula formation and chronic maxillary sinusitis.

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