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TRAUMATIC RADICULAR CYST OF THE ANTERIOR MAXILLA WITH PALATAL AND NASAL FLOOR INVOLVEMENT: A CASE REPORT

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ABSTRACT

Introduction: Radicular cysts are the most common inflammatory odontogenic cysts, arising from epithelial rests of Malassez secondary to pulpal necrosis. Trauma-induced radicular cysts involving the anterior maxilla with extension to the nasal floor are relatively uncommon and may present as large osteolytic lesions requiring combined endodontic and surgical management. **Case Presentation**: A 40-year-old male presented to the Department of Oral and Maxillofacial Surgery with pain and swelling in the upper anterior maxillary region for three months. The patient reported a history of facial trauma following a fall from a tractor several years earlier. Clinical examination revealed localized swelling involving the anterior maxilla. Aspiration yielded brown-coloured cystic fluid. Electric pulp testing demonstrated non-vitality of teeth 11, 12, and 21. Cone-beam computed tomography (CBCT) revealed a well-defined radiolucent lesion involving the periapical region of the maxillary incisors, with extension up to the nasal floor and associated palatal cortical bone destruction. Root canal treatment of the involved teeth was performed, followed by surgical enucleation and apicectomy under general anaesthesia. Histopathological examination confirmed the diagnosis of a radicular cyst. **Outcome**: Healing was uneventful, with satisfactory postoperative recovery and preservation of adjacent teeth. **Conclusion**: Traumatic pulpal necrosis may remain undetected for years before presenting as a large radicular cyst. CBCT plays a crucial role in evaluating lesion extent and surgical planning. Combined endodontic therapy, cyst enucleation, and apicectomy provide predictable outcomes for extensive anterior maxillary lesions.

KEYWORDS: Radicular cyst, apicectomy, enucleation, CBCT, odontogenic cyst.

INTRODUCTION

Radicular cysts are inflammatory odontogenic cysts originating from epithelial rests of Malassez in response to chronic periapical inflammation associated with non-vital teeth. They account for approximately 50–70% of all jaw cysts and are most frequently encountered in the anterior maxilla due to the higher incidence of trauma affecting this region.[1,2]

Dental trauma may result in pulpal necrosis without immediate symptoms, eventually leading to chronic periapical inflammation and cyst formation. Large radicular cysts may cause cortical expansion, palatal perforation, displacement of adjacent structures, and extension into the nasal cavity or maxillary sinus.[3] CBCT is particularly valuable in assessing lesion dimensions, cortical bone involvement, and relationship with adjacent anatomical structures.[4]

This report describes the diagnosis and management of a large traumatic radicular cyst involving the anterior maxilla with palatal bone destruction and extension to the nasal floor.

CASE PRESENTATION

A 40-year-old male presented to the outpatient clinic of the Department of Oral and Maxillofacial Surgery with a chief complaint of pain and swelling in the upper front tooth region for three months.

The patient reported a previous history of facial trauma resulting from a fall from a tractor. No significant medical history was reported.

Extraoral examination revealed no facial asymmetry or cervical lymphadenopathy. Intraoral examination demonstrated a localized swelling involving the anterior maxillary region extending palatally. The overlying mucosa appeared intact. On palpation, the swelling was mildly tender and exhibited cortical expansion.

Aspiration using a sterile syringe yielded brown-colored fluid suggestive of a cystic lesion. Electric pulp testing revealed non-vital responses in teeth 11, 12, and 21, indicating pulpal necrosis secondary to previous trauma.

CBCT examination demonstrated a well-circumscribed radiolucent lesion measuring approximately 5 cm in greatest dimension involving the periapical region of teeth 11, 12, and 21. The lesion extended superiorly toward the nasal floor and was associated with significant palatal cortical bone destruction. Expansion and thinning of surrounding cortical plates were evident, while the nasal floor remained intact despite close approximation.

Based on clinical and radiographic findings, a provisional diagnosis of radicular cyst was established. Differential diagnoses included residual cyst, odontogenic keratocyst, and glandular odontogenic cyst.

Following completion of root canal treatment for teeth 11, 12, and 21, surgical intervention was planned under general anesthesia. A full-thickness mucoperiosteal flap was reflected, revealing a large cystic cavity with palatal bone loss. Complete enucleation of the lesion was performed along with apicectomy of the involved teeth. The surgical cavity was irrigated thoroughly and primary closure was achieved.

The excised specimen measured approximately 2 cm and was submitted for histopathological examination.

Histopathological analysis demonstrated a cystic cavity lined by non-keratinized stratified squamous epithelium with underlying chronic inflammatory cell infiltrate, consistent with a radicular cyst.

Outcome and Follow-Up

Postoperative healing was satisfactory with no evidence of infection, wound dehiscence, or oro-nasal communication. The patient reported resolution of pain and swelling. Follow-up examinations demonstrated favorable healing and maintenance of function and esthetics.

Figures

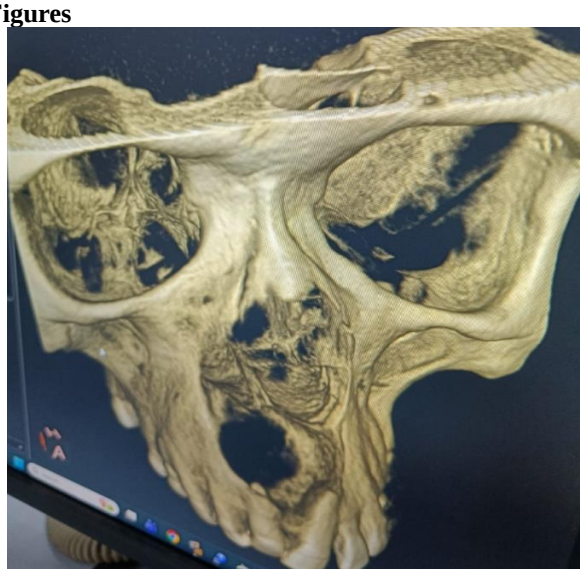


Fig. 1: 3D section of CBCT showing bony perforation palatally and extending till nasal floor.

Fig. 2: CBCT sections showing periapical radiolucency extending from 12 to 22 regions.

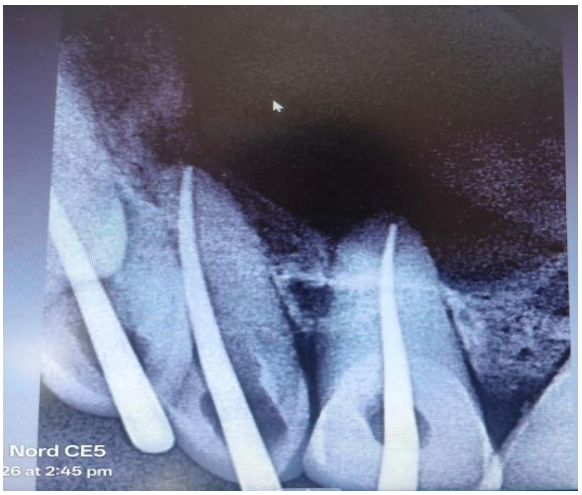


Fig. 3: Post RVG of RCT wrt 12,11,21.

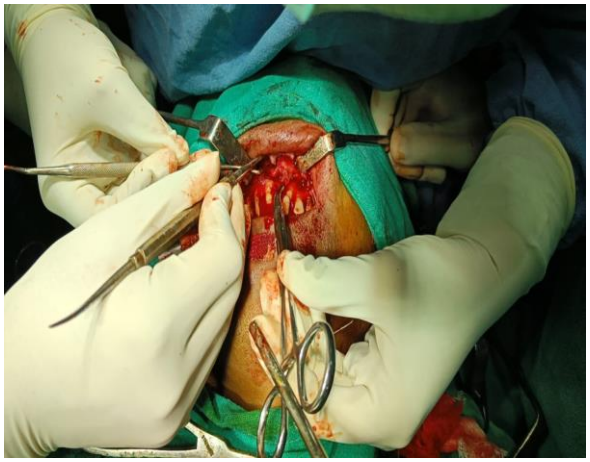
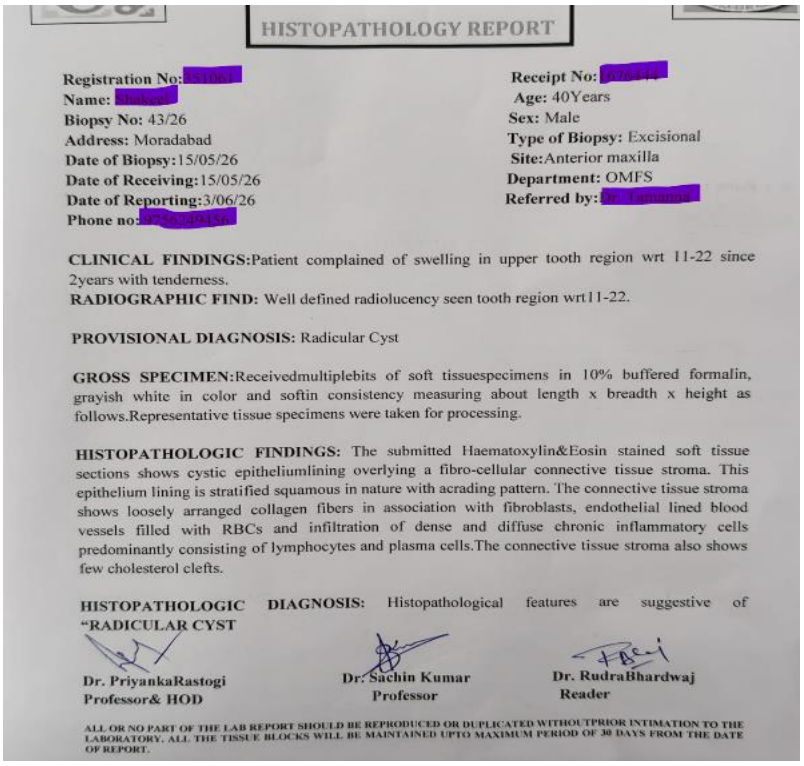


Fig. 4: Showing after crevicular incision separating cleavage plane for enucleation.

Fig. 5: After enucleation, peripheral ostectomy and apicectomy wrt 11,21.

Fig. 6: Showing excised specimen for histopathology.



HISTOPATHOLOGY REPORT

Registration No: [redacted]
Name: [redacted]
Biopsy No: 43/26
Address: Moradabad
Date of Biopsy: 15/05/26
Date of Receiving: 15/05/26
Date of Reporting: 3/06/26
Phone no: [redacted]

Receipt No: [redacted]
Age: 40Years
Sex: Male
Type of Biopsy: Excisional
Site: Anterior maxilla
Department: OMFS
Referred by: [redacted]

CLINICAL FINDINGS: Patient complained of swelling in upper tooth region wrt 11-22 since 2years with tenderness.
RADIOGRAPHIC FIND: Well defined radiolucency seen tooth region wrt11-22.

PROVISIONAL DIAGNOSIS: Radicular Cyst

GROSS SPECIMEN: Receivedmultiplebits of soft tissuespecimens in 10% buffered formalin, grayish white in color and softin consistency measuring about length x breadth x height as follows.Representative tissue specimens were taken for processing.

HISTOPATHOLOGIC FINDINGS: The submitted Haematoxylin&Eosin stained soft tissue sections shows cystic epitheliumlining overlying a fibro-cellular connective tissue stroma. This epithelium lining is stratified squamous in nature with acrading pattern. The connective tissue stroma shows loosely arranged collagen fibers in association with fibroblasts, endothelial lined blood vessels filled with RBCs and infiltration of dense and diffuse chronic inflammatory cells predominantly consisting of lymphocytes and plasma cells.The connective tissue stroma also shows few cholesterol clefts.

HISTOPATHOLOGIC DIAGNOSIS: Histopathological features are suggestive of "RADICULAR CYST

Dr. PriyankaRastogi
Professor& HOD

Dr. Sachin Kumar
Professor

Dr. RudraBhardwaj
Reader

ALL OR NO PART OF THE LAB REPORT SHOULD BE REPRODUCED OR DUPLICATED WITHOUTPRIOR INTIMATION TO THE LABORATORY. ALL THE TISSUE BLOCKS WILL BE MAINTAINED UPTO MAXIMUM PERIOD OF 30 DAYS FROM THE DATE OF REPORT.

DISCUSSION

Radicular cysts develop as a consequence of persistent inflammation associated with necrotic teeth. Trauma is a recognized etiological factor in the anterior maxilla, where pulpal necrosis may occur even in the absence of crown fractures.[5]

The present case demonstrated several characteristic features of a radicular cyst, including a history of trauma, non-vital teeth, aspiration of cystic fluid, and a well-defined periapical radiolucency. The large size of the lesion and palatal bone destruction highlighted the chronic nature of the pathology.

CBCT has become indispensable in the assessment of large odontogenic lesions because it provides three-dimensional visualization of cortical perforation, proximity to the nasal cavity, and extent of bone loss, thereby facilitating surgical planning.[4]

Management options for radicular cysts include nonsurgical endodontic treatment, marsupialization, decompression, and enucleation. Large lesions associated with persistent periapical pathology often require surgical enucleation combined with apicectomy to eliminate residual inflammatory tissue and improve prognosis.[6]

Histopathological confirmation remains essential because several odontogenic lesions may mimic radicular cysts radiographically.[7]

CONCLUSION

This case highlights the importance of considering a traumatic radicular cyst in patients presenting with anterior maxillary swelling and a history of dental trauma. Comprehensive evaluation using vitality testing, aspiration, and CBCT imaging is critical for accurate diagnosis. Combined root canal treatment, surgical enucleation, and apicectomy resulted in successful management of this extensive lesion involving the anterior maxilla and nasal floor.

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