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Case Report

Oral Pathology

Dentigerous Cyst Associated with an Impacted Maxillary Supernumerary Tooth

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Abstract: Dentigerous cysts are common cysts of the oral cavity and are said to arise, due to an accumulation of fluid between the reduced enamel epithelium of the dental follicle and the crown of the unerupted tooth. Their indolent behaviour warrants only surgical enucleation which is curative. The occurrence of dentigerous cysts in association with impacted supernumerary teeth accounts for 5% of the total cases, making it a rare phenomenon and raising considerable concerns due to the possible metaplastic and neoplastic transformations reported to arise from dentigerous cysts. Here we report a case of a 38-year-old male patient with a slow growing swelling in the anterior maxilla which was a radiographically seen as a unilocular radiolucency with no associated calcifications and hence prompted suspicions of a nasopalatine duct cyst which was contradicted on surgical enucleation which produced two small teeth like structures.

Key Words: Dentigerous cysts, Supernumerary Tooth, Anterior Maxilla, Fistular Cyst, Nasopalatine Duct Cyst, Enucleation.

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1. INTRODUCTION

Large numbers of pathologies are reported in the anterior maxillary region, and they often involve the underlying bone and are hence observed as radiolucencies on radiographic investigations. On further investigations these pathologies are found to be associated with non-vital teeth, indicative of a pulpal or periodontal inflammatory process, and only rarely are they found to be disease entities which maybe odontogenic in nature, such as odontogenic keratocyst and calcifying odontogenic cyst or non-odontogenic like nasopalatine duct cyst, squamous cell carcinoma, non- Hodgkin lymphomas, giant cell granulomas.[1,2] In the event where radiopacities are seen in this region, it prompts suspicion towards odontogenic or fibro osseous lesion, of which odontomas are the most frequently seen entities.[3,4] The case received by our lab in its clinical diagnostic phases was provisionally diagnosed as a fissural cyst, originating from the incisive canal and exhibiting slow growth, and consistent with the demographic findings of a male gender, age of the patient (38 years) being close to the median age of 42.5 years, radiographic appearance of a unilocular radiolucency and an aspirate of blood-tinged straw colour fluid. On excision two small teeth like structures were obtained at the periphery of the cystic mass, therefore prompting a reconsideration and modification of the initial provisional diagnosis of fissural cyst to dentigerous cyst. It was only after a histopathologic investigation of the lesion that a confirmatory diagnosis could be arrived at, therefore emphasizing the need for histopathology in the final diagnosis and treatment planning.

2. CASE REPORT

A 38-year-old male patient reported to a private clinic with a chief complaint of a swelling in the upper labial region for the past one year. There was no history of trauma in the region reported.

2.1 Medical History

The patient reported no systemic illnesses, no history of any drug allergies and no prolonged hospitalization.

2.2 Family History

The patient reported no relevant history of inherited familial disorders.

2.3 Dental History

This was the patient's first dental visit.

3. OBSERVATION

On examination, a diffuse sessile swelling of size of 4×2×1 cm was seen in the maxillary labial vestibular region producing vestibular obliteration. The colour of the mucosa overlying the swelling and in the surrounding regions appeared normal (Figure 1). On palpation the swelling was soft, fluctuant and non- tender. And the associated teeth were vital.

Fig 1: Intraoral View Exhibiting a diffuse swelling producing vestibular obliteration in maxillary vestibular region

3.1 Special Tests and Investigations

Radiographic investigations were performed and the OPG revealed a unilocular swelling in the maxillary anterior region with well-defined corticated borders and root resorption of 12, 11, 21, 22 and 23 (Figure 2).

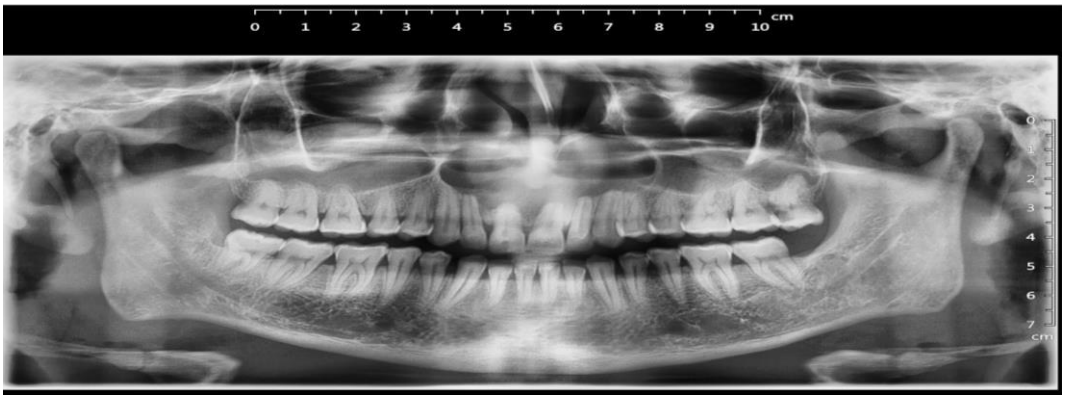

Fig 2: Panoramic View exhibiting unilocular swelling in the maxillary anterior region with well-defined corticated borders and root resorption of 12, 11, 21, 22 and 23.

The necessary blood investigations were performed, and the values were found to be within normal ranges. The swelling was aspirated with a wide bore needle and a thick yellow blood-tinged fluid was aspirated. It was followed by surgical enucleation of the lesion under local anesthesia. (Fig 3).

Fig 3: Fine Needle aspiration of thick yellow blood-tinged fluid.

After complete deroofing of the labial cyst wall, the cystic lining was identified and the cyst was enucleated in toto (Figure 4). On excision, two pieces of calcified tissue were found in the periphery of the lesion. All the bits of soft tissue and both the hard tissue pieces were sent for histopathological examination. (Fig 5).

Fig 4: Surgical site after enucleation of lesion.

Fig 5: Excised soft and hard tissue specimens.

On microscopic investigation, the soft tissue exhibited an inflamed odontogenic cystic lining epithelium of 4 to 5 cell thickness in association with a dense inflamed connective tissue stroma. The epithelium also exhibited areas of hyperplasia and inflammatory exocytosis. The inflammatory infiltrate predominantly comprises chronic inflammatory cells, i.e. lymphocytes and plasma cells. Large numbers of blood vessels and extravasated RBCs were seen throughout the section (Figure 6).

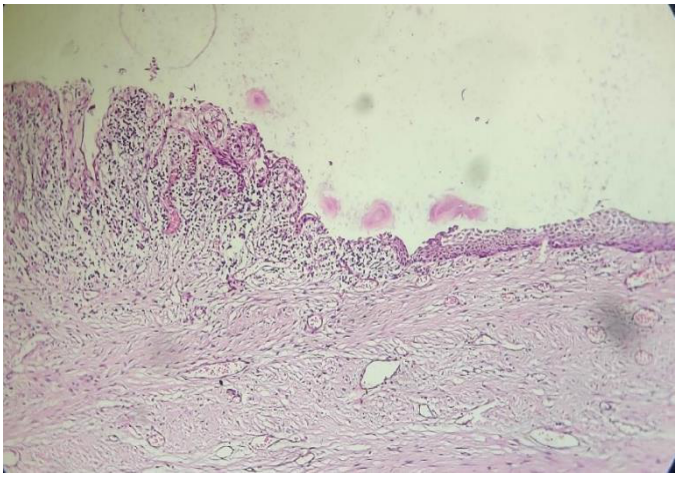

Fig 6: Photomicrograph of H&E stained soft tissue specimen showing an inflamed odontogenic cystic lining epithelium in association with a dense inflamed connective tissue stroma.

The ground section of the calcified pieces of tissue exhibited dentinal tubules and cementum with cementocyte-like cells, indicative of a supernumerary tooth or an odontoma (Figure 7).

3.2 Diagnosis

Therefore, based on clinical and radiographic findings, a diagnosis of a dentigerous cyst associated with an impacted supernumerary tooth was arrived at.

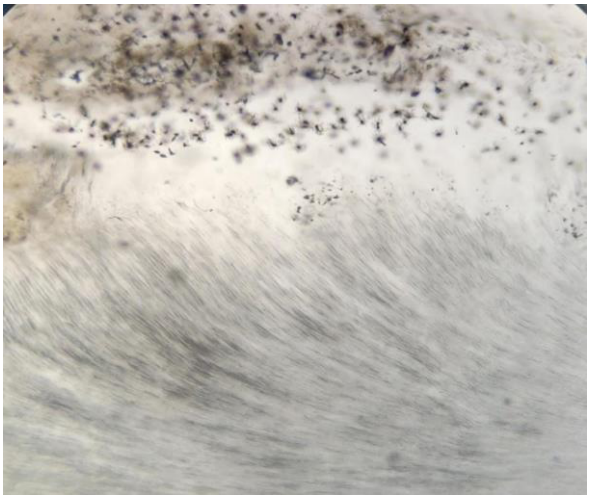

Fig 7: Photomicrograph of ground section of hard tissue specimen showing dentinal tubules and cementum with cementocyte-like cells.

3.3 Prognosis

Dentigerous cyst have a very low recurrence rate if completely excised. Due to the close proximity of the lesion and root resorption of 12, 11, 21, 22 and 23, the vitality of these teeth was compromised post surgical enucleation, appropriate endodontic therapies were undertaken during and after the surgical management to prevent future development of odontogenic or non-odontogenic neoplastic or cystic lesions such as radicular cysts.

3.4 Treatment Plan/ Innervation

Complete surgical enucleation of the cyst along with the excision of the supernumerary tooth was done and prior to closure of surgical site, apicectomy of 12, 11, 21, 22 and 23 was performed and retrograde filling of mineral trioxide was placed into the canal orifice and condensed 2mm into the canal followed by closure of the surgical site and completion of RCT in relation to 13, 12, 11, 21, 22 and 23 intraorally.

3.5 Follow-up

The patient has been on regular follow-up the past six months and hasn't exhibited post-operative complications or recurrences.

3. DISCUSSION

Dental literature states the possible causes of palatal swelling as infectious, allergic diseases, cysts, tumours or any other mucosal or bony abnormalities.[5] In our case, the chief complaint was of a slow growing swelling and the vitality of the adjacent teeth was preserved. Though on OPG, no calcifications were observed in association with the cystic space, on excision, small calcified structures were obtained along with the soft tissue mass. Therefore, prompting a provisional diagnosis of a dentigerous cyst, which was confirmed on histologic investigation. The term supernumerary tooth indicates the presence of a tooth in addition to the 32 permanent teeth or 20 deciduous teeth of the normal human dentition. These teeth may remain

embedded or erupt into the oral cavity.[6] The demographics of this entity indicate a prevalence of 0.15-1.9% in general population of which a male predominance of 54.7% to75.6% has been reported. An incidence of these in the anterior region has been reported to be as high as 93.3%.[6,7,8] Dentigerous cysts are defined as developmental cysts of odontogenic origin. These are formed by the hydrostatic force exerted by the accumulation of fluid between reduced enamel epithelium and the fully-formed crown of unerupted teeth.[9] These accumulations have been attributed to obstruction of venous outflow followed by increase in serum transudation across the capillary wall.[10] A prevalence of 11.4 to 33.0 % in the general population and a male predominance in the second and third decade have been reported.[11] Despite the high frequency of dentigerous cyst encountered in general dental practice, its association with supernumerary teeth is rare, the first case being reported by Bolk in 1917.[12] The impacted mesioden and anterior supernumerary teeth are usually asymptomatic and only discovered incidentally on radiographic investigation for other primary complaints or when patient reports swelling, pain and or expansion of the region which is usually associated with inflammation.[13] These symptoms might be indicative of expansion of dentigerous cyst which is produced by pressure exerted from its expansion that may also contribute to the associated root resorptive capacity.[14,15] The most favoured treatment of dentigerous cyst is surgical enucleation along with the excision of the impacted tooth due to its low recurrence. But long standing dentigerous cyst epithelial lining have been reported to rarely undergo transformation into ameloblastoma, squamous cell carcinoma or mucoepidermoid carcinoma, hence eliciting prompt removal and thorough histopathologic investigation of the lesion.

4. CONCLUSION

Supernumerary teeth are generally visible as hallows of different radiopacities on radiograph, but in rare instances they may not be visualised if they are too small or in complex anatomic sites like anterior maxilla which faces severe overlapping of anatomic structure. Dentigerous cyst is the second most common cyst of the oral cavity and supernumerary teeth are most common in the anterior maxillary region, yet the prevalence of dentigerous cyst in a supernumerary tooth is rare. Thus, this case highlights the need to submit all tissue bits obtained during surgery for histopathologic investigation along with all relevant clinical and surgical details.

5. AUTHORS CONTRIBUTION STATEMENT

The case was initially diagnosed by Dr. Selva Libin and operated on by Dr. Neel Ananth. Dr. M S Jaish Lal , Dr. T Sudha Rani, Dr. J Dinakar, Dr. K U Goma Kumar and Dr. Rebecca Jason received, processed the excised specimen and diagnosed it. Dr. Rebecca Jason conceptualized and gathered the data with regard to this work.

6. CONFLICT OF INTEREST

Conflict of interest declared none.

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