

CLINICAL AND RADIOLOGICAL BEHAVIOUR OF DENTIGEROUS CYST - STUDY

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ABSTRACT

The maxillofacial region is affected by a greater number of cysts than any other part of the body. The present study (A descriptive case series) is about the clinical, features i.e. age, sex and site distribution and radiological features of dentigerous cyst performed on 47 biopsy proved cases over a period of two years. This cystic lesion is common in males (60%) as compared to females (40%). The most common age group is the second decade (48.9%) of life. The mandibular third molar region (57.44%) is the most favorite anatomical site, followed by maxillary canine region (25.53%). Swelling has been the most common chief complaint i.e. (61.702%). In 19.14% of patients, dentigerous cyst was a chance radiographic finding. The most common radiological feature is a well circumscribed unilocular radiolucency surrounding the crown of a tooth (96%) modalities were enucleation (83%), marsupialization (11%) and marsupialization followed by enucleation (6%).

Key words: *Dentigerous cyst, Follicular cyst, Dental Follicle anomaly, Khyber College of Dentistry.*

INTRODUCTION

Cysts are more common in the jaws than in any other bone because of the ubiquitous presence of the epithelial rests after odontogenesis. These lesions are often difficult to evaluate on the bases of their radiographic features alone. The final diagnosis must be made after macroscopic and microscopic examination because several other lesions (including ameloblastoma, adenomatoid odontogenic tumor, calcifying epithelial odontogenic cyst etc.) show similar radiological findings'

The dentigerous cyst or follicular cyst is an epithelial-lined cavity that encloses the crown of an un-erupted tooth at the cemento-enamel junction. Dentigerous cysts are the second most common odontogenic cysts after radicular cysts occurring for approximately 24% of all cysts occurring in the jaws². Their frequency in the general population has been estimated at 1.44 cysts for every 100 un-erupted teeth.³

The exact histogenesis of the dentigerous cyst is not known. The key to the formation of the cyst appears to be accumulation of fluid either between the reduced enamel epithelium and enamel or in between the layers of the enamel organ. This fluid accumulation

occurs as a result of pressure exerted by the potentially erupting tooth on an impacted follicle that obstructs the venous outflow and thereby induces the rapid transduction of serum across the capillary walls⁴.

It has also been stated that dentigerous cyst occurs as a result of breakdown of proliferating cells of follicle after impeded eruption. These breakdown products results in increased osmotic tension and hence cyst formation.⁵

It has also been reported that in many cases, a deciduous tooth or remnant of it was found in direct contact with the cystic cavity and the related deciduous tooth was always diseased. So it was suggested that the origin of the dentigerous cyst is from the overlying necrotic deciduous tooth. The resultant peri-apical inflammation will spread to involve the follicle of the un-erupted permanent successor, an inflammatory exudates ensues with resultant dentigerous cyst formation.'

MATERIALS AND METHODS

The present study was carried out on biopsy proved cases of dentigerous cysts at oral and maxillofacial surgery unit of Khyber College of Dentistry Peshawar

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between January 2004 to January 2006 over a (period of two years). The purpose of the study was to determine the clinical (age, sex and site distribution) and radiological features of dentigerous cysts. For this purpose a proforma was designed to evaluate these variables, ofvarious radiographs used were peri-apical view, oclusal view (both for maxilla and mandible), postero-anterior view of face, lateral oblique view mandible, paranasal sinus (PNS) view and Orthopantomograms (OPGs). Various surgical procedures performed under local or general anesthesia were enucleation, marsupialization and marsupialization followed by enucleation depending upon the indications of these procedures. The cystic linings were sent for biopsy and confirmed as dentigerous cyst.

RESULTS

The age range was from 3 years to 57 years with the mean age of 21.17 years and the peak incidence is in the 2nd (48.9%) and 3rd (23.4%) decades of life. Table (1).

28 (60%) were male patients and 19 (40%) were females. The male to female ratio was 1.473. The ratio and percentages show that dentigerous cyst is more common in males as compared to females. Fig (1) The most common site is the posterior mandible and anterior maxilla according to the present study and the most common culprit follicle being that of mandibular 3rd molar tooth (57.44%) and maxillary canine (25.53%). One of the dentigerous cysts was associated with a mesiodens which is a supernumery tooth present in the midline that is why not designated in the Table as right or left. Table (2). Swelling has been the most common chief complaint i.e. (61.702%). In 19.14% of patients, dentigerous cyst was a chance radiographic finding Table. (3) Fig. (4, 8)

Well circumscribed radiolucency surrounding the crown of the tooth is the most common radiological feature of the dentigerous cyst (94%) while (6%) of the cysts were multilocular. Fig (2, 5, 6, 8)

TABLE 1: AGE DISTRIBUTION OF DENTIGEROUS CYST PATIENTS

Age in years	No. of Patients	Percentage
0-10	4	8.5%
11-20	23	48.9%
21-30	11	23.4%
31-40	5	10.6%
41-50	3	6.38%
51-60	1	2.12%
Total	47	100%

TREATMENT MODALITIES

The three forms of the treatment modalities performed on the dentigerous cyst patients were enucleation (83%), marsupialization (11%) and marsupialization followed by enucleation (6%). None of the case has been reported with recurrence to date. (Fig 3)

TABLE 2: ANATOMICAL SITE DISTRIBUTION OF DENTIGEROUS CYST

Anatomical site	No. of patients		Total
	Right	Left	
Mandibular 3 rd molar	0	8	27 (57.44%)
Maxillary Canine	8	4	12 (25.53%)
Maxillary 3 rd molar	3	1	4 (8.5%)
Mandibular premolar		1	1(2.12%)
Maxillary premolar	1		1(2.12%)
Mandibular 1st molar		1	1(2.12%)
Mesiodens			1(2.12%)
Supernumery			

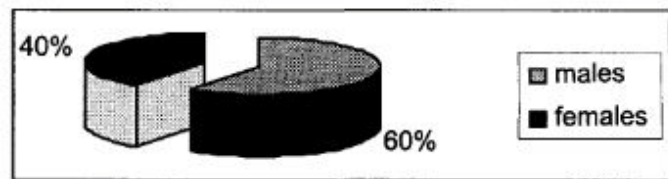


Fig 1. Sex distribution of dentigerous cyst

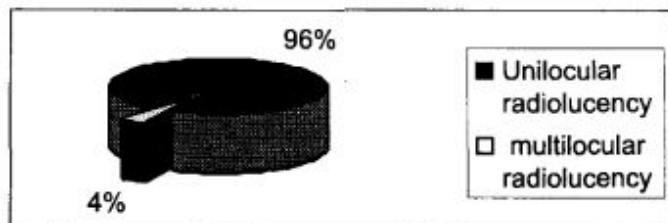


Fig 2. Radiological features of dentigerous cyst

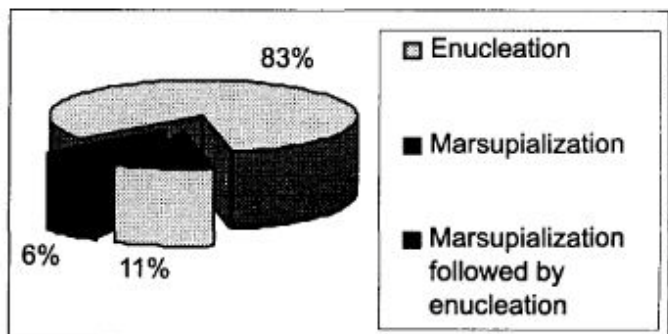


Fig 3. Treatment Modalities of dentigerous cysts

TABLE 3: PRESENTING COMPLAINTS OF DENTIGEROUS CYST PATIENTS.

Presenting complaint	No of Patients	Percentage
Swelling	29	61.702%
Fluid discharge	5	10.63%
Altered taste	2	4.25%
Missing mal-aligned teeth	2	4.25%
Chance radiographic finding	9	19.14%



Fig 4. Swelling and facial asymmetry the most common presenting complaint in dentigerous cyst patients.

Fig 5. A large multilocular dentigerous cyst.



Fig 6. A dentigerous cyst with the maxillary canine tooth.

Fig 7. Dentigerous cyst thick lining along with involved third molar crown



Fig 8. Dentigerous cyst. A chance radiographic finding

DISCUSSION

Dentigerous or follicular cysts are frequently discovered while investigating failure of a tooth to erupt, a missing tooth or mal-alignment. There is usually no pain or discomfort associated with the cyst unless it becomes secondarily infected⁶. Radiographic examination shows a uni-locular radiolucent lesion characterized by well defined sclerotic margins and associated with the crown of an un-erupted tooth. While normal follicular space is 3-4mm, a follicular cyst can be suspected when the space is more than 5mm. Cysts can attain considerable size with no symptoms and therefore can be discovered during investigation as asymptomatic slow growing swelling⁷. According to the previous literature dentigerous cysts occur over a wide age range with the peak incidence of the dentigerous cyst is in 2nd to 4th decades of life⁸. The same trend is seen in the present study with the age range from 3 years to Bhasker¹⁰ with the peak incidence in the second and third decades of life. The dentigerous cyst is common in males as compared to females. Both previous literature (Luis Monteiro, Jesus de la Pena, Liliansa Fonseca Barbas do Amaral)⁹ and the present study justify this statement. According to the present study the most common site is the posterior mandible and anterior maxilla, while the most common culprit dental follicle is that of mandibular third molar tooth followed by maxillary canine tooth. The study is consistent with that of Bhasker¹⁰ in this regard. Dentigerous cyst may also be associated with supernumerary teeth e.g. mesiodens and para-molars distomolars and odontomes which is not a frequent finding in this study. Only one case of dentigerous cyst associated with a supernumerary incisor (Mesiodens) has been reported.

Most Dentigerous cysts are solitary, however bilateral and multiple dentigerous cysts also occur in association with Maroteaux-Lamy syndrome and cleidocranial dysplasia. Both are developmental conditions which are detected in young children. Maroteaux-Lamy syn

drome is one of the mucopolysaccharidosis (MPS), a group of diseases resulting from genetic defects in degradation of specific mucopolysaccharides. In this syndrome there is a deficiency of N-acetyl-4-sulphatase that results in impaired degradation of sulphate which accumulates in the tissue and is secreted in urine. The dental features include un-erupted dentition, dentigerous cysts, malocclusion condylar defects and gingival hyperplasia. Cleidocranial dysplasia autosomal dominant disorder the features of this syndrome are partial or complete absence of clavicles, frontal and parietal bossing, maxillary micrognathia, prolonged retention of primary teeth, delayed eruption of permanent dentition, multiple dentigerous cysts and un-erupted supernumery teeth." None of the syndromic patient reported with dentigerous cyst in the present study.

It is understandable why in this study the most frequent clinical manifestation was swelling which represents an advanced stage. Because cysts are slow growing, expansile and usually symptomless lesions. It was also established that dentigerous cysts were accidental or chance radiological findings. This justifies the significance of periodic X-ray examination for screening this pathology.

Radiologically dentigerous cyst shows a unilocular well circumscribed radiolucency with sclerotic margins surrounding the crown of an unerupted tooth. But an infected cyst may show ill defined margins. 96% of dentigerous cysts according to the present study satisfied these radiological features. Only 2 cases showed multilocularity in both cases the cyst were large and had a prolonged history. But some authors are of the opinion that this is not a true multilocularity, they say that a large dentigerous cyst may give the impression of a multilocular process because of the persistent bone trabeculae within the radiolucency."

The most widely practiced treatment of the dentigerous cyst is the careful removal of the cyst lining along with the extraction of the un-erupted tooth i.e. enucleation (Cystectomy). If the eruption of the involved tooth is feasible then the tooth may be left in place after partial removal of the cyst wall Marsupialization (Cystotomy). Patient may need orthodontic treatment to assist eruption of the tooth^{13,14}. Very large dentigerous cysts may be treated by a combine marsupialization and enucleation procedures. This permits the decompression of the cyst, with a resultant reduction in the size of the bone defect". The cyst then can be excised at a latter date with less surgical morbidity. All the three procedures were performed in the present study. The prognosis of dentigerous cysts is excellent after total removal of the cyst. None of the case has been reported with recurrence till date.

Neoplastic (Ameloblastoma) and malignant transformation (Squamous cell carcinoma and intraosseous mucoepidermoids carcinomas) in the lining epithelium has been reported. But no such tragic event was reported in the present study.^{15,16,17}

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