

## PATTERN AND PRESENTATION OF ODONTOGENIC JAW CYSTS: A CLINICAL EXPERIENCE

Muhammad Usman Ali Awan, Adnan Babar\*, Muhammad Wasim Ibrahim\*\*

Combined Military Hospital Peshawar/National University of Medical Sciences (NUMS) Pakistan, \*Combined Military Hospital Abbottabad/National University of Medical Sciences (NUMS) Pakistan, \*\*Combined Military Hospital Multan/National University of Medical Sciences (NUMS) Pakistan,

### ABSTRACT

**Objective:** To determine the pattern and presentations of odontogenic jaw cysts in patients reporting at the Armed Forces Institute of Dentistry.

**Study Design:** Descriptive study.

**Place and Duration of Study:** Armed Forces Institute of Dentistry, from Jan to Dec 2007.

**Material and Methods:** Hundred patients including 70 males and 30 females with the age range 5-65 years were included in the study. History, clinical examination, radiographic examination and histopathologic examination of lesion were carried out for each patient. A proforma was filled for each patient for all relevant information, presentation and pattern. Diagnosis was confirmed by histopathology. Data were analyzed using SPSS version 10.

**Results:** Out of total 100 patients, 58% were diagnosed with radicular cysts, 25% with dentigerous cysts, 15% with odontogenic keratocyst, 1% patient with calcifying epithelial odontogenic cyst and 1% patient was diagnosed with eruption cyst.

**Conclusion:** The study demonstrates that radicular cyst was the most common odontogenic cysts followed by dentigerous and odontogenic keratocysts respectively in our study sample.

**Keywords:** Dentigerous cysts, Odontogenic cysts, Odontogenic keratocysts, Radicular cysts.

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### INTRODUCTION

A cyst is defined as an epithelium lined cavity having fluid, semifluid or gaseous contents and which is not created by the accumulation of pus<sup>1</sup>. Most cysts, but not all, are lined by epithelium. Cysts of the oral and maxillofacial tissues that are not lined by epithelium are the mucous extravasation cyst of the salivary glands<sup>2</sup>, the aneurysmal bone cyst<sup>3</sup> and the solitary or traumatic bone cyst<sup>4</sup>. Odontogenic cysts constitute an important aspect of Oral and maxillofacial pathology as the maxillofacial region is affected by a greater number of cysts than any other part of the body and they are the most common cause of chronic swellings in this region<sup>5</sup>.

Odontogenic cysts are classified in various

ways. According to pathogenesis these lesions are classified as developmental and inflammatory cysts<sup>6</sup>. Most of the jaw cysts are asymptomatic unless they become secondarily infected<sup>7</sup>. Considerable growth may occur before any deformity is significant enough to be noticed. Teeth in the area of the lesion may be carious, displaced, mobile or missing and in some cases it may be associated with deciduous teeth<sup>8</sup>. Cysts may present radiographically as unilocular or multilocular radiolucent areas of various sizes, having smooth or scalloped periphery<sup>9</sup>. In addition there may be tooth displacement, root resorption and impacted teeth related to these lesions<sup>10</sup>. They can be problematic because of recurrence and aggressive growth as both benign and malignant transformation in the epithelial lining of odontogenic cysts has also been reported<sup>11</sup>. Diagnosis of the cysts of the jaw depends upon thorough history, clinical, radiological and histopathological examination<sup>5</sup>. Different treatment options are available for the management of jaw cysts including

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**Correspondence:** Dr Adnan Babar, Classified Oral and Maxillofacial Surgeon, CMH Abbottabad Pakistan  
 Email: [dradnanbabar@yahoo.com](mailto:dradnanbabar@yahoo.com)  
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enucleation, marsupialization or decompression and marsupialization followed by enucleation<sup>12</sup>.

A large number of patients over a wide age range having odontogenic jaw cysts report to Armed Forces Institute of Dentistry (AFID). Data obtained from foreign authors and publications are referred to, which may vary from the result of this study. The purpose of this study was to determine the pattern and presentations of odontogenic jaw cysts in local population.

### MATERIAL AND METHODS

This descriptive study was carried out at

each patient to include them in study. Permission was taken from ethical committee of AFID for conducting the study. Patients with signs and symptoms of pain, swelling, tooth mobility, extra or intraoral sinus formation and paraesthesia were examined clinically. A radiographic assessment with intraoral occlusal view and extraoral Orthopantomogram was carried out for every patient. On the basis of clinical and radiological findings patients provisionally diagnosed with cyst were separated from rest of patients. Needle aspiration test was done for all

**Table-I: Type and location of odontogenic cysts (n=100).**

Type of cyst	Frequency	Location
Radicular cyst	58 (58%)	Anterior Maxilla (34%) Posterior Maxilla (9%) Anterior Mandible (13%) Posterior Mandible (2%)
Dentigerous cyst	25 (25%)	Anterior Maxilla (2%) Antero-post Maxilla (3%) Mandible Body (5%) Mandible Angle (10%) Mandible Ramus (5%)
Odontogenic keratocyst	15 (15%)	Posterior Maxilla (3%) Mandible (12%)
Calcifying epithelial odontogenic cyst	1 (1%)	Anterior Maxilla
Eruption Cyst	1 (1%)	Posterior maxilla

**Table-II. Clinical presentation of odontogenic cyst (n=100).**

Type of cyst	Signs and Symptoms
Radicular Cyst	Swelling (48%) Pain (31%) Sinus and fistula (31%) Tooth Mobility (21%) Asymptomatic (10%)
Dentigerous cyst	Swelling (22%) Pain (5%) Asymptomatic (3%)
Odontogenic keratocyst	Swelling (14%) Pain (9%) Tooth Mobility (2%) Asymptomatic (1%)
Calcifying epithelial odontogenic cyst	Pain and Swelling
Eruption cyst	Pain and swelling

Oral & Maxillofacial Surgery Department (OSD) of Armed Forces Institute of Dentistry (AFID), Rawalpindi from January 2007 to December 2007. An informed written consent was taken from

lesions before any surgical intervention and cystic fluid sent for fluid cytology while in few cases incisional biopsy was carried out to confirm diagnosis. After diagnosis of odontogenic cyst was

confirmed 100 patients included in study by non-probability convenience sampling and their signs and symptoms were reviewed. Cysts associated with syndromes and non odontogenic cyst or cyst like other lesions were not included in study.

Data were entered in SPSS version 10 for analysis. Mean  $\pm$  SD was calculated for the quantitative variable like age. Frequencies and percentages were presented for all qualitative variables: gender, anatomic location, swelling, pain, caries, tooth mobility, sinus, paraesthesia, unilocular, multilocular, smooth, sclerotic, poorly defined margins and association with impacted tooth.

## RESULTS

One hundred patients with an age range of 5 to 65 years were included in the study. The mean age of patients was  $32 \pm 11$  years. Out of total 100 patients 70% were males and 30% were females.

Among 100 patients, 58% were diagnosed with radicular cysts, 25% with dentigerous cysts, 15% with odontogenic keratocyst (OKC), 1% patient with calcifying epithelial odontogenic cyst, and 1% patient was diagnosed with eruption cyst. Overall location of all odontogenic cysts is shown in figure. The most common location for radicular cyst was anterior maxilla 34%, for dentigerous cyst mandibular angle 21% and for OKC mandible involved in 11% cases (table-I). The most frequently presented signs and symptoms were swelling, pain, caries, sinus formation, tooth mobility and paraesthesia respectively (table-II). Out of a total of 100 patients, 98% patients had unilocular lesions on radiographic evaluation whereas 2% patients had multilocular lesions, and the most common appearance of the margins of the lesion on radiographic evaluation was smooth sclerotic 85%, smooth 9% and scalloped 6% respectively. Seventy patients 70% had lesions associated with erupted teeth whereas 30% lesions were associated with impacted teeth.

## DISCUSSION

A number of cystic lesions in the jaws share similar clinical, radiographic and some

histological features. Knowledge of the incidence of odontogenic cysts, as well as their more common sites of presentation and age distribution, help practitioners to determine a likely clinical diagnosis. Different studies have been performed in populations from Canada, Mexico, Jordan, Chile, France, Australia, United Kingdom and Brazil for prevalence of odontogenic cysts in their population<sup>13-15</sup>.

Grossmann et al<sup>16</sup> presented the largest series of odontogenic cysts in a Brazilian population. In their study the gender distribution for total no of cysts were relatively equal for both genders. Ledesma-Montes et al<sup>13</sup> carried out a study in 2000 to ascertain the frequency of odontogenic cysts in a Mexican population. Three hundred and four cases of odontogenic cysts with gender distribution of 55.6% males and 42.4% females were found showing male predominance. In our study the gender distribution was 70% males and 30% females which shows a male predominance but with slightly different results.

In the study by Grossmann et al majority of the cysts occurred during the second to fourth decade of life with a peak in the third decade<sup>16</sup>. In



**Figure: Overall distribution of odontogenic cysts (n=100).**

another study the most affected population was in the second to fourth decade of age with peak incidence in the second decade<sup>13</sup>. In our study majority of cysts occurred in the third to fifth decade with a peak incidence in the fourth decade. This difference in the age group may be due to late presentation at this tertiary care hospital or due to recurrent lesions.

Studies from different parts of the world like Mexico<sup>18</sup>, Japan<sup>19</sup>, Nigeria<sup>20</sup>, and Jordan<sup>21</sup> shows radicular cysts, dentigerous cysts and OKC as the most common odontogenic jaw cysts, we also report similar results as in our study radicular cyst was the most common 58% followed by dentigerous cyst 25% and OKC 15% respectively. In various studies<sup>15,17</sup> majority of the cysts occurred in the mandible followed by the maxilla. These figures are slightly different with our results as in our study most common location for all cysts was maxilla (53%) followed by mandible (47%). This may be because in our study most common cyst was radicular cyst that commonly involved maxilla as compared to mandible which give an overall impression as maxilla is the common location for jaw cysts. As radicular cyst is the commonest of the odontogenic cyst this is because it is almost always associated with dental carries and necrotic pulp and a high frequency of dental carries in our population<sup>22</sup> becomes the commonest reason for this cyst.

In the study by Grossmann et al<sup>16</sup>, anterior maxilla was the most common location for radicular cyst and patients mostly presented with complaints of pain and swelling. In our study anterior maxilla was also common site for radicular cyst while swelling and infection was more common presentation than pain and this factor is important as patients usually get self medication for pain and present late for treatment only when they observed swelling.

Second common odontogenic cyst in our study was dentigerous cyst and this is same in other studies<sup>16</sup>. In our study 80% of dentigerous cyst were located in mandible. This data is similar as in a study of Ochsenius et al mandible was involved more in dentigerous cyst as compared to maxilla. OKC was the third most prevalent odontogenic cyst in various studies<sup>13,16,23</sup>. These results are in agreement with our study in which OKC represented 15% of the total odontogenic jaw cysts. In terms of localization the main site of involvement was posterior mandible<sup>23</sup> and in our study 80% of the lesions occurred in the posterior mandibular area.

In general, the molar region presents a higher percentage of developmental cysts while the upper anterior zone presents a higher percentage of inflammatory cysts. According to the new classification<sup>24</sup> in 2005, OKC has now been reclassified as keratocystic odontogenic tumors. For the sake of comparison we have maintained the previous classification system.

Grossman et al<sup>16</sup> reported 30 cases of calcifying epithelial odontogenic cyst in a sample of 2800. Jones et al<sup>15</sup> reported 21 cases in a sample of 7000 while in our study there was only one case of calcifying epithelial odontogenic cyst. This difference may be because of sample size as their sample size was larger than our.

Knowledge of pattern and presentation of odontogenic cyst and their timely and correct diagnosis will permit adequate treatment for these cysts, preventing their recurrence and more extensive tissue damage.

## CONCLUSION

The study demonstrates that radicular cyst was the most common odontogenic cysts followed by dentigerous and odontogenic keratocysts respectively in our study sample.

## CONFLICT OF INTEREST

This study has no conflict of interest to declare by author.

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