



## Clinicopathological evaluation of Odontogenic Cysts in Maysan city in Iraq (retrospective study).

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### Abstract

The purpose of this study is to determine the prevalence of odontogenic cysts in Iraqi populations in Maysan general hospital (Maysan -Iraq) and compare this prevalence with other international studies.

Data of this study were obtained from reports of patients diagnosed with odontogenic cysts between 2007 and 2010. Case records of patients who fit the Histological Classification of the World Health Organization (2005) were included. The following variables were analyzed: gender, age group, anatomical location and histological type. Odontogenic cysts accounted for 90 % of all lesions biopsied throughout the study period. Pain feeling and clinical expansion were recorded in most of our patients. Mean patient age was (28) years and (61%) of the patients were males. Radicular cyst was the most prevalent histological type (28.75%), followed by odontogenic keratocyst (25%) then dentigerous cyst (23.75%). The mandible was the most prevalent site of the lesions (55%).

Odontogenic cysts appear to have a distinct predilection for the male gender, the third decade of life and are more frequent in the mandible. Awareness about the prevalence and characteristics of odontogenic cysts is important in primary diagnosis and treatment of these lesions.

**Key words:** odontogenic cysts, radicular cyst, odontogenic keratocyst, dentigerous cyst.

### Introduction

A cyst is defined as a pathologic cavity with liquid, semi-liquid or gaseous contents, surrounded by an epithelial tissue membrane <sup>(1)</sup>. Cysts occur more often in the jaws than in any other bone because most of them originate from odontogenic epithelial remnants that remain after tooth development <sup>(2)</sup>. Odontogenic cysts are one of the most common destructive lesions affecting the jaw bones <sup>(3)</sup>. According to different studies, 7 to 12% of oral and maxillofacial biopsies are odontogenic cysts <sup>(4)</sup>. The most common clinical feature is a painless

swelling (unless the cysts become secondarily infected) associated with impacted and sometimes missing teeth, especially third molars <sup>(5)</sup>. They grow slowly and sometimes cause tooth displacement or root resorption. They can expand cortical plate, usually in a smooth, curved manner, and change the buccal or lingual cortical plate into a thin cortical boundary. They may also displace alveolar inferior nerve canal in inferior direction or invaginate the maxillary antrum. Odontogenic cysts are often found in tooth-bearing region <sup>(6)</sup>. They are classified in two

groups according to their pathogenesis: inflammatory and developmental <sup>(7)</sup>. Inflammatory cysts are associated with inflammation including radicular cysts but developmental cysts originate from the odontogenic epithelial remnant or apparatus that remains trapped within the jaw bone or gingival tissues including odontogenic keratocyst and dentigerous cysts <sup>(8)</sup>. Radiographically, odontogenic cysts present predominantly as a well defined corticated uni-multi locular radiolucencies <sup>(9)</sup>. Odontogenic cysts are different in behavior, location, radiographic and clinical features <sup>(10)</sup>.

Despite the large number of studies on odontogenic cysts in the literature, information about demographic profile and behaviors in Iraqi population is scarce.

The purpose of this study was to determine the frequency and clinical characteristics of odontogenic cysts diagnosed at oral and maxillofacial department in Maysan city (south of Iraq) and compare the findings with other similar studies following the new WHO classification.

## Patients and Methods

A retrospective study was conducted between April 2007 to March 2010, based on histopathological reports regarding cases of odontogenic cysts diagnosed at the oral and maxillofacial Department, oral Pathology laboratory in Maysan general hospital (Maysan-Iraq).

Demographic data and clinical characteristics including signs and symptoms of these patients were recorded. The following variables were studied: histological type of cyst, anatomical location, age group and gender. Histopathological examination was made by an oral pathologist based on the criteria of the World Health

Organization (2005). Data were subjected to descriptive statistical analysis using percentage and tables.

## Results

Eighty presented criteria of odontogenic cysts. 49 cases (61.25%) were observed in men and 31 cases (38.75%) in women (Table 1).

Most of odontogenic cysts were presented in the third decades of life (25) cases (Table 2). The prevalence of the cysts was decreased with increasing the age.

Radicular cyst was the most common and diagnosed in 23 case (28.75%), followed by Keratocyst in 20 cases (25%) and Dentigerous cyst in 19 case (23.75%). The prevalence of these lesions is shown in Table 1.

Information regarding the anatomic sites involved was 44 case (55%) affecting the mandible, most of mandibular cysts were located in premolar and molar area (posterior mandible), with 36 case (45%) affecting the maxilla, most of maxillary cysts were located in incisors and canine area (anterior maxilla) (Table 3).

All the patients had clinical symptoms in referring time except 3 patients whose lesion was accidentally diagnosed in dental radiography.

The most common clinical presentation was swelling reported in (94%) of the cases (Table 4), pain, tooth displacement and Bucco-lingual expansion was observed in (69%), (23%) and (43%) of the cases respectively.

## Discussion

Odontogenic cysts are one of the most common lesions affecting the jaws and many of these cysts share similar clinical and radiographic features <sup>(11)</sup>. Therefore, the diagnosis of

odontogenic cysts should be based on careful examination of clinical, radiographical, and histopathological features<sup>(12)</sup>.

Awareness of incidence of odontogenic cysts and their prevalent sites of presentation may help practitioners to make a likely clinical diagnosis<sup>(13)</sup>.

The prevalence of male was greater than female in our study, which is in agreement with other authors like Meningaud et al<sup>(14)</sup>. This higher prevalence of males in our study may be explained by the fact that men usually have poorer oral hygiene, habits and are more susceptible to trauma than women.

The mean age at diagnosis was lower than study done by Gültelkin et al<sup>(15)</sup>, it may be as the result of early referral for diagnosis of these lesions or may be related to more exposure of patients to predisposing factors of odontogenic cysts in our province.

The most common cyst in our study was radicular cyst, radicular cysts are inflammatory lesions caused by infection of the tooth pulp chamber. Toxins exit the apical foramen and infect the connective tissue of the periodontal ligament<sup>(16)</sup>. Radicular cysts are the most prevalent odontogenic cysts according to many studies reviewed, with slight variations<sup>(16, 17)</sup>. In our study, radicular cysts accounted for (28.75) % of all cases but the percentage was not as high as the study done by Bataineh et al<sup>(18)</sup>; this difference may show the effect of socioeconomic factors on frequency of odontogenic cysts. On the other hand the radicular cysts are usually treated in private clinic and did not refer to our department. It is possible that the socioeconomic conditions of the population might influence the relative frequency of inflammatory and developmental odontogenic cysts. Koseoglu et al observed a higher

frequency of developmental odontogenic cysts in patients seen at a private clinic and a higher proportion of inflammatory odontogenic cysts in patients attended at a public health service<sup>(19)</sup>.

In this study, most of mandibular cysts were located in posterior region and odontogenic keratocyst was more prevalent in mandible, which has been reported as the most common location of odontogenic cysts<sup>(20)</sup>. Odontogenic keratocyst were the second most common odontogenic cyst in our series (27%) in contrast to other studies such as Neville and Damm<sup>(21)</sup>.

Maxillary odontogenic cysts were more prevalent in anterior region which in agreement with other studies<sup>(22, 23)</sup>, but differs from those reported by Myoung et al<sup>(24)</sup>. The concordance between our own findings and the different published articles regarding distribution by dental arch may be explained by the high prevalence of traumatism and conservative treatments carried out for esthetic reasons in anterior teeth<sup>(25)</sup>.

The most common clinical feature was swelling and pain, the vast majority of odontogenic cysts of the jaws cause slowly progressive painless swellings. There are no symptoms until they become quite large or infected, the swelling becomes painful and may rapidly increase in size, partly due to inflammatory edema, this finding was in agreement with the finding of Tsukamoto and Makino<sup>(26)</sup>.

The results of our study were in concordance with earlier studies in some aspects, but some differences were also observed which were probably related to differences in lifestyle, racialism and living environment.

## Conclusions

The present results show a similar frequency of odontogenic cysts in Iraqi population in Maysan city studied here and other populations around the world, with inflammatory cysts being identified as the most frequent odontogenic cyst. Radicular cysts, odontogenic keratocysts and dentigerous cyst are the most common odontogenic cysts, accounting for 77.5% of all odontogenic cysts. Further studies including large series of odontogenic cysts should be performed in different regions of the world in order to determine the global epidemiologic profile of these lesions.

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Table 1: Gender distribution of patients with odontogenic cyst.

Type of cyst	Number	%	Female	Male
<b>Radicular cyst</b>	23	28.75%	9	14
<b>Keratocyst</b>	20	25%	8	12
<b>Dentigerous cyst</b>	19	23.75%	7	12
<b>Eruption cyst</b>	11	13.75%	4	7
<b>Residual cyst</b>	7	8.75%	3	4
<b>Total</b>	80	100%	31	49

Table 2: Age distribution of patients with odontogenic cyst.

Type of cyst	Age in years						Total
	1-10	11-20	21-30	31-40	41-50	>51	
<b>Radicular cyst</b>	2	5	7	4	3	2	23
<b>Keratocyst</b>	0	6	9	2	2	1	20
<b>Dentigerous cyst</b>	5	5	5	3	1	0	19
<b>Eruption cyst</b>	7	3	1	0	0	0	11
<b>Residual cyst</b>	0	0	3	2	2	0	7
<b>Total</b>	14	19	25	11	8	3	80

Table3: Distribution of odontogenic cysts according to anatomic site

Type of cyst	Anterior maxilla	Posterior maxilla	Anterior mandible	Posterior mandible	Total
<b>Radicular cyst</b>	06	04	05	08	23
<b>Keratocyst</b>	04	02	01	13	20
<b>Dentigerous cyst</b>	08	02	02	07	19
<b>Eruption cyst</b>	05	0	03	03	11
<b>Residual cyst</b>	04	01	0	02	7
<b>Total</b>	27	9	11	33	80

Table 4: Clinical characteristics of odontogenic cysts

	<b>Tooth displacement</b>	<b>Bucco lingual expansion</b>	<b>Pain</b>	<b>Swelling</b>
<b>Radicular cyst</b>	10%	25%	90%	100%
<b>Keratocyst</b>	20%	10%	50%	90%
<b>Dentigerous cyst</b>	70%	80%	15%	80%
<b>Eruption cyst</b>	0	60%	100%	100%
<b>Residual cyst</b>	15%	40%	90%	100%
<b>Total</b>	23%	43%	69%	94%