Journal of Population Therapeutics & Clinical Pharmacology

ORIGINAL RESEARCH ARTICLE
DOI: 10.53555/318qq998

ODONTOGENIC CYSTS IN TERTIARY CARE RIMS TEACHING HOSPITAL-RETROSPECTIVE STUDY

Dr. Tirumalrao[1*], Dr. Jyothi L[2], Dr. Abhishekha Patil [3], Dr. Amarvarma [4], Dr. Bapugouda Mulimani [5], Dr. Shweta Danaraddi [6], Dr. Geeta marishetter [7]

[1*]Associate Professor, Department of Dentistry, Raichur Institute of Medical Sciences, Raichur, Karnataka, India.
[2]Professor, Department of Dentistry, Navodaya Dental College, Raichur, Karnataka, India.
[3]Chief Dental Health Officer, Department of Dentistry, Raichur Institute of Medical Sciences, Raichur, Karnataka, India.
[4]Professor, Department of Dentistry, Raichur Institute of Medical Sciences, Raichur, Karnataka, India.
[5]Assistant Professor, Department of Dentistry, Raichur Institute of Medical Sciences, Raichur, Karnataka, India.
[6]Junior Resident, Department of Dentistry, Raichur Institute of Medical Sciences, Raichur, Karnataka, India.
[7]Junior Resident, Department of Dentistry, Raichur Institute of Medical Sciences, Raichur, Karnataka, India.

***Corresponding Author:** Dr. Tirumalrao
*Associate Professor, Department of Dentistry, Raichur Institute of Medical Sciences, Raichur, Karnataka, India.

ABSTRACT

INTRODUCTION

Cyst of the odontogenic origin is a destructing lesion which varies in its size. It can be inflammatory or epithelial, based upon its origin. These lesions are of importance because of their direct concern with patients' facial aesthetics and masticatory function. The aim of the study is to assess the frequency of odontogenic cyst in maxillary & mandibular region.

METHODS

The retrospective study was done among 500 odontogenic cysts cases during the period from January 2018 to September 2023 from RIMS Hospital of Raichur. Tissue samples with cystic lesions involving the jaws were collected. Patient's demographic data was recorded. Data collected was statistically analysed using descriptive analyses using SPSS version 25.0.

RESULTS

Maximum cases were in the age group of 18-35 years (60%). Number of male subjects was 75% and number of female subjects was 25% cases. Frequency of cyst in maxillary anterior region was 18%, in mandibular posterior region was 19%, in mandibular anterior region was 40% and mandibular posterior region was 23%. The most common type of cyst found were radicular (45), dentigerous (23) and odontogeic keratocyst (14).

CONCLUSION
The most common type of cyst present was radicular cyst. This study provides data on the prevalence of odontogenic cystic lesions in the jaws, specifically in relation to age, gender, and location preference.

KEYWORDS
Dentigerous Cyst, Mandibular Region, Maxillary Region, Odontogenic Cyst, Radicular Cyst

INTRODUCTION

Odontogenic cysts (OCs) are pathological cavities that are lined by odontogenic epithelium. They can be found in both jaws and occasionally in the oral soft tissues, particularly the gums.[1] Odontogenic cysts can develop at any age and typically do not cause any symptoms, which means they can go undiscovered for extended periods of time. Typically, normal x-rays provide evidence suggesting the presence of OC. Their origin is intricately linked to dental development. The vast majority (90%) of odontogenic cysts are derived from the odontogenic epithelium or its embryonic remnants. However, the exact cause of these cysts remains unknown in most cases. Odontogenic cysts (OC's) are classified into two kinds based on their aetiology: developmental and inflammatory.[2-5]An odontogenic cyst is frequently observed in a dental clinic. The main symptom of such lesions is a noticeable swelling of the gum tissue around the tooth or a radiolucent area surrounding the root of the affected tooth, as seen on routine dental X-rays.[6] The Odontogenic keratocyst, previously classified as a developing odontogenic cyst due to its aggressive and destructive nature, as well as its tendency to reoccur, is now recognised as an odontogenic tumour according to the 2005 WHO classification.[7] A radicular cyst, often referred to as a periapical cyst, is an inflammatory cyst that originates from the remnants of Hertwig's epithelial root sheath.[8] A dentigerous cyst is a type of cyst that develops in the jaws and is commonly observed around the crown of a tooth that has not fully erupted.[9] Accurate diagnosis of these lesions is crucial.[10] The treatment of choice is governed by several factors such as the size, location of the lesion, and involvement of adjacent anatomical structures.

Orofacial cysts and tumours are characterised by differences in occurrence and distribution across different geographic regions. In a developing nation like India, the understanding of the epidemiology of odontogenic cysts and tumours is restricted due to insufficient documentation in hospitals and healthcare institutions.[11] Research on the occurrence of odontogenic cysts has been conducted in many nations.[12-15] However, India has a relatively low population density.The treatment of choice is governed by several factors such as the size, location of the lesion, and involvement of adjacent anatomical structures.

Hence the aim of the study is to assess the frequency of odontogenic cyst in maxillary & mandibular region.

MATERIAL AND METHODS

The retrospective study was done among records of all odontogenic cysts cases during the period from January 2018 to September 2023 from RIMS Hospital of Raichur. Ethical clearance was taken from institutional ethics committee before commencement of study.

Through consecutive sampling a total of 500 patients were selected who had odontogenic cysts on the basis of inclusion and exclusion criteria,

Inclusion Criteria

All patients who were diagnosed clinically and radiographically and histopathologically diagnosed with odontogenic cysts.

Exclusion Criteria

Patients with Maxilla & Mandible carcinomas.

Tissue samples with cystic lesions involving the jaws were collected. Patient’s demographic data was recorded. Clinical and radiographical history was collected for correlation with the histological

findings in order to reach a conclusive diagnosis. These tissue biopsies were then subjected to conventional staining with Eosin and Haematoxylene and slides were observed under microscope. Diagnosis was established with clinico-radiographical correlation and all the cases were duly reported. Data collected was statistically analysed using descriptive analyses using SPSS version 25.0.

RESULTS

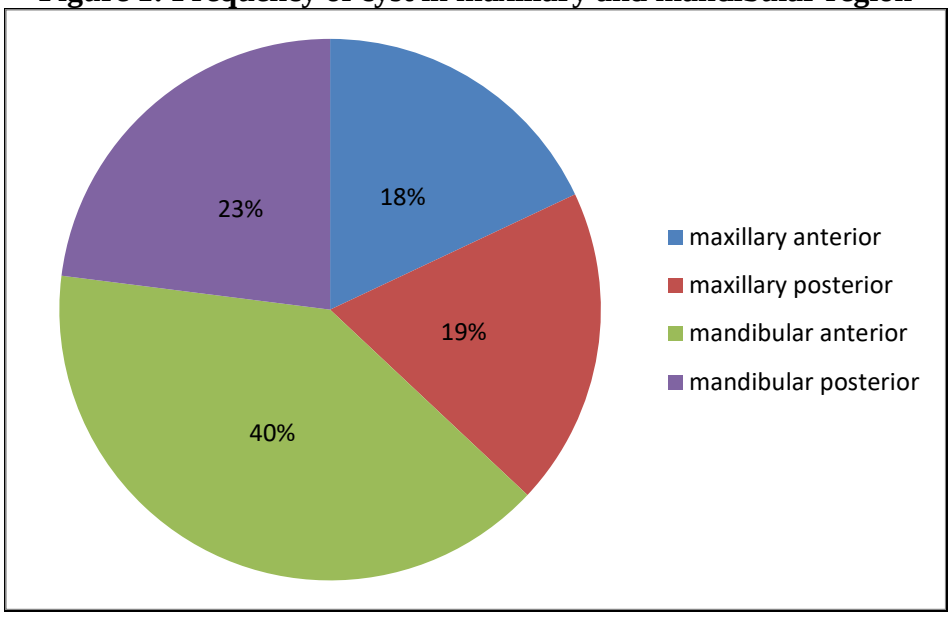
Out of 500 cases maximum were in the age group of 18-35 years (60%), in the age of 36-50 years there were 25% case, in the age of 51-60 years there were 8% case, in the age of below 18 years there were 5% case and above 60 years there were 2% cases. Number of male subjects was 75% and number of female subjects was 25% cases as shown in table 1.

Table 1: Demographic data of patients

Demographic data		Frequency
Age (in years)	Below 18	25 (5)
	18-35	300 (60)
	36-50	125 (25)
	51-60	40 (8)
	Above 60	10 (2)
Gender	Male	375 (75)
	Female	125 (25)

Frequency of cyst in maxillary anterior region was 18%, in mandibular posterior region was 19%, in mandibular anterior region was 40% and mandibular posterior region was 23% as shown in figure 1.

Figure 1: Frequency of cyst in maxillary and mandibular region



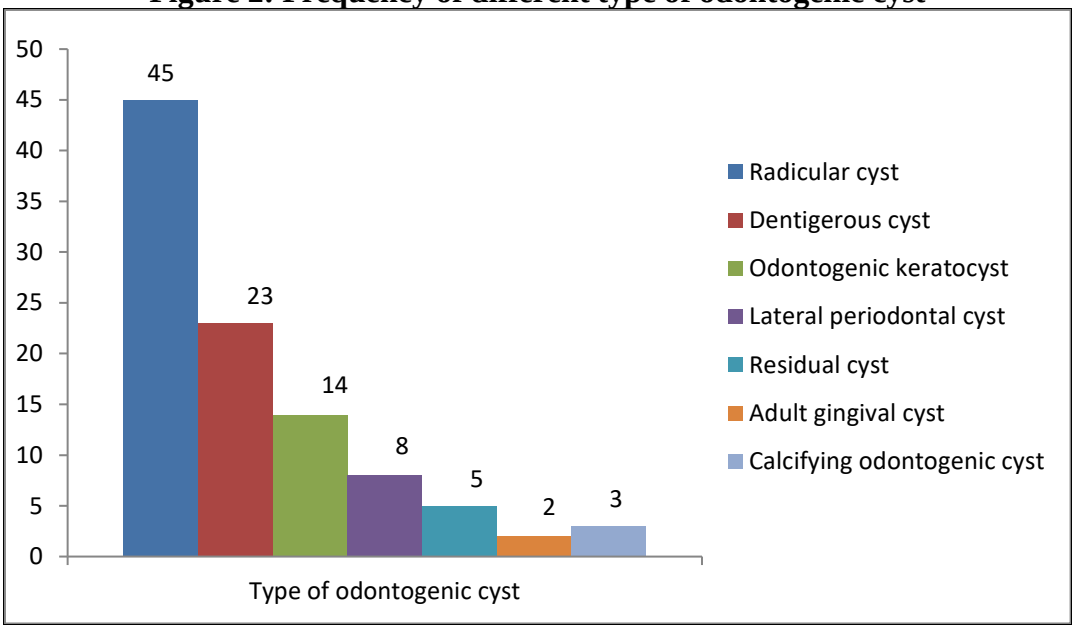
Type of odontogenic cyst found were radicular (45), dentigerous (23), odontogeic keratocyst (14), lateral periodontal (8), residual (5), adult gingival (2) and calcifying odontogenic (3) as shown in table 2 and figure 2.

Table 2: Frequency of different type of odontogenic cyst

Type of cyst	Frequency (%)
Radicular cyst	225 (45)

Dentigerous cyst	115 (23)
Odontogenic keratocyst	70 (14)
Lateral periodontal cyst	40 (8)
Residual cyst	25 (5)
Adult gingival cyst	10 (2)
Calcifying odontogenic cyst	15 (3)

Figure 2: Frequency of different type of odontogenic cyst



DISCUSSION

Research on cysts and tumours in the mouth from various regions worldwide has shown that understanding the location, occurrence rate, and fundamental clinical characteristics of these abnormalities is crucial for evaluating their prevalence in different populations and identifying high-risk groups. Odontogenic lesions display geographical variations in their occurrence and epidemiological behaviour throughout different parts of the world.[16] This study exclusively examines the occurrence rate and clinical and demographic features of OCs among patients who visited RIMS Hospital in Raichur from January 2018 to September 2023.

The study group consisted predominantly of individuals between the ages of 18-35, with a smaller proportion falling within the 36-50 age range. The study found that the highest occurrence of odontogenic cysts (OC's) was observed in individuals aged 18-35 years. This finding aligns with similar studies conducted by Niranjan et al, Ochsenius et al, Avelar et al, and Borges et al, who also reported a peak incidence of odontogenic cysts between the ages of 20 and 29 years.[12,17-19] An analysis revealed that 75% of the individuals in the study were males, indicating a higher prevalence of odontogenic cysts in males. Johnson et al also found that males were more susceptible to OC's, consistent with earlier investigations that yielded comparable outcomes.[20] In contrast, a higher proportion of females was observed in the Brazilian population.[21-23]

In our study the most common cyst found was radicular cyst followed by dentigerous cyst and odontogenic keratocyst. On the other hand Ramachandra et al[24] observed that Odontogenic keratocysts represented 22.65% of all reported cysts. One possible explanation for the high occurrence of radicular cysts could be their association with dental caries. A radicular cyst typically occurs as a result of severe tooth decay and the death of dental pulp. Pulp necrosis refers to the death of the pulp tissue in the root canal system. This can lead to the colonisation and growth of microorganisms within the root canal. As a result, bacteria toxins and inflammatory mediators are released into the surrounding periapical region. The creation of a radicular cyst is a consequence of various processes, including the interaction between the epithelial and stromal tissues. Conversely, the high occurrence

of dentigerous cysts was strongly associated with a high occurrence of impacted teeth, as impacted teeth were a necessary condition for the development of a dentigerous cyst. A global average rate of third molar impaction of 24.4% has been documented.[25]

The majority of instances were detected in the mandibular anterior region, with the mandibular posterior region having the second highest number of occurrences. Based on our analysis, we found that cysts were more commonly found in the mandibular region compared to the maxillary region. This aligns with the findings of previous studies conducted by Ledesma et al and Prockt et al.[26,27]

CONCLUSION

This study has provided data on the prevalence of odontogenic cystic lesions, specifically in terms of age, gender, and location preference. The data gathered and reported in this study has yielded substantial clinico-pathological information that is relevant to both clinicians and pathologists.

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