

Original Research Article

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## Retrospective Study of Demographic Profile of Odontogenic and Non-Odontogenic Cysts in Uttarpradesh Population, India

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### ABSTRACT

#### Keywords

Odontogenic and Non-Odontogenic Cysts, Demographic Profile, radicular cyst

#### Article Info

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To determine the demographic profile of odontogenic cysts (OC) and nonodontogenic cysts (nOC) which were all histologically diagnosed over a 6-year period in the uttarpradesh population. Records of patients with OC and nOC in uttar pradesh population, during the period of 2005 to 2013 were evaluated. Among 1900 oral biopsies, 290 (15.2%) presented criteria of OC and nOC. Of these, 281 specimens (14.7%) were diagnosed as OC and 9 (0.47%) represented nOC. The 3 most frequent OC diagnosed were radicular cyst (62.0%), dentigerous cyst (25.0%), and odontogenic keratocyst (10.8%). The most frequent nOC was the nasopalatine duct cyst (2.2%). Our results concluded that there is a wide range of OC and nOC. Some cysts showed predilection for age, gender, and localization. We also showed demographic aspects and clinical characteristics of these cysts. These could be used as baseline data to obtain more epidemiologic information about the OC and the nOC especially in the uttarpradesh population.

### Introduction

Cysts is defined as any pathologic cavity which is surrounded by epithelium, with a fluid or semi-solid material in its cavity. The jaws represents as host to a wide range of cysts, owing to the epithelial tissues involved in odontogenesis.<sup>1</sup> The odontogenic cysts (OC) are osseous-destructive lesions which more commonly affect the jaws.<sup>2</sup> They develop from the epithelial components of the odontogenic apparatus, or its remnants, that lie entrapped within the jaw bone or in its approximation like in gingival tissue.

It is considered that proliferation epithelium and its cystic degeneration leads to the development of Odontogenic Cysts.<sup>3,4</sup> Proliferations of non-odontogenic epithelial remnants are responsible for the formation of non-odontogenic cysts (nOC).<sup>5</sup> The Odontogenic and non-odontogenic cysts show varied relative rates of frequency, histogenesis, clinical features, as well as biologic behavior. Some of these cysts are slow growing, innocuous, whereas others behave in an aggressive and destructive pattern.<sup>3</sup> The biologic behavior of the jaw

cysts is related to recurrence and/or aggressiveness of its growth.<sup>1</sup>The purpose of the present study was to determine the demographic profile of odontogenic and non-odontogenic cysts in uttar predesh population.

### **Materials and Methods**

Records of 1900 samples of oral biopsies were retrieved from the patients with OC and nOC from the oral pathology file in uttar predesh population, during the period of 2005 to 2013. The hematoxylin and eosin-stained slides of OC, nOC, or unspecific cyst diagnoses were selected and re-evaluated according to the 1992 World Health Organization (WHO) histologic classification.<sup>5</sup> Histologic diagnosis criteria for orthokeratinized odontogenic cyst (OOC) were in accordance with Wright.<sup>13</sup> Those for calcifying odontogenic cyst (COC) were in accordance with Buchner.<sup>15</sup> All demographic profiles of OC and nOC were analyzed for age, gender, localization, and primary or recurrent lesions.

### **Results and Discussion**

Among 19,00 oral biopsies retrieved from the patients with OC and nOC from the oral pathology file in uttar predesh population, during the period of 2005 to 2013 Of this total, 270 cases (14.2%) were diagnosed with OC and 9 cases (0.47%) were diagnosed with nOC (table 1). The three most frequently diagnosed OC were radicular cyst (RC), which constituted 61.8%( 167)of our sample; dentigerous cyst (DC), with a prevalence of 24.8% (67); and odontogenic keratocyst (OKC), which represented 7.7%(21). one cases represented OKC patients with the nevoid basal cell carcinoma syndrome. The most frequent nOC was the nasopalatine duct cyst (NPDC), found in 55.5% (5) of all nOC cases.

Considering all of the cases, gender distribution was 52.63% for female and 47.37% for male patients. A female predilection of nasolabial cyst (3:2) and paradental cyst (2:1) was observed. Eruption cysts and lateral periodontal cyst were more prevalent in male patients. The population with OC or nOC included patients from the first to the eighth decades of life. About 84% cases were found in the second, third, fourth, and fifth decades, with a peak in the third decade 26.7%. The most prevalent OC in the third decade of life was RC 14, and among the nOC the NPDC was most prevalent.

As for localization of the OC and nOC, the maxilla was involved in 51% of the patients and the mandible in 49% cases. The most frequent exact localization in the maxilla was the anterior region, with 46.7% of all cysts. Among all cysts localized in the mandible 73.0% cases affected the posterior region.

Total number of oral biopsies = 1900

Total number of odontogenic and non odontogenic cysts = 279

Odontogenic cysts = 270

Non odontogenic cysts = 09

Similar clinical, radiographic, and histologic features are shared by a number of cystic lesions in the jaws. Therefore, knowledge of the incidence of OC and nOC, as well as their more common sites of presentation and age distribution, help us to determine a likely clinical diagnosis of said lesion. Correct diagnosis of cysts in the jaws and their variants is essential, owing to the likelihood of some lesions recurring and presenting an aggressive nature. The diagnosis of these lesions is especially

important for those pathologists who are not used to dealing with oral and maxillofacial conditions so that they may be aware of the histology of normal odontogenic tissues so as to avoid misinterpretation of dental follicles and papillae as OC.<sup>19</sup>

There are only few studies about OC and nOC carried out after the 1992 WHO classification. According to the new WHO classification in 2005,<sup>20</sup> OKC and COC have now been reclassified as keratocystic odontogenic tumors and calcifying cystic odontogenic tumor, respectively. The present study is the largest series of OC and nOC of the Uttar Pradesh population described in literature. Odontogenic cysts and nOC represented 14.2% of the entire number of oral cavity and jaw cases from the Oral Pathology Service.

Our results were in accordance to those obtained from studies in Canada (17.2%)<sup>2</sup> and the United Kingdom (12.8%)<sup>8</sup>; however, these cysts are more commonly encountered compared with Mexico (7.8% and 8.4%)<sup>4,6</sup> and substantially less common than in Finland.<sup>24</sup> The nOC in this study represented about 0.50% of all submitted specimens, whereas a higher result was reported in the findings of Daley et al.<sup>2</sup> in Canada (1.01%). The gender frequency in the total number of cases was relatively equal for both genders. However, when each type of cyst is analyzed separately, this gender distribution changes. The nasolabial cyst and paradental

cyst showed female prevalence equal to that reported by Vasconcelos et al.<sup>11</sup> yet contrasted with the results reported by Philipsen et al.<sup>25</sup>

In relation to localization, a preference for the posterior mandible (73%), followed by anterior maxilla (46.7%), was observed. These figures are in agreement with such authors as Regezzi,<sup>1</sup> Jones et al.,<sup>8</sup> Pindborg and Hansen,<sup>28</sup> Shear,<sup>29</sup> and Lam et al.<sup>30</sup> The OC and nOC recurrence rates are cited in literature to some cysts.<sup>8,28-30</sup> The three most frequent cysts were RC (61.8%), DC (24.8%), OKC (7.7%). It is not surprising that the RC was the most common diagnosis, accounting for 61.8% of all odontogenic cysts. These results were identical to those of Kreidler et al.,<sup>7</sup> Shear et al.,<sup>29</sup> and Bhaskar,<sup>31</sup> who found a similar age range. A lower incidence of RC was found by Mosqueda-Taylor et al.,<sup>4</sup> Ledesma-Montes et al.,<sup>6</sup> Thompson,<sup>32</sup> Nakamura et al.<sup>33</sup> and Bataineh et al.<sup>34</sup> whereas a greater proportion was reported by Daley et al.<sup>2</sup> and Happonen et al.<sup>24</sup> The second most prevalent lesion found in this study was DC, which represented 24.8% of the cysts sample (3.86% of all specimens), compared with other studies in which the prevalence varied from 17.4% to 35.5%.<sup>6,8,33-35</sup> The DC attacked the lower third molar, as described in the literature to date. This lesion presented a satisfactory prognosis for recurrent lesions.

**Table.1**

Odontogenic cysts (270)			Non odontogenic cysts (09)		
Cyst	No.	%age	Cyst	No.	%age
1. Radicular cyst	167	61.85%	1. Nasopalatine cyst	5	55.5%
2. Dentigerous cyst	67	24.81%	2. Others	4	44.5%
3. Odontogenic keratocyst	21	7.77%			
4. Others	15	9.25%			
<b>Total</b>	<b>270</b>	<b>--</b>	<b>Total</b>	<b>09</b>	<b>--</b>

Odontogenic keratocyst was the third most common diagnosis, comprising 1.1% of our sample. In previous studies, the reported incidence of OKC has shown to vary from 1% to 21.5%.<sup>2,4,8,9</sup> Our distribution was lower than those reported by Mosqueda-Taylor et al.,<sup>4</sup> Ledesma-Montes et al.,<sup>6</sup> Nakamura et al.,<sup>33</sup> and Radden and Reade.<sup>36</sup>

The NPDC, represented by 5 cases was the most common nOC (55.5%) and accounted for 0.26% of all specimens. This result is almost similar to other reports, which found a prevalence of NPDC at 1.3%<sup>43</sup>.

In conclusion, the present results demonstrate that there is a wide range of OC and nOC, with some cysts having a predilection for age, gender, and localization. The demographic aspects and clinical characteristics of these cysts could be used as baseline data to obtain more epidemiologic information about the OC and the nOC. In Uttar Pradesh population as well in the general population there have been relatively few studies performed regarding their prevalence.

## References

1. Altini M, Shear M. The lateral periodontal cyst: an update. *J Oral Pathol Med* 1992;21:245-50.
2. Anneroth G, Hall G, Stuge U. Nasopalatine duct cyst. *Int J Oral Max Surg* 1986;15:572-80.
3. Bataineh AB, Rawashdeh MA, Al Qudah MA. The prevalence of inflammatory and developmental odontogenic cysts in a Jordanian population: a clinicopathologic study. *Quintessence Int.* 2004;35:815-9.
4. Benn A, Altini M. Dentigerous cysts of inflammatory origin. A clinicopathologic study. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 1996;81:203-9.
5. Bhaskar SN. Oral pathology in the dental office: survey of 20,575 biopsy specimens. *J Am Dent Assoc* 1968;76:761-6.
6. Brannon RB. The odontogenic keratocyst. A clinicopathologic study of 312 cases. Part I. Clinical features. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 1976;42:54-72.
7. Brannon RB. The odontogenic keratocyst. A clinicopathologic study of 312 cases. Part II. Histologic features. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 1977;43:233-55.
8. Brondum N, Jensen VJ. Recurrence of keratocysts and decompression treatment. A long-term follow-up of forty-four cases. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 1991;72:265-9.
9. Browne RM. The odontogenic keratocyst— clinical aspects. *Br Dent J* 1970;128:225-31.
10. Buchner A. The central (intraosseous) calcifying odontogenic cyst: an analysis of 215 cases. *J Oral Maxillofac Surg* 1991;49:330-9.
11. Carter LC, Carney YL, Perez-Pudlewski D. Lateral periodontal cyst: multifactorial analysis of a previously unreported series. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 1996;81:210-6.
12. Daley TD, Wysocki GP, Pringle GA. Relative incidence of odontogenic tumors and oral jaw cysts in a Canadian population. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 1994;77:276-80.
13. Daley TD, Wysocki GP. New developments in selected cysts of the jaws. *J Can Dent Assoc* 1997;63:526-32.
14. Das S, Das AK. A review of pediatric oral biopsies from a surgical pathology service in a dental school. *Pediatr Dent* 1993;15:208-11.

15. EpiInfo. A Word-Processing, Database, and Statistics System for Epidemiology on Microcomputers [software online]. Produced by Centers for Disease Control and Prevention (CDC), Atlanta, in collaboration with World Health Organization (WHO), Geneva. Available at: <http://www.cdc.gov>. Accessed August 12, 2004.
16. Fernandes AM, Duarte EC, Pimenta FJ, Souza LN, Santos VR, Mesquita RA, Aguiar MC. Odontogenic tumors: a study of 340 cases in a Brazilian population. *J Oral Pathol Med* 2005;34:583-7.
17. Gultelkin SE, Tokman B, Turkseven MR. A review of paediatric oral biopsies in Turkey. *Int Dent J* 2003;53:26-32.
18. Happonen RP, Ylipaavalniemi P, Calonius B. A survey of 15,758 oral biopsies in Finland. *Proc Finn Dent Soc* 1982;78:201-6
19. Jones AV, Craig GT, Franklin CD. Range and demographics of odontogenic cysts diagnosed in a UK population over a 30-year period. *J Oral Pathol Med* 2006;35:500-7.
20. Kaplan I, Gal G, Anavi Y, Manor R, Calderon S. Glandular odontogenic cyst: treatment and recurrence. *J Oral Maxillofac Surg* 2005;63:435-41.
21. Kim J, Ellis GL. Dental follicular tissue: misinterpretation as odontogenic tumors. *J Oral Maxillofac Surg* 1993;51:762-7.
22. Kramer IRH, Pindborg JJ, Shear M. Histological typing of odontogenic tumors. 2nd edn. Geneva: World Health Organization; 1992.
23. Kreidler JF, Raubenheimer EJ, Van Heerden WF. A retrospective analysis of 367 cystic lesions of the jaw—the Ulm experience. *J Craniomaxillofac Surg* 1993;21:339-41.
24. Lam KY, Chan ACL. Odontogenic keratocyst: a clinicopathological study in Hong Kong Chinese. *Laryngoscope* 2000;110:1328-32.
25. Ledesma-Montes C, Hernandez-Guerrero JC, Garces-Ortiz M. Clinico-pathologic study of odontogenic cysts in a Mexican sample population. *Arch Med Res* 2000;31:373-6.
26. Mosqueda-Taylor A, Irigoyen ME, Diaz MA, Torres MA. Quistes odontogénicos. Análisis de 856 casos. *Med Oral* 2002;7:89-96.
27. Nakamura T, Ishida J, Nakano Y, Ishii T, Fukumoto M, Izumi H, et al. A study of cysts in the oral region. Cysts of the jaw. *J Nihon Univ Sch Dent* 1995;37:33-40.
28. Parra FC, Amado RC, Lambertucci JR, Rocha J, Antunes CM, Pena SD. Color and genomic ancestry in Brazilians. *Proc Natl Acad Sci U S A* 2003;100:177-82.
29. Partridge M, Towers JF. The primordial cyst (odontogenic keratocyst): its tumour-like characteristics and behaviour. *Br J Oral Maxillofac Surg* 1987;25: 71-9.
30. Philipsen HP, Reichart PA, Ogawa I, Suei Y, Takata T. The inflammatory paradental cyst: a critical review of 342 cases from a literature survey, including 17 new cases from the author's files. *J Oral Pathol Med* 2004;33:147-55.
31. Philipsen HP. Odontogenic tumour. In: Barnes L, Eveson JW, Reichart P, Sidransky D, editors. World Health Organization classification of tumours: pathology and genetics of head and neck tumours. Lyon: IARC Press; 2005. p. 283-328.
32. Pimenta JR, Zuccherato LW, Debes AA, Maselli L, Soares RP, Moura-Neto RS, et al. Color and genomic ancestry in Brazilians: a study with forensic microsatellites. *Hum Hered* 2006;62:190-5.
33. Pindborg JJ, Hansen J. Studies on odontogenic cyst epithelium. II. Clinical

- and roentgenologic aspects of odontogenic keratocysts. *Acta Pathol Microbiol Scand* 1963;58:283-94.
34. Radden BG, Reade PC. Odontogenic cysts. A review and a clinicopathological study of 368 odontogenic cysts. *Aust Dent J* 1973;18:218-25.
  35. Regezi JA. Odontogenic cyst, odontogenic tumors, fibrous, and giant cell lesions of the jaw. *Mod Pathol* 2002;15:331-41.
  36. Shear M. Cysts of the jaws: recent advances. *J Oral Pathol* 1985;14:43-9.
  37. Shear M. Developmental odontogenic cysts. An update. *J Oral Pathol Med* 1994;23:1-11.
  38. Skinner RL, Davenport WD, Weir JC, Carr RF. A survey of biopsied oral lesions in pediatric dental patients. *Pediatr Dent* 1986;8:163-7.
  39. Thompson CC. A six year regional report on the oral tumour registry and lesions diagnosed in the School of Dentistry Biopsy Service University of Oregon Health Science Center (Portland, Oregon). *J Oral Med* 1981;36:11-5.
  40. Vasconcelos RF, Aguiar MCF, Castro WH, Araújo VC, Mesquita RA. Retrospective analysis of 31 cases of nasopalatine duct cyst. *Oral Dis* 1999;5:325-8.
  41. Vasconcelos RF, Souza PEA, Mesquita RA. Retrospective analysis of 15 cases of nasolabial cyst. *Quintessence Int* 1999;30:629-32.
  42. Weir LC, Davenport WD, Skinner RL. A diagnostic and epidemiologic survey of 15,783 oral lesions. *JADA* 1987;115:439-42.
  43. Woolgar JA, Rippin JW, Browne RM. A comparative study of the clinical and histological features of recurrent and nonrecurrent odontogenic keratocysts. *J Oral Pathol* 1987;16:124-8.
  44. Wright JM. The odontogenic keratocyst: orthokeratinized variant. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 1981;51:609-18.
  45. Fregnani ER, Pires FR, Quezada RD, Shih IM, Vargas PA, Almeida OP. Calcifying odontogenic cyst: clinicopathological features and immunohistochemical profile of 10 cases. *J Oral Pathol Med* 2003;32:163-70.

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