

FREQUENCY AND DEMOGRAPHIC PROFILE OF ODONTOGENIC CYSTS FROM A RETROSPECTIVE ANALYSIS OF A COHORT OF PATIENTS FOR THE PERIOD 2003-2014**Clinic and Polyclinic for Oral, Maxillofacial, and Facial Surgery at Ludwig Maximilian University in Munich (Munich, Germany)**

mic_amu@mail.ru

Analysis of the results of international studies on the prevalence of cysts and features of their development reveals contradictory data. The present study aimed at providing determination pattern, presentations and prevalence of odontogenic jaw cysts in local population. From January 2003 to June 2014, 344 patients with 392 odontogenic cysts were treated at the Clinic for Oral, Maxillofacial, and Facial Surgery at Ludwig Maximilian University. The Patients were divided into two main groups: a) 0-16 years and b) over 16 years. Out of total number of patients male patients were more affected by odontogenic cysts, constituting 66.07% compared to females at 33.93%. The evaluation of locations revealed that cystic lesions predominantly occurred in the mandible. In 3.57% of cases, cystic lesions occurred in both the maxilla and the maxillary sinus, and in 0.51% of cases, only the maxillary sinus was involved. In 18.3% of cases, cysts were localized in the maxillary anterior region, 8.3% in the maxillary premolar region, and 10% in the maxillary molar region. Among cysts in the mandible, the majority occurred in the molar region followed by the mandibular premolar region and the mandibular anterior region. Thus, out of the total number of patient male were more affected by odontogenic cysts, compared to females. Radicular cysts of the jaws were diagnosed more frequently. Localizations of radicular cysts on the lower jaw was more frequent than on the upper jaw, which confirms the literature data.

Key words: odontogenic cysts, prevalence, localization, statistics, age-sex peculiarities.

Connection of the publication with planned research works.

This article is a fragment of a dissertation "Spectrum and Distribution of Odontogenic Cysts – Retrospective Analysis of a Patient Cohort between 2003 – 2014", performed at the Clinic and Polyclinic for Oral, Maxillofacial, and Facial Surgery at Ludwig Maximilian University in Munich, Germany.

Introduction.

Cysts of the jaw bones, more often of odontogenic origin, are hollow benign neoplasms lined with multilayer squamous epithelium, and they are detected mainly in case of their large size, deformation of bone tissue, as well as in the development of secondary infection, etc. [1, 2, 3]. Such cysts are categorized into certain types: radicular, follicular, paradental, etc.

Radicular cysts, which develop from cells of Epithelial Cell Rests of Malassez (ERM) and arise from foci of periapical chronic inflammation, account for the largest percentage in terms of frequency of occurrence. These cysts can be diagnosed in the adult population and are detected unlike other types of odontogenic cysts in the most cases [4, 5]. But, in general, such pathological processes are observed in individuals in childhood, adolescence and older age, but often, that is, in more than 50% of cases, cysts are diagnosed in the age group reaching 20-40 years; according to other authors, the highest prevalence of odontogenic cysts was found in the age group of 30-50 years [6-10]. When determining the prevalence of radicular cysts, insignificant gender differences were revealed.

Thus, according to some authors, odontogenic cysts were more frequently detected in men than in women [11, 12], and according to other authors, odontogenic cysts are more common in women than in men [13]. A number of researchers have proved that odontogenic cysts are more often localized on the upper jaw, but

the same level of lesions of the upper and lower jaw is evidenced by the data of other authors [14, 15]. Thus, analysis of the results of international studies on the prevalence of cysts and features of their development reveals contradictory data, which can be explained by the inclusion of different incompatible age groups in the studies, as well as by the low level of specialized diagnostic and therapeutic and preventive care [16, 17, 18].

With regard to the localization of these neoplasms in a particular jaw region, radicular cysts are most often localized in the maxilla and comparatively less frequently in the mandible. Follicular cysts are more common in young adults and are diagnosed with equal frequency on the maxilla and mandible. They can occur around a fully formed tooth and around the crown of an unerupted tooth. In children with a deciduous dentition, follicular cysts are more commonly reported in the maxillary canines and in the lateral teeth of the mandible; in permanent dentition, this form of odontogenic cyst is found in the maxillary canines [19, 20].

Eruption cyst is caused by inflammation of the dental follicle and develops as a result of a disturbance in the process of tooth eruption. The frequency of occurrence of this type of odontogenic cysts is determined at a fairly low level compared to other cysts. This is due to the presence of certain difficulties in differential diagnosis and problems associated with the consideration of this disease as an independent nosological form [21, 22].

Cystectomy and cystotomy are frequently used methods of surgical treatment of odontogenic cysts. At the same time, the need for surgical intervention for cysts is not decreasing and is at a high level, despite the introduction of modern conservative methods of treatment.

The dependence of jaw parameters, facial growth, and tooth size on hereditary factors, race, and ethnicity

predetermines the need for similar studies in different populations [23, 24, 25].

The aim of the study.

To determine pattern, presentations and prevalence of odontogenic jaw cysts in local population.

Object and methods of research.

The basis of this monocentric retrospective study comprises a total of 392 odontogenic cysts in 344 patients from the Clinic and Polyclinic for Oral, Maxillofacial, and Facial Surgery at Ludwig Maximilian University, Campus Innenstadt, treated on an outpatient, inpatient, and day patient basis between January 1, 2003, and June 1, 2014. The material was obtained in accordance with the measures taken to ensure satisfactory conditions for maintaining the patient's health, respect for their rights, human dignity and moral and ethical standards. The conditions for the selection of research samples met the requirements of the principles of the Helsinki Declaration of Human Rights and the Council of Europe Convention on Human Rights and Biomedicine. All patients with histologically confirmed odontogenic cysts (radicular cyst, follicular cyst, eruption cyst, residual cyst, and lateral periodontal cyst) treated.

The excised tissues were examined and histologically evaluated by the Institute of Pathology, Ludwig Maximilian University, Munich. The age and gender distribution of the entire patient cohort and individual cyst types were determined. The relationship between the age and gender of patients with odontogenic cysts was analyzed.

Patients were divided into two main groups: a) 0-16 years and b) over 16 years. Additionally, patients were also divided into decades of life. Radiological evaluation and determination of cyst localization were carried out using preoperatively created panoramic layer images (OPT), dental X-ray images, bite images, lower jaw overview images according to Clementschitsch, digital volume tomography (DVT), magnetic resonance tomography (MRT), and computed tomography (CT). The description in the respective operation report was also used for localization determination.

Both the upper and lower jaw were divided into individual regions:

In the upper jaw:

Anterior tooth region (A)

Premolar region (B)

Molar region (C)

Involvement of the maxillary sinus

In the lower jaw:

Anterior tooth region (D)

Premolar region (E)

Molar region (F)

Involvement of the mandibular ramus

(G)

The statistical analysis used SAS 9.3 software (SAS Institute, Cary NC). Other software programs, such as Microsoft Word 2007 (word processing), Microsoft Excel® 2007 (tabular presentation of patient data), and Microsoft PowerPoint 2007 (graphical presentation of results), were also utilized. A descriptive analysis of all collected patient data was performed.

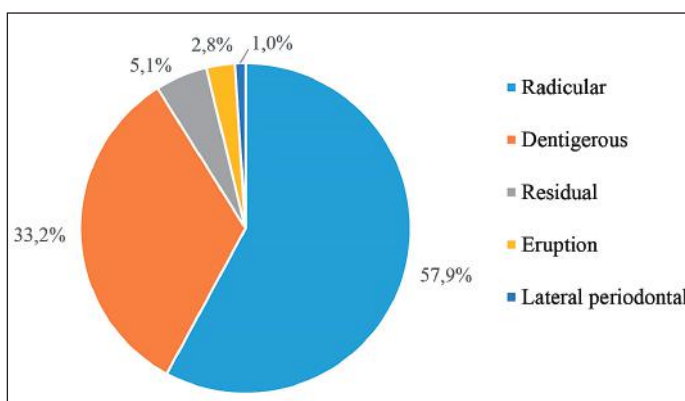


Figure 1 – Distribution of cyst entities in the entire patient population (n=392).

Research results.

Analysis of the patient cohort predominantly revealed radicular and follicular cysts, constituting 91.07% (n=357 cysts) of the total. Residual cysts represented 5.1% (n=20 cysts) (figure 1). Eruption cysts (2.8%, n=11 cysts) and lateral periodontal cysts (1.03%, n=4 cysts) occurred infrequently. Radicular and follicular cysts were diagnosed more frequently in adults (93.21%, n=316) and pediatric patients (77.36%, n=41).

All cystic lesions were classified into two groups: inflammation-related and development-related cysts. Inflammatory cysts occurred more frequently in this cohort, constituting 63.01% (n=247 cysts), compared to development-related cysts at 36.99% (n=145 cysts).

Radicular cyst 57.9% (n=227); Dentigerous cyst 33.17% (n=130); Residual cyst 5.1% (n=20); Eruption cyst 2.8% (n=11); Lateral periodontal cyst 1.03% (n=4). In the adult population, inflammatory cysts were also more prevalent, accounting for 68.44% (n=232 cysts) compared to development-related cysts at 31.56% (n=107 cysts). Conversely, developmental cysts dominated in children, comprising 71.7% (n=38). In the adult patient cohort, males also dominated with 67.84% (n=230), while females constituted 32.16% (n=109), resulting in a ratio of 2.1:1 (male: female). In patients under 16 years, the gender distribution was more balanced (54.71%, n=29 male; 45.29%, n=24 female), resulting in a ratio of 1.2:1.

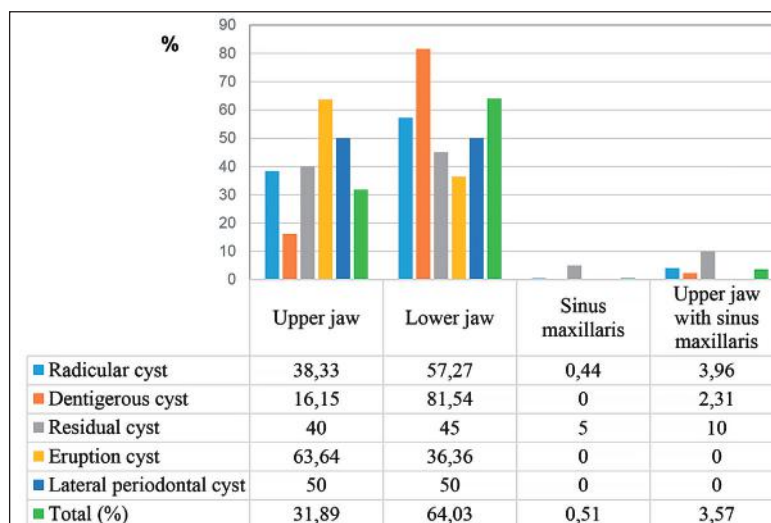


Figure 2 – Localization of the cystic lesions (n=392).

Table – Location of all cysts in the adult and pediatric patients

Location	Adult Patients (>16 years)	Pediatric Patients (<16 years)
Upper jaw	31,56%, n=107	33,96%, n=18
Lower jaw	64,6%, n=219	60,37%, n=32
Sinus maxillaris	0,6%, n=2	0%
Upper jaw with sinus maxillaris	3,24%, n=11	5,67%, n=3

Other scientists, through clinical observations and retrospective analyses of the incidence of different types of odontogenic cysts, have also found a marked predisposition in men to the development of odontogenic cysts [26, 27]. The evaluation of locations revealed that cystic lesions predominantly occurred in the mandible (64.03%, n=251), while the maxilla accounted for 31.89% (n=125). In 3.57% (n=14) of cases, cystic lesions occurred in both the maxilla and the maxillary sinus, and in 0.51% (n=2) of cases, only the maxillary sinus was involved (**figure 2**).

The majority of cases, regardless of gender, occurred in the 5th decade, accounting for 20.9% (n=82). The 4th decade followed with 19.4% (n=76). The average age at the time of surgery was 41.61 years, with no significant difference between men (41.44 years) and women (41.95 year). The analysis of the pediatric and adult patient cohorts indicated that cysts were more frequently localized in the mandible (60.37%, n=32 in pediatric patients and 64.6%, n=219 in adults).

Cysts in the maxilla were less common, with 33.96% (n=18) in pediatric patients and 31.56% (n=107) in adults (**table**).

Moreover, the maxilla and mandible were divided into three anatomical regions each for further analysis. In 18.3% (n=86) of cases, cysts were localized in the maxillary anterior region, 8.3% (n=39) in the maxillary premolar region, and 10% (n=47) in the maxillary molar region. Among cysts in the mandible, the majority occurred in the molar region (37.9%, n=178), followed by the mandibular premolar region (18.1%, n=85) and the mandibular anterior region (7.4%, n=35).

The involvement of the mandibular ramus was evaluated in cysts localized in the mandibular molar region, with 23.03% (n=41) showing ramus involvement. Among these, 51.21% (n=21) were located in the left mandibular ramus, and 48.79% (n=20) in the right mandibular ramus.

The localization of odontogenic cysts was also analyzed by jaw quadrants and presented in Cyst localization was further assessed according to the Fédération Dentaire Internationale (FDI) tooth numbering system. The most commonly affected locations were regions 48 (n=57) and 38 (n=52).

Discussion of research results.

Evaluation of odontogenic cysts localization in various studies has generally shown a relatively similar distribution between the upper and lower jaws [28, 29]. In our study, the mandible (64.03%) was more frequently affected than the maxilla. 31.89% of lesions were in the maxilla, 3.57% in the maxilla and the maxillary sinus, and only 0.51% in the maxillary sinus. These results are comparable to data from [30, 31]. In our study, we evaluated the localization of all odontogenic cysts as well as individual cyst entities.

The respective cyst entities were presented concerning their localization in the maxilla and mandible. According to our results, odontogenic cysts were mostly located in the mandibular molar region (37.9%) and the maxillary anterior tooth region (18.3%). These localizations were also the most affected jaw areas according to other sources [32, 33].

In this work, cystic lesions in children were also predominantly located in the mandible (60.37% mandible, 33.96% maxilla). This aligns with the results of some authors [34, 35, 36].

Conclusions.

Thus, out of the total number of patient male were more affected by odontogenic cysts, compared to females.

Radicular cysts of the jaws were diagnosed more frequently.

Localizations of radicular cysts on the lower jaw was more frequent than on the upper jaw, which confirms the literature data.

Perspectives for future research.

In order to make some serious contribution to the solution of this rather serious problem of modern practical dentistry associated with the high prevalence of odontogenic diseases, it is necessary to conduct more in-depth and large-scale studies, the main purpose of which will be to study the causes of the development of various odontogenic cysts and improve the effectiveness of their prevention.

References

- Kim JW, On DH, Cho JY, Ryu J. Risk factors for postoperative infection of odontogenic cysts associated with mandibular third molar. *Maxillofac Plast Reconstr Surg*. 2020 Feb 18;42(1):4. DOI: [10.1186/s40902-020-00248-5](https://doi.org/10.1186/s40902-020-00248-5).
- Nandini DB, Devi TP, Deepak BS, Sanjeeta N. Incidental finding of orthokeratinized odontogenic cyst with unusual features. *J Oral Maxillofac Pathol*. 2022;26(1):130. DOI: [10.4103/jomfp.jomfp_133_21](https://doi.org/10.4103/jomfp.jomfp_133_21).
- Perez A, Lenoir V, Lombardi T. Dentigerous Cysts with Diverse Radiological Presentation Highlighting Diagnostic Challenges. *Diagnostics*. 2022;12(8):2006. DOI: [10.3390/diagnostics12082006](https://doi.org/10.3390/diagnostics12082006).
- Suluk-Tekkeşin M, Wright JM. The World Health Organization Classification of Odontogenic Lesions: A Summary of the Changes of the 2017 (4th) Edition. *Türk Patoloji Derg*. 2018;34(1). DOI: [10.5146/tjpath.2017.01410](https://doi.org/10.5146/tjpath.2017.01410).
- Açıkgoz A, Uzun-Bulut E, Özden B, Gündüz K. Prevalence and distribution of odontogenic and nonodontogenic cysts in a Turkish population. *Med Oral Patol Oral Cir Bucal*. 2012;17(1):e108-15. DOI: [10.4317/medoral.17088](https://doi.org/10.4317/medoral.17088).
- Almazayad A, Almutairi M, Almadan N, Alamro M, Maki F, AlQuwayz TS, et al. Frequency and Demographic Profile of Odontogenic Cysts in Riyadh, Saudi Arabia: Retrospective Multicenter Study. *Diagnostics* (Basel). 2023 Jan 18;13(3):355. DOI: [10.3390/diagnostics13030355](https://doi.org/10.3390/diagnostics13030355).
- Cabrini RL, Barros RE, Albano H. Cysts of the jaws: a statistical analysis. *J Oral Surg*. 1970 Jul;28(7):485-9.
- Hwang MJ, Lee YP, Lang MJ, Wu YH, Chiang CP, Chueh LH. Clinicopathological study of radicular cysts with actinomycosis. *J Dent Sci*. 2021;16(3):825-830. DOI: [10.1016/j.jds.2021.04.008](https://doi.org/10.1016/j.jds.2021.04.008).
- Irimia A, Moraru L, Ciubotaru DA, Caruntu C, Farcasiu AT, Caruntu A. Minimally Invasive Two-Stage Surgery in the Treatment of Large Cystic Lesions of the Jaw. *Healthcare* (Basel). 2021;9(11):1531. DOI: [10.3390/healthcare9111531](https://doi.org/10.3390/healthcare9111531).
- Rathi N, Reche A, Agrawal S. Radicular Cyst: A Cystic Lesion Involving the Hard Palate. *Cureus*. 2023;15(10):e47030. DOI: [10.7759/cureus](https://doi.org/10.7759/cureus).

11. Vijayvergiya G, Tandon A, Rai A, Khurana U, Joshi D, Chaurasia J, et al. Histopathologic spectrum and clinical correlation of lesions of jaw - a series of 60 cases. *Int J Clin Exp Pathol*. 2022 Dec 15;15(12):467-475.
12. Li M, Du H, Wang S, Li G. [Cone-beam CT imaging features of common cystic lesions associated with the impacted mandibular third molar]. *Zhonghua Kou Qiang Yi Xue Za Zhi*. 2023;58(9):913-918. DOI: [10.3760/cma.j.cn112144-20230702-00262](https://doi.org/10.3760/cma.j.cn112144-20230702-00262).
13. Mohamed AA, Babiker AA, Khalfallah MS, Eltohami YI. Odontogenic Keratocysts: Presentation and Surgical Outcome in a Sample of Sudanese Patients. *Int J Dent*. 2023;2023:8763948. DOI: [10.1155/2023/8763948](https://doi.org/10.1155/2023/8763948).
14. Pyllkö J, Willberg J, Suominen A, Laine HK, Rautava J. Appearance and recurrence of odontogenic keratocysts. *Clin Exp Dent Res*. 2023;9(5):894-898. DOI: [10.1002/cre2.796](https://doi.org/10.1002/cre2.796).
15. 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(10):815-9.
16. Martin LHC, Speight PM. Odontogenic cysts: an update, *Diagnostic Histopathology*. 2017;23(6):260-265. DOI: [10.1016/j.mpdhp.2017.04.006](https://doi.org/10.1016/j.mpdhp.2017.04.006).
17. Barbosa JR, Vieira EL, Sales LN. Epidemiological evaluation of jaw cysts according to the new WHO classification: a 30-year retrospective analysis, *Braz. Oral Res*. 2021;35:e129 DOI: [10.1590/1807-3107bor-2021.vol35.0129](https://doi.org/10.1590/1807-3107bor-2021.vol35.0129).
18. Ruslin M, van Trikt KN, Yusuf AS, Tajrin A, Fauzi A, Rasul MI, et al. Epidemiology, treatment, and recurrence of odontogenic and non-odontogenic cysts in South Sulawesi, Indonesia: A 6-year retrospective study. *J Clin Exp Dent*. 2022 Mar 1;14(3):e247-e253. DOI: [10.4317/jced.59309](https://doi.org/10.4317/jced.59309).
19. Peeran SW, Altaf OB, Peeran SA, Alsaid FM, Muqrabi MH, Ahmed AM, et al. Oral health in Libya: addressing the future challenges. *Libyan J Med*. 2014;9(1):23564. DOI: [10.3402/ljm.v9.23564](https://doi.org/10.3402/ljm.v9.23564).
20. Kasat VO, Karjodkar FR, Laddha RS. Dentigerous cyst associated with an ectopic third molar in the maxillary sinus: A case report and review of literature. *Contemp Clin Dent*. 2012 Jul;3(3):373-6. DOI: [10.4103/0976-237X.103642](https://doi.org/10.4103/0976-237X.103642).
21. Pramod DS, Shukla JN. Dentigerous cyst of maxilla in a young child. *Natl J Maxillofac Surg*. 2011 Jul;2(2):196-9. DOI: [10.4103/0975-5950.94481](https://doi.org/10.4103/0975-5950.94481).
22. Dhawan P, Kochhar GK, Chachra S, Advani S. Eruption cysts: A series of two cases. *Dent Res J (Isfahan)*. 2012 Sep;9(5):647-50. DOI: [10.4103/1735-3327.104889](https://doi.org/10.4103/1735-3327.104889).
23. Şen-Tunç E, Açıkel H, Sönmez I S, Bayrak Ş, Tuloğlu N. Eruption cysts: A series of 66 cases with clinical features. *Med Oral Patol Oral Cir Bucal*. 2017 Mar 1;22(2):e228-e232. DOI: [10.4317/medoral.21499](https://doi.org/10.4317/medoral.21499).
24. Avelar RL, Antunes AA, Carvalho RW, Bezerra PG, Oliveira Neto PJ, Andrade ES. Odontogenic cysts: a clinicopathological study of 507 cases. *J Oral Sci*. 2009 Dec;51(4):581-6. DOI: [10.2334/josnurd.51.581](https://doi.org/10.2334/josnurd.51.581).
25. Oeschger ES, Kanavakis G, Halazonetis DJ, Gkantidis N. Number of teeth is associated with facial size in humans. *Sci Rep*. 2020 Feb 4;10(1):1820. DOI: [10.1038/s41598-020-58565-8](https://doi.org/10.1038/s41598-020-58565-8).
26. Savithri V, Suresh R, Janardhanan M, Aravind T, Mohan M. Prevalence of odontogenic cysts and its associated factors in South Indian population. *J Oral Maxillofac Pathol*. 2020;24(3):585. DOI: [10.4103/jomfp.JOMFP_171_20](https://doi.org/10.4103/jomfp.JOMFP_171_20).
27. Cserni D, Zombori T, Vörös A, Stájer A, Rimovszki A, Daru K, et al. Clinicopathological Approach to Odontogenic Cysts: the Role of Cytokeratin 17 and bcl2 Immunohistochemistry in Identifying Odontogenic Keratocysts. *Pathol Oncol Res*. 2020;26(4):2613-2620. DOI: [10.1007/s12253-020-00866-4](https://doi.org/10.1007/s12253-020-00866-4).
28. Sriram K, Madhulaxmi, Kumar SM. Age and gender distribution of odontogenic cysts - A retrospective study. *Journal of Pharmaceutical Negative Results*. 2022;13(3):1517-1521. DOI: [10.47750/pnr.2022.13.S03.233](https://doi.org/10.47750/pnr.2022.13.S03.233).
29. Sheng S, Tipton N, Chang J, Meng HW, Tribble GD. Peripheral calcifying odontogenic cyst: a case report and comprehensive review of 60 years of literature. *Front. Oral. Health*. 2023;4:1223943. DOI: [10.3389/froh.2023.1223943](https://doi.org/10.3389/froh.2023.1223943).
30. Ramachandra P, Maligi P, Raghuveer H. A cumulative analysis of odontogenic cysts from major dental institutions of Bangalore city: A study of 252 cases. *J Oral Maxillofac Pathol*. 2011 Jan;15(1):1-5. DOI: [10.4103/0973-029X.80030](https://doi.org/10.4103/0973-029X.80030).
31. Nuñez-Urrutia S, Figueiredo R, Gay-Escoda C. Retrospective clinicopathological study of 418 odontogenic cysts. *Med Oral Patol Oral Cir Bucal*. 2010 Sep 1;15(5):e767-73. DOI: [10.4317/medoral.15.e767](https://doi.org/10.4317/medoral.15.e767).
32. Waheed SA, Zaidan TF, Abdullah BH. Odontogenic Cysts and Tumors of Maxilla and Maxillary Sinus (A Clinicopathological Analysis). *J Bagh Coll Dent*. 2021 Dec 15;33(4):38-43. DOI: [10.26477/jbcd.v33i4.3018](https://doi.org/10.26477/jbcd.v33i4.3018).
33. Selvamani M, Donoghue M, Basandi PS. Analysis of 153 cases of odontogenic cysts in a South Indian sample population: a retrospective study over a decade. *Braz Oral Res*. 2012;26(4):330-4. DOI: [10.1590/s1806-83242012005000007](https://doi.org/10.1590/s1806-83242012005000007).
34. Açıkgöz A, Uzun-Bulut E, Özden B, Gündüz K. Prevalence and distribution of odontogenic and nonodontogenic cysts in a Turkish population. *Med Oral Patol Oral Cir Bucal*. 2012 Jan 1;17(1):e108-15. DOI: [10.4317/medoral](https://doi.org/10.4317/medoral).
35. Allon DM, Allon I, Anavi Y, Kaplan I, Chaushu G. Decompression as a treatment of odontogenic cystic lesions in children. *J Oral Maxillofac Surg*. 2015 Apr;73(4):649-54. DOI: [10.1016/j.joms.2014.10.024](https://doi.org/10.1016/j.joms.2014.10.024).
36. Pechalova PF, Bakardjiev AG. Cysts of the Jaws: a clinical study of 621 cases. *Acta Stomatologica Croatica*. 2009;43(3):215-224.

ЧАСТОТА ТА ДЕМОГРАФІЧНИЙ ПРОФІЛЬ ОДОНТОГЕННИХ КІСТ ЗА ДАНИМИ РЕТРОСПЕКТИВНОГО АНАЛІЗУ КОГОРТИ ПАЦІЄНТІВ ЗА ПЕРІОД 2003-2014 РР.

Мамедов К. Ч.

Резюме. Вступ. Кістоподібні утворення, включно з пухлинами і пухлиноподібними утвореннями щелеп, посідають важливе місце в практиці щелепно-лицьових хірургів і часто становлять чималий відсоток від усіх захворювань щелепно-лицьової ділянки. При цьому, серед новоутворень щелепно-лицьової ділянки поширеність одонтогенних кіст може перевищувати 80%. Одонтогенні кісти верхньої і нижньої щелеп є порожнистими доброякісними новоутвореннями, які діагностують найчастіше на тлі розвитку вторинної інфекції за рахунок деформації кісткової тканини в результаті досягнення ними великих розмірів. Під час вивчення поширеності різних видів подібних кістозних утворень, зокрема таких типів, як радикулярні, фолікулярні, парадентальні кісти, найчастіше діагностують радикулярні кісти, що розвиваються в ділянці вогнищ періапикального хронічного запального процесу і формуються за участю клітин-залишків епітеліальних клітин Малассе. Що стосується вікових особливостей поширеності радикулярних одонтогенних кіст, то їх найчастіше виявляють серед пацієнтів підліткового і старшого віку, на відміну від інших видів кіст. Але подібні патологічні процеси спостерігаються в осіб дитячого віку теж. Також визначаються деякі гендерні відмінності поширеності одонтогенних кіст. Так, під час аналізу даних численних наукових досліджень виявлено той факт, що в пацієнтів чоловічої статі значно частіше діагностували одонтогенні кісти щелепно-лицьової ділянки, ніж у представників жіночої статі. При цьому, найбільш достовірною причиною подібних відмінностей може служити фактор нечастих стоматологічних оглядів саме пацієнтами чоловічої статі, тобто жінки частіше звертаються до стоматолога, ніж чоловіки. Що може стати причиною більш пізніх клінічних та інструментальних досліджень. Крім того, як важливий фактор ризику розвитку кістозних уражень запального генезу є недостатній рівень гігієни порожнини рота, який також має свої деякі відмінні ознаки в пацієнтів чоловічої та жіночої статі.

Мета дослідження. Визначити характер, прояви та поширеність одонтогенних кіст щелеп серед місцевого населення.

Об'єкт і методи дослідження. В основу цього моноцентричного ретроспективного дослідження увійшли загалом 344 пацієнти з 392 одонтогенними кістами з клініки та поліклініки щелепно-лицевої хірургії Університету Людвіга-Максиміліана, кампус Інненштадт, які проходили амбулаторне, стаціонарне лікування між 1 січня 2003 р. і 1 червня 2014 р. Усі пацієнти з гістологічно підтвердженими одонтогенними кістами (радикулярна кіста, фолікулярна кіста, кіста прорізування, резидуальна кіста і латеральна пародонтальна кіста) пройшли лікування. Рентгенологічну оцінку і визначення локалізації кісти проводили з використанням створених до операції панорамних пошарових зображень (ППЗ), рентгенограм зубів, зображень прикусу, оглядових зображень нижньої щелепи за Clementschitsch, цифрової об'ємної томографії, магнітно-резонансної томографії (МРТ) та комп'ютерної томографії (КТ). І верхня, і нижня щелепа були розділені на окремі ділянки. У верхній щелепі: ділянка передніх зубів, ділянка премолярів, ділянка молярів, ураження верхньощелепної пазухи. На нижній щелепі: ділянка передніх зубів, ділянка премолярів, ділянка молярів, ураження гілки нижньої щелепи. Для статистичного аналізу використовували програмне забезпечення SAS 9.3 (Інститут SAS, Північна Кароліна). Також використовували інші програми, такі як Microsoft Word 2007 (текстовий редактор), Microsoft Excel® 2007 і Microsoft Power Point 2007.

Результати дослідження та їх обговорення. Як було зазначено за даними проведених нами досліджень, серед хворих із досліджуваною патологією більшість склали радикулярні кісти. Аналогічні результати щодо частоти поширеності різних видів одонтогенних кіст були отримані в ході раніше проведених досліджень. Однією з головних причин виникнення і розвитку радикулярної кісти є стійкий хронічний запальний процес у ділянці причинного зуба, що може бути пов'язано з безліччю чинників, таких як гігієнічний стан порожнини рота і його рівень, постійне проведення заходів з індивідуальної гігієни та його якісне виконання, харчові звички, своєчасне виявлення та ефективне лікування каріозних уражень, віково-статеві показники хворих, психічне й фізичне здоров'я, соціально-економічні аспекти, комплаєнтність пацієнтів, неякісне лікування попередньо травмованих зубів і звичайно ж відповідний рівень професіоналізму лікаря. Серед обстежених пацієнтів, під час визначення гендерних структурних особливостей, одонтогенні кісти в більшості випадків діагностувалися в порожнині рота осіб чоловічої статі, тоді як під час вивчення стану щелепно-лицьової ділянки в жінок показники за поширеністю були значно нижчими. А під час оцінки особливостей розташування різних видів одонтогенних кіст було виявлено, що найчастіше вони вражали тканини альвеолярного відростка нижньої щелепи, де ділянку локалізації цих патологічних станів визначали в зоні молярів, порівняно рідше патологічні ураження одонтогенної природи фіксували в ділянці премолярів, тобто малих корінних зубів нижньої щелепи, і в ділянці нижніх фронтальних зубів. Радикулярна кіста 57,9%; зубощелепна кіста 33,17%; залишкова кіста 5,1%; кіста прорізування 2,8%; латеральна пародонтальна кіста 1,03%. У дорослої популяції запальні кісти також були більш поширеними, складаючи 68,44%, порівняно з кістами, пов'язаними з розвитком, які становили 31,56%. І навпаки, кісти, пов'язані з розвитком, переважали у дітей, складаючи 71,7%. У когорті дорослих пацієнтів також переважали чоловіки – 67,84%, тоді як жінки становили 32,16%, тобто співвідношення становило 2,1:1 (чоловіки: жінки). У пацієнтів віком до 16 років гендерний розподіл був більш збалансованим (54,71% – чоловіки; 45,29% – жінки), тобто співвідношення становило 1,2:1. Інші вчені шляхом клінічних спостережень і ретроспективного аналізу захворюваності на різні види одонтогенних кіст також виявили у чоловіків виражену схильність до розвитку одонтогенних кіст. Оцінка локалізації показала, що кістозні ураження переважно траплялися на нижній щелепі (64,03%), тоді як на верхню щелепу припадало всього 31,89%. Оцінка локалізації одонтогенних кіст у різних дослідженнях загалом показала відносно схожий розподіл між верхньою і нижньою щелепами. У нашому дослідженні нижня щелепа (64,03%) уражалася частіше, ніж верхня. 31,89% уражень припадало на верхню щелепу, 3,57% – на верхню щелепу і верхньощелепну пазуху і тільки 0,51% – на верхньощелепну пазуху. Ці результати можна порівняти з даними робіт. У нашому дослідженні ми оцінювали локалізацію всіх одонтогенних кіст, а також окремих видів кістозних утворень. За нашими результатами, одонтогенні кісти найчастіше розташовувалися в ділянці молярів нижньої щелепи (37,9%) і ділянці передніх зубів верхньої щелепи (18,3%). Ці ділянки виявилися і найбільш ураженими ділянками щелепи і за даними інших авторів.

Таким чином, метою дослідження було вивчення одонтогенних кіст у дорослих і дітей у межах усієї популяції та у двох окремих групах протягом одинадцятирічного періоду, використовуючи різні критерії та порівнюючи результати з попередніми дослідженнями. Випадки оцінювали на основі розподілу кіст, гендерного розподілу, локалізації, типу лікування, частоти рецидивів і лікування причинних зубів. У цьому дослідженні частіше діагностували радикулярні кісти та фолікулярні кісти. Значно рідше зустрічалися резидуальна кіста, кіста розвитку і латеральна кіста пародонту. Ці дані по суті підтвердили результати раніше опублікованих досліджень. Переважання пацієнтів чоловічої статі спостерігалось як у цілому колективі пацієнтів, так і при оцінці окремих кістозних утворень. Чоловіча стать переважала в дорослих і дітей із корінцевими кістами та в дорослих пацієнтів із фолікулярними кістами. Одонтогенні кісти найчастіше виникають на 4-5-му десятиліттях життя. Як і очікувалося, кісти прорізування діагностувалися тільки у дітей, а резидуальні кісти – тільки у дорослих. Найбільш ураженою ділянкою були як загальні одонтогенні кісти, так і радикулярні та фолікулярні кісти в ділянці молярів нижньої щелепи.

Висновки. Таким чином, із загальної кількості пацієнтів чоловіки частіше страждали на одонтогенні кісти, ніж жінки.

Частіше діагностували радикулярні кісти щелеп.

Локалізація радикулярних кіст на нижній щелепі зустрічалася частіше, ніж на верхній, що підтверджує дані літератури.

Ключові слова: одонтогенні кісти, поширеність, локалізація, статистика, віково-статеві особливості.

FREQUENCY AND DEMOGRAPHIC PROFILE OF ODONTOGENIC CYSTS FROM A RETROSPECTIVE ANALYSIS OF A COHORT OF PATIENTS FOR THE PERIOD 2003-2014

Mammadov K. C.

Abstract. *Introduction.* As indicated, according to the data of our studies, among patients with the pathology under study, radicular cysts made up the majority. Similar results on the frequency of occurrence of various types of odontogenic cysts were obtained in previous studies. One of the main reasons for the occurrence and development of a radicular cyst is a persistent chronic inflammatory process in the area of the causative tooth, which may be associated with many factors, such as the hygienic condition of the oral cavity and its level, constant implementation of individual hygiene measures and its high-quality implementation, eating habits, timely detection and effective treatment of carious lesions, age and gender indicators of patients, mental and physical health, socio-economic aspects, patient compliance, poor-quality treatment of previously injured teeth and, of course, the appropriate level of professionalism of the attending physician. Cyst formations, including tumors and tumor-like formations of the jaws, occupy a significant place in the practice of maxillofacial surgeons and often make up a significant percentage of all diseases of the maxillofacial region. At the same time, among neoplasms of the maxillofacial region, the incidence of odontogenic cysts can exceed 80%. Odontogenic cysts of the upper and lower jaw bones are hollow benign neoplasms, which are most often diagnosed against the background of the development of a secondary infection, when the bone tissue is deformed as a result of their reaching large sizes. When studying the frequency of occurrence of various types of similar cystic formations, in particular types such as radicular, follicular, paradental cysts, radicular cysts are most often diagnosed, developing in the area of foci of the periapical chronic inflammatory process and formed with the participation of cells from the remnants of the Malasse epithelial cells. As for the age-related characteristics of the prevalence of radicular odontogenic cysts, they are most often detected among adolescent and older patients, in contrast to other types of cysts. But similar pathological processes are observed in children too. Some gender differences in the incidence of odontogenic cysts are also identified. Thus, when analyzing numerous scientific research data, the fact is revealed that male patients were diagnosed with odontogenic cysts of the maxillofacial area much more often than female patients. At the same time, the most reliable reason for such differences may be the fact that male patients rarely attend dental examinations, that is, women visit the dentist more often than men. Which may cause later clinical and instrumental studies. In addition, an insufficient level of oral hygiene, which also has some distinctive features in male and female patients, can be considered an important risk factor for the development of cystic lesions of inflammatory origin.

The aim of the study. To determine pattern, presentations and prevalence of odontogenic jaw cysts in local population.

Object and methods of research. The basis of this monocentric retrospective study comprises a total of 392 odontogenic cysts in 344 patients from the Clinic and Polyclinic for Oral, Maxillofacial, and Facial Surgery at Ludwig Maximilian University, Campus Innenstadt, treated on an outpatient, inpatient, and day patient basis between January 1, 2003, and June 1, 2014. All patients with histologically confirmed odontogenic cysts (radicular cyst, follicular cyst, eruption cyst, residual cyst, and lateral periodontal cyst) treated. Radiological evaluation and determination of cyst localization were carried out using preoperatively created panoramic layer images, dental X-ray images, bite images, lower jaw overview images according to Clementschitsch, digital volume tomography, magnetic resonance tomography (MRT), and computed tomography (CT). The description in the respective operation report was also used for localization determination. Both the upper and lower jaw were divided into individual regions: In the upper jaw: Anterior tooth region, Premolar region, Molar region, Involvement of the maxillary sinus. In the lower jaw: Anterior tooth region, Premolar region, Molar region, Involvement of the mandibular ramus. The statistical analysis used SAS 9.3 software (SAS Institute, Cary NC). Other software programs, such as Microsoft Word 2007 (word processing), Microsoft Excel® 2007, and Microsoft PowerPoint 2007, were also utilized.

Research results and their discussion. Among the examined patients, when determining gender structural characteristics, odontogenic cysts were in most cases diagnosed in the oral cavity of males, while when studying the condition of the maxillofacial area in women, the incidence rates were significantly lower. And in the course of assessing the location of various types of odontogenic cysts, it was revealed that most often they affected the tissues of the alveolar process of the lower jaw, where the area of localization of these pathological conditions was determined in the area of large molars, relatively less often pathological disorders of an odontogenic nature were recorded in the area of premolars, that is small molars of the lower jaw and in the area of the lower frontal teeth. Radicular cyst 57,9%; Dentigerous cyst 33,17%; Residual cyst 5,1%; Eruption cyst 2,8%; Lateral periodontal cyst 1,03%. In the adult population, inflammatory cysts were also more prevalent, accounting for 68.44% compared to development-related cysts at 31.56%. Conversely, developmental cysts dominated in children, comprising 71.7%. In the adult patient cohort, males also dominated with 67.84%, while females constituted 32.16%, resulting in a ratio of 2.1:1 (male: female). In patients under 16 years, the gender distribution was more balanced (54.71%, male; 45.29%, female), resulting in a ratio of 1.2:1. Other scientists, through clinical observations and retrospective analyses of the incidence of different types of odontogenic cysts, have also found a marked predisposition in men to the development of odontogenic cysts. The evaluation of locations revealed that cystic lesions predominantly occurred in the mandible (64.03%), while the maxilla accounted for 31.89%. Evaluation of odontogenic cysts localization in various studies has generally shown a relatively similar distribution between the upper and lower jaws. In our study,

the mandible (64.03%) was more frequently affected than the maxilla. 31.89% of lesions were in the maxilla, 3.57% in the maxilla and the maxillary sinus, and only 0.51% in the maxillary sinus. These results are comparable to data from. In our study, we evaluated the localization of all odontogenic cysts as well as individual cyst entities. According to our results, odontogenic cysts were mostly located in the mandibular molar region (37.9%) and the maxillary anterior tooth region (18.3%). These localizations were also the most affected jaw areas according to other sources.

The study aimed to examine odontogenic cysts in adult and pediatric patients within an entire population and in two separate groups over an eleven-year period, using different criteria and comparing results with previous studies. Cases were evaluated based on cyst distribution, gender distribution, localization, treatment type, recurrence rate, and treatment of causative teeth. Radicular cysts and follicular cysts were more frequently diagnosed in this study. The residual cyst, eruption cyst, and lateral periodontal cyst occurred much less frequently. These findings essentially confirmed the results of previously published studies. A predominance of male patients was observed in the entire patient collective and individual cyst entities. The male gender dominated in adult and pediatric patients with radicular cysts and in adult patients with follicular cysts. Odontogenic cysts most commonly occurred in the 4th to 5th decades of life. As expected, eruption cysts were only diagnosed in children, and residual cysts were only diagnosed in adults. The most affected region was both the overall odontogenic cysts and radicular and follicular cysts in the mandibular molar region.

Conclusions. Thus, out of the total number of patient male were more affected by odontogenic cysts, compared to females.

Radicular cysts of the jaws were diagnosed more frequently.

Localizations of radicular cysts on the lower jaw was more frequent than on the upper jaw, which confirms the literature data.

Key words: odontogenic cysts, prevalence, localization, statistics, age-sex peculiarities.

ORCID and contributionship:

Mammadov K. C.: — ABCDEF

Corresponding author

Mammadov Kamran Ceyhun

Clinic and Polyclinic for Oral, Maxillofacial, and Facial Surgery at Ludwig Maximilian University in Munich
Germany, 80539, München, Geschwister-Scholl-Platz 1

Tel: +994502008840

E-mail: mic_amu@mail.ru

A – Work concept and design, B – Data collection and analysis, C – Responsibility for statistical analysis, D – Writing the article, E – Critical review, F – Final approval of the article.

Received 27.08.2023

Accepted 02.02.2024

DOI 10.29254/2077-4214-2024-1-172-518-522

UDC 616.716-002.36:616.211-002

¹Steblovskiy D. V., ²Kopchak A. V., ¹Lokes K. P., ¹Bilokon S. O., ¹Voloshyna L. I., ¹Popovych I. Yu.

PREVALENCE OF INFLAMMATORY DISEASES OF THE NOSE AMONG PATIENTS WITH ODONTOGENIC PURILENT-INFLAMMATORY DISEASES OF MAXILLO-FACIAL LOCATION

¹Poltava State Medical University (Poltava, Ukraine)

²Bogomolets National Medical University (Kyiv, Ukraine)

d.steblovskiy@pdmu.edu.ua

Many patients with these diseases of the paranasal sinuses have pathological changes both on the side of the maxillofacial area and on the side of the nasal cavity. There is a steady annual increase in the number of patients with acute, inflamed or exacerbations of patients (and generally latent) odontogenic maxillary sinusitis and their share among all inflammatory and dystrophic diseases of the ENT organs and the maxillofacial area. The purpose of study was to determine the frequency of admission to the maxillofacial department of the Poltava Regional Clinical Hospital of patients with odontogenic inflammation of the maxillary sinus, to study the informativeness of the methods used to diagnose odontogenic sinusitis at the pre-hospital stage, and to evaluate the treatment methods used in the hospital. Research objects and methods. A retrospective analysis of 456 case histories of patients with odontogenic maxillary sinusitis, who were treated in the maxillofacial department of the Department of Public Health, was carried out - for the period 2017-2023. The peak of admissions of patients with odontogenic sinusitis to the Department of Maxillofacial Surgery of Poltava Regional Clinical Hospital occurred in 2019 - 272 (16.7%) cases of sinusitis, the lowest rate of hospitalization was recorded in 2008 - 195 (about 11.9%). The most common diagnosis was: "Exacerbation of chronic odontogenic sinusitis" - 817 (50.2%) cases, which is consistent with the literature data. Patients with the diagnosis: "Acute odontogenic sinusitis" accounted for the minimum rate - 2.4% of cases. Recurrence of sinusitis was observed on average in 2017-2023 in 5.2% of cases. In 19.3% of cases, there was a discrepancy between the diagnosis of the referring institution and the clinical diagnosis. In 2.6% of cases, the clinical diagnosis