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Analysis of the Pericoronitis Epidemiology and Key Aspects of Treatment

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Annotation: The article presents a retrospective analysis of the medical records of patients with pericoronitis who sought help at the clinic of surgical dentistry of the Tashkent State Dental Institute during 2024. The results of a structural analysis of the prevalence of the disease, aspects of diagnosis and management of patients, the composition and quality of therapeutic measures and their effectiveness are given.

Keywords: pericoronitis, lower third molar, operculectomy, retention, dystopia.

Introduction. Pericoronitis is an inflammatory disease of the oral cavity caused by an infection of the soft tissues in the immediate vicinity of the crown of an immature tooth, including the gum and dental follicle [1, 3]. It most often affects the third molar of the lower jaw; it is usually observed in teeth that erupt very gradually or undergo retention. It is believed that the penetration of microbes into the follicular region leads to infection as soon as the tooth follicle comes into contact with the oral cavity. The microbiota of pericoronitis consists mainly of anaerobes. It is generally recognized that the accumulation of food particles near the crown shell and occlusive tissue damage located around the crown caused by the antagonist tooth accelerate this process. There are limited reports on the occurrence and etiology of pericoronitis, and the data obtained are contradictory. The survey data showed that the frequency of eruption is 4.92% among patients aged 20 to 25 years. According to statistics, in 95% of cases, the eruption of the lower third molars is accompanied by pericoronitis [2, 4].

Since eruption of the third molars is mainly associated with pericoronitis, the disease is most often observed in adults aged 20 to 29 years. Pericoronitis does not depend on the patient's gender. One study showed that pericoronitis is most often associated with tooth damage in 67% of cases with vertical tooth position, in 12% with mesioangular tooth position, in 14% with dystoangular tooth position and in 7% of cases with other orientations [5]. There is a close relationship between a person's oral hygiene habits and the severity of the disease.

The aim of the study: to perform out a structural analysis of the frequency of pericoronitis among the adult population, compare algorithms and results of therapeutic measures.

Materials and methods. A retrospective analysis of the results of examination and treatment of patients who sought help at the polyclinic of Surgical Dentistry of the Tashkent State Dental Institute Clinic during 2024 for obstructed eruption of the lower third molar (LTM) complicated by pericoronitis was conducted.

The evaluation of complaints, medical history and results of clinical examination of patients was carried out. The main predisposing factors for the development of pericoronitis of the lower third molars were identified. The results of X-ray examinations were studied: targeted intraoral X-rays of the lower third molar with free mouth opening, orthopantomography with limited mouth opening and abnormal position of the lower third molar; multispiral computed tomography (MSCT) with the tooth located near the mandibular canal and the presence of pronounced changes in bone tissue. X-rays of the mandible determined the position of the LTM, the condition of the periodontium and surrounding

bone, the ratio of the tooth to the branch and canal of the mandible, and the retromolar distance. Laboratory blood tests were performed if necessary. Serous, purulent, ulcerative forms of acute pericoronitis and recurrent chronic were isolated.

The data was analyzed using descriptive statistics. Statistical processing of the obtained data was carried out using nonparametric methods (Mann-Whitney criterion) and correlation analysis (Pearson criterion). The results were presented as a median, and the reliability of the difference in average values was evaluated according to the Student's criterion. The principles of evidence-based medicine are used in the organization and conduct of research. The statistical analysis was performed using the OriginPro 8.6 program (OriginLab Corporation, USA).

Results and discussion. During the analyzed period, a total of 88 patients applied to the polyclinic of surgical dentistry for difficult eruption of the lower third molars complicated by pericoronitis, which was 11.7% of the total number of primary patients. The age of the patients ranged from 18 to 42 years. Most patients were aged 20-25 years. Among patients with this pathology, there were relatively fewer men than women – 38 (43.2%) and 50 (57.8%) people, respectively. Localization of the disease on the left side of the jaw was more common – 59 (67%) cases. The frequency of patient visits by month of the year is shown in Table 1.

An analysis of the frequency of visits from patients with pericoronitis revealed an uneven distribution and a relatively higher number of patients in March and September. The alleged reason for this situation is the sharp fluctuations in the average daily temperature during these months, typical for the climate of Uzbekistan. However, this assumption requires more extensive research with a significantly larger sample size and accurate meteorological data.

Table 1. Frequency of treatment of patients with pericoronitis by months of the year.

Months		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
n		4	8	12	5	5	8	6	8	15	6	6	5
%		**4,5**	**9,1**	**13,6**	**5,7**	**5,7**	**9,1**	**6,8**	**9,1**	**17**	**6,8**	**6,8**	**5,7**
Male		2	3	4	1	3	4	2	5	6	2	3	3
Female		2	5	8	4	2	4	4	3	9	4	3	2

When studying the nature of the progression of the disease, it was determined that in most patients the disease began with the appearance of aching pains around the teething tooth, pain when opening the mouth and swallowing. Patients sought medical help 2-3 days after the onset of the disease. Some patients were self-medicating at first, rinsing their mouths with various antiseptics, herbal solutions (sage, chamomile, furacillin), taking painkillers and NSAIDs, which provided some temporary relief.

The general condition of most patients was assessed as satisfactory. 68 (77.3%) patients had a subfebrile temperature in the range of 37.0-37.4 °C.

Fig 1. Clinical case of pericoronitis of the left lower third molar

In the catarrhal form of pericoronitis (42 (47.7%) cases), free mouth opening was maintained, and minor pain was noted during chewing and swallowing. Hyperemia and swelling of the mucous membrane in the retromolar region, soreness and release of serous exudate on palpation were detected in the oral cavity. There were no pathological changes in the lateral projection of the lower jaw on the X-ray (Fig. 1).

Patients with purulent form of the disease (32 (36.4%) cases) had complaints of malaise and headache. Hyperemia and edema of the mucous membrane of the retromolar region and the lower parts of the pterygoid-maxillary fold were detected in the oral cavity. The wisdom tooth was usually covered by a mucous membrane, or the mucous membrane covered the distal tubercles of the crown.

On palpation, purulent contents were released from under the hood. Tissue infiltration was detected from the lingual or buccal side, in the retromolar region, extending to the pterygoid-maxillary fold, and in some patients edema, and tissue infiltration spread to all areas bordering the lower third molar. Mouth opening is difficult, limited, painful (mild inflammatory contracture up to 3-4 cm was found).

The submandibular lymph nodes were enlarged, mobile, and painful on palpation. The radiograph of 20 patients showed a zone of bone destruction with an indistinct contour in the rudiment or roots of the lower third molar.

In most patients, facial asymmetry of varying severity was determined due to soft tissue edema in the angle of the lower jaw on the side of the disease, and limited mouth opening. The external manifestations depended on the prevalence of the inflammatory process.

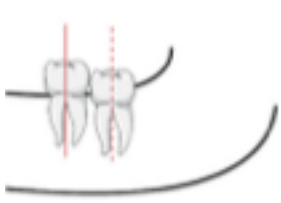
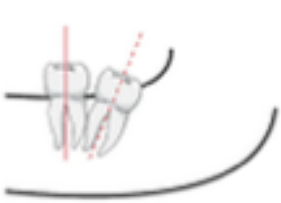
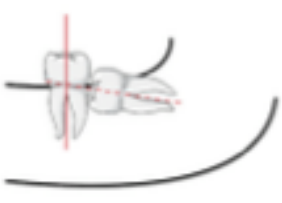
With a chronic recurrent process (14 (15.9%) cases), there were complaints of difficulty chewing on the affected side, soreness of the "hood" over the lower third molar, and bad breath. The general condition is satisfactory. There was an increase and soreness on palpation of the submandibular lymph nodes.

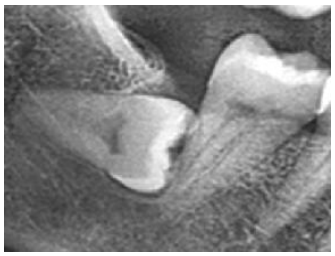
Mouth opening is difficult, limited, painful. On examination, the gum above the "hood" was ulcerated, there were scarring, and some patients had exudate behind the LTM. The radiographs revealed a clear semilunar rarefaction focus, and bone destruction from the tooth crown spread along the root.

The position of NTM was studied in accordance with the Winters classification. Vertical position was more common – 36 (40.9%) cases (Table 2).

All patients underwent comprehensive treatment, which included surgical interventions and drug therapy. To stop the acute inflammatory process, an operculectomy was performed, and according to the indications, tooth extraction was performed. Dissection of the hood was performed in cases where tooth extraction (if indicated) was impossible without intervention on the surrounding bone tissue. The incision was performed in the medial-distal direction outside the hood towards the pterygoid-maxillary fold with free access to the distal gingival pocket. The incision reduced tissue tension and created an outlet for inflammatory exudate, preventing the process from spreading to neighboring cellular spaces. The wound and the gingival pocket were treated with 0.5% chlorhexidine solution. Mouthwashes with warm antiseptic solutions or herbal decoctions were prescribed. Oral analgesics were included in the composition of drug therapy. With a hyperergic course of the inflammatory process, purulent pericoronitis, a predisposition to the spread of the pathological process, and with reduced body reactivity, antibacterial drugs were prescribed.

Table 2. The position of LTM according to Winter`s classification.

Vertical	Mesioangular	Distoangular	Horizontal
			

36 (40,9 %)	19 (21,6 %)	5 (5,7 %)	28 (31,2 %)
			

Complete removal of the hood was performed in patients with optimal anatomical and topographic conditions for tooth eruption - the vertical position of the tooth axis, the presence of space between the anterior edge of the jaw branch and the distal surface of the tooth crown.

Indications for tooth extraction were determined depending on its position, the condition of neighboring molars, and the nature of destructive changes in the bone. On the day of treatment, tooth extraction was performed if the tooth could be extracted without additional interventions on the surrounding bone tissue.

In other cases, the wisdom tooth was extracted after the inflammation in the soft tissues was relieved. The exception was the development of an inflammatory process with bone destruction in the periapical region. Such teeth were extracted on the day the patients sought medical help. The absolute indication for the removal of LTM, especially in case of recurrence of inflammation, was the unavoidable anatomical abnormalities of its position, the lack of the possibility of its eruption.

In total, 28 (31.8%) patients had LTMs extraction. At the same time, on the day of seeking help at the polyclinic, according to the indications, wisdom teeth were extracted from 9 (10.2%) patients – there were no anatomical conditions for eruption, an abnormal position of the HTM in the jaw, etc. In 19 (21.6%) patients, wisdom teeth were extracted due to a recurrence of pericoronitis and the lack of positive dynamics after an operculectomy and drug therapy.

The most favorable conditions for the preservation of LTM were its vertical position with a rectilinear shape of the roots, without changes in periodontal tissues, the presence of sufficient space in the dental arch and an angle of inclination of less than 15 degrees. With this arrangement of the tooth, the "hood" was removed, and the crown part was freed from the soft tissues covering it. All other variants of its location – dystopia and retention, lack of space for eruption, the presence of pathology in periodontal tissues, were regarded as indications for removal.

Conclusions. Thus, a retrospective analysis of medical documentation revealed a frequent occurrence of pericoronitis in the structure of purulent-inflammatory diseases. It should be noted that there is no single algorithm for the management of patients with pericoronitis, a clear scheme of effective drug therapy. The above facts indicate the need to develop tactics for the comprehensive treatment of pericoronitis, considering the etiological factors and pathogenetic aspects of the disease.

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