

ANTIBIOTICS IN THIRD MOLAR EXTRACTION: PROS AND CONS

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Introduction

Third molar removal is one of the most frequent operations performed by a dental surgeon. The purpose of this operation is to remove the pathological focus, prevent the spread of infection and create a “drainage” through the alveolar socket from inflammatory focus in the jaw, to create conditions for prosthetics of dental defects, orthodontic treatment. Regardless of the presence of an infectious focus in the tissues surrounding the tooth, it is necessary to take into account that there are many opportunistic microorganisms in the oral cavity. As a result, most surgical operations carried out in the oral cavity can be considered conditionally clean, and the number of possible postoperative complications includes the development of alveolitis, periostitis of the jaw, abscess, phlegmon of the maxillofacial region. In order to prevent these complications, preoperative and postoperative antibiotic prophylaxis is actively discussed in the modern scientific medical literature.

Purpose: to determine the indications, advantages and disadvantages, frequency of use by dentists-surgeons of antibiotic prophylaxis in the removal of the third molars.

Materials and methods

A literature review was conducted using scientific search library databases PubMed, Cochrane Register of Controlled Trials, Elibrary. The main selection of materials was carried out by keywords, taking into account the inclusion and exclusion criteria.

Search words: “dentistry”, “antibiotic prophylaxis”, “infection”, “tooth extraction”, “third molar”, “bacteremia”, “antibiotics”.

Inclusion criteria: clinical trials, systematic reviews, presence of a control group, published between 2014 and 2019. Exclusion criteria: experimental animal studies, clinical cases.

In October 2019, a survey of 17 dentists engaged in surgical reception in dental clinics in Yekaterinburg was conducted. Dentists were offered a questionnaire of 5 questions about the use of antibiotics in the removal of third molars, based on the questionnaire designed by Vlcek D. et al., Switzerland, 2014 [23]. In the questionnaire, there were questions of open and closed type. In addition, an electronic version of the questionnaire was compiled using the remote questionnaire system in the Google Forms format. The survey was anonymous and voluntary.

Statistical processing of the obtained data was carried out using the Microsoft Excel software package using descriptive statistics methods.

Results and discussion

After search in electronic databases, 23 studies were included in this review. Studies were conducted in different countries: India [2, 5, 18–20], USA [15], Brazil [6], Italy [8, 9, 12], Spain [3, 4, 10, 13, 16], Switzerland [23], Nigeria [7, 17], great Britain [21], Saudi Arabia [1].

Antibacterial drugs such as amoxicillin [3, 4, 6–11, 13, 14, 16, 17, 19, 21, 23], combination of amoxicillin and clavulanic acid [2–4, 7, 8, 10, 17, 20, 21, 23], as well as levofloxacin [7, 17, 21], moxifloxacin [21], azithromycin [4, 5, 20], metronidazole [14, 19–21, 23] have been studied in publications. Courses of medication and the dosages differ.

Almost all authors of the studied articles agree that the use of antibiotics after and before the operation of removing the third molars is a controversial and debatable issue, especially in the case of their regular, “routine” application [24]. At the same time, 8 of the analyzed studies recognize the need for either “routine” prescribing of antibacterial drugs [1, 5, 7, 8, 10, 14, 17, 20], or taking into account indications for their application [9, 11]. The remaining 12 publications provide a number of arguments against the preventive use of antibiotics [2–4, 6, 12, 13, 15, 16, 18, 19, 21–23]. Arguments against the use of antibiotics are expressed in the last meta-analysis devoted to this problem [12].

Many authors note the pharmaco-economical inefficiency of antibiotic administration, the low incidence of complications after tooth extraction surgery (ranging from 1.2% and less to 4–6.1%), the adequacy of antiseptic treatment of the oral cavity before and after surgery [16–18]. The administration of antibiotics after tooth extraction, in addition to helping to prevent possible infectious complications, contributes to the development of other, associated with the development of adverse drug reactions (antibiotic-associated diarrhea), drug resistance of microorganisms and the accession of secondary infection. An additional disadvantage of antibiotics, the authors who oppose antibiotic prophylaxis, consider the economic costs of the patient, while in the case of drug resistance, the patient’s costs for subsequent treatment may increase.

At the same time, supporters of the use of antibacterial drugs note that in clinical studies in groups of patients who took antibacterial drugs, the incidence of postoperative complications was lower (although these differences were not

always reliable). When prescribing antibiotics, it is important to take into account the patient's history – the presence of comorbidities, allergies or intolerance to drugs. The authors consider immunodeficiency of the patient, the presence of concomitant pathology, including endocrine diseases (diabetes mellitus), in the stage of decompensation, in the presence of risks of bacteremia and infectious endocarditis to be an unconditional indication for the use of antibacterial drugs.

The question of antibiotic prophylaxis in the preoperative period and the need for its continuation in the postoperative period also remains controversial. Courses and dosages of antibacterial drugs varied (table 1).

In order to find out the frequency of use of antibacterial drugs in the removal of the third molars by dentists-surgeons of Yekaterinburg, a survey was conducted among them.

17 dentists-surgeons took part in the survey. Work experience in the specialty of respondents ranged from 1 to 10 years or more, with less than 5 years of work experience — 1 doctor (5.9%), 5–10 years of experience — 3 doctors (17.6%), more than 10 years of experience — 13 doctors (76.5%).

According to the survey, 14 doctors (82.4%) prescribe antibiotics to their patients when removing the third molars, while more often antibacterial drugs (83.3%) are recommended for use after tooth extraction surgery.

The results of the survey demonstrate that dentists-surgeons use different antibiotics with different dosages and courses of treatment for the removal of the third molars (table 2).

The surveyed dentists-surgeons of Yekaterinburg remove from 6 to 20 (10 of the respondents or 58.8%) or more than 20 (7 of the respondents or 41.1%) third molars per month.

Conclusion

The use of antibacterial drugs in the removal of the third molars is controversial. Routine administration of these drugs is not rational. The absolute indication for the use of antibacterial drugs is the presence of concomitant pathology in the patient, including endocrine diseases (diabetes mellitus), in the stage of decompensation, the presence of a high risk of bacteremia and infectious endocarditis. According to modern scientific publications and a survey of dental surgeons, the most commonly prescribed antibacterial drugs for the removal of third molars are amoxicillin and a combination of amoxicillin with clavulanic acid.

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