

PROTOCOLS FOR THE USE OF ANTIBIOTICS IN STOMATOLOGICAL SURGICAL PRACTICE**Mirzarakhimov Umidjon Bakhtiyorjon o'g'li**

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Abstract: This article examines the clinical protocols for the use of antibiotics in dental surgical practice. It highlights the indications for prophylactic and therapeutic antibiotic administration, principles of rational drug selection, dosage, and duration of treatment. Special attention is given to the prevention of postoperative infections and the growing issue of antimicrobial resistance. The study emphasizes evidence-based approaches and the importance of antimicrobial stewardship in improving clinical outcomes and ensuring patient safety in stomatological surgery.

Keywords: dental surgery, antibiotic protocols, antimicrobial resistance, prophylaxis, therapeutic antibiotics, oral microbiota, infection prevention, clinical guidelines

In contemporary dental practice, surgical interventions constitute an essential component of comprehensive oral healthcare, encompassing procedures such as tooth extractions, dental implant placement, periodontal surgeries, and management of maxillofacial infections. Despite significant advancements in aseptic techniques and surgical technologies, the risk of postoperative infections remains a critical concern. In this context, the rational use of antibiotics has become an integral aspect of stomatological surgical protocols, aimed at preventing infectious complications and ensuring optimal healing outcomes.

Antibiotics in dental surgery are utilized for both prophylactic and therapeutic purposes. Prophylactic antibiotic administration is primarily intended to prevent the occurrence of surgical site infections (SSIs), particularly in patients with systemic risk factors or in procedures associated with a high risk of bacterial contamination. Therapeutic use, on the other hand, is indicated in the presence of established infections, including odontogenic abscesses, cellulitis, and osteomyelitis. However, the increasing global concern regarding antimicrobial resistance has necessitated a more judicious and evidence-based approach to antibiotic prescription in dental settings.

The oral cavity harbors a complex and diverse microbiota, comprising both aerobic and anaerobic microorganisms. During surgical procedures, disruption of mucosal barriers can facilitate the translocation of these microorganisms into deeper tissues or the bloodstream, potentially leading to localized or systemic infections. Therefore, the selection of appropriate antibiotic agents, dosage regimens, timing, and duration of therapy must be guided by clinical indications, patient-specific factors, and current clinical guidelines. International organizations such as the World Health Organization and the American Dental Association emphasize the importance of antimicrobial stewardship in dentistry. These guidelines advocate for the minimization of unnecessary antibiotic use, the preference for narrow-spectrum agents when appropriate, and adherence to standardized clinical protocols. Failure to comply with these principles not only contributes to the development of resistant microbial strains but also increases the risk of adverse drug reactions and healthcare costs.

Given these considerations, the development and implementation of standardized protocols for antibiotic use in dental surgical practice are of paramount importance. Such protocols aim to

balance the benefits of infection prevention with the risks associated with antibiotic overuse. This study focuses on analyzing current protocols, indications, and best practices for antibiotic use in stomatological surgical procedures, with the goal of optimizing patient outcomes and promoting responsible antimicrobial use.

The use of antibiotics in dental surgical practice is governed by clearly defined clinical protocols that aim to ensure efficacy while minimizing risks. These protocols are primarily based on three key principles: appropriate indication, correct selection of antimicrobial agents, and rational duration of therapy. In modern stomatological surgery, antibiotics should not be considered a routine component of every procedure but rather a targeted intervention guided by clinical necessity. One of the primary indications for antibiotic use in dental surgery is prophylaxis. Prophylactic antibiotics are recommended in cases where there is a high risk of postoperative infection or when the consequences of infection may be severe. This includes patients with compromised immune systems, such as those with diabetes mellitus, malignancies, or undergoing immunosuppressive therapy. Additionally, individuals with a history of infective endocarditis or prosthetic heart valves require antibiotic prophylaxis prior to invasive dental procedures to prevent bacteremia-induced complications.

In routine dental procedures such as uncomplicated tooth extraction in healthy individuals, antibiotic prophylaxis is generally not indicated. However, in more complex surgical interventions such as impacted third molar removal, bone grafting, sinus lifting, and dental implant placement—the decision to prescribe antibiotics should be based on factors such as surgical duration, extent of tissue trauma, and presence of pre-existing infection. Evidence suggests that a single preoperative dose of antibiotics may be sufficient in many cases, reducing the need for prolonged postoperative administration. The selection of antibiotics is another critical component of clinical protocols. The most commonly prescribed antibiotics in dental surgery are penicillin derivatives, particularly amoxicillin, due to their effectiveness against the predominant oral microflora. In patients with penicillin allergy, alternatives such as clindamycin, azithromycin, or metronidazole may be used. The choice of antibiotic should be guided by its spectrum of activity, pharmacokinetic properties, and patient tolerance. Narrow-spectrum antibiotics are generally preferred to minimize disruption of normal microbiota and reduce the risk of resistance development.

Timing and dosage are equally important in ensuring the effectiveness of antibiotic therapy. For prophylactic purposes, antibiotics are typically administered 30 to 60 minutes before the surgical procedure to achieve optimal tissue concentration at the time of incision. In therapeutic scenarios, the duration of antibiotic therapy should be limited to the minimum effective period, often ranging from 3 to 7 days depending on the severity of infection. Overextension of therapy does not improve outcomes but significantly increases the risk of antimicrobial resistance and adverse effects.

A significant challenge in modern dentistry is the growing issue of antimicrobial resistance. Inappropriate prescription practices, such as unnecessary use of antibiotics, incorrect dosing, and prolonged treatment durations, contribute to the emergence of resistant bacterial strains. This has led to a paradigm shift toward antimicrobial stewardship, emphasizing evidence-based prescribing, patient education, and regular review of treatment protocols. Dentists play a crucial role in this process, as dental prescriptions account for a considerable proportion of antibiotic use in outpatient healthcare settings.

Furthermore, patient-specific factors must always be considered when developing antibiotic protocols. Age, body weight, renal and hepatic function, pregnancy status, and history of allergic reactions can all influence drug selection and dosage. In pediatric and geriatric populations,

particular caution is required to avoid toxicity and ensure therapeutic effectiveness. Additionally, interactions with other medications should be carefully evaluated to prevent adverse outcomes. Recent advancements in dental research have also explored alternative strategies to reduce reliance on antibiotics. These include improved surgical techniques, enhanced sterilization protocols, use of antiseptic agents such as chlorhexidine, and the development of biomaterials with antimicrobial properties. Such innovations aim to minimize infection risk while addressing the global concern of antibiotic overuse.

In conclusion, the use of antibiotics in stomatological surgical practice must be guided by well-established clinical protocols that prioritize patient safety, treatment efficacy, and the prevention of antimicrobial resistance. While antibiotics remain a valuable tool in preventing and managing infections, their indiscriminate use poses significant risks both at the individual and public health levels.

Rational antibiotic therapy requires a comprehensive assessment of clinical indications, careful selection of appropriate agents, and strict adherence to recommended dosages and durations. Prophylactic use should be limited to high-risk cases, while therapeutic administration must be based on clear evidence of infection. The principles of antimicrobial stewardship should be integrated into everyday dental practice to ensure responsible prescribing behavior. Ultimately, the future of dental surgery lies in a balanced approach that combines advanced clinical techniques, preventive strategies, and judicious use of antibiotics. By adhering to standardized protocols and continuously updating clinical knowledge, dental professionals can enhance treatment outcomes while contributing to the global effort to combat antibiotic resistance.

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