

USE OF ANTIBIOTICS IN DENTISTRY

Khan A.¹, Ahmed R.²

1. Prof. Dr. Atiquzzaman Khan, Professor & Head, Dept. of Conservative Dentistry & Endodontics, University Dental College & Hospital.

2. Prof. Dr. Rubaba Ahmed, Professor, Dept. of Science of Dental Materials, University Dental College & Hospital.

Sir Alexander Fleming's observation in 1928 that the mold *Penicillium notatum* inhibited a circumferential zone of bacterial growth in a petridish ultimately led to the development and mass production of penicillin for medical use in 1943—the beginning of the wide use of antibiotic therapy. Today, a myriad of antibiotics are used to treat infections of bacterial origin, some of which are of odontogenic origin.

Bacterial ingress from necrotic pulpal tissues and from periodontal pockets is the usual source of odontogenic infections. Empiric antibiotic therapy should be used when a patient with an odontogenic infection develops an elevated body temperature, lymphadenopathy, trismus (i.e., difficulty opening the mouth), dysphagia (i.e., difficulty swallowing), and/or cellulitis (the extension of the infection into the contiguous tissues, the borders of which are ill-defined and the surface texture indurated). Other indications for empiric antibiotic therapy are periodontal abscesses, pericoronitis, and acute necrotizing ulcerative gingivitis.

Antibiotics are sometimes prescribed before dental procedures to prevent infections as prophylactic measure, especially in patients with certain heart conditions or those with compromised immune systems. This is to prevent bacteremia, which can lead to infective endocarditis. After dental surgeries, such as tooth extractions or implants, antibiotics may also be prescribed as post-surgical use to prevent postoperative infections. Proper use of antibiotics can effectively manage and eliminate bacterial infections, and prevent further complications. Prophylactic antibiotics can prevent serious conditions like infective endocarditis in at-risk patients. Reducing the bacterial load before, during and after surgical procedure can enhance healing post-surgery and reduce the risk of postoperative complications. Although antibiotic enhances healing and improves treatment outcome in some cases and in other cases it appears as a life saver, there is a deep concern about the use of antibiotic. Overuse and misuse of antibiotics contribute to the development of resistant bacterial strains. This is a significant global health concern. Some patients may have allergic reactions to antibiotics, which can range from mild rashes to severe anaphylaxis. So during use of antibiotics the doctor should take proper history and precaution. Antibiotics can cause side effects such as gastrointestinal disturbances, which can affect patient compliance and overall health. Another concern about the use of antibiotic is that, use of broad-spectrum antibiotics can sometimes disrupt the natural flora, leading to superinfections such as oral thrush or *Clostridioides difficile* colitis.

For best Practices dentists should prescribe antibiotics only when absolutely necessary and ensure the right choice, dosage, and duration. Also informing patients about the importance of completing the prescribed course and the potential side effects is beneficial. Regular reviewing of antibiotic use, monitoring and staying updated with guidelines from professional bodies such as the American Dental Association (ADA) and the Centers for Disease Control and Prevention (CDC) may help in rational use.. There are some situations where antibiotics are not necessary and the dentist may go for other options. For example, exploring non-antibiotic alternatives for managing infections, such as improved oral hygiene, use of antiseptics, and surgical intervention when appropriate can also be beneficial. Also many minor dental infections, such as localized gingivitis or early-stage periodontitis, can often be managed effectively with good oral hygiene, professional cleaning, and local antiseptics without the need for systemic antibiotics. Herpetic lesions or oral thrush requires specific antiviral or antifungal treatments. So antibiotics do not play any role here. Often, localized abscesses can be effectively treated with drainage and oral care

improvements without systemic antibiotics, especially if the patient is otherwise healthy.

While antibiotics play a vital role in dental care, their use must be carefully managed to balance the benefits against the risks of resistance and adverse effects. Dentists should adhere to evidence-based guidelines and continually educate patients on the importance of proper antibiotic use.

References:

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Address of Correspondence

Prof. Dr. Atiquzzaman Khan

Professor & Head, Dept. of Conservative Dentistry & Endodontics

Editor in Chief, Journal of Dentistry and Allied Science

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E-mail: dratiquzzamankhan@yahoo.com