

Why You Should Not Prescribe Antibiotics for Dental Sinus Tracts: A Short Overview

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ABSTRACT

Antibiotic prescription is still a rising trend in the dental profession and, unfortunately, misconceptions regarding wrong antibiotic prescriptions still exist today. Intraoral sinus tracts associated with chronic dental infections are quite common in the dental setting. Due to the fact that these lesions are associated with a chronic abscess, a high percentage of dentists still find it appropriate to prescribe antibiotics thinking that this will arrest and treat the chronic lesion. Prescription of antibiotics should be carefully reviewed before it is deemed necessary. Oral health professionals should be aware of, and comply with the evidence-based recommendations in order to fight antibiotic misuse in situations where they are not recommended. This brief paper aims to review chronic periapical abscesses associated with dental sinus tracts and seeks to remind why pharmacotherapy should not be a treatment option of this specific pathology.

INTRODUCTION

The use of antibiotics had a revolutionary effect in modern medicine. It has prevented a lot of casualties and contributed to infectious disease control ^[1]. On the other hand, this very success made it easy to fall into indiscriminate use of antimicrobials, which in time brought the scientific community to face with a rising number of problems, namely the problem of bacterial resistance to antibiotics ^[2]. Antibiotics, as all drugs, may be responsible for drug interactions and a number of adverse reactions as well as an increased risk of secondary infections, such as Candidiasis ^[2,3]. Regions with a higher history of antibiotic usage show higher antimicrobial resistance, verifying a significant relationship between these two factors ^[4]. Antimicrobial resistance is logically linked to misinformation and common belief among medical professionals, especially when it comes to general practitioners who are not familiar with the type of infection in question ^[5-7]. Raising awareness and education regarding antibiotic resistance and misuse should prevent serious repercussions by reverting antimicrobial abuse ^[8].

When it comes to the head and neck, dental emergencies are quite common. Dental pain results from acute and chronic infections of pulpal origin that can be solved by dental intervention, and don't require antibiotics ^[9]. In patients that present with spreading infection or systemic symptoms, antibiotics may be of use, but it is crucial to point out that these will never replace dental treatment; at most they will complement it ^[3].

DIAGNOSIS

An appropriate diagnosis is the first essential step towards the success of any treatment. This is even more true when it comes to endodontics. According to the American Association of Endodontics ^[10], a chronic periapical abscess is defined as an inflammatory reaction to the infected or even necrotic pulp. Typically it begins with a gradual onset producing little or no discomfort and is characterized by a release of pus through an associated sinus tract. On radiographic examination, a radiolucent area, associated to the bone destruction, is expected. If a sinus tract is present, the dentist may identify its pathway by carefully inserting a gutta percha cone through its opening and guiding it in until a resistance is found. A sinus tract is a pathological

communication between two anatomic spaces. It originates from the chronical abscess and ends in an opening ^[11]. Generally it requires the presence of necrotic pulp, which is highly likely to allow bacterial proliferation. If left untreated, the infection may later spread to periradicular tissues, resulting in apical periodontitis leading to the resorption of one of the cortical bone plates, usually the least resistant, draining directly into the oral cavity ^[12]. In order to obtain the right endodontic diagnosis, it is important for the clinician to keep in mind that the sinus tract may also originate from a radicular fracture, a periodontal abscess or even chronical osteomyelitis, making the differential diagnosis extremely important ^[13].

In a prevalence study conducted in the US, findings showed that approximately 1 in 5 teeth with periradicular infection previous to endodontic treatment presented with a sinus tract ^[14].

Evidence-based Reasons

The following topics are clear reasons to why antibiotic prescription is of no help in chronic abscesses that present a sinus tract

1. **It's useless, pharmacologically speaking:** Antibiotics act by inhibiting the bacteria or killing them, which in turn reduces the overall bacterial count ^[15]. Even if we manage to reduce the bacterial count, the underlying cause will persist ^[16], especially when it comes to a confined persistent lesion such as a chronic abscess, thus making this redundant. When the antibiotic course is over, the infection recurs ^[17,18].
2. **Anatomically? Far far away:** Oral antibiotics for systemic use will never reach the localized chronic infection process in a way to allow them to have therapeutic effect. In these cases, there is a compromise of pulpal and periradicular tissue circulation ^[15,19,20], making it very unlikely for pharmacotherapy to be efficient. The chronic abscess is a localized confined lesion which does not have indication for the use of a systemic drug ^[8,21].
3. **Let the dentist do his job!:** It is imperative to remember that a chronic abscess is a long standing low grade infection ^[22], that persists due to bacterial retention ^[23]. What will resolve this infectious process is the dental treatment per se, by removing the etiological cause. Chemo-mechanical debridement is far more effective than an antibiotic in getting rid of the irritants responsible for this chronic infectious process ^[9,23]. Removal of the foci of infection typically resolves the issue ^[8,14].

There is reportedly no additional benefit in the use of antibiotics on the outcome of infection in these cases, preoperatively, during endodontic treatment and post-operatively: Level of evidence A ^[24-26].

4. **Pointless and maybe even harmful:** A study conducted by the British National Health Service confirmed that antibiotics are used inappropriately and indiscriminately ^[26]. In the last couple of years an increase on the bacterial resistances was noted, much due, probably largely due to the empirical use of antibiotics by the practitioner in the treatment of several pathologies ^[21,27,28]. Bacterial resistance due to overuse of antibiotics could lead, ultimately to antibiotic resistant infections which increase patient morbidity and mortality, putting patients under life threatening risks ^[29].

When to use them

The indication for use of systemic antibiotic in endodontics is extremely reserved. There is an indication for use in cases where there is clear progressive and diffuse swelling and associated systemic infection symptoms such as fever, malaise, lymphadenopathy and cellulitis or as a prophylactic measure in immunocompromised patients ^[19,25,27,30]. There may be need of incision and drainage when natural drainage cannot be established, according to the guidelines, and again, if the patient presents with systemic effects, antibiotic use may be considered ^[30].

CONCLUSION

In summary it is important to stress that according to all evidence, antibiotic prescription is not indicated in the chronic abscess associated with sinus tract. Clinicians should base their prescriptions on guidelines and evidence-based studies in order to avoid misuse. An appropriate diagnosis and the operative treatment, in this case endodontic treatment, of the source of infection is the key to success in this clinical scenario.

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