The use of antibiotics in dental implantology

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Introduction

In the last decade the oral surgery procedures have grown in number and variety, especially those concerning dental implant insertion and tissue regeneration. Dental practitioners encounter a number of postoperative complications after performing these procedures. Some of these were caused by the inappropriate use of antibiotics. The aim of this article is to clarify the use of antibiotics before and after dental implant insertion procedures.

Materials and Methods

The indications of antibiotic use in oral implantology are therapeutic and preventive. Most often they are used with preventive aim, but there are cases of periimplant diseases in which the use of antibiotics is imminent.

Before surgery, the dentist must make a very careful patient evaluation, both local and general. The general status can be a decisive factor for the success of the implant. Systemic diseases (cardiovascular, endocrine disorders, bone diseases), pregnancy and tobacco can alter the status of the implants, but can also affect the use of antibiotics in preventing or treating oral infectious diseases *(Table 1).* There is also the possibility that some patients use drugs to treat systemic diseases, which can interact with the antibiotics recommended by the implantologist. In the following we will try to recommend some treatment options in different clinical situations involving endo-osseous implants.

1. Preventive use of antibiotics before and after implant placement

There is a general tendency to use antibiotics before implant insertion, especially when we expect to insert more than two implants, when tissue engineering is used, in cases of sinus floor elevations, or nerve transpositions. These techniques involve large areas of bone uncovered and long-lasting surgery protocol with a high risk of bacterial contamination through saliva. Patients who present a high potential of infection are: smokers, diabetic patients, endocarditis patients, patients with liver and kidney disorders. In these cases an interdisciplinary cooperation with the general practitioner is recommended. In *Table 2* there are some recommended antibiotics along with the daily doses to use in dental implant therapy.

2. Use of antibiotics in periimplant diseases

Inflammation of the soft and hard tissues surrounding implants is similar to those involving

Table 1. Evaluation of risk factors for antibiotic use in implant dentistry

Anamnesis	Possible outcome
allergy	allergic reactions
pregnancy	fetal disorders
lactation	excretion in mothers milk
hepatic diseases	risk of accumulation
digestive diseases	insufficient absorption
renal diseases	drug elimination difficulty
other drugs	drug interaction

Table 2. Dosage for preventive use of antibiotics in implant dentistry

Substance	Dosage / day	Delivery form
Penicillin		
Penicillin V3-4 x 1.2	Mega	0.6/1.2 tablets/drops
Amoxicillin	3 x 0.5-1	Mega500/750 mg/1g tablets
Augmentin	2 x 875/125 mg	tablets/powder/drops
Cephalosporin		
Cefalexin	3 x 0.5-1g	500-1000 mg tablets/syrup
Cefaclor	3 x 0.5 g	250-500 mg capsules/drops
Cefuroxim	2 x 0.5 g	125/250/500 mg tablets/capsules
Makrolide		
Erythromycin	3-4 x 0.5-1g	250/500 mg tablets
Roxithromycin	1 x 300 mg	150/300 mg tablets/capsules
Clarithromycin	2 x 250 mg	250 tablets/drops
Lincosamine		
Clindamycin	3-4 x 300 mg	75/150/300 mg capsules
Nitroimidazole		
Methronidazol	2 x 500 mg	250/400 tablets

natural teeth, but the implants do not possess periodontal ligament for protection. This is the reason why any periimplantitis should be treated with maximum care. In some cases the use of antibiotics is recommended *(Table 3).*

Results

In our practice the most used antibiotic is Augmentin, which offers the best results in a 2 x 125 mg dose/day. We treated all our postoperative complications with the same type of antibiotic, having always a favorable evolution of the patient.

Discussions and conclusions

The use of antibiotics in implant therapy is often necessary, especially in complex cases and in postoperative complications. Antibiotics are some of the most used substances in dental therapy. Because of the large spectrum of bacteria present, the mouth represents an important source of infection, produced especially by aerobe and anaerobe gram-positive bacteria. This is why the antibiotics used in dental surgery must act on gram-positive germs as well *(Table 4).*

In cases of peri-implant complications, antibiotic treatment only is not sufficient, surgi-

Table 3. Antibiotic dosage in periimplant diseases

Preference	Substance	Commercial name	Dosage/day
1	Amoxicillin + Potassium clavulanate	Augmentin	2 x 875/125 mg
2	Amoxicillin + Methronidazol	Amoxypen	3 x 250 mg
3	Methronidazol	Clont	2-3 x 400 mg

Table 4. Germ resistance to antibiotics

Substance	Streptococcaceae	Bacterioidaceae
Penicillin V	0	3.9 %
Ampicillin	0	1.0 %
Amoxicillin + Potassium clavulanate	0	0
Clindamycin	0.7 %	1.0 %
Erythromycin	5.0 %	10.6 %
Roxithromycin	13.0 %	6.8 %
Methronidazol	–	6.8 %

cal treatment is almost every time necessary. Also the use of citric acid might be necessary, because it is shown that it inhibits the growth of bacteria on implant surfaces.

Antibiotics are very helpful in implant therapy, but their use must be closely monitored because of their interactions with other medicine, allergies and general status.

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