Pharmacological prophylaxis protocols in the installation of micro screws and their relationship with primary stability

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SUMMARY: Anchoring in orthodontics is a constant challenge, so the use of micro screws as an absolute anchor has increased. An adequate installation of the micro-screw is an important part for the success of the procedure, so the objective of this review is to compile the existing protocols in the use of pharmacological prophylaxis associated with the installation of micro-screws and relate it to its stability. The literature review indicates that there are no conclusive protocols on the use of local or systemic pharmacology in relation to the use of micro screws, nor their direct association with stability, so they should consider the patient's own characteristics to individualize cases and not apply a standard protocol of pharmacological prophylaxis.

All the studies reviewed generally incorporate healthy patients systemically into their sample, thus reducing the risk of associating the stability of the micro screw with a systemically based disease. Then the patient's selection takes into account the general condition, and is contraindicated in patients with uncontrolled periodontal disease (1).

The planning of the installation of a micro screw depends on the initial diagnosis, physical examination of the oral cavity, proximity of noble structures and aesthetic factors. Although it is a simple technique, however the risk of root perforation is high, so a useful tool as a complementary examination is computed tomography (CT) and panoramic or periapical radiography.

The considerations that we must take before the surgical technique are: choice of safe areas, areas with good access, adequate cortical, avoid damaging dental structures (1).

Screw insertion is through the attached or keratinized gum, since it is necessary that it does not swell around the screw head and the probability of tissue hyperplasia and inflammation is lower in this area than in non-adhered gum (1, two). Inflammatory can occur in two stages:
1. Post surgery (for loss of tissue continuity)
2. Postload (by cracking between screw head and soft tissue)

The inflammation of the tissues around the micro screw is critical for its stability, since there is no bone integration to the bone, but the union occurs through a mechanical interdigititation between the micro screw and the surrounding bone.

This inflammatory process spreads through the soft tissues causing degeneration of the bone around the implant, taking this phenomenon into account, preventing the inflammation of the soft tissues, takes real importance at the time of the installation of a TAD (3).

<table>
<thead>
<tr>
<th>Selected article</th>
<th>Local prophylaxis</th>
<th>Systemic prophylaxis</th>
<th>conclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gutiérrez Labaye, et al. Microtornillos: Una revisión.</td>
<td>0.12% chlorhexidine gel or mouthwash. Before and after the installation of the micro screw.</td>
<td>no</td>
<td>Does not require the use of antibiotics</td>
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<tr>
<td>Janyczek, et al. Influence of antibiotic prophylaxis on the stability of orthodontic microimplants: A pilot randomized controlled trial</td>
<td>no</td>
<td>Prophylactic antibiotic or as a treatment in some cases.</td>
<td>It declares that the use of antibiotics is not necessary, since the stability of the micro screw is not altered with its use</td>
</tr>
<tr>
<td>Spyridon N. Papageorgiou, et al.</td>
<td>0.2% mouthwash or application with CHX 2% silk</td>
<td>no</td>
<td>It does not involve pharmacology in its results.</td>
</tr>
<tr>
<td>Shunsuke Uesugi, et al. Prognosis of primary and secondary insertions of orthodontic miniscrews: What we have learned from 500 implants</td>
<td>CHX mouthwash 0.12% post surgery as treatment</td>
<td>Post surgery antibiotic as a treatment</td>
<td>It does not involve pharmacology in its results.</td>
</tr>
</tbody>
</table>

KEY WORDS: micro screw, prophylaxis, stability, orthodontics, pharmacology.
According to Amir Mohammadi, using CHX decreases the failure rate in the stability of micro screws, versus other studies say that its use does not matter and does not even use it within its protocol (3).

Although some articles report a local reduction of bacteria and therefore a decrease in the risk of inflammation, their direct participation in the primary stability of the micro screw cannot be conclusive.

Regarding systemic prophylaxis, it is typically performed with antibiotics, it can be with a single dose before application or with a dose of therapy.

According to meta analysis of Esposito M, et al. a single preoperative prophylactic dose increases the success rate from 92% to 98% in implants, while according to Jan Łyczek, he declares that the use of antibiotics is not necessary, since the stability of the micro screw is not altered with its use (5,3).

Everyone agrees that poor hygiene causes inflammation of the peri-implant tissues and even the reabsorption of surrounding bone thanks to the periodontal pathogens that are established.

The inflammation of the tissues around the micro screw is critical for its stability. Periodontal pathogens are attempted to be controlled with the use of pharmacological prophylaxis, either with a local or systemic application.

CONCLUSIONS
After reading the articles, it can be concluded that there is great controversy in the use of this prophylaxis in the installation of micro screws, since there is no common agreement and the results of the studies are very heterogeneous with each other, in addition to not justifying the use of the prophylaxis they apply, nor its influence on stability.
Finally, there are no objective results regarding the pharmacological prophylaxis directly related to the stability of the micro screw, but it can influence indirectly.

According to the different results and the lack of evidence, it can be determined that the information collected is inconclusive to establish a protocol of pharmacological prophylaxis against the installation of micro screws.

REFERENCES


