Matheus Melo Pithon[1,2]

THICKNESS OF SLOT DOES NOT INFLUENCE ANCHORAGE LOSS

Orthodontic anchorage control is essential when aiming to improve the facial profile and aesthetics of a smile. With the advent of skeletal anchoring devices, anchorage control has become predictable; however, in many clinical situations, the rigid control these devices provide is unnecessary, requiring anchorage loss. Faced with this, the question arises: is there a way to facilitate anchorage loss? A reduction in the gauge of the thread and an increase in the thickness of the slot may be considered to reduce friction, to the detriment of the loss of inclination control. Another alternative would be to expand the bracket slot. An English clinical study[1] was undertaken to examine each method, and to compare the anchorage loss of the maxillary first molar (Fig 1), using 0.018-in and 0.022-in slot brackets. The results revealed that thickness of bracket slot has no significant influence on the anchorage loss of the maxillary molar during orthodontic treatment.

THE MORE APICAL THE MINI-IMPLANT IS INSTALLED, THE GREATER THE STABILITY

Continuing with the "anchorage" theme, we cannot forget how much orthodontic mini-implants have facilitated our work as orthodontists. In the past, it was not uncommon to encounter unwanted anchorage loss. Mini-implants became popular because they are relatively easy to install, and are low cost and effective; however, they are not perfect. Under certain circumstances, these devices lose their stability, detaching themselves from the bone and causing some discomfort to the patient. But what could bring about such unwanted loss of anchorage? In order to answer this question, Lebanese researchers developed a study[2] aimed at evaluating the success rate of orthodontic mini-implants in relation to the

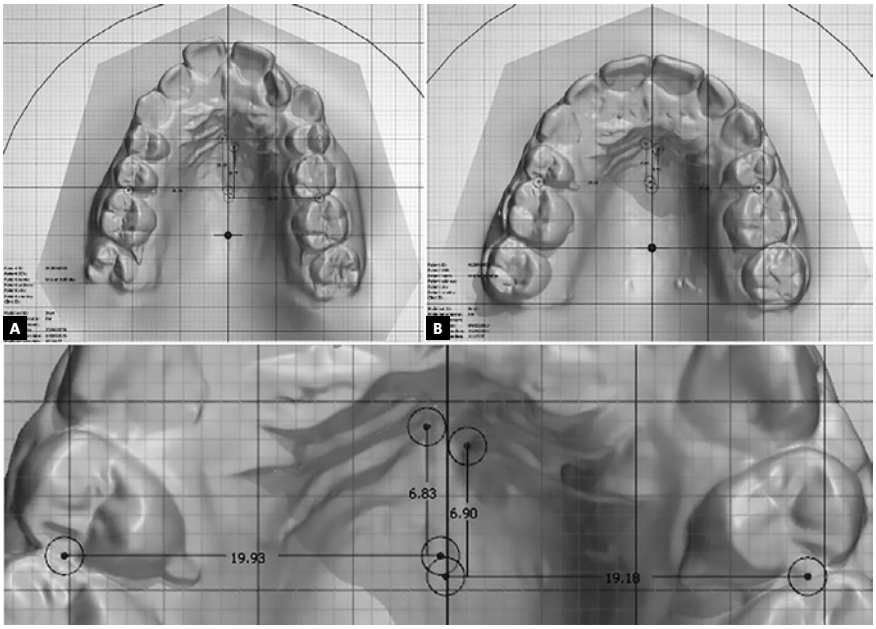

Figure 1 - Anteroposterior first permanent molar distance to the medial end of the third palatal rugae: **A**) pretreatment; **B**) posttreatment.
Source: Yassir et al.[1], 2019.

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characteristics of the implant, distance from the mini-implant to the alveolar crest, and their proximity to the roots of adjacent teeth. For this, radiographic records (Fig. 2) of 260 mini-implants, installed in the maxilla and mandible, were evaluated. The results showed that the stability of the mini-implants is associated with the distance of these from the alveolar bone crest; that is, the more apical the position, the greater the stability (respecting, of course, the inserted gingival limit). The study concluded that root proximity was not associated with mini-implant failure, as had been suggested by previous studies. The researchers suggested that the mini-implants be installed in the inserted gingiva, although distant from the alveolar ridge, being necessary to incline them apically.

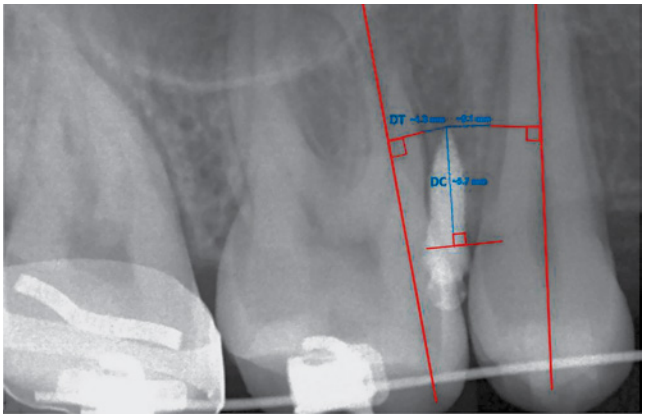

Figure 2 - Radiographic evaluation using a periapical radiograph. Source: Haddad et al.[2], 2019.

CHLORHEXIDINE 2%: A STRONG ALLY IN THE FIGHT AGAINST CROSS-INFECTION IN ORTHODONTICS

Have you ever stopped to think that new brackets can be vectors of cross-contamination? Well, I cannot bring to mind a company that markets sterile brackets, as is the case with orthodontic mini-implants. Because of this, brackets can be contaminated during their manufacture and packaging. In order to verify this hypothesis, Indian researchers evaluated the post-manufacture contamination and packaging of the trademark companies American Orthodontics, 3M Unitek, Ortho Organizers, and China Dental Orthodontic[3] (Fig. 3). In addition, the authors also verified the effectiveness of 2% chlorhexidine in the disinfection of brackets prior to clinical use. The results obtained were alarming because the products of these four commercial brands all showed significant bacterial contamination, evidencing the need for disinfection prior to use. The authors also concluded that 2% chlorhexidine has high efficacy in the destruction of gram-positive and gram-negative bacteria. Therefore, it is suggested that 2% chlorhexidine be used in clinical practice for the disinfection of orthodontic brackets prior to installation in the oral cavity.

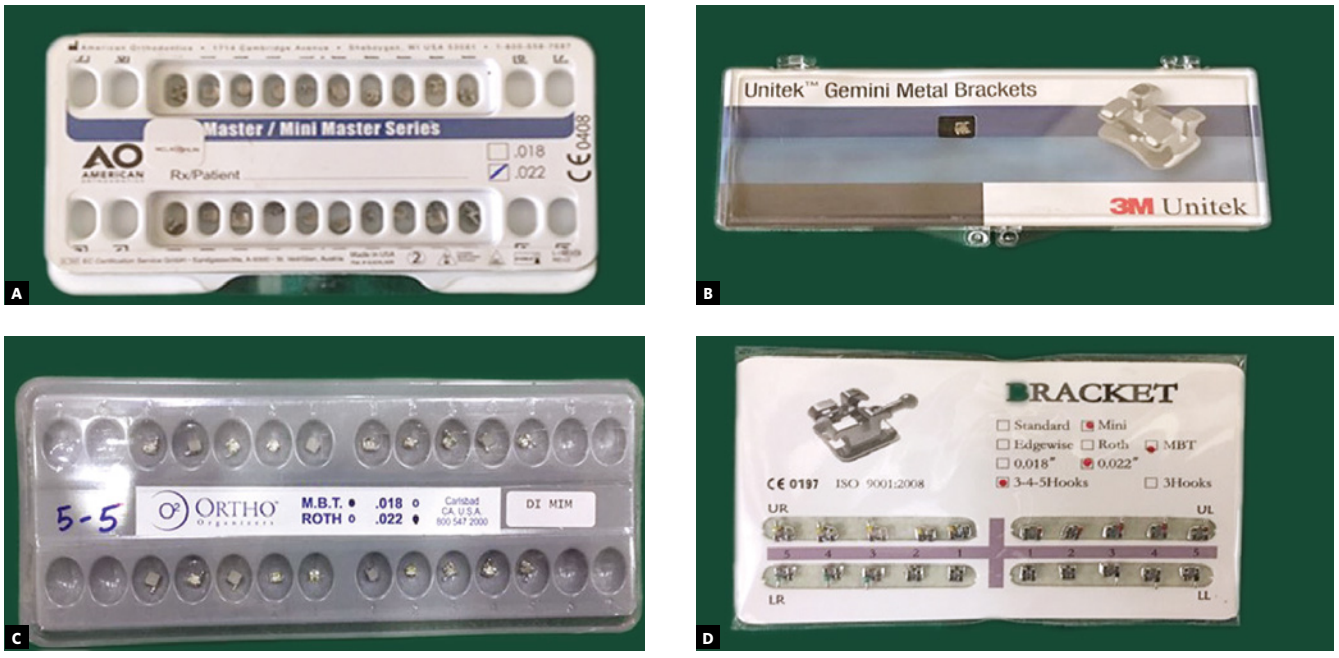

Figure 3 - Orthodontic bracket kits: **A**) American Orthodontics; **B**) 3M Unitek; **C**) Ortho Organizers; and **D**) China Dental Orthodontic. Source: Vivek et al.[3], 2019.

MICRO-OSTEOPERFORATION DOES NOT ACCELERATE ORTHODONTIC MOVEMENT

The dream of every orthodontic patient is to have their teeth corrected by devices that are not visible, in the shortest possible time. In part, this desire has been fulfilled by means of the resurgence and modernization of orthodontic aligners. In terms of a significant reduction in treatment time, however, science has not advanced much in recent years. Recently, there has been considerable debate about whether micro-osteoperforations (MOPs) are effective in accelerating orthodontic movement. This theme became prominent after the company Propel developed a kit that could be used to perform such a procedure, in a simplified way, by orthodontists themselves; however, no conclusive studies evaluating the effectiveness of such devices had been undertaken until recently, when a group of American researchers, led by Peter H. Buschang, performed a study[4] on beagles that aimed to determine how MOPs affect bone turnover, remodeling, bone density, and volume. They found that MOPs in the dentoalveolar region of the dogs (Fig. 4) did not produce a difference in dental movement after seven weeks of space closure, and that there was no significant effect on bone density or volume. It was concluded, however, that MOPs produce a slight, but temporary, increase in dental movement during the first two weeks. These effects are small and of limited duration, and were determined to be clinically insignificant.

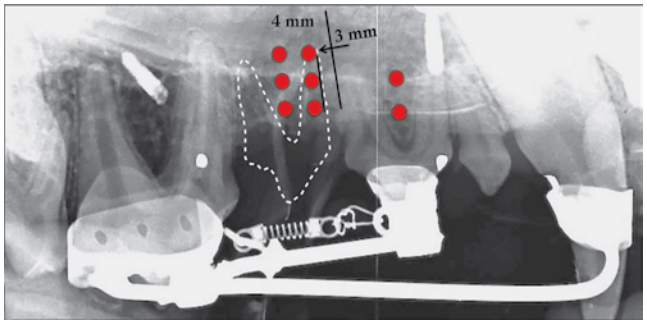

Figure 4 - Radiograph showing the approximate locations of the 6 MOPs placed 3-7 mm from tooth root and 2 MOPs placed in the furcation. Red dots represent 1.5-mm-diameter 3 7-mm-deep MOPs. Extracted tooth outlined. Source: Cramer et al.[4], 2019.

RAPID MAXILLARY EXPANSION AND EDGEWISE MECHANICS ARE EFFECTIVE TOOLS IN EXPANDING ARCHES IN GROWING PATIENTS

At the end of an orthodontic treatment, the desired outcome are aesthetics, function and stability. In the vast majority of cases, patients seek us out only to improve the aesthetics of their smiles, making little mention of function and stability. What they don't know is that these latter two items should never be neglected. The theme of stability has attracted a lot of attention recently, mostly due to the expansional mechanics promoted by self-ligating devices and thermoplastic aligners. But should we ignore classic procedures, such as rapid expansion of the maxilla and Edgewise mechanics, in deference to modern techniques? Are classical mechanical approaches really capable of achieving long-term stability? With the aim of answering these questions, researchers from the University of Saint Louis developed a study[5] to evaluate the long-term stability of rapid palatal expansion, followed by fixed Edgewise appliances. The authors concluded that there was a significant increase in arches dimensions after the use of these devices, and that subsequent gains persisted across all measurements when evaluated over an average of 11 years posttreatment.

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