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AUTOCLAVE AND GLUTARALDEHYDE: EFFECTIVE METHODS IN DECONTAMINATION OF ORTHODONTIC WIRE MARKERS

Despite the advances in Orthodontics regarding orthodontic brackets, wire bends are essential to obtain an excellent occlusion. When bending wires, it is necessary to mark them. The available options are pencil marker for overhead projector (fades out in contact with saliva), individual markers or orthodontic dermatograph pencils. When a dermatograph pencil is chosen, the question of how to disinfect it between each use arises. Pursuing an answer to this question, Iranian researchers have developed a study[1] which evaluated autoclave, glutaraldehyde and a disinfectant agent (Deconex™) as pencil decontaminators. The rationale for conducting this study is relevant, given the need to avoid cross-infection during orthodontic treatment. The results of this study showed that the best methods for disinfection were autoclave or the use of 2% glutaraldehyde for 30 minutes. The results from this study should be extrapolated to our daily clinical practice, so as to avoid infection to be transmitted among patients.

AESTHETIC ORTHODONTIC WIRES HAVE NO CYTOTOXICITY WHEN COMPARED TO CONVENTIONAL ONES

Every day a large number of adult patients resort to Orthodontics seeking improvement in dental function and facial aesthetics. Treatment in adults, which was once a rarity, became a reality. Although treatment of these patients is essentially the same, it has characteristics inherent to aging which cannot be neglected. Another important feature in this group of patients is the search for an aesthetic device that does not hinder their social relations. In this perspective, ceramic brackets and coated wires, which become hidden in the oral environment, arose. Since their inception, coated wires have been widely evaluated for their mechanical properties; however, to date, their biological characteristics have been little studied. Attempting to fill this gap, Italian researchers have developed an *in vitro* study[2] comparing conventional NiTi wires with coated NiTi wires. The results achieved with this study revealed that both conventional and coated wires showed similar cytotoxicity. With these results, the authors point out that the clinical use of these wires has to be considered of similar risk.

VIBRATION DOES NOT INCREASE THE RISK OF ROOT RESORPTION DURING ORTHODONTIC TREATMENT

The desire for fast orthodontic movement causes strategies for this purpose to arise. Corticotomies, drug application and vibratory devices are some of these strategies. Vibratory devices have gained followers around the world because they are not invasive and also due to strong marketing involved. Although there is no strong scientific evidence that proves their effectiveness, the use of vibratory devices is increasing day by day. Thus, it is important to assess not only the advantages disclosed by their manufacturers, but also their potential drawbacks, among which is root resorption. In order to elucidate this question, researchers from an American university developed a study[3] using rats as test subjects (Fig 1). The results achieved with this study showed that the group receiving vibration associated with movement had the same amount of resorption than the control group, which only received movement. These partial laboratory data reinforce the low performance of vibration during induced tooth movement.

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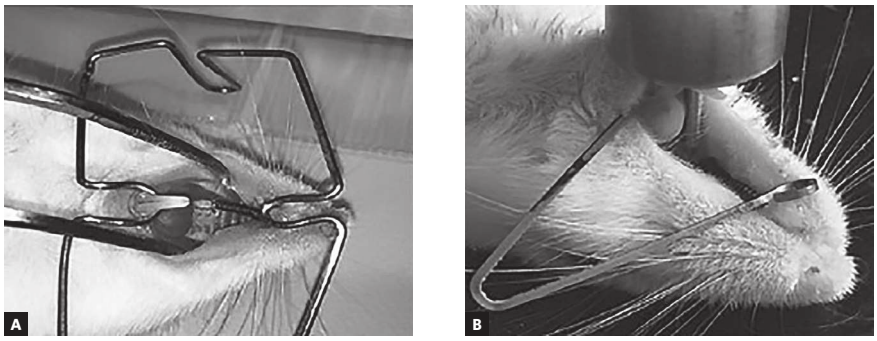

Figure 1 - **A**) Insertion of spring. **B**) Application of low frequency mechanical vibration in the first maxillary right molar. Source: Yadav et al.,[3] 2016.

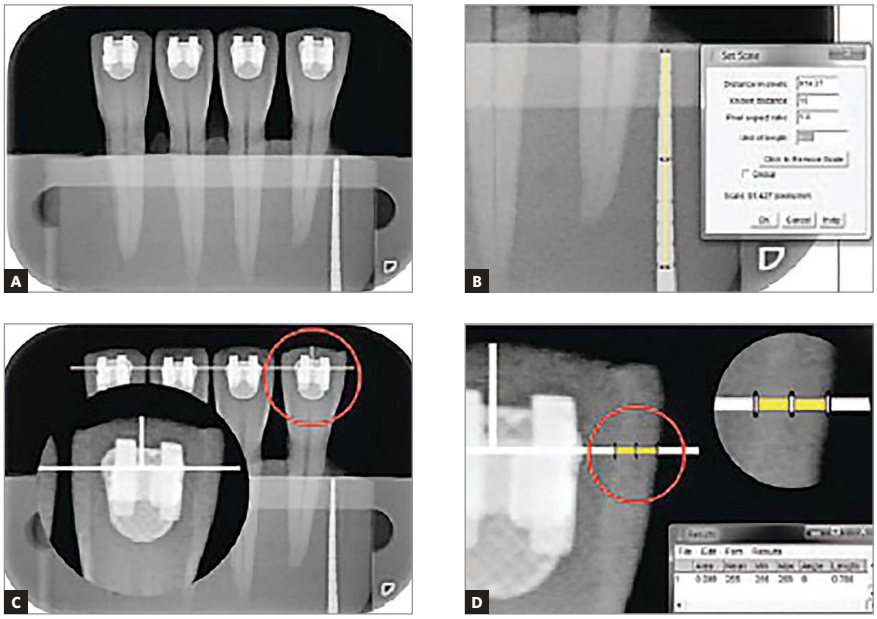

Figure 2 - Image processing steps: **A**) image, **B**) scale adjustment to pixels/mm for size accordance, **C**) placement of horizontal and vertical reference lines, and **D**) straight line selection of enamel width and length calculation of the selected line. Source: Ang et al.,[4] 2016.

THE ANGLE OF THE RADIOGRAPHIC TUBE AND THE PRESENCE OF BRACKETS AFFECT MEASUREMENT OF INTERPROXIMAL ENAMEL IN THE REGION OF INCISORS

To obtain an excellent occlusion after orthodontic treatment it is important that a perfect harmony between maxillary and mandibular teeth be achieved, particularly regarding their mesiodistal diameter. It is not too much to say that in most orthodontically treated cases we are faced with tooth size difference (Bolton's discrepancy). In these situations, whenever possible, it is more interesting to wear out teeth that are too large than to add on the opposite arch. Yet, questions such as "how much can be worn?" arise when opting for wearing. Therefore, a periapical radiograph of the region where one wants to perform wearing will be of much interest in order to see how much enamel is available. Nevertheless, could we rely on these measures? What are the factors that could interfere in the obtained image? In order to elucidate these questions, Dutch researchers have proposed a study[4] evaluating whether the influence of the radiographic film, the angulation of the radiographic tube and the presence of brackets would interfere in measurement-taking of interproximal enamel in the region of mandibular incisors (Fig 2). The results obtained from this study revealed that angular changes in the periapical radiographic technique and the presence of brackets on mandibular incisors significantly affect interproximal enamel measurement-taking with imaging analysis software.

PATIENTS USING FULL-COVERAGE BONDED PALATAL EXPANDERS DEVELOP A HIGHER NUMBER OF WHITE SPOT LESIONS

Palatal expansion lingers along over decades, being more current now than ever. Several devices are used for this purpose: Haas or Hyrax expanders and bonded expanders are good examples. Their use is dependent on personal preferences and characteristics inherent to each one of them, as all aim to achieve the same goal which is palatal disjunction. Those who are in favor of bonded expanders claim it would be possible to achieve vertical control due to the fact that those devices present some acrylic on the occlusal surface. This is beneficial on the one hand, but can lead to problems on the other hand, especially regarding the appearance of white spot lesions when using this type of device. The fact that the acrylic device covers the occlusal surface favors biofilm buildup, leading to the appearance of white spot lesions. However, there has been no study assessing this issue so far. Therefore, Turkish researchers have proposed a study[5] which used the QLF-D Biluminator 2 camera to evaluate the formation of white spot lesions in patients using bonded expanders compared with control patients (Fig 3). The results were predictable, since patients using the bonded expander showed a higher number of white spot lesions than patients in the control group. It is worth mentioning, along with the results of this study, that there is a need to use enamel protective material, in addition to proper control of bacterial biofilm whenever using those devices.

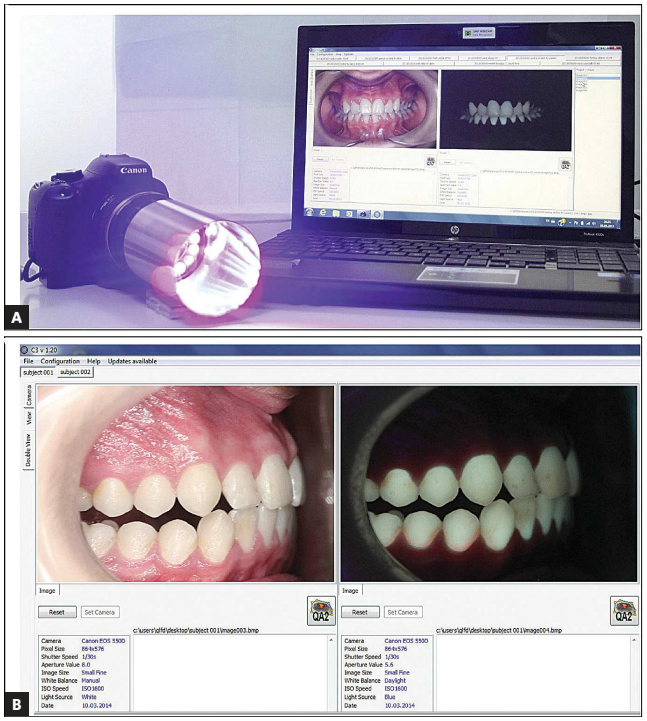

Figure 3 - **A**) QLF-D Biluminator 2 camera (Inspektor Research Systems, Amsterdam, The Netherlands); **B**) Image-capturing software (C3 v1.20, Inspektor Research Systems). Source: Yagci et al.[5], 2016.

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