

Chemo-Mechanical Caries Removal

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Abstract

In pediatric dentistry, one of the main difficulties in the removal of carious dental tissue is the management of the child patient due to fear and anxiety about the use of anesthesia and rotating instruments. In order to solve this problem, the chemical-mechanical method for the elimination of the carious tissue, is a conservative and effective alternative since it avoids the use of anesthetics and rotary instruments. According to studies, this method is more accepted by patients compared to the traditional method. This paper aims to present a clinical case of the use of papain gel (Papacarie®) for the chemical-mechanical removal of carious tissue in deciduous teeth.

Keywords: Chemo-Mechanical Caries Removal; Papacarie; Caries

Why it's important?

Caries disease has a great impact on the quality life of the population, caused by genetic, nutritional and hormonal factors, causing pain and discomfort to the patient. In the search for less invasive alternative procedures and to eliminate the phobia of the patient to treatment, several methods with the objective of caries removal were tested, among them a chemo-mechanical caries removal technique was developed which does not required use rotary instruments [1]. Papacarie® it's a Brazilian product [11] that's contain papaya, chloramines, toluidine blue, salts, water and thickener, it is low cost [2].

Papain, which breaks down partially degraded collagen molecules, has properties capable of digesting dead cells [8] and also prevents proteolytic action in tissues considered normal. Its other component, chloramine, has bactericidal properties, and works by softening the infected dentin. Toluidine blue is a dye present in the product to detect carious tissue [9].

How to make?

Prophylaxis of the dental element will be applied using pumice stone with water and Robinson brush in the pen of low rotation. The absolute isolation of the operative field is performed (Figure 1). After preparation of the operative field, Gel Papacarie® (Figure 2) is applied inside the cavity, it is expected the time of 30 seconds for its action (which is observed by the appearance of bubbles on the surface), then with a spoon of dentin without a cut removes the softened tissue together with the gel, and if necessary, reapply the same. When observing a vitreous aspect in the cavity it is known

that all infected tissue was removed (Figure 3). Then the permanent restoration of the dental element (Figure 4) is performed, and finally a periapical radiograph can be made showing the success of the technique (Figure 5). The technique of chemical-mechanical removal of the carious tissue is indicated for patients with need of preservation of healthy tissue; elderly with root caries; patients with conventional treatment phobia; patients with great sensitivity and in children [3], being a limited technique, because there are cases that it is essential to use rotary instruments.

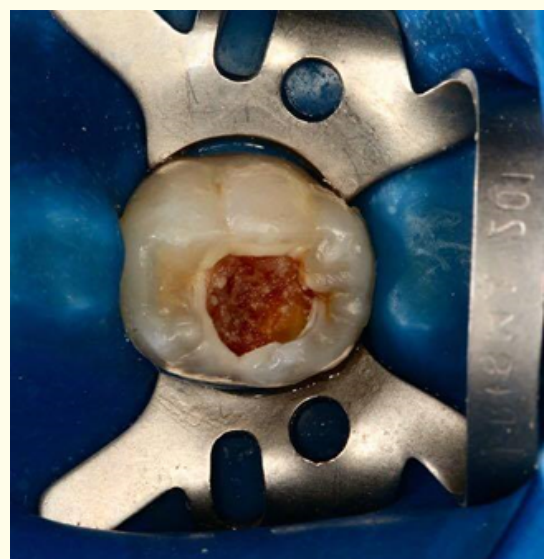


Figure 1: Absolute isolation of the operative field.



Figure 2: Application of Papacarie gel for 30 seconds in the cavity.

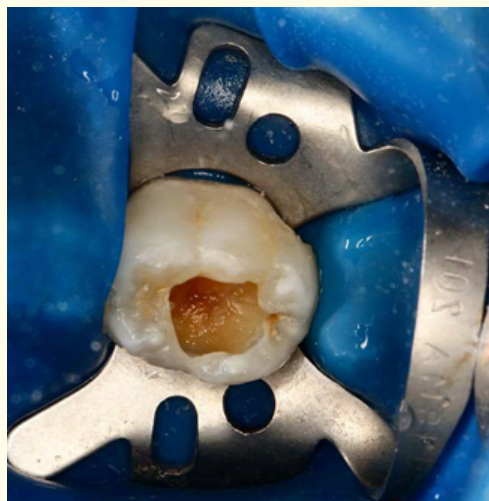


Figure 3: Vitreous appearance of the cavity after removal of the carious lesion.



Figure 4: Definitive restoration with composite resin.

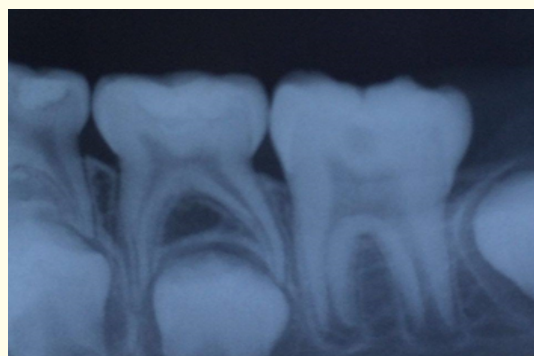


Figure 5: Final radiography.

Anesthesia and the use of rotating instruments are critical procedures in children's dental care because they can trigger fear and anxiety due to unpleasant previous experiences in the association of needle anesthesia and the fear of the unknown [4]. The Papacarie® technique allowed the total removal of the carious tissue, dispensing instruments that cause unpleasant feelings, having as great advantage a better acceptance of the patient to the treatment [5].

According to studies, the chemo-mechanical method for removal of the carious tissue with the use of Papacarie® has the same effectiveness as the traditional technique [6]. This alternative technique presents a lower risk of pulp exposure than in the use of rotary instruments, since it eliminates only infected tissue from the cavity [1,4].

Results show favorable aspects after 1-year clinical follow-up in 60 teeth in children 5 to 9 years of age and in 30 molar teeth of adolescents and adults up to 23 years of age [7].

Conclusions

The chemo-mechanical caries removal using the Papacarie® gel selectively removes the infected dentin, leaving intact the affected dentin allowing remineralization and preservation of the dental structure [10]. All components make the chemical-mechanical elimination of the tissue decayed with Papacarie® an effective technique, economical and practical. It can be an excellent alternative for the treatment of anxious and uncooperative patients, thus reducing the patient's anxiety due to the use of anesthetics and rotary instruments. The dental surgeon must make the correct use of his indication.

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