Evaluation of Caries Removal Using Mechanical and Chemo-mechanical Methods in Deciduous Molars: A Prospective Randomized Controlled Trial

By

Rima Nayef Maarouf
B.D.S 2013 (Beirut Arab University)

Thesis
Submitted in Partial Fulfillment of the Requirements for the Degree of Master of Science in Pediatric Dentistry

Department of Developmental Sciences
Faculty of Dentistry

Supervised by

Dr. Sherine Badr Youness Badr
Director, Division Pediatric Dentistry
Associate Professor of Pediatric Dentistry
Department of Developmental Sciences
Faculty of Dentistry, Beirut Arab University

Dr. Hala Ragab
Director, Division of Operative and Esthetic Dentistry
Associate Professor of Operative and Esthetic Dentistry
Department of Restorative Sciences
Faculty of Dentistry, Beirut Arab University

2018
Abstract

**Objective:** The aim of this study was to assess the efficiency of polymer burs and Papacarie® in comparison to hand excavators in caries removal in deciduous molars, and to assess relevant pain perception of each method and the possibility of risk complications at six-month-time lapse.

**Method:** Thirty-three carious deciduous molars fulfilling the inclusion criteria were selected in four- to eight-year-old children. Eleven teeth were randomly allocated to each of the three subgroups: Group I (Test group), Group II (Test group) and Group III (Control Group) in which carious dentin was removed with Papacarie®, polymer bur or sharp excavator respectively. Efficiency of caries removal was numerically scored 0, 1, 2, 3, 4 and 5 using caries detector dye. Patient perception of the treatment procedure was measured using the “Wong-Baker Faces Pain Rating Scale”. Clinical assessment was done at three- and six- month follow-up periods, and radiographic assessment was done at six- month period. Data was statistically analyzed using SPSS v.17 (BM Corp; Armonk, NY) with an alpha level of 0.05 used as a decision point for statistical significance.

**Results:** Polymer bur group showed significantly lower caries removal efficiency and higher pain scores compared to Papacarie® and hand excavator methods. The latter two groups showed statistically comparable results regarding efficiency and inflicted pain in spite of the better clinical performance by Papacarie®. All studied criteria at three- and six- months follow-up were negative regardless of the studied caries removal method.

**Conclusion:** Polymer bur did not improve the efficiency of caries removal nor did it reduce relevant pain perception compared to hand excavators or Papacarie® in deciduous molars. Papacarie® showed the highest potential in caries removal efficiency and in providing a comfortable treatment experience. Yet, this was statistically comparable to hand excavators. None of the studied caries removal methods had detrimental effect on the pulp, peri-apical tissue or tooth-restoration margin over the six-month period.

**Key words:** caries removal- pain- Papacarie®- polymer bur- hand excavator