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Times required for cavity preparation using ultrasonic tips

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Introduction

Minimal cavity preparation can be achieved with the use of ultrasonic tips.

Objective

The purpose of this study was to evaluate the required time for opening the proximal cavities using three ultrasonic tips of different sizes and fine diamond inlay bur followed by ultrasonic tip.

Material and Methods

Proximal cavity preparation (Tab. 1) with margins in enamel in 50 intact molars.

Cavity Preparation System
SONICSYS approx tips micro torpedo, size #2 and #3 (KaVo, Germany)
Siplus Instrument approximal U-shaped (Komet, Germany)
Piezon Cavity System 408, U-shaped (Electro Medical Systems, Switzerland)
Fine diamond inlay burs (Intensive, Switzerland) and finished with ultrasonic tips

Fig. 1 SONICSYS

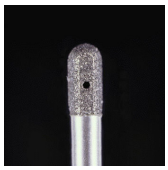


Fig. 2 Siplus

Time
Measurement required for the cavity opening (n = 10)

SEM
Analysis of the cavity margins

ANOVA
Significance level of 0.05

Fig. 3 Piezon

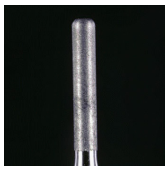


Fig. 4 Inlay bur

Results

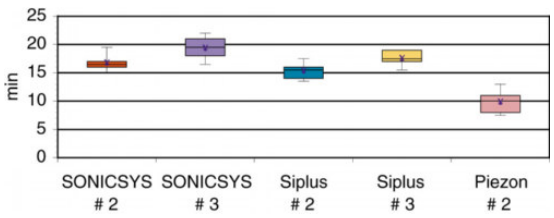


Fig. 5 Time required for cavity preparation using ultrasonic tips

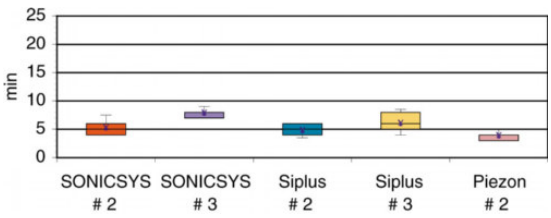


Fig. 6 Time required for cavity preparation using diamond bur/ultrasonic tip combinations

The mean time required for opening small cavities recorded with Siplus [15 min (range: 13-18 min)] was significantly longer ($p > 0.05$) than with diamond bur/Siplus tip combination [5 min (range: 3-6 min)]. Opening the cavities with only SONICSYS tip size #2 took 17 min (range: 15-21 min) and size #3 took 19 min (range: 16-22 min), which were significantly longer than with diamond bur/SONICSYS tip size #2 [5 min (range: 4-8 min)] and size #3 combination [8 min, (range: 7-9 min)]. The mean time for opening the cavities recorded for Siplus tips of different sizes did not differ from the time for the corresponding sizes of SONICSYS tips ($p > 0.05$). Piezon cavity system required the least time both with ultrasonic tips [10 min (range: 7-14 min)], and tips in combination with diamond burs [4 min (range: 3-5 min)].

Discussion and Conclusions

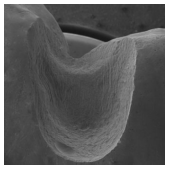
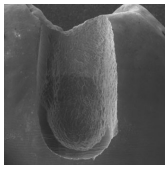
A  B 

Fig. 7 A: Overall cavity view prepared with ultrasonic tips
A: Siplus

Fig. 7 B: Piezon

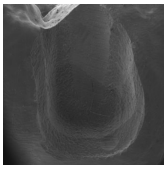
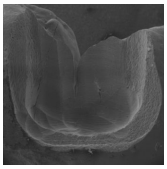
A  B 

Fig. 8 A: Overall cavity view prepared with A: ultrasonic tip, SONICSYS

Fig. 8 B: diamond bur/ultrasonic tip, SONICSYS

Proximal cavity preparations with ultrasonic tips require more time than those with diamond bur ultrasonic tip combinations. Proximal cavities opened by means of fine diamond burs and finished with ultrasonic tips provide short chairside times which are similar to conventional preparation techniques.

This Poster was submitted on 29.04.99 by Prof. Dr. Peter Pfeiffer.

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