

A COMPARATIVE EVALUATION OF THE EFFICIENCY OF DIFFERENT ACIDS FOR REMOVAL OF SMEAR LAYER AFTER CAVITY PREPARATION. AN IN VITRO STUDY

SHWETA BAGMAR¹, SAMEER JADHAV², VIVEK HEGDE³ & SRILATHA S⁴

¹Post Graduate Student, Department of Conservative Dentistry and Endodontics, M. A. Rangoonwala Dental College and Research Centre, Pune, Maharashtra, India

²Professor and Guide, Department of Conservative Dentistry and Endodontics, M. A. Rangoonwala Dental College and Research Centre, Pune, Maharashtra, India

³Head of the Department, Department of Conservative Dentistry and Endodontics, M. A. Rangoonwala Dental College and Research Centre, Pune, Maharashtra, India

⁴Reader, Department of Conservative Dentistry and Endodontics, M. A. Rangoonwala Dental College and Research Centre, Pune, Maharashtra, India

ABSTRACT

Introduction: To evaluate and compare the efficiency of different acids for removal of smear layer after cavity preparation.

Materials: 40 extracted molars stored in normal saline, fine grit straight fissure diamond abrasive(CPC, China), 17% ethylene diamine tetra acetic acid solution, 5% citric acid solution, 17% polyacrylic acid solution, 37% phosphoric acid gel.

Methods: 40 Extracted human intact second molar were selected, divided in 4 groups randomly n=10. After that, occlusal surface of human molar were prepared with standardized box of 3mm using diamond abrasive. Then prepared sample were studied under scanning electron microscope. After preoperative scanning electron microscopy, prepared sample in each group were treated with 17% EDTA, 37% phosphoric acid, 17% polyacrylic acid, 5% citric acid respectively for 60 seconds, then irrigated with 5ml of distilled water and after which specimen were dried and studied under scanning electron microscope.

Results: Scanning electron microscope evaluation of dentin surface etched with 17% ethylene diamine tetra acetic acid for 60 seconds revealed maximum number of opened dentinal tubules with reduced number of smear plug. However, higher percentage of number of opened dentinal tubules with no smear layer plugs were observed with 17% polyacrylic acid as compared to other acids. But it is found to be very aggressive on dentin surface indicating loss of calcium ions.

Conclusions: Within the limitation of the study 17% EDTA and 37% phosphoric acid revealed maximum number opened dentinal tubules with less smear plug and simultaneously less surface deterioration.

KEYWORDS: Smear Layer, EDTA, Phosphoric Acid, Polyacrylic Acid, Citric Acid, Dentinal Tubules