

ASSESSMENT OF PULP RESPONSE TO DIFFERENT REMAINING DENTIN THICKNESSES (RDT) AND A DENTIN BONDING AGENT. AN IN-VIVO STUDY

Abdulghani Mira*, Motaz Ghulman*, Ola M. Fahmi** and Madiha M. Gomaa***

ABSTRACT

The aim of the present in-vivo study was to assess the pulpal response to different remaining dentin thicknesses in terms of soft tissue changes and hard tissue deposition beneath class V cavities lined with a dentin bonding agent. **Material and methods:** a sum of thirty-two premolar from four adult healthy dogs was used for the study. The experimental procedures in dogs were made following the European Communities Directive (86/609/EEC). Class V cavities in the center of the buccal surface of each selected tooth were prepared at two different pre-specified and adjusted depths (CWD) as an estimate of RDT and grouped as depth I (16 teeth) and depth II (16 teeth). The adhesive dentin bonding used was Clearfil SE bond (Kuraray). Calcium hydroxide (Dycal) was used as a control lining material. Accordingly, experimented teeth were further subdivided into four groups of eight teeth each, namely groups A and B (depth I), to be lined with Dycal and Clearfil SE respectively. Groups C and D (depth II), to be lined also with Dycal and Clearfil SE respectively. Dogs were sacrificed after one month observation period and teeth specimens prepared. **Results** of histomorphometric analyses showed that, remaining dentin thickness (RDT) ranged from 1- 0.75mm in teeth sections of groups A, B (depth I) and < 0.5 - 0.25mm in groups C and D (depth II). For Clearfil SE bond- depth I- a significantly less pulpal inflammation than depth II was observed either immediately under the prepared cavity or at the pulpal center (P-value: 0.003 and <0.001) respectively. For both depths, Clearfil SE bond groups (B and C) showed significantly more inflammatory features than Dycal (control). As for hard tissue formation, reactionary dentin formation was detected under 14 out of 16 cavities of depth I, irrespective of the lining material. As for depth II, Dycal lined cavities showed a thin layer of tertiary dentin. This feature was nearly absent under the majority of depth II cavities lined with Clearfil SE bond group (D). On the other hand, no reparative dentin was found in all studied teeth sections. **Conclusions:** According to the present evidence, it can be concluded that, RDT is an important and effective factor in reducing or preventing pulpal adverse reaction to insults caused by cavity preparation and restoration events. So unnecessary increase in cavity depths should be avoided.

*Assistant Professor, Operative Dentistry Division, Conservative Dental Sciences Department, Faculty of Dentistry, King Abdul Aziz University.

** Assistant Professor, Operative Dentistry Department, Faculty of Oral and Dental Medicine, Cairo University.

***Professor, Endodontic Division, Conservative Dental Sciences Department, Faculty of Dentistry, King Abdul Aziz University.