THE USE OF 3D COMPUTERIZED RECONSTRUCTION FOR THE STUDY OF CORONAL MICROLEAKAGE K.LYROUDIA,O.PANTELIDOU, G.MIKROGEORGIS, C.CHATZIKALLINIKIDIS, N.NIKOPOULOS AND I.PITAS International Endodontic Journal, no. 33,pp. 243-247, 2000

The purpose of this study was to evaluate a new method for studying coronal mikroleakage associated with root-filled teeth.

Twenty human mandibular posterior teeth were prepared chemomechanically with the step-back technique and then divided into two groups of ten teeth each. The canals were filled using lateral condensation of gutta-percha points; Roth's 801 was used as sealer for the first group, and Ketac-Endo for the second. After 48h, the temborary fillings in the access cavities were removed, the roots coated with three layers of nail polish and the teeth were exposed to artificial saliva for 40 days. Subsequently, the crowns of the teeth were placed into Indian ink for 4 days before the coating was removed and the teeth embedded in a two-phase polyester resin. Serial cross sections were taken from each specimen using a microtome, and each cross section photographed under a stereoscopic microscope. The photographs of the cross sections were digitized using an image scanner and the contours of the external surface of the teeth, the obturated root canals and the boundaries of dye penetration were followed. Finally, a three-dimensional surface representation was achieved using the triangulation method.

Although the sample size and the experimental methods were not designed to form valid groups, the results showed that all roots obturated with Ketac-Endo sealer had dye microleakage, whilst only three teeth of the Roth's 801 group had dye microleakage.

The 3D reconstruction of dye microleakage proved to be an interesting method and a useful tool for the evaluation of coronal microleakage when using different types of root canal sealers.