MIKROGEORGIS G, LYROUDIA KL, NIKOPOULOS N,

PITAS I, MOLYVDAS I.

Aristotle University of Thessaloniki,

Thessaloniki 54006, Greece, email: lyroudia@zeus.csd.auth.gr

3-D computer-aided reconstruction of six teeth with morphological abnormalities

Anatomical peculiarities of the teeth is a restraining reason for endodontic therapies because of the difficulties they appear during such procedures. The purpose of this study was the 3-D reconstruction of six teeth with morphological peculiarities by using serial cross sections and a personal computer. All the teeth were put in 3% NaOCl solution after their extraction, washed under running water and air-dried. They were then embedded in a two phase polyester resin and serial cross sections were taken from each specimen by using a special microtome (Isomet, Buehler, U.S.A.). The thickness of each section was 0.75 mm. Each section was photographed under a stereoscopic microscope (Stemy SV8, Zeiss, Germany).

The photographs of the cross sections were digitized and the external contours of the teeth and the root canal tracks were extracted for each section. Semiautomatic alignment of the sections was achieved with the use of techniques of image processing. Three dimensional surface representation was used in this project to reconstruct the inner and outer surface of the teeth. The results showed in detail the internal morphology of the teeth under investigation. The fact that we are able to view and study these teeth from different view points is one of the main advantages of this method as one could have an idea of the anatomy of these teeth in the space, which is very useful for a clinician. In conclusion, the 3-D reconstructing method is a useful tool for the study of the morphology of the teeth with anatomical abnormalities.