3D Computer-Aided Reconstruction of the Morphology of Teeth with Malformations

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Abstract. Malformations of the teeth is a restraining reason for endodontic therapies because of the difficulties they appear during such procedures. These difficulties refer to the knowledge of their internal morphology. The purpose of this study was the 3D reconstruction of two types of malformations of the teeth named "double" teeth and "odontomas". Two "double" teeth and two "odontomas" were studied. All the teeth structures were embedded in polyester resin and from each specimen serial cross sections were taken by using a special microtome. The serial cross sections were photographed under a stereoscopic microscope and digitized. The contours of the external and internal surface of the sections were taken and semiautomatic alignment was achieved. 3D surface representation was used in this project to reconstruct the inner and outer surface of the structures. The results showed in detail the internal structure 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 the established method as one could have an idea of the internal structure of these teeth in the space, which is very useful for a clinician. In conclusion, the 3D reconstructing method is a useful tool for the external and internal study of the structure of the teeth with dental anomalies.