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A PRELIMINARY STUDY ON ROOT AND ROOT CANAL MORPHOLOGY OF ENDODONTICALLY TREATED MANDIBULAR FIRST MOLARS

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Study of root and root canal anatomy has endodontic, as well as anthropological significance. The mandibular first molar is the first permanent tooth to erupt into the oral cavity and considered as an important tooth in establishing occlusion in the permanent dentition. As it is considered to be more prone to caries than other teeth in the dentition, good understanding of its morphology and anatomical variations is important in clinical dentistry. This study was carried out to determine the number of roots, root canals and configuration and variations of root and root canal morphology in permanent mandibular first molars.

Working length radiographs of 97 consecutive patients comprising 49 males and 48 females receiving root canal treatment for mandibular first molars were assessed using a standard radiograph viewer with extraneous light blocked under x2.5 magnification. All radiographs were assessed by a single experienced investigator. Sociodemographic (race, age, gender and ethnicity) and tooth specific (number of roots, and root canal configurations) data were assessed and documented.

The sample consisted of 85.6% Sinhalese, 10.3% Tamil and 4.1% Muslim patients. Of the radiographs, 56.7% and 43.3% represented left and right lower molars, respectively. The incidence of 3 rooted lower first molars was 15.5%. Among Sinhalese the incidence was 15.66% (13 of 83 patients) and in Tamils the incidence was 10% (1 of 10 patients) Females had a higher incidence of 3 rooted molars (24.5%) compared to males (6.25%). The canal configuration of the mesial root represented type IV configuration in 88.7% and type II configuration in 11.3% of the cases. The configuration of the distal root showed type I configuration in 51.5%, type II in 21.6%, type III in 1% and type IV in 9.3% of the cases. When two distal roots were present, the canal configuration was type I in both the roots.

According to the preliminary survey the incidence of 3 rooted lower third molars is 15% which is higher than the incidences shown in similar studies. The incidence of canal configurations in mesial and distal roots is similar to those shown in other studies. The present study indicates the importance of having a better understanding about the variation of root and root canal morphology of the permanent mandibular first molar, especially regarding the high prevalence of three rooted molars, to minimize the possible endodontic and surgical complications.