

Root and Canal Morphology of Permanent Maxillary First Molars in a Sri Lankan Population

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The study of root and canal anatomy of teeth has clinical and anthropological significance. A number of studies have shown different trends in the shape and number of roots and canals of teeth among different populations. It has been reported that the mesiobuccal root of the maxillary first molar contains a double root canal system more often than a single canal. However, prevalence of such morphological variations for South Asian people has rarely been reported. The aim of this study was to determine the root and canal morphology of permanent maxillary first molars in a Sri Lankan population with special concern to the presence of a second canal in the mesiobuccal root.

One hundred and fourteen permanent maxillary first molars were washed immediately after extraction and stored in 10% formalin until the collection was completed. The teeth were boiled in 5% NaOH for five minutes and then cleaned with 10% NaOCl to remove organic debris on the surface. Any further deposits such as calculus and bone fragments were removed by scaling and polishing. Each specimen was examined visually under a quartz-halogen light with the aid of a hand lens. The root numbers of the molars were recorded. Vacuum injection protocol was used to inject the ink into the root canal system and make the tooth transparent in order to visualize the canal system. The cleared specimens were examined under a dissecting microscope at $\times 10$ magnification. Vertucci's classification was taken as the main reference during the evaluation of the samples. JMP (SAS Institute, Ver. 3) software was used for statistical analysis.

The commonest canal type in the mesiobuccal root was type IV (42.11%), followed by type II (24.56%) and type I (22.81%). The prevalence of the second canal in the mesiobuccal root was 77.20% and that in distobuccal root was 3.51%. Palatal root had only a single canal in 99.12% of the teeth. These findings signify that due consideration should be given by clinicians to find the second canal in the mesiobuccal root of upper first molar for successful root canal treatment of the permanent maxillary first molar tooth..