

Abstract

Objective: To determine the internal root morphology and gender variations in mandibular first permanent molars in a Kenyan population. **Design:** In vitro descriptive cross sectional study. **Setting:** School of Dental Sciences, University of Nairobi **Results:** The mesial root of mandibular first molars had two canals in 96.3% of the teeth in both males and females and type IV canal configuration was most prevalent in the mesial root. The distal root of the mandibular first molar had one canal in 57.7% of the teeth in males and females. There were significant gender variations in the number of canals and canal configurations in the distal root. Two canals were more prevalent in females (53.6%) compared to males (30.4%) and a single canal was more frequent in males (69.6%) compared to females (46.4%) ($P=0.001$). Canal types I, II and IV were the most frequent in the mandibular distal root. The gender variation in the frequency of canal types I, II and IV in the distal root was statistically significant ($P=0.001$). **Conclusion:** Most of the mandibular first molars have three canals (56%). Two canals in the distal root are more frequent among females (53.6%) compared to males (30.4%).