Cone Beam Computed Tomography: A Useful Diagnostic Tool to Determine Root Canal Morphology in a Sample of Egyptian Population

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Abstract : Cone-beam computed tomography (CBCT) provides high-quality 3-dimensional images of dental structures because of its high spatial resolution. The study of dental morphology is important in research as it provides information about diversities within a population. Many studies have shown different shapes and numbers of roots canals among different races, especially in molars. The aim of this study was to determine the morphology of root canals of mandibular first and third molars in a sample of Egyptian population using CBCT scanning. Fifty mandibular first Molars (M1) and fifty mandibular third (M3) extracted molars were collected. Thick rectangular molds were made using pink wax to hold the samples. Molars were embedded in the wax mold by aligning them in rows leaving arbitrary 0.5cm space between them. The molds with the samples in were submitted for CBCT scan. The number and morphology of root canals were assessed and classified according to Vertucci's classification. The mesial and the distal roots were examined separately. Finally, data was analyzed using Fisher exact test. The most prevalent mesial root canal frequency in M1 was type IV (60%) and type II (40 %), while M3 showed prevalence of type I (40%) and II (40%). Distal root canal morphology showed prevalence of type I in both M1 (66%) and M3 (86%). So, it can be concluded that CBCT scanning provides supplemental information about the root canal configurations of mandibular molars in a sample of Egyptian population. This study may help clinicians in the root canal treatment of mandibular molars.

Keywords : cone beam computed tomography, mandibular first molar, mandibular third molar, root canal morphology