Khodayarinamin A. D.
ROOT CANAL MORPHOLOGY OF MAXILLARY AND MANDIBULAR PREMOLARS IN BELARUSIAN POPULATION USING CONE BEAM COMPUTED TOMOGRAPHY

Scientific advisors prof. Kabak S. L., MD, assist. prof. Kidyasova T.V.
Department of Human Morphology
Belarusian state medical university, Minsk

Introduction. Lack of knowledge of internal anatomy of teeth and dental pulp is second most important cause of treatment failures after wrong diagnosis and treatment planning. The root canal system has a complex anatomy. The maxillary first premolars and mandibular premolars are the most difficult teeth for endodontic treatment because of the number of roots and canals, the direction and longitudinal depression of the roots, difficulties in visualizing the apical limit. Cone beam computed tomography (CBCT) is the most accurate method to detect root canal morphology.

Aim. This study provided the assessment of root and canal morphology of the maxillary and mandibular permanent premolars in a Belarusian population using CBCT.

Materials and methods. CBCT images of randomly selected 70 patients of dental policlinics in Minsk (45 males and 25 females between 23-65 years old) during the period 2012-2017 were analyzed. The final number of the scans became 30 (20 males and 10 females) according to chosen criteria's such as presence of at least maxillary or mandibular first and/or second premolars from both right and left sides with fully developed root, absence of periapical lesion or other pathology in the region of the root apex, no endodontically treated teeth. Teeth with crowns or posts were not assessed. All images were analyzed in axial, coronal and sagittal view.

Were evaluated the number of roots and root canals, root canal morphology according to Vertucchi's classification. The influence of sex was not evaluated.

All images were taken using tom Galileos GAX5 (Sirona Dental System, Bensheim, Germany) and analyzed by program GALILEOS Viewer.

Results. To assess the data was used the program "Statistica". In defined group of 30 patients (20 males and 10 females between 23-65 years old) were evaluated:

1) in maxillary first premolars the most common root number was two (52%) and most of these teeth showed Type IV canal configuration (53%), also was shown Type II (18%) and Type I (6.5%)

2) in maxillary second premolars the most prevalent were one rooted teeth (83%) and most of these teeth showed Type I canal configuration (47,3%), also was shown Type II (8%)

3) mandibular first premolars had a single root (94.5%) and most of these teeth showed Type I canal configuration (61.5%) also was shown Type II (8.5%) and Type III (6%)

4) mandibular second premolars had a single root in 100% , the most common canal configuration was Type I (79%) also was shown Type III (9%)

Conclusion. In this research with a Belarusian population most common first maxillary premolars had two roots with Type IV canal configuration, most common second maxillary premolars had a single root with Type I canal configuration, most common both mandibular premolars had a single root with Type I canal configuration.