

PREVALENCE OF ROOT INVAGINATION IN MANDIBULAR FIRST PREMOLARS IN A SAUDI POPULATION AND ITS CLINICAL SIGNIFICANCE

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ABSTRACT

Aim: to investigate the incidence root invagination in mandibular first premolars in Saudi population and its effect on the root canal system configuration. **Materials and Methods:** Two hundred extracted mandibular first premolars from a Saudi population were collected from the Oral surgery department at the Faculty of Dentistry/ King Abdulaziz University and the dental sections of hospitals in Jeddah/Saudi Arabia. Mandibular premolars were inspected using Stereo-microscope x40, photographed and their root surface topography studied and incidence of root invagination recorded. Teeth specimens were also radiographed both buccolingually and mesiodistally to study the root canal system configuration using digital radiography. Furthermore, teeth with mesial invagination were radiographed using periapical films from different horizontal angulations to specify the most suitable radiographic projection angle for diagnosis of root invagination clinically. Results were statistically analyzed using SPSS software. **Results:** 85.5% of the teeth examined had one root and type I canal system while twenty-nine teeth (14.5%) were found to possess mesial root invagination with apically bifurcated root in 5.5% of them. Vertucci type V canal system was found in all teeth with mesial invagination (29 teeth). Root length from the CEJ to the apex counted for 8.4 ± 1.2 mm. Root curvatures detected were: no curvature (straight roots), lingual, bayonet, buccal, or distal curvatures in a descending order. **Conclusion:** The presence of mesial root invagination should be anticipated during endodontic treatment of mandibular first premolars to reduce incidence of unexpected failures.

KEY WORDS: Canal Variations, Mandibular First Premolar, Root Configuration, root invagination

INTRODUCTION

The success of nonsurgical root canal treatment (NSRCT) is dependent on a thorough knowledge of the root and root canal morphology in order to locate all canals and properly clean, shape, and

obturate the canal space in three dimensions⁽¹⁻³⁾. Amongst all the teeth, mandibular first premolar is often considered an enigma to the endodontist⁽⁴⁾. In the famous Washington's study⁽²⁾, numerous endodontic failures in mandibular first premolar after a routine treatment and flare-ups during the

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