

Supplemental root in a mandibular first molar: a rarity

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Abstract

Anatomic variations are common in human dentition. A clear understanding of these variations is very important for success of endodontic treatment. A dentist should be aware of these anatomic variations as this can affect the treatment outcome. A case of endodontic therapy is presented in which inability to locate an anatomically rare supplemental canal of a three rooted mandibular first molar resulted in treatment failure. A 21-year-old female reported with pain and swelling in relation to lower right first molar. An intra oral periapical radiograph revealed 3 roots; the first canal of the mesial root and a canal of one of the distal roots were found to be treated endodontically, which were infraobturated but the canal of the 2nd distal root had not been treated. The radiograph revealed periapical radiolucency and widening of periodontal space. Prior to starting the endodontic treatment the clinician must be aware of the anatomic variations in tooth pulp morphology and also the importance of preoperative radiographs cannot be underscored.

Introduction

A clear understanding of the anatomy of human teeth becomes an essential prerequisite for achieving success in endodontic treatment. The presence of an untreated canal may be a reason for failure.¹ The importance of developing a visual picture of the expected locations and number of canals in a particular tooth can't be overstressed.

This report describes a failed endodontic therapy on a mandibular first molar with unusual root morphology. The canal in the distolingual root was left untreated during the treatment because no radiographic examination was performed as the patient was 1 month pregnant at that time.

Case Report

A 21-year-old female reported with pain and swelling in relation to lower right first molar.

The patient had undergone root canal treatment for the same tooth one year before, when she was 1 month pregnant. She had no radiographic record as only apex locator was utilized to locate the canals at that time. On examination temporary restoration with zinc oxide eugenol was seen. The tooth was discolored and sensitive to percussion. An intra oral periapical radiograph (IOPR) revealed 3 roots; the first canal of the mesial root and a canal of one of the distal roots were found to be treated endodontically, as they were infraobturated, but the canal of the 2nd distal root had not been treated. The radiograph revealed periapical radiolucency and widening of periodontal space (Figure 1). The most suitable treatment would have been to reobturate all canals and the treatment plan was explained to the patient but unfortunately the patient declined the suggestion.

Discussion

The report describes a failed case of 3 rooted mandibular first molar in which one canal of the extra root (distolingual) was left unobturated resulting in treatment failure. This report highlights the importance of having an understanding of variations in the normal tooth morphology. Anatomical variations are an acknowledged characteristic of mandibular permanent molars.²⁻⁴ Most mandibular first and second molars in Caucasians have 2 roots, with 2 mesial and 1 distal canal. There is a mongolid variation in which there exists supernumerary distolingual root, the frequency of this trait ranges from 6-44%. The presence of a third root in the permanent first molar is the major variant in this group. The frequency of this trait is less than 5% in Caucasians, African, Eurasian and Indian population.⁴ The 4th canal was left untreated during treatment because periapical radiography was not performed as the patient was 1 month pregnant at that time. As pregnancy is an absolute contraindication to dental x-rays only the apex locator was utilized for diagnostic purpose, the presence of the extra root and fourth canal was therefore not diagnosed which ultimately resulted in treatment failure. Hence it may be concluded that prior to starting the endodontic treatment the clinician must be aware of the anatomic variations in tooth pulp morphology and also the importance of preoperative radiographs can't be underscored. An apex locator although helpful in estimating the working length during root canal treatment, can't replace periapical radiography as it doesn't provide the detailed information about root canal morphology that radiographic techniques like Cone Beam CT with a

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Figure 1. Showing a rare third root in mandibular first molar.

small FOV exposition to reduce the X-Ray exposition and *shift sketch technique* to diagnose this rare condition can be of great use in preventing any lapse in the diagnosis of this atypical condition.

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