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Anatomical variation of mandibular canine and consequences of prosthetic treatment

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Introduction

Human mandibular canines do not present an internal anatomy as simple as could be expected; there are canines with a single root and two canals, two roots or fused roots. The existence of mandibular canines with more than one root canal is a fact that clinicians ought to keep in mind, in order to avoid failure during endodontic treatment. In spite of the low incidence of canines with one root and two canals or two roots, this possibility cannot be forgotten.
In a study conducted by Quellet (1) the presence of the second root in mandibular canine appears in proportion of 5% of all teeth included. A considerably lower percentage was found by Laurichesse et al. (2), which described that in the case of mandibular canines, the second root is found in proportion of only 1%. JD Pecora and colleagues found a rate of 1.7% of mandibular canines with two roots, featuring two canals (3).

Case 1:

Patient F. L. came at the dental office complaining of pain in the right mandibular area. She was partially edentulous (inferior class I Kennedy) and wearing two mobile dentures with esthetic clasps. The abutments of the lower denture were 4.3 and 3.4, both covered with porcelain-fused-to-metal crowns. The cause of the pain was a periapical lesion associated with tooth 4.3. The periapical X-ray showed the presence of two roots of the mandibular canine and an attempt of endodontic treatment which failed. In this case the canine has to be endodontically retreated and restored with a new crown. The presence and the orientation of the two canals were observed using two Kerr files, and then they were prepared in a step back technique. The canals were filled up to the apex, as in a later stage of the treatment the periapical lesion necessitated surgical removal (apical resection).

Fig. 1

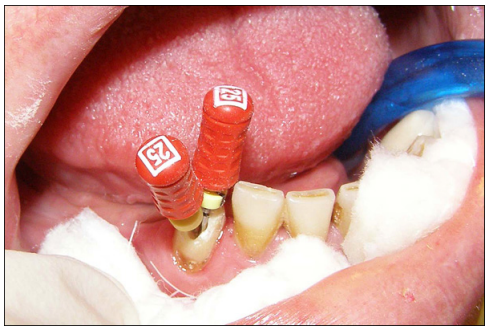

Fig. 2

Fig. 3

Fig. 4

Fig. 5

Fig. 6

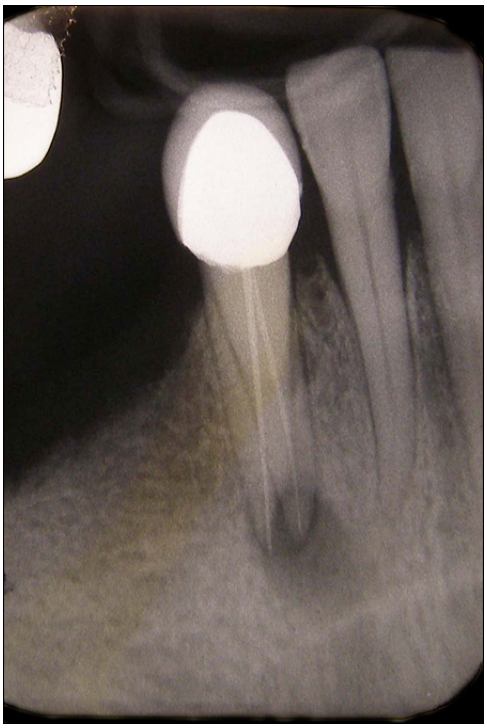

Fig. 7

Case 2:

Patient M. F. showed up at the dentist's office requesting a complete oral rehabilitation. The treatment included two removable partial dentures supported and stabilized with snap and magnet attachments. The rotated and inclined position of the canine 4.3 increased the level of difficulty in achieving the parallelism required for the abutments. The axes of the abutments being divergent, it was mandatory to perform an endodontic treatment on the inferior canine. At first glance, the root canal of the 4.3 canine should not pose any problems, this particular tooth being in most cases a monoradicular tooth displaying only one large canal, easily accessible, located in the root's shaft. During the phases of the treatment was noticed that the access was blocked along with the view down the radicular canal. It was observed that the entrance is positioned eccentrically, so we decide to do a periapical x-ray from an eccentric position. The canal was highlighted using a gutta-percha cone, and the curvature of the cone and the presence of two canals were observed on the new radiological image. The final restoration was made with a material containing calcium hydroxide and with a gutta-percha cone.

Fig. 8

Fig. 9

Fig. 10

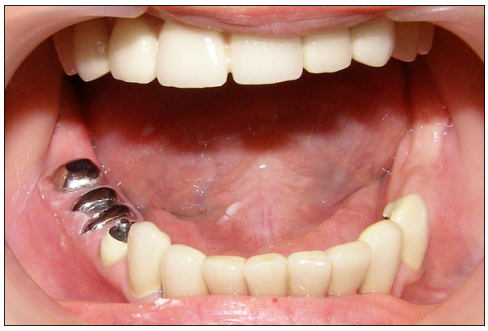

Fig. 11

Fig. 12

Fig. 13

Fig. 14

Conclusions

The precise knowledge of the endocanalicular system's anatomy is essential for the success of the root canal therapy. The failure to detect all the canals and the incomplete canal filling ultimately results in the loss of the tooth. The long term success of the prosthodontic treatment depends directly on the quality of the endodontic treatment of the abutments. The mandibular canine is very important for any type of prosthetic restoration. The clinical cases reported show that such anatomical variations can also occur in Romanian population as much as described in the international literature and cannot be overlooked in private practice.

Literature

1. Ouellet R, Mandibular permanent cuspids with two roots, J Can Dent Assoc 1995, 61:159-161.
2. Laurichesse JM, Maestroni J, Breillat J ,Endodontie Clinique , 1st edn., Edition CdP, Paris, France, 1986, 64-66.
3. Pécora JD, Sousa Neto MD, Saquy PC, Internal anatomy, direction and number of roots and size of human mandibular canine, Braz Dent J, 1993, 4:53-57.

This Poster was submitted by Dr. Oana-Cella Andrei.

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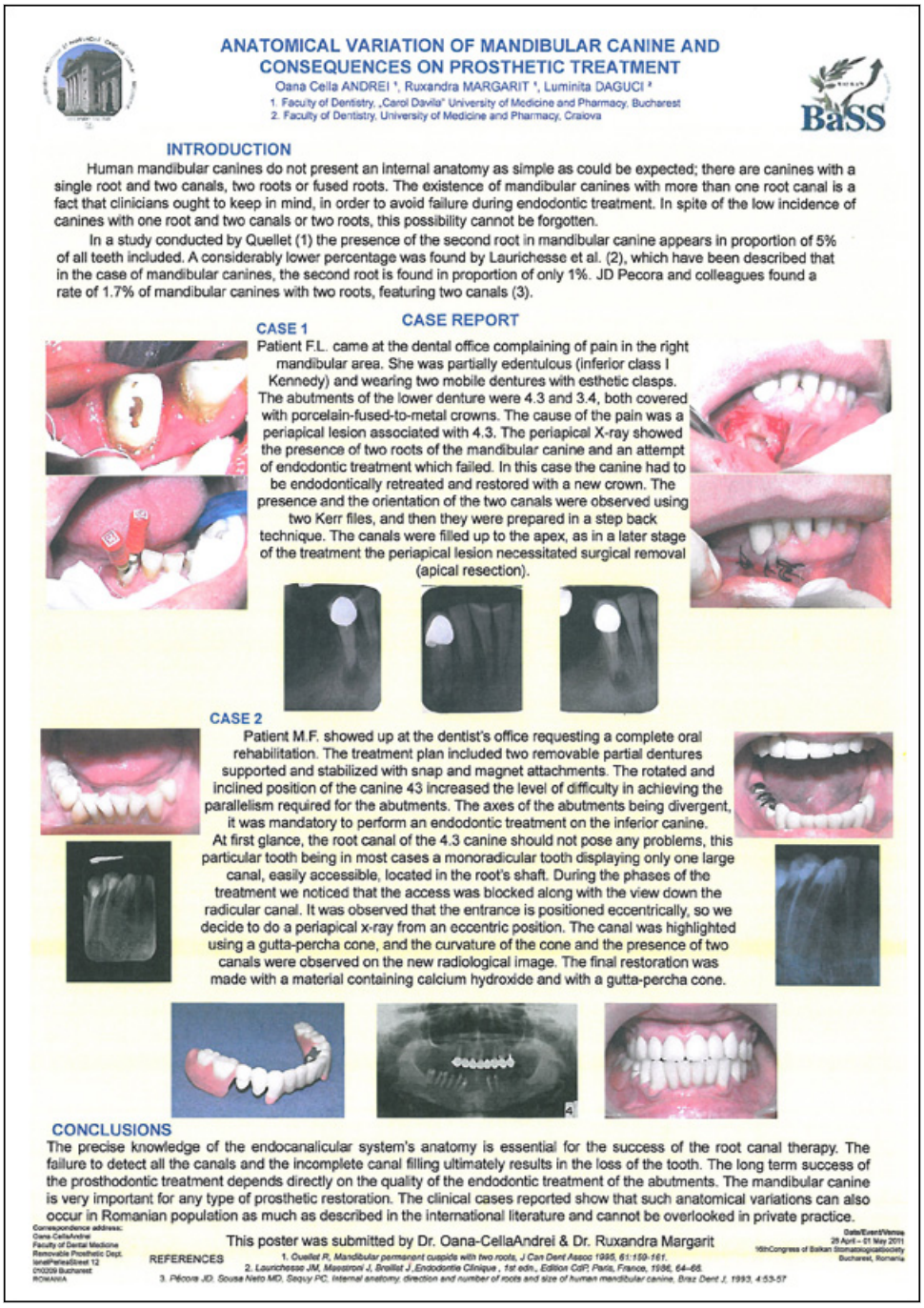
Poster Faksimile:



ANATOMICAL VARIATION OF MANDIBULAR CANINE AND CONSEQUENCES ON PROSTHETIC TREATMENT

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INTRODUCTION

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CASE REPORT

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CASE 2

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