

### MULTIPLE ROOT IN PREMOLAR TEETH

### PREMOLAR DİŞLERDE ÇOK KÖKLÜLÜK

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#### ABSTRACT

*A proper endodontic treatment requires both adequate knowledge of the possible modifications that might occur in the roots of teeth as well as basic morphologic root canal and sufficient experience to interfere with such cases. This case study has presented the root excesses in all the members of a family, supporting the thesis that root excess is genetic-related formation.*

**Keywords:** multiple rooth

#### ÖZ

*İyi bir endodontic tedavi için basit kök morfolojilerinin yanı sıra diş köklerinde bulunabilecek modifikasyonlar hakkında da bilgi sahibi olmak gerekir. Bu vaka çalışması kök fazlalıklarının genetic orjinli olabileceği tezini destekleyen bir ailenin tüm fertlerinin kök fazlalıklarını sunmaktadır.*

**Anahtar Kelimeler:** çok köklülük

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## INTRODUCTION

The objective of the endodontic treatment is to prepare the root canals and fill them in such a way as not to leak. It is known that apical leakage takes the lead among the causes of failure in the endodontic treatment (1). The factors that lead to leakage into the root canal in periapical tissues are that due to inadequate knowledge about the variations in the root canal system, some parts are left untouched during the preparation of root canals and accordingly canals are filled inadequately (2).

The research carried out parallel to the developments in the methods of examining tooth morphology over the last two decades have brought about a lot of innovations in larger details concerning the numbers of teeth roots and canals. It has been stated in the studies that teeth might as well show individual differences in terms of root canal morphology. It has also been reported that such factors as age, gender and race could be effective on this point (3-5).

To minimize the risk of failure in endodontic treatment, the dentist should not only be familiar with the basic knowledge of root canal morphology but also know the variations that root canal morphology can show. It is known that maxillary and mandibular premolar teeth are the most frequent causes of problems on account of the variations that root canal anatomy shows in endodontic treatment (6-11) In this case report, root excesses in the premolar teeth of all the members of a family have been presented.

## CASE REPORT

Periapical and orthopantomographic radiographies were taken from two twin daughters, P. L. and N. L., who were at the age of 23 and who applied to our clinic with the complaints of toothache in 1997. Upon determining root excesses through the radiographies, it was thought necessary to take their Radio Visio Graphy (RVG) for further examination and diagnosis.

The examination of P. L.'s RVG revealed 3 roots in the upper right 1st premolar tooth, 1 roots in the upper right 2nd premolar tooth, 3 roots in the upper left 1st premolar tooth, 1 roots in the upper left 2nd premolar tooth and 2 roots in the lower left 1st premolar tooth, 1 roots in the lower left 2nd premolar tooth, 2 roots in the lower right 1st premolar tooth and 1 roots in the lower right 2nd premolar tooth (Figure 1).



**Figure 1:** RVG appearances of P.L.'s premolars.

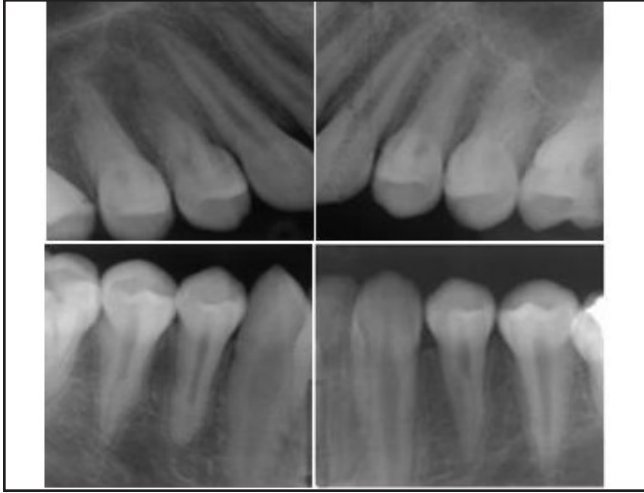
The examination of N. L.'s RVG revealed 3 roots in the upper right 1st premolar tooth, 1 roots in the upper right 2nd premolar tooth, 2 roots in the upper left 1st premolar tooth, 1 roots in the upper left 2nd premolar tooth and 2 roots in the lower left 1st premolar tooth, 1 roots in the lower left 2nd premolar tooth, 2 roots in the lower right 1st premolar tooth and 1 roots in the lower right 2nd premolar tooth (Figure 2).



**Figure 2:** RVG appearances of N.L.'s premolars.

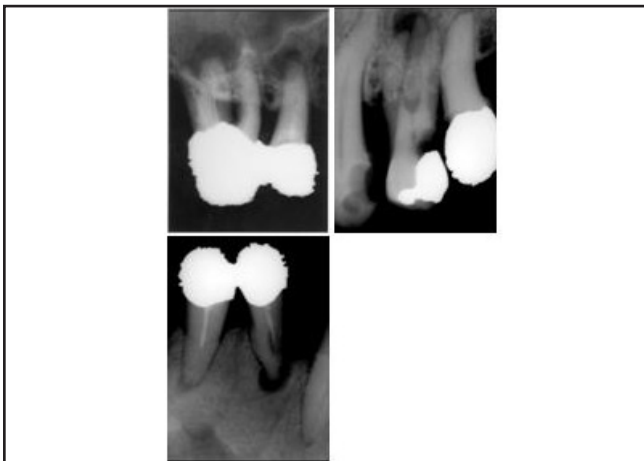
Following these observations, the other members of the family were called to the clinic to determine whether these root excesses were heretical or not. The anamnesis of the parents showed that they were relative to one another. Their 49-year old father, 45-year-old mother and 18-year-old brother, H. L., were examined for further diagnosis. The examination of H. L.'s RVG revealed 3 roots in the upper right 1st premolar tooth, 2 roots in the upper right 2nd premolar tooth, 2 roots in the upper left 1st premolar tooth, 2 roots in the upper left 2nd premolar tooth and 2 roots in the

the lower left 1st premolar tooth, 1 roots in the lower left 2nd premolar tooth, 2 roots in the lower right 1st premolar tooth and 1 root in the lower right 2nd premolar tooth (Figure 3).



**Figure 3:** RVG appearances of H.L.'s premolars.

The examination of the father's RVG revealed that the upper right 1st premolar tooth had been extracted. However, it showed 1 root in the upper right 2nd premolar tooth, 3 roots in the upper left 1st premolar tooth, 2 roots in the upper left 2nd premolar tooth, 2 roots in the lower right 1st premolar tooth and 1 root in the lower right 2nd premolar tooth. The father's lower left 1st and 2nd premolar teeth had been extracted (Figure 4). The decision about the father's teeth was total extraction for prosthetic treatment. The examination of the extracted teeth confirmed the above findings from his RVG.



**Figure 4:** RVG appearances of the father's premolars.

The examination of the mother's RVG revealed 1 root in the upper right 1st and 2nd premolar teeth, 3 roots in the upper left 1st premolar tooth, 1 root in the upper left 2nd premolar tooth and 1 root in the lower left 1st and 2nd premolar teeth and 1 root in the lower right 1st premolar tooth, 2 roots in the lower right 2nd premolar tooth (Figure 5).



**Figure 5:** RVG appearances of the mother's premolars.

## DISCUSSION

Researchers have carried out a lot of studies on the differences in tooth morphology and root excesses (2-16).

Looh12 reported that he determined the rate of one root as %49.4 and that of two roots as 50.6% but he did not meet any molar with three roots in his in vitro study, which covered the detection of 957 maxillary 1st premolars by direct eye and digital radiography method.

Pecora et al stated in their study that they found the rate of one root as 55.8%, that of two roots as 41.7 % and that of three roots as 52.5% (13).

Chappora et al reported that they determined the rate of one root as 40.2%, that of two roots as 56.2% and that of three roots as 3.3% in their in vitro study covering 150 maxillary 1st premolars (14).

Peccora et al determined the rate of one root as 90.3% and that of two roots as 9.7% in their study done with visual examination and digital radiography method on 435 extracted maxillary 2nd premolars (15).

In their intraoral examination, Sabala et al determined the rate of two roots in mandibular 1st premolars as 22.8%, that of two roots in mandibular 2nd premolars as 4.4% and that of one root with one canal and three roots as 0.8% in maxillary 1st premolars (16).

In their examination of intraoral radiographies of 400 black

and 400 white people, Trope et al determined the rate of two roots as 5% in mandibular 1st premolars of white people and as 16.2% in those of black people (3). They also found the rate of two roots as 1.5% in mandibular 2nd premolars of white people and as 4.8% in those of black people. In his study on 200 extracted mandibular incisors of Chinese people, Walker determined that root and canal excesses change racially (4).

Similarly, it was concluded in another study by Wasti et al that incidence of four root canals in mandibular and maxillary first permanent molar teeth of South Asian Pakistanis is a common occurrence (17). The distribution of the different configurations of root canal systems in this population differed from that in Caucasian groups as reported by some other researchers in the same study, suggesting that variations in root canal systems may be attributed to racial divergence (6,18-21).

Apart from such racial studies, there are also some others on gender factor in this incidence. In his in vivo study on 3202 maxillary premolars, for example, Aoki found the rate of one root as 55.4% in males and as 76.1% in females (5). He reported the rate of two roots as 22.5% in males and as 17.6% in females. However, Walker's and Trope et al's studies comparing the racial relationships and Aoki's study comparing the gender relationships in multiple root seem to be supportive of the thesis that root excesses may be hereditary (3-4).

Unlike the above-mentioned researchers, we did not carry out a study on the incidence of multiple roots. The reason why we wished to present this case report was, however, that we determined multiple roots in all the individuals of a family. Another reason was that we failed to see any study on the family members in literature.

The findings obtained in the present study are supportive of the thesis of the above-mentioned studies that multiple roots are caused by racial and hereditary factors. Therefore, our subsequent studies will rather focus on this connection.

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