Case Report

A rare case of maxillary central incisors with two root canals

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Abstract

Maxillary central incisors usually have one root canal. The cases with two root canals with type IV vertucci canal configuration are extremely rare. Internal morphology of the root canals is variable and often complex. Better understanding of root canal complex is very essential for a clinician to ensure proper treatment. Computed tomography plays an excellent role in diagnosing such anatomical variations.
Keywords: Maxillary central incisor, root canal, internal anatomy, tooth development.

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INTRODUCTION

Diagnosis plays an important role in the treatment plan. It is generally considered that a tooth with single root has single root canal.[1]However the internal anatomy of the tooth can present a number of variation, these are extremely rare and in most cases are associated with anomalous tooth development such as germination, fusion, dens invaginatus or presence of supernumerary root.[2]The incidence of an additional canal in maxillary central incisor is 0.6%.[3]The purpose of this article is to present and describe an unusual clinical case of a maxillary central incisor with two root canals, demonstrated by radiograph and computed tomography examination.

CASE REPORT

A 19 year old female patient with the chief complaint of fractured upper incisors with lip lacerations reported to the department of dentistry, Hassan institute of medical sciences, Hassan. On detailed examination right commisure of the lip was lacerated, multiple abrasions over the face was noted. Lacerated wound was sutured with 3-0 vicryl. On intraoral examination revealed a large Ellis class IV fracture in 11 and 21 and Ellis class II fracture in 12 and 22 (figure 1) Immediate vitality tests gave negative response. Patient was kept under observation. Intraoral periapical radiograph showed mild periapical changes in 21.It also revealed two canals in 11 and 21(figure 2),so for further confirmation computed tomography was taken which confirmed the presence of two canals in 11(figure 3). After three weeks, a repeat vitality test was performed which gave a positive result and the tooth was non-tender on percussion. Hence, esthetic management of the fractured tooth was planned, shade selection was done and restored with composite resin Filtex Z250 (figure 4). Patient was asymptomatic during 3 months follow-up.

DISCUSSION

Most commonly maxillary central incisors with single root has single root canal. There were few case reports describing an additional canal in maxillary central incisors[Sponchiado *et al.*;Genovese and Marsico;Lin *et al.*].[4]Sert and Beyrilli reported the presence of additional canal in 3 of the 200 maxillary central incisor examined using demineralization (~1.5%;Table 1).[5]

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Table 1: Table summarizing the demineralization studies on maxillary central incisors

Investigator	Report type	Examined teeth(n)	Incidence	
			Type II	Type IV
Vertucci[6]	Demineralization and staining	100	0	0
Sert and Bayirli[5]	Demineralization and staining	200	1	2
Weng *et al.*[7]	Modified canal staining	71	3	0

Figure 1

Figure 2

Figure 3

Figure 4

Legend

Figure 1: Ellis class IV fracture of maxillary central incisors

Figure 2: Intraoral periapical radiograph showing maxillary central incisors with two root canals

Figure 3: Computed Tomography image showing maxillary right central incisor (11) with two root canals

Figure 4: Maxillary central incisors and lateral incisors after composite restoration

The morphological variation are attributed to the disturbance in normal development of Hertwig's epithelial root sheath. A correct diagnosis before treatment is fundamental in teeth of this type. In this case patient's main concern was correction of fractured anterior teeth. Smile is an assets that a person can have. When teeth are malformed or fractured, patient feels conscious and avoids smiling and tries to cover up the teeth. Correction of this can produce significant change in appearance and develops confidence and social life.[8]Crown fractures involving enamel and dentin without pulp exposure are called uncomplicated crown fractures by Andreasen[9]and class II fractures by Ellis.[10]The main objective of treating teeth with crown fracture is pulp protection.[11] Esthetic dentistry differs from restorative dentistry in this the application of restorative techniques purely improve the appearance while not necessarily improving function. The prognosis of teeth with crown fracture not involving pulp is usually good.[12]

CONCLUSION

It is important that dentists consider the existence of anatomical variations of root canal system, and that these variations can also be found in the maxillary central incisors

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