

RETREATMENT OF A MAXILLARY LATERAL INCISOR WITH TWO CANALS ASSOCIATED WITH BONY DEHISCENCE: AN ENDO-PERIO CASE REPORT

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ABSTRACT

A 25-year old female was referred with gingival recession and pus discharge associated with bony dehiscence in relation to previously root canal treated maxillary left lateral incisor. Radiographic examination revealed presence of a second canal which was left untreated in the previous treatment which could be the possible cause of treatment failure and development of bony dehiscence. During re-treatment, the second canal was located, cleaned and shaped and obturated and the bony defect was treated with free gingival graft. This case report demonstrates the need for greater attention in treating the root canal of maxillary lateral incisors due to its variations in root canal morphology and also the need for thorough evaluation of good quality pre-operative radiographs taken in different angulations to avoid such mishaps. This case is unusual because considerable research has reported that these teeth can only have a single canal.

KEY WORDS : Maxillary lateral incisor, Bony dehiscence, Missed canal, Retreatment, Root canal variations.

INTRODUCTION

Anatomical studies have shown that maxillary lateral incisor usually presents with a single canal.¹⁻³ Some of the researchers^{1,4,5,6} reported that these teeth have only one root, with 100% of them having single anatomy. Approximately, 6.6% exhibited 2 or more canals. However numerous case reports demonstrate significant variability in canal anatomy. Other studies have shown displacement of the root apex and apical foramen.⁷ These anomalies pose a challenge even to the most experienced clinician in treating these teeth.

The following case describes an endodontic mishap in a maxillary left lateral incisor with a missed canal that was not negotiated during previous treatment which is considered to be the possible cause of bony dehiscence and its correction.

Case report

A 25-year old female patient was referred to the Department of Conservative Dentistry and endodontics with the chief complaint of pus discharge and root exposure in relation to upper front tooth. Patient gave the history of root canal therapy 4 years back. She did not give the history of trauma to that tooth. Medical history revealed that she is a known chronic asthmatic patient and is under medication for the same. Clinical examination revealed that the maxillary left lateral incisor was

associated with bony dehiscence (**Fig.1**). Tooth was neither tender to percussion nor to palpation of associated buccal mucosa. Her oral hygiene was good and no local factors such as plaque and calculus were found. No distinct tooth mobility detected. Periodontal examination revealed recession of gingiva upto the apical third of the root.

Intra oral periapical radiograph demonstrated radiolucent area on mesial side of lateral incisor extending upto the apical third. It also revealed poor obturation of the lateral incisor (**Fig.2**).

Based on the radiographic interpretation, we came to a provisional diagnosis of chronic apical periodontitis leading to the development of bony dehiscence. Patient was informed about the doubtful prognosis of the tooth and consent to the re-treatment was obtained.

Endodontic retreatment was initiated after administering local anaesthesia using 2% lidocaine (Lignox, Warran). Rubberdam was not applied because patient was chronic asthmatic, but all the precautionary measures were taken. Many studies have shown that rubberdam is contraindicated in chronic asthmatic patient.⁸ Temporary cement was removed from the lateral incisor and improved access was prepared for finding all possible variations. Then the guttapercha was retrieved and careful examination and negotiation revealed



Fig.1. Bony dehiscence of 22



Fig.2. radiograph showing improper obturation



Fig.3. presence of second canal in 22



Fig.4. Retreatment and obturation



Fig.5. Grafting of the dehiscence after endodontic treatment



Fig.6. Photographs post treatment follow up after 1 year.



Fig.7.



Fig.8.

Fig 7. And Fig.8. Follow up radiographs after 1 year

second canal in the maxillary lateral incisor (**Fig. 3**). There was slight purulent discharge from the canals. Radiographic examination revealed it to be a type III vertucci's root canal anatomy(1-2-1).

After working length determination, the canals were cleaned and shaped using stainless steel flexofile (Mailleferre Dentsply, Ballaigues, Switzerland) and irrigated thoroughly with 3% sodium hypochlorite, 2% chlorhexidine (Balas Dental Products, Chicago, IL) and saline. Calcium hydroxide (Roth International Ltd, Chicago, IL) was placed as an intracanal medicament and access cavity sealed with cavif. Patient was recalled after 1 week for re-evaluation and consultation with periodontist. Inter-appointment dressings were given for 3 weeks. After 3 weeks, patient was asymptomatic and the two canals were dry and ideal for obturation. Then the tooth was obturated using lateral condensation technique with guttapercha (Dentsply Tulsa Dental) and Kerr EWT sealer (Kerr SybronEndo) (**Fig.4**). After thorough periodontal and radiographic examination, considering the amount of bone loss around the root of lateral incisor, the periodontist recommended correction of the bony dehiscence by placement of free gingival graft. After the endodontic treatment was completed, periodontal surgery was done and the defect was filled with the graft (**Fig.5**). Patient was asymptomatic during recall visits and 1 year follow-up photograph was taken (**Fig. 6**). one year follow-up radiographs taken in different angulations revealed progressive healing (**Fig.7** and **Fig. 8**).

Discussion

Maxillary lateral incisors are located at a site of high embryological risk. Several anomalies of development were found in these teeth i.e presence of two roots as a result of fusion/germination, dens invaginatus, radicular grooves, talon cusp and peg shaped^{9,10}. Root canal therapy is not always easy. Peikoff and Trott reported an endodontic failure in a maxillary lateral incisor with an accessory root and radicular groove¹¹.

In the present case report the tooth has vertucci's type III root canal anatomy(1-2-1). Table 1 shows previous anatomical studies on root canal configuration according to vertucci in maxillary lateral incisor.

Due to the untreated second canal during previous endodontic therapy, there was significant amount of bone loss around the root of the lateral incisor which has led to bony dehiscence. This is primary endodontic lesion with secondary periodontal involvement.

The tooth now requires both endodontic and periodontal treatment. If the endodontic treat-

Table 1. Case reports of apical canal configurations for maxillary lateral incisors

AUTHORS	1 CANAL	2 CANALS	3 CANALS
PECORA ET AL ¹²	-	X	-
THOMPSON ET AL ¹³	X	-	-
FABRA-COMPOS ¹⁴	-	X	-
CHRISTIE ET AL ¹⁵	-	X	-
WALVEKAR ANDBEHBEHANI ¹⁶	-	-	X
COLLINS ¹⁷	-	X	-

* Two canals join into one

ment is adequate, the prognosis depends on the severity of the marginal periodontal damage and the efficacy of periodontal treatment. With endodontic treatment alone, only part of the lesion will heal to the level of the secondary periodontal lesion.

Detection of the second canal during previous endodontic therapy might have avoided the bone loss and formation of dehiscence. In addition to standardized radiographs, computerized digital radiography, cone-beam computed tomography, and high-resolution magnification has increased the ability to clinically determine the presence of additional canals and in turn to prevent treatment failures.

CONCLUSION

This case report demonstrates the need for greater attention when treating the root canal of maxillary lateral incisors and also the need for developing quality radiograph at various stages of endodontic therapy and their thorough evaluation to prevent mishaps. It is also important to bring awareness among the general dental practitioners that the truism and statistics of 100% single rooted incisors is not necessarily true.

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