CASE REPORT

ENDODONTIC AND ESTHETIC MANAGEMENT OF LATERAL INCISOR- A RARE CASE REPORT

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ABSTRACT

Complete debridement and disinfection of a root canal is essential for attaining satisfactory results following endodontic therapy. Anatomic variations such as increased number of roots, increased number of canals within a single root or increase in complexity of the root canal system present challenges to attaining this goal. In this era of technological advances use of advanced imaging modalities such as cone beam computed tomography (CBCT) allows one to accurately locate any anatomic aberrations, increasing the rate of success of non-surgical root canal therapy. Certain factors such as malpositioning of teeth, presence of fused teeth may complicate post endodontic rehabilitation. This case report highlights the restorative

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INTRODUCTION

Missed canals are one of the well-known reasons for endodontic failures, as it acts as a source of necrotic materials, microbes and their products.[1] A good knowledge of the root canal morphology is essential for locating all the canals, occasionally however unusual root canal morphology may be encountered. Reported incidence of an additional canal in the maxillary central incisor is said to be around 0.6%.[2] These anomalies in root canal morphology are said to occur due to disturbances in the development of Hertwigs epithelial root sheath (HERS). Location of the main canal away from the centre of the tooth indicates presence of an accessory canal in anterior teeth. The most common additional aid to detect additional canals is the use of angulated radiographs (at 20-40 degrees), these however are said to be effective in locating canals which are widely separated.[3,4] Other factors such as distortion of radiographs and superimposition of anatomic structures can confuse the operator. More advanced imaging modalities such as CBCT may overcome such problems and allow for accurate localisation and treatment of aberrant root canals. A 20 year old patient presented to the dental OPD with chief complaint of pain and pus discharge in relation of upper front teeth. Patient reported history of fall 3 years back following which central incisor became discoloured. Due to an anomalous tooth size – jaw size relation there appeared to be crowding of her anterior teeth. An OPG X-ray indicated periapical radiouluscency wrt upper maxillary central and lateral incisor. Vitality testing confirmed that these teeth were indeed non vital. The x-ray revealed anomalous root structure in relation to the lateral incisor. But this could not be clearly demarcated due to the overlap between the incisors and the two dimensional nature of a radiograph. For further evaluation of this unusual morphology, a CBCT imaging of the tooth was advised. An informed consent was obtained from the patient, and a multi-slice CBCT scan of the maxillary left side was performed (Kodak 9000 3D) with a tube voltage of 80 KV and a tube current of 8 mA. This revealed the presence of two canals in the lateral incisor. The teeth were anaesthetised with 1.8mL of 2% lidocaine containing 1:80,000 epinephrine (Lignox 2%, Indoco Remedies Ltd., Mumbai, India) under rubber dam isolation. A conventional endodontic access cavity was prepared. Clinical evaluation of the internal anatomy of the lateral revealed 2 small hemorrhagic points. There seemed to be 2 distinct orifices working length was estimated by an electronic apex locator (Propex II, Dentsply) and confirmed with a radiograph and was followed by cleaning and shaping upto F3. CaOH2 intracanal medicament was applied. An interim restoration of Cavit (3M Espe, Seefeld, Germany) was placed in the pulp chamber to seal the access cavity.

DISCUSSION

Maxillary lateral incisors are said to be single rooted teeth with a single canal. Variations from this standard are rare. Studies based on radiography alone or those using radiopacifers have shown differing results. This

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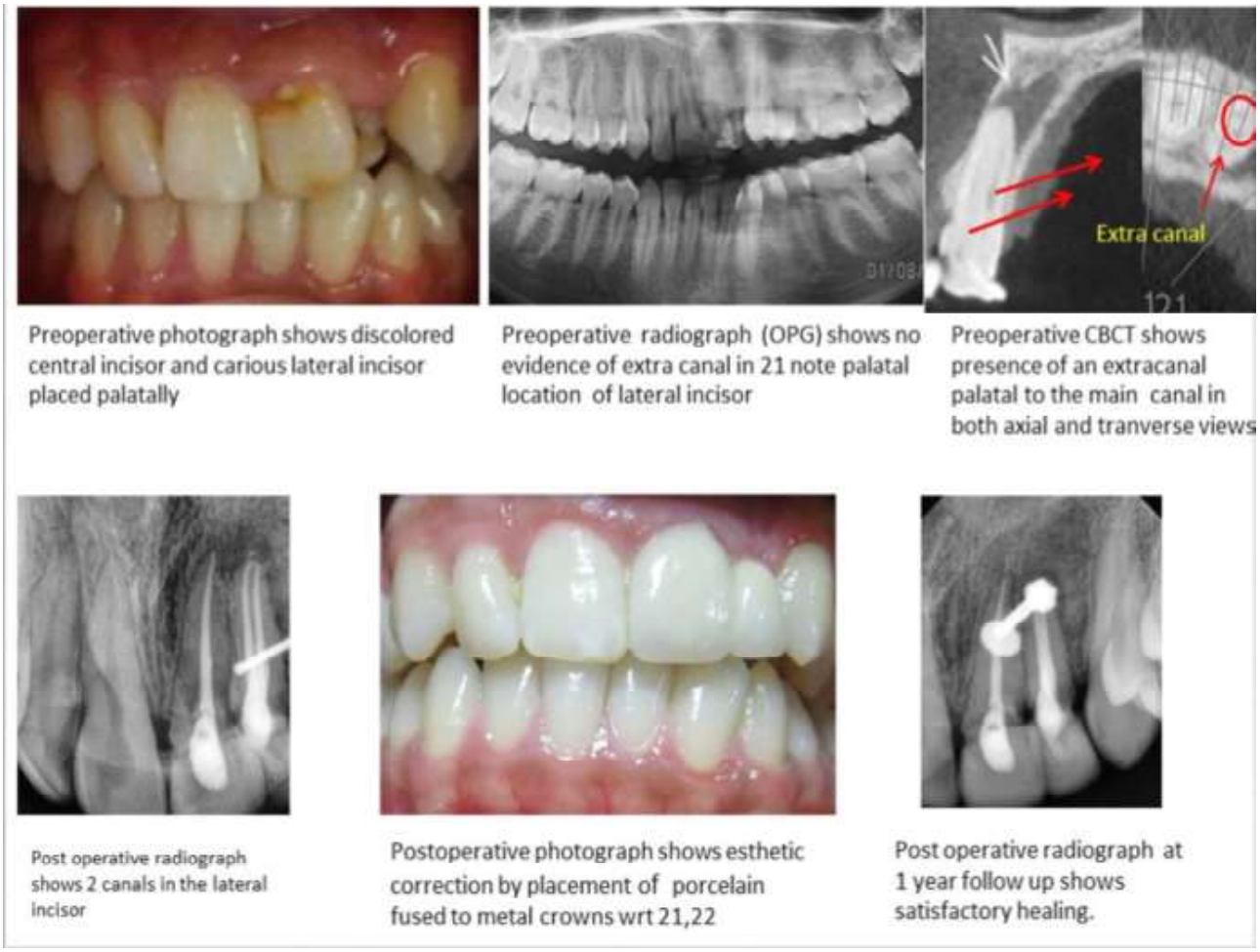

Fig. 1

may be due to the obliteration of any accessory canals following deposition of secondary dentin in older patients, this also highlights the importance of searching for an additional canal in younger age-group.[5] Keeping in mind the location of the tooth in the esthetic zone of the mouth attempts must be made to retain this tooth as long as possible. To ensure the long-term prognosis of the same, it is imperative that the morphology of the root canals and their numerous variations areassessed before initiating root canal treatment.[6] Esthetic correction of malpositioned tooth is a challenging proposition. It can additionally, lead to increased susceptibility to dental caries and periodontal diseases As the patient was unwilling to undergo orthodontic correction for the blocked out left lateral incisor, restorative correction of the same was attempted. Presence of additional root canals can be confirmed using multiple preoperative angled radiographs along with careful visualization and probing of the pulp chamber floor. Indistinct X-ray images modified coronal access, and unusual location/ size of canal openings are a few simple indicators of likely aberrant anatomy. In the current case, both conventional and digital radiographs were unable to provide definitive information on the anatomical variations. The outline of the palatal canal could not be delineated clearly on the radiographs but surely indicated presence of some aberrant anatomy.

The higher accuracy of CBCT has greatly facilitated three-dimensional imaging and visualization of unusual anatomy and/or additional root canals that can often be missed on routine radiographs. CBCT compared to conventional CT scans is advancement in CT imaging that provides relatively high-spatial resolution of anatomic structures with much reduced patient radiation dose.

Additionally, CBCT scanners use simpler, less complicated, and therefore, less expensive hardware (X-ray source and detector) making it quite popular as an office diagnostic tool. Case reports in literature that have reported using CBCT for diagnosis of additional palatal canals in maxillary first molar are summarized in[6], One disadvantage of CBCT is the scattered radiation that produces streaking image artifacts, which can prevent diagnostic accuracy. Untrue CBCT images were observed near metallic intracanal posts. Previous reports have shown contradictory findings between CBCT

images and clinical aspects a big caution to be kept in mind while interpreting CBCT images is the uncommon occurrence of gross anatomic variations which cannot be correlated clinically with the help of a surgical operating microscope.[7]

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