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RESEARCH ARTICLE

ENDODONTIC RE-TREATMENT OF MAXILLARY SECOND PREMOLAR WITH RECURRENT SINUS TRACT: A CASE REPORT

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ABSTRACT

Clinical case of successful diagnosis and management of maxillary second premolar with abnormal and very rare morphology, then description of non- invasive treatment methods by using an optical microscope, and control memory files.

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INTRODUCTION

Early detection of anatomic variations during diagnosis can lead to critical changes in the treatment strategies, and ensuring better predictability of the outcome of treatment (1), because undetected or hidden extra roots and canals can lead to failure of root canal treatment (2). Today development in magnifying visual aids and superior lighting can serve a non-invasive method for detection extra canals and abnormal morphology (3). The morphology of the maxillary premolars is complex, and the maxillary second premolar is the one that presents the greatest complexity, since it is the only tooth that can show the eight configurations of the Vertucci classification, according to this study the occurrence of one canal with one apex is 75% and two canals at the apex are 24%. The presence of three canals at apex was found to be only 1% (4). According to Lozano MA *et al* 1999, by varying the horizontal angle 20° and 40° the number of root canals observed in maxillary first and second and mandibular first premolars coincided with the actual number of canals present (5). The daily development of NiTi endodontic files used in rotary systems allows biomechanical preparation in a shorter period of time than the conventional manual files (6).

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The aim of this article to report a clinical case of successful diagnosis and management of maxillary second premolar with abnormal and very rare morphology, then description of non-invasive treatment methods by using an optical microscope, and control memory files.

CASE REPORT

A 54-year-old female diabetic patient (ASA III), presented at the Dental Clinic of Alnoor Specialist Hospital, reporting swelling in upper right side since three months ago. Clinical examinations revealed maxillary right second premolar covered with crown, and buccal sinus tract. Tooth was non tender to percussion, exhibit normal mobility, and normal probing depth. Radiographic examination revealed distal secondary caries, perfectly obturated two root canals, widening of periodontal ligament space, and sinus tract extending from mesial surface of the root (figure1,2). Based on these findings, a diagnosis of previously treated with chronic apical abscess was made. Previous Endodontic treatment was carried out by experienced endodontist in the same center. Unfortunately, CBCT not available in the center, so intraradicular approach was discussed with the patient because coronal leakage was suspected due to distal caries as shown on radiographs. Porcelain Fused to metal crown sectioned, excavation of distal caries with low speed round bur (CARIESECTOMY BUR #3).

Fig.1,2. **periapical radiographs showing distal secondary caries, widened periodontal ligament space and lamina dura, adequate obturation and sinus tract extending from apical third of mesial surface of the root**

Rubber Dam isolation, and removal of coronal composite restoration, then careful inspection of gutta percha under the microscope for detection of any signs of coronal leakage or missed canal but it was very clean and good adapted, after that temporization the tooth with Cavit. As the patient is poorly controlled DM we discussed another treatment option which was intentional re-implantation, the patient approved and another appointment was scheduled. Two weeks later at the second appointment, one mesial and one distal shifted radiographs performed, then careful interpretation Radiographs showing shifting of obturation material a missed canal was suspected and the patient informed about that which may alter the treatment plane and outcomes (Figure 3,4)

Fig. 3. Mesial shift periapical radiograph

Fig. 4. Distal shift periapical radiograph

Cavit removed, after deep carful inspection of pulp chamber floor using microscope a small non negotiated canal detected. After that removal of GP from buccal, palatal canals using Profile #25 taper 6%, and the third palatal canal explored by ISO size 10 files, then determination of working length using Apex locator (IPex II) and radiograph. Chemomechanical preparation of all canals was started using 5.25% sodium Hypochlorite as the main irrigant. During shaping of palatal canals with Pro Taper universal S1, S2(DENTSPLY MAILLEFER) they joined together to become Vertucci Type V, now the canal become more difficult for cleaning, finishing and obturation. Under high magnification and by using ProTaper Gold rotary file due to its memory control and metallurgic properties the canal was prepared successfullyThe all canal dried with paper point, master cone fitting(figure 5),and obturation with warm vertical compaction technique using AH plus sealer, then the access cavity restored with Glass Ionomer Cement (Riva self cure) (figure6),and referred back to restorative clinic for final restoration and prosthetic treatment

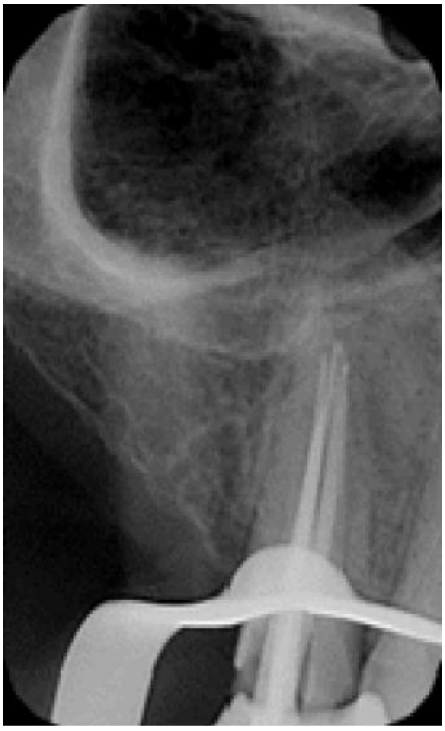

Fig.5. Master cone periapical radiograph

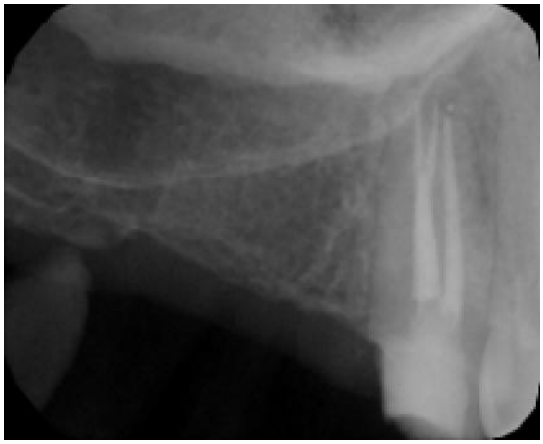

Fig. 6. periapical radiograph showing obturation of all canals and GIC restoration

DISCUSSION

The main goal of endodontic therapy is throughout cleaning and shaping of pulpal spaces and three dimensional obturation with inert material (7), and extra root canals, which are left untreated accounts for many of the endodontic failures (2). One of the most important diagnostic aid for detection extra root and root canals a radiograph of good quality with the parallel technique, mesial and distal shift(4), and must performed before starting treatment to get the correct diagnosis and appropriate management. The presence of a third root canal should also be suspected if the working length radiograph or obturation material totally displaced in either mesial or distal direction. Cone beam computed tomography is also recommended to identify unusual anatomy (8),but unfortunately it was not available at that time. According to Karapinar-Kazandag *et al* (9), the optical microscope can provide high magnification and illumination which improve visualization of pulp chamber and root canals. Many Literatures showed a higher variation in the root canal morphology of the maxillary second premolar (10,11,12). Sometime the practitioner become frustrated and disappointed if the reason of the disease does not identified, so it preferable to provide enough time for discussion and interpretation of radiographs and all available information.

Conclusion

Careful interpretation of varied angle preoperative radiographs is mandatory if a missed canal or abnormal anatomy is suspected to avoid wrong diagnosis and postoperative complications. New rotary file system with control memory is preferable in canal with difficulty access.

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