


CASE REPORT

Palatal-Root Resection in Endodontic–Periodontal Combined Lesions: A Case Report

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ABSTRACT

Endodontic-periodontal combined lesion is a clinical dilemma because establishing a differential diagnosis and predicting a prognosis are difficult. A correct diagnosis is sometimes difficult; an accurate knowledge of the etiologic factors is essential for adequate choice of treatment. The management of endodontic-periodontal combined lesion demands both endodontic and periodontal therapy. Root resection therapy is one treatment option for preserving multirooted tooth with furcation involvement. This case report reviews root resective therapy and the concomitant endodontic management as a treatment option for an endo-periodontal lesion in periodontitis patients in maxillary molar. The role of root resection and treatment strategy are also discussed based on a review of the endodontic and periodontal literature.

KEYWORDS: Endodontic-Periodontal Lesion; Furcation Involvement; Root Resection.

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INTRODUCTION

Endodontic-periodontal combined lesion is a clinical challenge because establishing a differential diagnosis and predicting a prognosis are difficult. Anatomical and functional interdependence between the pulp and the periodontium was first described in 1964 (1). The etiology can be either endodontic or periodontal. The classification of endo-perio lesions by Simon et al. is that primary endodontic diseases, primary periodontal diseases and combined disease including primary endodontic disease with secondary periodontal involvement, primary periodontal disease with secondary endodontic involvement and true combined disease (2). Currently, accordingly to the new classification system of periodontal diseases and conditions from the American Academy of Periodontology and the European Federation of Periodontology 2018, endo periodontal lesion should be classified according to signs and symptoms that have direct impact on their prognosis and treatment, such as presence or absence of fractures and perforations, presence or absence of periodontitis, and the extent of the periodontal destruction around the affected teeth (table 1) (3). Therefore, diagnostic steps should be based on thorough patient-reported dental history, intraoral examination (visual inspection, palpation, percussion, pulp vitality testing and periodontal assessment) and

radiographic examination. The treatment of endodontic-periodontal combined lesion demands both endodontic and periodontal therapy. Root resection therapy has been widely used in the treatment of furcation involvement of a multirooted tooth. This case report reviews root resective therapy and the concomitant endodontic management as a treatment option for an endo-periodontal lesion in periodontitis patients in maxillary molar. The role of root resection and treatment strategy are also discussed based on a review of the endodontic and periodontal literature.

CASE REPORT

A 50-year-old female patient was referred to the Department of Periodontology at the center of consulting and dental treatment, Ibn Sina hospital university health center in Rabat, Morocco, with a complaint of pain in the upper left molar region with gingival reddening, discomfort on chewing and swelling since 5 days. Medical and dental history was not contributory. Intraoral examination showed a poor oral plaque control, gingival recession on palatal in association with 26, which was tender on both horizontal and vertical percussion, Pulp testing confirmed that the was nonvital. 18, 17, 12, 22, 27, 35, 45, 47,48 was found missing.

On periodontal examination, the plaque index by Silness and Loe (PI) (4) were 1,65 and gingival index (GI) (5) were 1.75. There was a localized deep periodontal pocket of 10 mm and a 6 mm gingival recession on palatal of 26 (figure 1).



Figure 1 : Preoperative Clinical Photo Palatal Side

The tooth mobility was grade II in Miller's classification (6) and periodontal probing through the furcation showed increased probing values with grade III furcation defect as per Glickman's Classification of furcation involvement (7). The rest of the dentition had normal periodontal

probing values with clinical attachment loss varied from 3 to 7mm.

Radiographic examination revealed the absence of any carious lesion. The radiolucency involves furcation area and periapical region of mesial, distal and palatal root,



extruding along the lateral surface of root which is continuous with periodontal space, and there was horizontal bone defect around the palatal root (figure 2).

Figure 2: Preoperative Radiograph

A diagnosis was an endo-periodontal lesion in periodontitis patients, and no other risk factors were associated (figure 3).

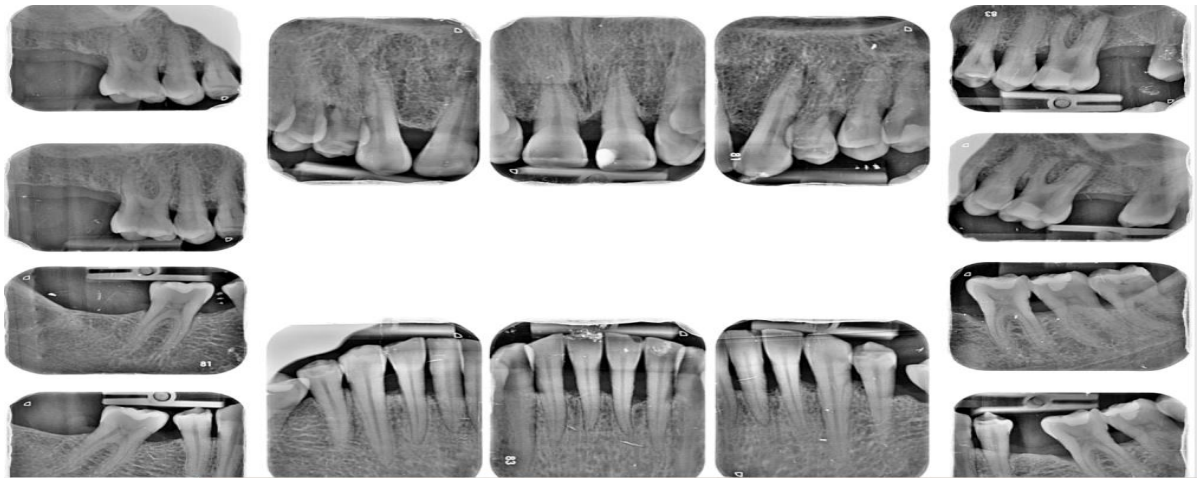


Figure 3: Initial periapical radiographs

Treatment planning was done taking into consideration that the tooth was nonvital with a grade III furcation involvement (palatal root) as well.

To manage the emergency, the patient was referred to the department of conservative dentistry to realize endodontic treatment (figure 4).

After then a nonsurgical periodontal therapy based on motivation and meticulous oral hygiene instruction, in combination with a full-mouth scaling and root planning. The antiseptic based on 0.12% chlorhexidine mouthwash to be applied twice a day during nonsurgical treatment. Three months after the periodontal treatment (etiologic phase), the clinical evaluation noted a reduction of plaque and gingival index scores which become respectively, PI: 0.3 and GI: 1.5. It was observed that there was no change in the periodontal measurements. Therefore, periodontal surgery was planned for treatment of furcation defect.

Under local infiltration anaesthesia, a palatal full-thickness flap was elevated from 25 to 28. After removal of granulation tissue, debridement was done at the defect area using Gracey's curette 11/12 and 13/14. Also, thorough scaling and root planning was carried out on the exposed root surface area of the defect.

There was a severe bone loss beyond the apex of the palatal root. However, no buccal furcation involvement between mesial and distal root was found. the extent of furcation involvement was detectable during surgery (figure 5). So palatal root resection is indicated and odontoplasty has eliminated all undercuts (figure 6).



Figure 4: Obturated 26 with radiolucency in furcation area still evident after 3 months



Figure 5: Flap Retracted and Furcation Defect with 26



Figure 6: the Postoperative Radiograph Showing a Palatal Root Resection

Then the flap was repositioned and secured with 5-0 monofilament suture. The patient was advised to brush at the surgical site using a postsurgical brush for 2 weeks and was also advised to utilize mouthwash for 3 weeks. The sutures were removed 10 days after surgery (figure 7). The patient was put on regular visit at 1, 3, 4, and 6 months. Tooth 26 had 2–3 mm probing depths and no mobility at the 8-month follow-up (figure 8).



Figure 7: Postoperative Photo Showing a Healing after 15 Days



Figure 8: The Presence of Healthy Soft Tissues after 8-Months Follow-Up.

DISCUSSION

In combined endodontic-periodontal lesions, pulpal and periodontal tissues are affected simultaneously. Those teeth usually present severe and rapid destruction of supporting tissues beyond the apex. Thus, they are classified as having a hopeless prognosis (8). Numerous therapeutic approaches have been introduced to treat furcation-involved molars, including nonsurgical and surgical mechanical debridement, furcation plasty, tunneling procedures, regenerative therapy, and resective surgical procedures.

Root resection refers to the removal of a root at the furcation or apical to it, without removal of the crown, usually on maxillary molars (9). Root resection was the treatment of choice in this case report after root canal treatment. Farrar introduced this root-resection procedure, which has been used to treat Class II and III furcation-involved molars. Root-resection therapy, aims to eliminate the plaque-retentive niche and to establish a morphology that facilitates good oral hygiene (10).

Indications for root resection listed by Rosenberg et al. (11) was a grade II or III horizontal furcation involvement with a negligible vertical component of osseous loss on the roots to be retained, severe caries that extends into the root and/or the furcation area, an endodontic perforation such as perforation of the pulp chamber floor or a lateral

perforation of a root canal and a root fracture that involves only one root.

The prognosis of resection root has been well documented in the literature, but the reported survival rates vary greatly when comparing different studies. Svardström and Wennström (12) reported the failure rate of 11% for the 10 years period, however, agrees with that of incidence of failure reported in the study of Hamp et al. where they concluded a failure rate of 8% with a follow-up of 7 years (13), and in a recent study by Carnevale et al. described a tooth loss of only 6% in 175 molars treated with root resection during 10 years (14). On the other hand, Langer and Bühler (15,16). concluded that 10 years outcome of root resection therapy was less favorable with a significant finding of 32% to 38% of the teeth that failed during the observation period. Blomlöf et al. (17) reported that a survival rates were 68% for root-resected molars over a 10-years period. Dannewitz et al. in two studies established in 2006 and 2016 reported a failure rate of 40% and 38,6% respectively. The failure rate of molars after root resective treatment in 2016 was comparable low to the results presented by the same group in 2006. They explained the high failure rate of this treatment procedure in this analysis by the fact of maintaining some teeth with questionable prognosis by root resection and performing root resective mostly therapy in molars with advanced periodontal destruction not suitable for a regenerative approach (18,19). A retrospective study over 30 years calculated the cumulative survival rate of molars after root resection, the results showed that it goes from 98.9% after 5 years, to 90.6% after 10 years, 68.9% after 15 years, 43.6% after 20 years and 34.9% after 25 to 30 years. Lower molars showed a survival probability of almost 80% even 20 years after root resection, but almost all maxillary molars were lost after the resection of the palatal root in the same study (20).

However, most of the extractions reported for teeth after root resection in different studies are caused by reasons other than periodontal disease recurrence such as: patient-related factors (age, female gender, smoking, and diabetes) and tooth-related factors (periodontal bone loss, furcation involvement III, endodontic treatment, and residual probing pocket depth) (9, 14,15, 16, 19). It should also be noted that all studies reported regular supportive periodontal therapy was the key factor for long-term tooth retention (21, 22, 23, 24).

Nowadays to extract the tooth and replace it with a dental implant have increasingly replaced resective therapy as an approach for maintaining molars with advanced furcation involvement in clinical practice. While the survival of implants and root-resected molars over a period of 10 years placed in the molar region is not significantly different, as demonstrated by Hermann and his collaborators (20). Fugazzotto and al. reported a 15-year cumulative success rate of 96.8% for root-resected molars and 97% for molar implants (25). In contrast to these studies, Kinsel et al. reported failure rate was 15,9% and

3,6% respectively for root-resection therapy and single implants. Zafiroopoulos and al. reported respectively 32,1% and 11,1% of post-treatment complications in hemisected molars and in molars implants over 4 years (26). Finally, comparisons between the efficacy of resective and molar implant therapies are difficult because all studies in the literature does not address the question of treatment section.

CONCLUSION

Combined lesion, either primary periodontal or primary endodontic in origin, must be treated by the root canal and periodontal treatment. Endo-periodontal lesions associated with periodontal destruction that secondarily affects the root canal may develop in subjects with periodontal health or disease (27,28). The periodontal condition has an important impact in the prognosis of these lesions because of the striking changes in the oral ecology of subjects with periodontal diseases (29). However, endodontic therapy would result only in resolution of the endodontic component of involvement and would have a little effect on the periodontal lesion (30). Root resection should always be considered in cases of advanced furcation involvement, especially if it is limited to a single root. Long-term survival of resected molars must take into consideration the tooth treated, the root resective procedure performed, the endodontic and restorative therapy. The Present case examined the outcomes of endodontic and root resection performed on multirrooted a hopeless prognosis affects by endodontic periodontal lesions with attachment loss to the apex. An improvement in clinical and radiographic parameters was observed after endodontic and periodontal therapy.

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AUTHORS' CONTRIBUTIONS

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COMPETING INTERESTS

The authors declare no competing interests with this case.

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PATIENTS CONSENT

Written informed consents were obtained from the patient for the publication of this case report.

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