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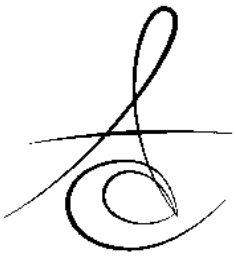

MULTIDISCIPLINARY TREATMENT OF AN ENDO-PERIO LESION WITH SPLINTING: A CASE REPORT

ENDO-PERİO LEZYONUN SPLİNTLEME YARDIMIYLA MULTİDİSİPLİNER TEDAVİSİ: BİR OLGU SUNUMU

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ABSTRACT

Akut ve kronik formdaki pulpal ve periodontal hastalıklar için cerrahi ve cerrahi olmayan tedavi prosedürleri mevcuttur. Bu olgu sunumunun amacı mobilitesi olan periodontal-endodontik lezyonlu bir dişin multidisipliner tedavisini bildirmektir. 42 yaşındaki bayan hastanın periodontal muayenesinde apse, derin periodontal cepler ve vitalite kaybı tespit edilmiştir. Kök kanal tedavisinden sonra intrakoronal splint yerleştirilmiş ve periodontal tedavi uygulanmıştır. 9.ayda alınan periapikal ve panaromik radyograflarda mandibular sol birinci premolar ve mandibular sağ ikinci molar dişlerde artmış radyoopasite tespit edilmiştir. Tüm ağız değerlendirmesinde ise 3mm den fazla sondlanabilir cep derinliğine rastlanmamıştır. Periodontal tedavi ile birlikte splint uygulanması, fonksiyonun kazanılması ve kemik iyileşmesi açısından ileri kemik kaybı ve mobilitesi olan dişlerde tedavi protokolü olarak tercih edilebilir.

Anahtar Kelimeler: Diş mobilitesi, Periodontal Splintler, Alveoler kemik kaybı, Kök kanal tedavisi

ÖZ

Various therapeutic options, including surgical and non-surgical techniques, are available for acute and chronic forms of pulpal and periodontal diseases. The aim of this case report is to present a case involving the multidisciplinary treatment of a patient with a periodontal-endodontic lesion with mobility. A 42-year-old woman with an abscess, deep periodontal pockets, and non-vital teeth was treated using a multidisciplinary approach. After root canal treatment, an intracoronal splint was constructed and periodontal treatment was performed. An increase in radiopacity on the mandibular left first premolar and mandibular right second molar were detected via panoramic and periapical radiographs taken nine months later. No probing depth greater than 3mm was clinically detected anywhere around the patient's teeth. Using periodontal treatment with splinting is an important treatment protocol option for improving tooth function and facilitating bone healing in teeth with advanced bone loss and mobility.

Keywords: Tooth mobility; Periodontal Splints; Alveolar bone loss; Root canal therapy

INTRODUCTION

Periodontitis can extend destructively into the periapical region and may lead to pathological pulpal changes and other symptoms not typically seen with periodontitis. Primary periodontal lesions with secondary endodontic involvement involve periodontal inflammation and bone loss, and can lead to retrograde infection of the pulp.[1] Most untreated periodontal-endodontic lesions can cause periodontal attachment loss and are responsible for tooth mortality and even tooth loss.[2] Periodontal healing is also influenced by root canal infection; a root canal also serves as a reservoir of bacteria, both maintaining periapical inflammation and encouraging marginal inflammation.[3] Diagnosis and treatment of perio-dontal-endodontic lesions can generally be performed with a careful inspection following radiographic and

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clinical examination. Pulpal vitality testing is essential for a differential diagnosis and for selection of primary measures for treatment of inflammation.[1] Various therapeutic options, including surgical and non-surgical techniques, are available for pulpal and periodontal diseases existing in acute and chronic forms.[4, 5]

The aim of this report is to present a case involving the multidisciplinary treatment of a patient with a periodontal-endodontic lesion with mobility.

CASE REPORT

A 42-year-old woman was referred to the Periodontology Department at Erciyes University Faculty of Dentistry complaining about gingival bleeding, abscess formation, tooth mobility and pain during biting and chewing. The patient, who was a heavy smoker (20 cigarettes per day), had a remarkable medical history. It was learned from her questionnaire that a practitioner had performed scaling on her a month earlier and had offered to extract her mandibular left first premolar. However, the patient refused the offer and opted for treatment by a specialist.

During periodontal examination, probing depth, gingival recession, and clinical attachment level were recorded using a periodontal probe (Williams probe, Hu Friedy, USA) from the six point of each tooth. Clinical examination revealed subgingival calculus on teeth with higher probing depths, especially on the mandibles (Figure 1A to F). On the buccal aspect of the mandibular left first premolar, there was an abscess formation with exudate presentation and class III mobility. Probing depths of 7 to 10 mm were reached circumferentially around the same tooth at (Figure 1C). However, the body temperature was normal and no palpable lymph nodes were detected. The abscess formation was assessed as due to the incomplete removal of calculus from the pocket during the previous treatment. Pathological probing depths were also reached at 7 to 9 mm on the mandibular left second premolar and at 5 to 9 mm on the mandibular left first molar (Figures 1C and 1E). On the mandibular right second molar, in addition to pathological probing depth, class I mobility with grade I furcation involvement (according to the Ramfjord and Ash classification) were detected (Figure 1F).

Before periodontal treatment, a vitality test was performed. The mandibular right second molar and the mandibular left first premolar were assessed as non-vital. All teeth were checked for occlusal trauma. Radiographic examination showed periodontal bone loss on the mandibular left canine through the mandibular left second molar (Figures 2 and 3A). Vertical bone loss was seen on both the mesial and distal sides of the mandibular left first premolar. A decrease in radiolucency was detected both in the lateral and furcation areas on the mandibular right second molar (Figures 2 and 4A). Based on clinical and radiographic findings, the diagnosis of primary periodontal lesion with secondary endodontic involvement was made in accordance with the Simon et al.[5] classification.

figure 1. **(A to F)** Initial intra-oral photographs of patient. A periodontal abscess was seen at mandibular left first premolar with mobility III and circumferential pathological pocket formation. Pain existed on biting with mandibular right second molar. Bleeding on brushing was present. Patient never performed flossing.

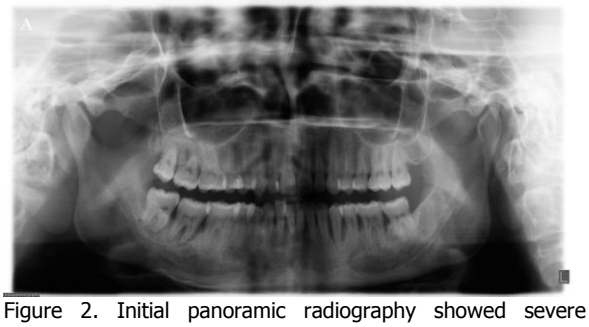

Figure 2. Initial panoramic radiography showed severe periodontal bone loss on mandibular teeth. Mandibular left first premolar and mandibular right second molar were assessed as non-vital. Decreased radiopacity on mandibular right second molar was also seen.

The abscess in the mandibular left first premolar was drained. Root canals were cleaned and shaped with rotary instruments. Root canal treatments were completed in two different appointments with placement of calcium hydroxide (Figures 3B and 4B).

For intracoronal splinting, a preparation was applied to the occlusal surfaces from the mandibular left first premolar to the mandibular left first molar. The surfaces were then etched and dried. After the bonding procedure, an orthodontic wire was placed onto the cavity, which was then filled with resin. Upon completion, the occlusion was checked. Scaling and root planing (SRP) were performed on root surfaces to remove calculus, necrotizing cementum, and granulation tissue. Finally, 1% Chlorhexidine gel (Curosept, Curaprox, Switzerland) was inserted into inflamed pockets. The patient was recalled three weeks later.

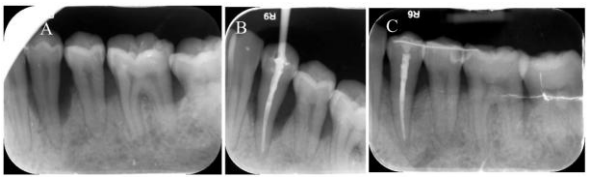

Figure 3. **A)** Initial radiograph of mandibular left canine to mandibular left second molar. Mandibular left first premolar was non-vital with mobility III, at mandibular left second premolar was vital with mobility II. **B)** Root canal treatment was performed during two different appointments with the inter-appointment placement of calcium hydroxide. After gutta-percha and resin placement, an orthodontic wire used as an intracoronal splint was bonded to the occlusal surface for stabilizing. **C)** Healing of the periradicular lesion was apparent after nine months. Mandibular left first premolar probing depth was only 3mm.

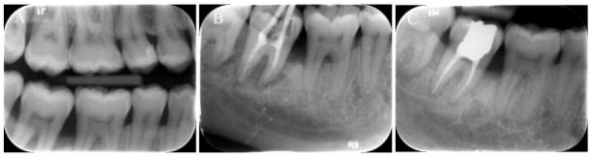

Figure 4**. A)** Initial bitewing of the right-side teeth. Although no caries were seen, mandibular right second molar was non-vital. Radiolucency deformation existed on the furcation and lateral area. **B)** Root canal treatment was performed in two different appointments with the inter-appointment placement of calcium hydroxide. **C)** Healing at nine months showed repair of periradicular bone and radiolucency.

The patient was re-examined at three weeks and at three, six, and nine months postoperatively. Healing on the mandibular left first premolar and increased radiopacity on the mandibular right second molar were detected via panoramic and periapical radiographs taken at nine months (Figures 3C, 4C, and 5). No probing depth higher than 3mm was detected clinically anywhere around the patient's teeth (Figures 6A to E). The patient reported no discomfort or bleeding during oral hygiene procedures. Because of some calculus formation that was detected on the lower anterior teeth, the patient was motivated again and also recalled three months later.

Figure 5. Panoramic radiograph after nine months. After phase-I periodontal therapy with an intracoronal splint, an increase of radiopacity was seen on mandibular left first premolar and mandibular right second molar.

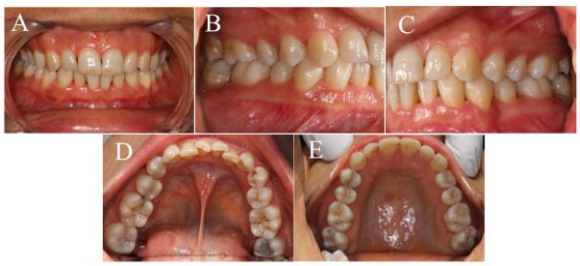

Figure 6. **(A to E)** Intra-oral photographs at nine months. The abscess area was healed. Plaque was detected minimally, especially on the anterior mandibular teeth. No pain or any complaints about the splint were reported. Resin was broken from the occlusal surface of the mandibular left first molar due to biting a nut. No pathological pocket formation existed.

DISCUSSION

Perio-endo lesions are among the most intimidating diagnostic and therapeutic problems faced by clinicians.[1] Some clinicians may argue that long-term prognosis of teeth with these lesions may be unpredictable. However, extraction of teeth and replacement with dentures or implants may not always be the most appropriate treatment for severely avdanced periodontal destruction,[6] especially with higher mobility. The treatment should be a combi- nation of periodontal therapy, occlusal adjustments, and tooth restraints for stability, which facilitates the reorganization process of the gingival tissues, periodontal fibers, alveolar bone and also maintains patient comfort.[7] As in this case, splinting and periodontal therapy

may be a more appropriate measure to restore function which relies on less periodontal support.[6]

Teeth with chronic endo-perio lesions present a unique treatment challenge, and each clinician must base decisions related to treatment on scientific evidence combined with the clinician's individual past experience in similar situations, in addition to the patients' desires. In our case, although extraction of the mandibular left first premolar was offered by the practitioner to the patient, she did not accept the treatment. In dental practice, intracoronal splinting may be offered to patients who do not accept extraction. This option could be a part of treatment if the pros and cons of the treatment are assessed.

Endodontic infection in mandibular molars was found to be associated with additional attachment loss in the furcation area, and thus may be considered to be one of several risk factors influencing the prognosis for molars in periodontitis-prone patients.[8] In our case, radiolucency degeneration in the furcation area on the mandibular left second molar was recovered after root canal treatment and periodontal therapy.

It was reported that regardless of the extent of radiographic attachment loss, healing after SRP and surgical periodontal treatment was also significantly impaired over time by the presence of a root canal infection.[9,10] Thus, the two non-vital teeth were treated with root canal treatments before SRP in this case report.

Positive outcomes of nonsurgical periodontal treatment, such as probing depth reduction and clinical attachment gain at sites that initially were 4 to 6 mm in depth or greater than 7mm, have been reported.[11] In this case report, teeth with probing depths greater than 7 mm responded positively to SRP. In addition, nonsurgical furcation therapy has been reported to be effective in inhibiting grade I furcation-involved teeth from further intrerradicular disease progression for five years.[12] In this case report, the mandibular right second molar had a grade I furcation-involvement with a deep periodontal pocket. At the ninth-month visit, no clinical disease progression and a decrease in radiolucency on a periapical radiograph was observed. Thus, SRP with endodontic treatment was shown to be effective in the current case.

In this case report, first SRP was performed, and at reevaluation periods, it was observed that clinical periodontal parameters were improved. Furthermore, at the ninth month, radiographic evidence of bone formation and CAL gain was observed. Thus, the patient follow-up did not include surgical intervention, as there was no further need for periodontal therapy. In the treatment of endo-perio lesions, after performing conventional periodontal and endodontic treatment, the use of different periodontal surgical techniques has been reported, such as guided tissue regeneration (GTR) and the treatment of infrabony defects using bone grafts with or without resorbable and non-resorbable membranes.[4, 13, 14] In addition to the treatment of periodontal-endodontic lesions, the use of platelet-rich fibrin has also been suggested in the literature.[15, 16] The prognosis for a given tooth, which depends on the severity of the periodontal disease and the tooth's response to periodontal therapy, should be evaluated when choosing a regenerative treatment option.

Splinting is a common treatment approach in dental practice to obtain stability and eliminate mobility. It has also been shown that splinting can decrease pain and discomfort during biting and chewing.[17] In addition, splinting of the mobile tooth is recommended before regenerative periodontal treatment to obtain maximum benefits from the treatment.[18, 19] In this case report, the teeth were splinted, and then root planing was performed. Although GTR was not used in this case report, regeneration was obtained after SRP. In this case report, it was our experience that SRP instrumentation was made easier by the splinting due to the prevention of tooth mobility. As another benefit, the patient was no longer complaining about chewing or biting after splinting.

In teeth with periodontal-endodontic lesions, root canal therapy and intracanal medicaments have been recommended to promote tissue healing.[20] After SRP, initial periodontal tissue healing of three to four weeks has been shown to be necessary before periodontal re-examination, e.g., probing. In addition, an approximately one- to three-month observation and reevaluation period has been suggested before planning further periodontal surgery interventions.[21]

Although significant improvements were obtained in this case, the absence of long-term follow-up was one limitation.

CONCLUSION

Using periodontal treatment with splinting can be chosen as a treatment protocol for improving function and bone healing in teeth with advanced bone loss and loss of mobility.

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