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Letter to the editor

Management of teeth with endodontic-periodontal lesions

Treatment of endodontic-periodontal lesions (EPL) poses challenges for the clinician due to the reduced success rate compared to lesions that only originate from endodontic or periodontal alone. Etiologic factors such as bacteria, viruses, trauma, root perforation, root resorption, crack, and dental malformation play a pivotal role in the development of the lesions. Therefore, eliminating etiological factors in EPL plays a key role in enhancing treatment success.^{1,2} Based on these points, this brief letter focuses on the treatment of endodontic-periodontal lesions.

Laser therapy has shown satisfactory results in the case of EPL. In this regard, Dembowska et al. evaluated using a diode laser (940 nm) on teeth with EPL. To this end, 12 patients with EPL were enrolled and divided into two groups ($n = 6$). Scaling, root planing, and root canal therapy were performed in both groups, except that the first group also received laser treatment. The results showed that using a diode laser (i.e., 940 nm with a power of 0.8 W) significantly reduced periodontal pocket depth, tooth mobility, and bone loss in the first group. Therefore, applying a diode laser is recommended to improve the success rate of the treatment.³

Another study evaluated the efficacy of diode laser on 100 patients with true combined lesions. For this purpose, the patients were divided into two groups ($n = 50$), followed by an evaluation of the difference between pocket depth, tooth pain, bleeding on probing, attachment loss, and plaque index between the control and experimental groups. The treatment protocols were as follows: 1) scaling and root planing (two times with a 1-week interval), 2) root canal therapy after the first scaling and root planing, and 3) using a diode laser (wavelength 980 nm) in the experimental group with zigzag movement into the pocket. The results showed that using laser as an additional treatment in the experimental group significantly reduced pocket depth, tooth pain, and accelerated the healing of periodontal tissues.⁴

To manage EPL, Razi et al. evaluated platelet-rich fibrin (PRF) and titanium-prepared platelet-rich fibrin (T-PRF) in

140 patients with EPL. Patients were divided into two groups and then underwent root canal treatment. Afterward, PRF and T-PRF were used to treat the first and second groups, respectively. The results revealed that probing pocket depth was decreased, and it was useful in gaining the attachment level of gingiva. Thus, both PRF and T-PRF are effective in managing EPL.⁵

To assess the treatment strategy in the case of EPL in a variety of teeth, a systematic review based on 7 studies with meta-analysis evaluated the influence of intracanal medicaments on the EPL of teeth. The study highlighted that applying calcium hydroxide followed by chlorhexidine gel in the canals can improve clinical periodontal parameters. Two-visit root canal therapy should be considered for calcium hydroxide placement. Therefore, using calcium hydroxide as a temporary filling, followed by a final root canal filling, and sufficient time should be considered for periodontal regeneration.⁶

Treating teeth with a hopeless prognosis is a challenging issue, particularly in the case of EPL. In this respect, Khojaste et al. reported EPL on tooth No. 11 with type-III mobility of the tooth. Compared to the central incisor, the tooth was supra-erupted at 3 mm, and the pocket depth surrounding the tooth was 6–12 mm. The treatment protocols in this study were as follows: 1) supra and subgingival scaling and root planing (two times with a 1-week interval), followed by reducing plaque index from 85 % to 20 % and bleeding on probing, 2) prescribing amoxicillin and metronidazole for 1 week, 3) a modified papilla preservation flap, 4) eliminating granulation and debridement on the root surface, 5) relocating the tooth apically with hand pressure, 6) applying a semi-rigid splint, 7) using allograft bone followed by collagen membrane, 8) repositioning the flap at its original level and suturing, and 9) root canal therapy. The results of a 1-year follow-up showed satisfactory outcomes from this treatment. Hence, adequate attachment gingiva, proper regeneration technique, the importance of splinting, and successful root canal therapy are determining factors in the success of EPL.¹

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Another challenging issue is the palato-radicular groove in the case of endodontic-periodontal lesions. In this subject, the results of two relevant studies are as follows:

- 1) In a case report, tooth No. 21 was diagnosed with EPL associated with a palato-radicular groove. The examination showed the type-I mobility of the tooth by Miller classification, a deep probing pocket on the disto-palatal aspect (10 mm), and radiolucency on the distal aspect of the root. The authors performed a combination therapy consisting of root canal therapy, odontoplasty, and periodontal surgery (including allograft and resorbable barrier membrane). To eliminate endotoxin on the root surface, minocycline paste (100 mg/ml) was also applied for 3 min. The results of follow-up within 2 years showed reduced pocket and significant bone fill in the palatal aspect.⁷
- 2) In another report, a 40-year-old patient was diagnosed with a type-II palato-radicular groove on tooth No. 12 with EPL. The treatment steps applied in this study were as follows: 1) preliminary removal of calculus, 2) root canal therapy, 3) elimination of supra and subgingival plaque followed by a full-thickness flap, 4) preparing the groove, 5) applying minocycline on the root surface, 6) sealing the groove with iRoot BP Plus, and 7) suturing the flap followed by periodontal dressing. The results of a 2-year follow-up revealed a good prognosis. Hence, in the case of the palato-radicular groove, a multidisciplinary treatment approach followed by odontoplasty and groove sealing should be considered.⁸

Research has also shown an increase in the success rate of EPL through the additional disinfection of a root canal system in the case of EPL with periodontal pocket using ozone gas.² According to the content in this brief letter, the following procedures should be considered in the case of EPL: 1) applying diode laser, 2) using PRF and T-PRF in managing EPL, 3) using Ca(OH)₂ as temporary filling for root canal therapy, 4) using proper regeneration technique and splinting in severe EPL, 5) odontoplasty or sealing groove in the case of palato-radicular groove, and 6) using ozone gas. Consequently, clinicians' ability to accurately assess the etiology and diagnosis of EPL requires a multidisciplinary therapeutic approach that is indispensable to treating EPL.

Declaration of competing interest

The authors have no conflicts of interest relevant to this article.

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