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Endodontic periodontal lesion due to inadequate endodontic treatment - A case report

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Abstract

The diagnosis of endodontic Perio dontal diseases can sometimes be challenging to make an accurate diagnosis. We report a case of a 34 years old female patient with an endo-Perio lesion in the right lower second molar # 47 which was previously treated with endodontic therapy followed by prosthetic rehabilitation. We highlight the need for adequate endodontic management and the importance of maintaining proper prosthetic contour for the prevention of endodontic periodontal lesions. In our case, the endodontic periodontal was the result of inadequate endodontic treatment by the dental clinician. Hence with this case, we reiterate the importance of adequate and complete endodontic treatment and also the need to follow the tooth contours during prosthetic rehabilitation as a preventive protocol for endodontic periodontal lesions.

Keywords: Furcation Bone Loss, Periapical Radiolucency, Root Canal Therapy.

Introduction

The endo-Perio lesion is a condition characterized by the association of periodontal and pulpal disease in the same dental element.[1] When the pulp becomes inflamed/infected, it elicits an inflammatory response of the periodontal ligament at the apical foramen and/or adjacent to openings of accessory canals.[2] Three main avenues for the exchange of infectious elements and other irritants between the two compartments are created by (1) dentinal tubules, (2) lateral and accessory canals, and (3) the apical foramen.[3] The most common signs and symptoms associated with a tooth affected by an endo-Perio lesion are deep periodontal pockets reaching or close to the apex and negative or altered response to pulp vitality tests [4].

Case report

A 34 years old female visited the dental university clinic with the complaint of pain in the upper right teeth region for 2 weeks. The pain was spontaneous in onset lingering for few minutes but worsened during sleep.

The percussion test was negative vertically and horizontally. On periodontal probing of tooth #47 (mesiobuccal 2mm, buccal 2mm, distobuccal 8mm, mesio-lingual 3mm, lingual 3mm, distolingual:6mm), distal root clinical attachment loss of more than 5mm was noted. The tooth was nonmobile with grade II furcation involvement. On radiographic examination using periapical and bitewing radiographs in the region of #45,46,47,48 (Figure A and Figure B), tooth no.#47 interdental craters in the region of teeth #47, 48 was found to have moderate horizontal bone loss, radiolucency in the distal alveolar crest and furcation area with the widening of the pdl space all along the distal root. Distal root caries were also noted with inadequate root canal treatment and prosthetic crown. More than 2/3rd of the root canal length was not prepared or obturated. Internal and external root resorption was also another finding in the distal root. Hyper cementos is of both the roots were noted with periapical rarefaction and destruction of lamina dura around the apical region of both roots.

The periodontal bone loss, furcation bone loss, and periapical bone loss with root resorption were all continuous with each other with the widening of distal pdl space as mentioned above. Tooth #46 was also endodontically treated with a crown. Blunting of the alveolar crest with the widening of pdl space in the crestal region indicated early periodontal bone chances in tooth #46. The mesial root canal was inadequately filled. A well-defined periapical radiolucency with the destruction of lamina dura and hyper cementos is of apical 1/3rd of the mesial root was seen in tooth #46. Mesial root caries in tooth #48 were also noted. Ill-defined periapical radiopacities were also seen suggestive of reactive bone formation.

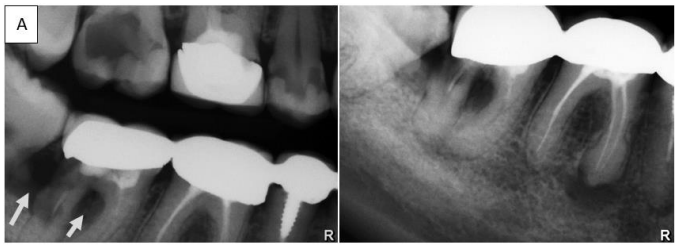

Figure 1

A diagnosis of an endo –Perio lesion with Stage III Periodontitis combined with Periapical abscess due to endodontic failure for tooth # 47 was given and Periapical granuloma due to endodontic failure in tooth # 46 was given. A management plan of extraction of tooth # 47, 48 due to poor prognosis and re-root canal treatment for tooth #46 was carried out. The patient was followed up for 3 months with adequate bone healing.

Discussion

An endodontic Perio dontal lesion is defined as endodontic and Perio dontal involvement of the same tooth. An established endo-Perio lesion is always associated with varying degrees of micro bial contami nation of the dental pulp and the supporting period ontal tissues.

The relationship between periodontal and endodontic disease was first described by Simring and Goldberg in1964.[5] The penetration of bacteria through dentinal tubules is considered to be a matter of controversy and infection of the endo dontic-Perio dontal route niche is not well understood.[6] The similarity between the endo dontic and Perio dontal micro biota indicated the possibility of infection spreading between the root canal and the Perio dontal pocket.[7]

The environmental effect as a direct consequence of periapical and peri radicular radiolucencies associated event may promote the development of marginal bone loss and consequently should be regarded as a risk factor in periodontitis progression [8]. This proves the fact that either one of these diseases occurs and progresses to the

other or they develop independently and get associated at an advanced stage of disease progression. Endodontic-periodontal lesions present challenges to the clinician as far as diagnosis and prognosis of the involved teeth are concerned. [9] The diagnosis of such lesions is commonly viewed and treated as separate entities which make its diagnosis and management critical. [9,10] The microorganisms and by-products from the infected root canal may cross accessory and furcal canals and determine sinus tract and loss of attachment [9,11]. David Herrera (2018) proposed that an established endo- perio lesion is always associated with varying degrees of microbial contamination of the dental pulp and the supporting periodontal tissues. [4] Simon et al in 1972 classified the endodontic periodontal lesions based on their primary cause of origin into 5 categories.

1. Primary endodontic lesions
2. Primary endodontic lesion with secondary periodontal involvement
3. Primary periodontal lesions
4. Primary periodontic lesions with secondary endo dontic involvement
5. True ‘combined’ lesions

The management of endo Perio lesions also requires a multidisciplinary and precise sequence of steps to be followed for successful treatment, especially in the esthetic zone.[14] Management can be done using a laterally positioned flap (LPF) (partial thickness / full-thickness flap) with subepithelial connective tissue grafts especially for a tooth with a single recession.[14] Titanium-prepared platelet-rich fibrin or guided tissue regeneration with open flap debridement along with endodontic therapy is also a treatment option.[15] Biosynthesized silver nanoparticles have also been found to be efficacious against Porphyromonas gingival is, Bacillus pumilus, and Enterococcus faecalis in endo Perio lesions.[16]

Ozone therapy is another proposed treatment for cases with narrow periodontal bone loss and pockets in aggressive periodontitis with a poor prognosis.[17] Hemi section with root canal therapy is also a possible treatment plan for multi-rooted teeth with a sound periodontium in the unaffected root.[18] to be Simultaneous management in the appropriate sequence for endodontic and periodontal surgical therapy was suggested by Tewari S et al (2018) to be a better option for patient compliance and less duration of treatment.[19] However, factors like smoking, multirooted teeth, generalized periodontitis, high probing depth with clinical attachment loss are poor prognostic factors for grade 2 and 3 endo-periodontal lesions.[

Conclusion

Here we report a case of iatrogenic induced endo Perio lesion leading to early partial edentulousness and thereby dental morbidity. Also, we have discussed the possible management options for an endo Perio lesion for consideration. Many a time an adequate endodontic therapy or maintaining proper tooth contours during prosthetic or restorative rehabilitation to facilitate proper flushing action of saliva are overlooked by dental practitioners. Hence this case also highlights the importance of preventive protocol for endo periodontal lesion by the rightful dental practice.

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