Endo-Perio lesion: A diagnosis and Case report

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Abstract: - Introduction: - Dentists are likely to encounter lesions that have both periodontal and endodontic aetiological components; the so called ‘Endo-Perio lesion’. Correct diagnosis of such lesions is therefore important as it enables the most suitable clinical management to be treatment planned. It is still recommended, that for treatment of ‘Endo-Perio lesion’, initial endodontic therapy is completed.

Case report: - A 58 year’s old women reported in a department of conservative dentistry and endodontics with chief complaint of gingival irritation, suppuration and mobility with mandibular first molar. The patient was asymptomatic, negative vitality testing and sinus tract. On radiographic examination a localized apical radiolucency extending to lateral area of root surface is seen. On the basis of clinical and radiographic findings a diagnosis of ‘Endo-Perio lesion’ or primary endodontic lesion with secondary periodontal involvement was made. An endodontic treatment was completed followed by periodontal therapy.

Conclusion: - Endo-Perio pathosis present a diagnostic challenge for many practitioners. As with the other interdisciplinary topics, using consistent terminology to facilitate a comprehensive and systemic approach to diagnosis and treatment will result in more effective treatment and improved outcomes for patients.

Keywords: - Endo-Perio lesion, primary endodontic with secondary periodontal involvement, Pulp, vitality tests

Introduction: - The interface between the periodontium and the pulp has long been an area of interest[1] because they are closely related, having embryonic, anatomic and functional interrelationship. [2] The physiological interrelationship between root canals and periodontal pockets contains communications such as apical foramen, lateral canals foramina, and dentinal tubules. [3] The other communicative pathways are, palatogingival groove, root perforations and vertical root fractures. [1] These structures may become pathways for the migration of periodontal and endodontic pathogens and contribute to the development of endo-perio lesions. [3] The expression endo-perio lesion was devised to better describe the etiopathogenesis in such cases and includes the following:

• Lesions resulting from apical to coronal migration of endodontic pathogens and their toxins with or without fistula or sinus tract at the gingival margins depending on the nature of infection. [4]

• Originating from a marginal lesion which has subsequently affected more apical periodontal areas. The pulp and the periodontium are different from one another and are anatomically connected through the foramina. [4]

• Resulting from a combination of the above, in which case the differential diagnosis must attribute each portion of the lesion to its cause. [3]

Periodontal disease leading to a destruction of the bone in a coronal-to-apical direction while direction of the endodontic lesions is from apex to coronal. Microbial infection is primarily responsible for the development of pulpal and periodontal lesions. Hence, both the disease processes could originate as separate entities and may overlap during the progress of the same. Diagnosis is complicated by the fact that these diseases are too frequently viewed as independent entities. [4]

Classification

   i. Primary endodontic lesions
   ii. Primary endodontic lesions with secondary periodontal involvement
   iii. Primary periodontal lesions
   iv. Primary periodontal lesions with secondary endodontic involvement
   v. True combined lesions.

b. Walton et al. in 1996, based on the origin of the periodontal pocket:[4]
   i. Endodontic origin
   ii. Periodontal origin
   iii. Combined endo-perio lesion
   iv. Separate endodontic and periodontal lesions
   v. Lesions with communication
   vi. Lesions with no communication.

c. World workshop for classification of periodontal diseases (1999) and periodontitis associated with endodontic disease:[4]
   i. Endodontic-periodontal lesion
   ii. Periodontal-endodontic lesion
   iii. Combined lesion.

This case provides an example of an interdisciplinary approach for the successful treatment of an endo-perio lesion.
A summary of clinical and radiographic features of perio-endo lesions

<table>
<thead>
<tr>
<th>Lesion</th>
<th>Pain</th>
<th>Swelling</th>
<th>Periodontal pocket</th>
<th>Radiographic features</th>
<th>Vitality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary endodontic lesion</td>
<td>Moderate to severe</td>
<td>Possible</td>
<td>None unless sinus tract</td>
<td>Possible periapical radiolucency</td>
<td>Non-vital</td>
</tr>
<tr>
<td>Primary endodontic lesion with secondary periodontal involvement</td>
<td>Moderate to severe</td>
<td>Likely</td>
<td>Evident or sinus tract</td>
<td>Radiolucency from apex to sulcus, decreased crestal bone height</td>
<td>Non-vital</td>
</tr>
<tr>
<td>Primary periodontal lesion</td>
<td>None to moderate</td>
<td>Possible</td>
<td>Moderate</td>
<td>Decreased crestal height</td>
<td>Vital</td>
</tr>
<tr>
<td>Primary periodontal lesion with secondary endodontic involvement</td>
<td>None to moderate</td>
<td>Possible</td>
<td>Severe</td>
<td>Bone loss approaching apex</td>
<td>Vital</td>
</tr>
<tr>
<td>Combined pulpal and periodontal lesion</td>
<td>Moderate to severe</td>
<td>Likely</td>
<td>Severe</td>
<td>Bone loss extending apex</td>
<td>Non-vital</td>
</tr>
</tbody>
</table>

**Case report:** A 58 year’s old woman reported in a department of conservative dentistry and endodontics with chief complaint of gingival irritation, suppuration and mobility with mandibular first molar. History of deep restoration, Tender to percussion (TTP) Negative to vitality testing, Narrow pocket with suppuration and Mobility. Radiographic Appearance shows interdental bone loss – with vertical pattern.

**Diagnosis:** Based on the finding, diagnosis was made as an endo-perio lesion of primary endodontic with secondary periodontal involvement.

**Treatment:** Based on the strategic importance of the tooth, the patient was willing for an endodontic treatment. The tooth was relieved from occlusion. Endodontic treatment was completed in three visits under rubber dam isolation, in a span of 4 weeks with interappointment calcium hydroxide intracanal dressings. When the localized swelling resolved and the tooth was asymptomatic, treatment was completed and access restoration was done. It should be noted that in periodontal intervention scaling and curettage was carried out. Post endodontic restoration with metal crown was completed after 3 months.

The follow-up examination showed healthy gingival status, absence of tooth mobility, and progressive hard tissue repair in the periapical and furcal areas of tooth 36 as seen in the radiograph.
Discussion: - The endo-perio lesions are a challenging factor to clinicians as far as diagnosis and prognosis of the involved teeth are concerned. As far as primary endodontic and periodontal lesions are concerned, the diagnosis is simple. [7] The diagnosis of teeth is difficult and depends on pulp sensibility testing. If bone defects are radiographically and clinically visible but the pulp response to a pulp test is normal, then the inflammation is periodontal in origin. [8] If the pulp shows negative response to the thermal tests, then inflammation source may be endodontic in origin which has caused the periodontal lesion via apical foramen or accessory canals. The pulp vitality test is the first step for proper diagnosis. Although the vitality test does not reveal the histological status of the dental pulp, their ability to determine the pulpal status is quite satisfactory. The ability of vitality tests to detect non-sensitive reaction represented a necrotic pulp was reported as 89% with the cold test and 88% with the electrical test. [3] Chronic inflammatory reaction of the infected root canal can sometimes extend into the gingival sulcus and drains through the sinus tracts. The periodontal manifestations tend to resolve soon after endodontic treatment if there are no local periodontal factors. Conversely, there has been a debate in the literature about the impact of the endodontic treatment on the healing potential of the periodontium. Some studies have been reported that endodontic treatment may cause an inhibitory effect on periodontal wound healing while some of them have demonstrated no significant effects. [4] Primary endodontic disease with secondary periodontal involvement should first be treated with endodontic therapy. Treatment results should be evaluated in 2–3 months and only then periodontal treatment should be considered. [9] This sequence of treatment allows sufficient time for initial tissue healing and better assessment of the periodontal condition. It also reduces the potential risk of introducing bacteria and their byproducts during the initial phase of healing. [9] In this regard, it was suggested that aggressive removal of the periodontal ligament and underlying cementum during interim endodontic therapy may adversely affect periodontal healing. Areas of the roots that were not aggressively treated showed unremarkable healing. Consequently, the prognosis for treatment of primary endodontic disease with secondary periodontal involvement depends primarily on the severity of periodontal involvement, periodontal treatment, and patient response. [9] Endo-perio lesions are challenging problems faced by clinicians, and, although they are relatively rare in clinical practice, they can severely compromise the tooth prognosis. They require multidisciplinary diagnosis and treatment. Regardless of the treatment protocol used, cooperation between the endodontist and periodontist is essential to treat and monitor lesion healing. In this case report, the cleaning and shaping of the root canals were performed in combination with irrigation using sodium hypochlorite, calcium hydroxide intracanal dressings in periodontal intervention scaling and curettage was carried out.

Conclusion: - Only by careful diagnosis can the most effective therapy method be selected and the success rate increased. The guidelines to a precise treatment method are straightforward once the lesion is categorized properly.

References: -