Unusual endo-perio lesion: A Case Report
Gauri Srindhi, Srinidhi S.R.

Abstract
Endo-perio lesions primarily occur by way of the intimate anatomic and vascular connections between the pulp and the periodontium. Diagnosis is often challenging because these diseases have been primarily studied as separate entities and may mimic clinical characteristics of each other. When a primarily endodontic lesion changes into a secondary periodontal lesion the resultant clinical features become even more bizarre. This may delay the diagnosis and hence the correct treatment. The case described here also aims at showing the limitations of the traditional diagnostic techniques that are used for diagnosing endo-perio lesion.

Key words: Endo-Perio Lesions; Root Fracture; Secondary Periodontal Lesion.

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Introduction
The intimate anatomic and vascular connection between the pulp and the periodontium is studied in great detail by the periodontists and the endodontists. These lesions initially present themselves as just an endodontic lesion and later slowly start showing signs for periodontal involvement. This type of lesion is called by Simon as Class III type of endo-perio lesion. Periodontal involvement is only for establishing as easy route for drainage of endodontic pathology.

There are many cases documented about established secondary periodontal and primary endodontic lesions but few of them document the events that took place during the conversion, when diagnosis is most confusing. Here is a case that presented itself initially as an endodontic emergency and the bizarre clinical features delayed the correct treatment for several weeks. Its conversion into a secondary periodontic lesion helped in the final diagnosis and correct treatment.

Case Report
A 35 years old healthy female patient reported with the chief complaint of acute pain and swelling with respect to 46 (mandibular right first molar). Patient gave a history that the tooth was treated endodontically and a full coverage metallic restoration was placed on it about a month back. The tooth was asymptomatic for about a month post treatment and suddenly started paining couple of days earlier. The pain was acute and throbbing in nature. Extra oral examination showed a slight swelling in the right mandibular area overlying the tooth and the submandibular lymph nodes were palpable and tender. Intraorally, there was swelling in the vestibular region in relation to 46 and the gingiva in the area was healthy. There were no periodontal pockets with respect to any of the teeth in area. The occlusion was atraumatic. The tooth was severely tender on percussion. It had a metal full coverage crown and the crown seemed normal in all the aspects.

The kind of pain the patient had and the signs suggested it was periapical pathology. An IOPA was taken to see the periapical condition and to rule out any inadequacy with the endo treatment. The IOPA did not show any pathology like periapical widening or root fracture and the obturation was satisfactory. The occlusion, contour, margins of the full coverage crown were examined and were considered to be essentially normal.

Treatment: It was decided that in absence of any evidence to suggest otherwise, it is better to treat this injury as a traumatic one. Disturbing a recently placed crown on an adequately endodontically treated tooth for examining the structures underneath without sufficient evidence could not be justified. Hence we drained the lesion by an incision on the most fluctuant part in the vestibule and discharged the patient after giving antibiotics and analgesics for three days. It was expected that the lesion will heal if it was due to a single traumatic incident. The patient reported after three days and was asymptomatic. The swelling was gone and the tooth was non tender.

However, the patient reported back after a week with recurrence. The clinical features and the symptoms were exactly similar to the first incidence. The only difference was a little increase in the probing depth of the gingival sulcus at the mesial root on the buccal aspect. Still the probing depth was within
physiologically normal limit (i.e. less than 3mm) and there was no communication with the periapical swelling through the sulcus. Even during the recurrence the clinical signs and symptoms were completely nonspecific. The treatment given was necessarily the same as the first time, i.e. incision, drainage with antibiotics and analgesics. The lesion responded to the treatment given.

The patient reported back after another week with third recurrence. Clinical examination revealed that the probing depth with respect to the tooth in the site in question was increased and now an explorer could enter the furcation area from buccal aspect easily. An IOPA taken with a gutta-percha point in the thin periodontal pocket showed the lesion was in relation to the mesial root of the molar. It also showed radiolucency in furcation. This necessitated an exploratory surgical approach to diagnose the exact cause of the problem. The situation was explained to the patient and consent obtained for the same.

*Surgical exploration:* A 15 No. B.P. blade was used to take a crevicular incision with respect to the buccal aspect of 45, 46 and 47. An envelope flap was elevated and the area underneath was examined. It was noticed that the only tooth involved with periodontal bone loss was 46 and that too only its mesiobuccal aspect and the buccal furcation. The interdental areas that are known to show the earliest of the periodontitis were healthy. The mesial root showed localized bone loss shaped like a crescent that started on the buccal margin and entered into the furcation. This specific bone loss exposed a small root fracture in the middle one third regions. The patient was explained about the findings and the possibility of sealing the root fracture. The patient opted not to go with any further treatment and decided to get the tooth extracted.

**Discussion**

Cases of root fracture are difficult to diagnose in the initial stage as they do not give rise to any radiological findings nor any specific clinical signs. Many a times only a process of elimination of other etiologies brings us to the correct diagnosis. The other possibilities that need to be eliminated are: failure of endodontic treatment, an acute periodontal abscess, trauma from occlusion and crown fracture. Swelling in an endodontically treated tooth can be due to various reasons like missed canals, inadequate obturation, perforations and crown or root fracture.(3)

In this case, the endodontic treatment procedure was uneventful and the obturation was satisfactory. Furthermore, a full metal coverage crown was placed immediately after the endodontic treatment. So it eliminated the possibility of crown fracture. An acute periodontal abscess normally occurs in the cervical or the middle third of the root. The swelling usually communicates with the gingival sulcus or pocket and drains on dilation of sulcus.(4) A periapical localization of the swelling is unusual to say the least. Also occurrence of acute periodontal abscess in a periodontally healthy mouth and site is uncommon.

Trauma from occlusion can be another reason for having severe pain with respect to a single tooth especially when there is a newly inserted restoration or crown. But the crown was not under traumatic occlusion. No clinical or radiographic signs of trauma from occlusion were observed. Also the relief obtained without adjusting the occlusion is unlikely in a case of trauma from occlusion. Also trauma from occlusion does not give rise to initiation of periodontal pocket the way it was seen in this case.(5)

The only other possibility was a root fracture. As it is documented, a crack on the root is not always evident on the x-ray.(1) The prognosis of a root fracture becomes poorer as we approach the cervical area especially if exposed to oral environment. A root fracture can mimic signs and symptoms of occlusal trauma. Vertical root fractures have contributed to the progression of periodontal destruction in the presence of apparently successful endodontic tooth therapy and overall periodontal site stability.(5)

In this case the initial examination showed no attachment loss over the root fracture. Recurrent abscess formation in the area rapidly resorbed the bone overlying the root crack. This led to periodontal pocketing and furcation involvement to provide an easy route of drainage. Walton et al stated that sometimes the definitive diagnosis of root fracture has to be confirmed by exploratory surgical exposure of the root for direct visual examination.(6)

Another treatment option would have been to try and seal the root crack with glass ionomer cement and covering the periodontal flap on top with sutures. However, it is stated that no consistently successful techniques have been reported for sealing the fractured root.(2) Also, the patient who had already undergone
multiple visits for root canal treatment, full coverage crown and had painful recurrences of periapical swellings thrice and was not ready to accept a treatment plan that was not fool proof. So finally tooth had to be extracted and the extracted tooth showed the crack clearly.

**Conclusion**

Endo-perio lesions primarily occur by way of the intimate anatomic and vascular connections between the pulp and the periodontium. Diagnosis is often challenging because these diseases have been primarily studied as separate entities and may mimic clinical characteristics of each other. A patient study of behavior of the lesion and a thorough differential diagnosis can help us reach the correct diagnosis.

**Authors Affiliation:** 1. Dr. Gauri Srinidhi, M.D.S, Periodontist, Private Practitioner, 2. Dr. Srinidhi S. R, M.D.S, Professor, Dept. of Conservative Dentistry & Endodontics, Sinhgad Dental College and Hospital, Pune, India.

**References**


**Address for Correspondence**

Dr. Gauri Srinidhi, M.D.S., Periodontist, "DENTAL CLINIC", Shop no 8, Vithai Plaza, Opp. Vandevi temple, Karvenagar, Pune 411052, India.

Email: gaurisat@yahoo.com

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