



Management of Combined Endo Perio Lesion: A Case Report

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ABSTRACT:

Endo-perio lesion represents a complex dental condition involving the intricate interplay between endodontic and periodontal pathologies. This condition arises when inflammatory processes simultaneously affect both the pulp and the periodontal tissues of a tooth. Clinically, endo-perio lesions present a unique set of challenges, as they exhibit a diverse range of symptoms, including changes in pulp vitality, gingival inflammation, bone deformities, and tooth mobility. The diagnosis of endo-perio lesions require a comprehensive understanding of both endodontic and periodontal clinical findings, often necessitating collaboration between specialists for accurate identification and effective treatment planning. Successful management involves addressing both the endodontic and periodontal components, making this condition a nuanced and intricate aspect of dental practice.

Introduction:

Endo perio lesion is referred to a condition where there is a communication or interplay between the endodontics and periodontal tissues. Diagnosing endo perio lesions poses a unique set of challenges for dentists, as these conditions involve a complex interplay between endodontic and periodontal factors. Endodontic and periodontal diseases often share common clinical manifestations such as pain, swelling, and changes in probing depth. Distinguishing between the two becomes challenging when these signs overlap, leading to a potential misdiagnosis or delayed treatment. Also, lesions may present as periapical radiolucencies, bone loss, or furcation involvement, making it difficult to differentiate between endodontic and periodontal origins based solely on radiographic evidence.(1)The current literature represents a case report and review that will further help the clinicians in diagnosing and treating such cases.

Pulp periodontal relationship:

Pulp and PDL both are derived from ectomesenchyme. Ectomesenchyme give rise to dental follicle and dental papilla which form PDL and dental pulp respectively. Pulp and periodontal relationship is a critical aspect of dental health, as it involves the interconnection between the pulp and periodontium. Pulp and periodontium are functionally interwines, and any disturbance in one can affect the other. The pulp, housing nerves and blood vessels, communicates with the periodontium through the apical foramen at the root apex.(2) Infection or inflammation originating in the pulp can spread to the periodontal tissues, leading to conditions known as endo-perio lesions. There are 3 main avenues for communication between pulp and PDL: dentinal tubules, lateral or accessory canals and apical foramen. Other pathways for communication include palatogingival groove, root perforations and vertical root fracture.(3)

Etiological factors:

1. Living pathogens:
- bacteria, fungi, viruses like



- anaerobic bacteria (>90%)
- Facultative anaerobes
- Candida albicans
- HSV
- Epstein-Barr Virus type I

2. NON- LIVING PATHOGEN:

- Extrinsic and intrinsic agents

- Amalgam
- root canal filling materials
- absorbent paper points
- Gingival retraction cord
- Calculus-like deposits

3. CONTRIBUTING FACTORS:

- Poor endodontic treatment
- Coronal leakage

- Trauma
- Root resorption
- Perforation
- Developmental malformations

Pathogenesis: Periodontal lesions are initiated by deposits of plaque and calculus: The toxins produced by these bacteria can irritate the gum tissues and cause the body's immune system to "turn on" (chronic inflammation)- this inflammation can breakdown and destroy the tissues and bone supporting the tooth. The gum tissues separate from tooth, forming pockets. As the disease progresses, the pocket deepens, destroying more supporting tissues.(4)

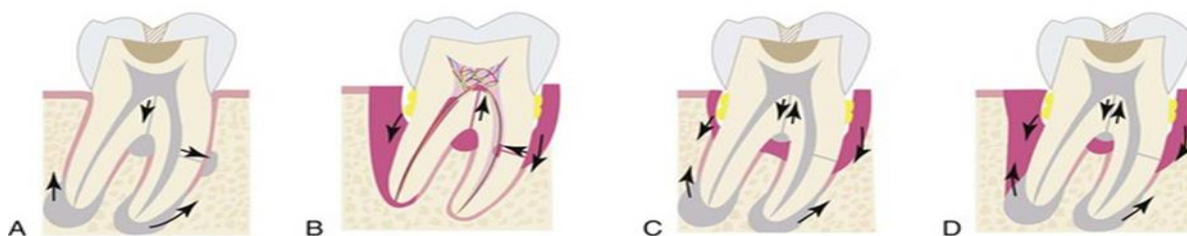


Fig 1: pathogenesis of endo perio lesion

Classification:

Based on etiology: given by Simon, Glick and Frank-1972

a. Primary endo

- b. Primary endo, secondary perio
- c. Primary perio
- d. Primary perio with secondary endo
- e. True combined lesions

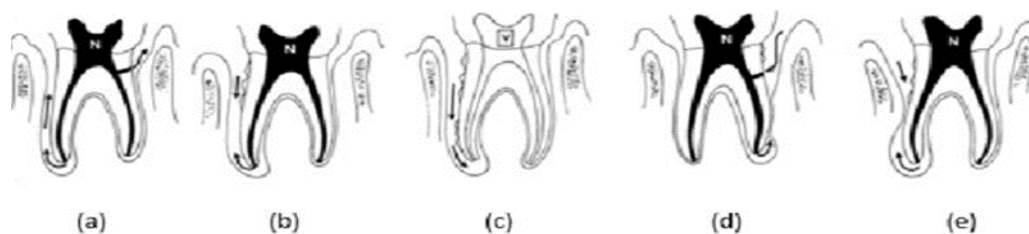


Fig 2: classification of endo perio lesion

Diagnosis:

Accurate diagnosis is crucial for effective management. Dental professionals may use clinical examinations, radiographs, and other diagnostic tools to identify the presence of endo-perio lesion.

The clinical findings associated with endo perio lesions present distinct patterns that assist in their

differentiation. In cases of endo lesions, pulpal response is characterized by its absence, indicative of a lack of sensitivity or vitality. Additionally, bone deformity in endo lesions often assumes a tubular 'U' shape. Plaque and calculus deposition are typically absent in endodontic cases, as is general periodontitis. On the other hand, the presence of caries or restorations is a



common feature in endo lesions, while mobility of the affected tooth is generally absent.(5)

Conversely, periodontal lesions exhibit a contrasting set of clinical findings. Pulp response in perio lesions is often present, signifying heightened sensitivity or reactivity. Bone deformity tends to take on a triangular ‘V’ shape in periodontal cases. The presence of plaque and calculus is a notable characteristic, contributing to the periodontal pathology. Aries or restorations are typically absent in pure periodontal lesions, and the affected tooth may exhibit increased mobility. Generalized periodontitis is a common feature associated with periodontal lesions, underscoring the involvement of the surrounding periodontal tissues.(6)

Case report:

A 32-year-old female patient presented to the School of Dental Sciences with chief complaint of pain in upper right back region of tooth for last 15 days. Medical history and dental history are not contributory. On intraoral examination, tooth was sound but tender on both horizontal and vertical percussion was present. On periodontal examination- there was deep periodontal pocket 8mm palatally irt 26. Radiographic examination revealed radiolucency involving mesial root of 16.

The patient was then referred to department of conservative dentistry to check for tooth vitality. Electric pulp testing was done to check for tooth vitality, which confirmed that the tooth was nonvital. Treatment planning was done taking into consideration that the tooth was nonvital with true combined lesion.

Treatment planning was done consulting with the periodontic department and the final treatment protocol taken was to initiate endodontic treatment first followed by flap surgery in department of Periodontology.

After rendering the endodontic treatment patient was kept on follow up for 1 month and then periodontal surgery was planned for treatment of periodontal defect in mesial root. (fig 3a-3f)

After taking care of asepsis and sterilization the surgery was planned. The area selected for surgery was anesthetized using xylocaine with adrenaline 1:200,000. A semilunar flap was raised at the buccal and palatal aspects following intracrevicular incision and vertical releasing incision(fig 4a). A vertical releasing incision was placed extending into the alveolar mucosa not closer than one tooth to the involved area, i.e. 16. This was done so as to facilitate the coronal positioning of flap, thereby resulting in complete coverage of the defect and the material used. After reflection a thorough degranulation and debridement was done at the defect area using Gracey’s curette # 13 and 14(fig 4b). Also thorough scaling and root planning was carried out on the exposed root surface area of the defect. After thorough curettage of the defect area, a combination of PRF and bioactive glass was placed and stabilized in the furcation area. (fig 4c)

Primary soft tissue closure of the flap was done with non-resorbable black silk suture(3-0) using interrupted suturing and Coe pack was placed to promote cleanliness and healing.(4e-4f)

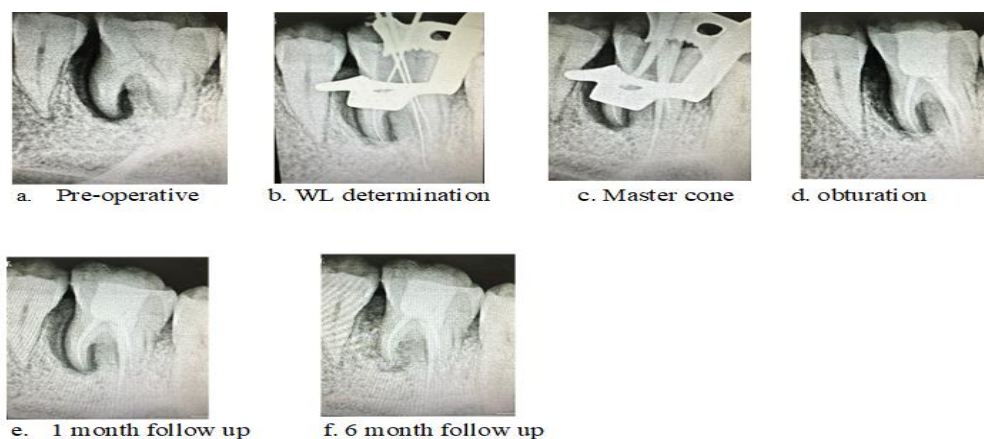


Fig 3: Endodontic management

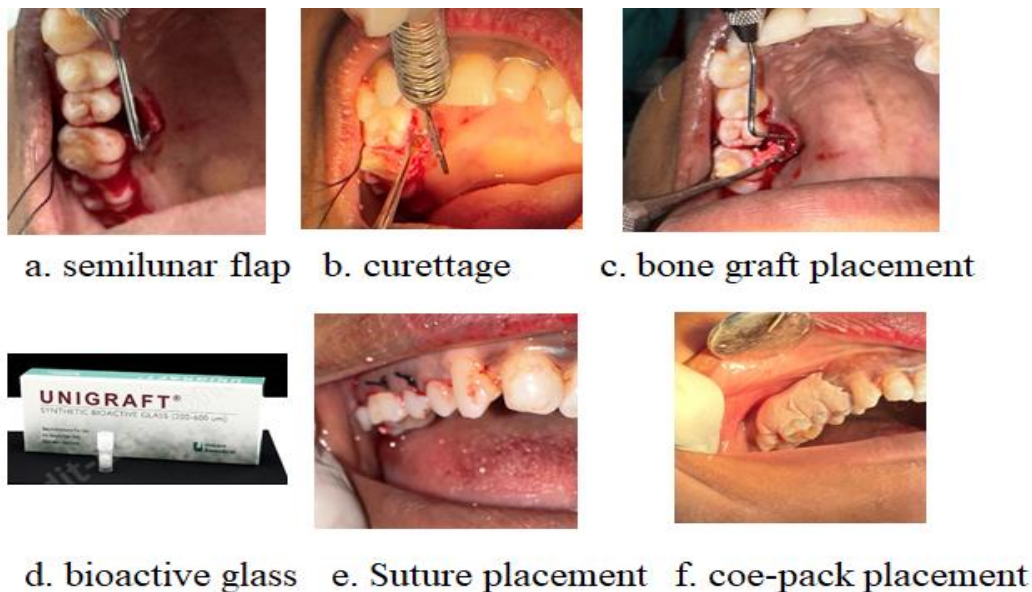


Fig 4: surgical management

The patient was advised to maintain proper oral hygiene by prescribing 0.12% chlorhexidine mouthwash for rinsing twice daily. Patient was evaluated post-surgery and sutures were removed 10 days after surgery. Patient was refrained to brush at the surgical site till sutures were removed. After removal of sutures, patient was advised to continue with the prescribed mouthwash for 3 weeks and follow up was done after 1 month. Patient was asymptomatic after 3 month and was directed for future follow up at 6-month interval. Patient is still under observation for future follow ups.

Discussion:

An individualized and thorough diagnosis of lesions of endodontic and periodontal origin is a challenge and at the same time, the fundamental key to establishing an adequate treatment. The differentiation of a lesion solely of endodontic or periodontal origin can be seen in pulp vitality tests or in periodontal examinations, probing depth and extension of the periodontal pocket, which may be allied to the percussion test.(7) The primary signs associated with this lesion are deep periodontal pockets extending to the root apex and/or negative or altered response to pulp vitality tests. Other signs and symptoms may include radiographic evidence of bone loss in the apical or furcation region, pain spontaneously or on palpation or percussion, purulent exudate or suppuration, tooth mobility, sinus tract or

fistula, and changes in color of the crown and/ or gingiva.(8) It is necessary to choose the correct diagnostic tests, as well as to accurately interpret the results, ensuring a good treatment prognosis.

Combined endodontic and periodontal therapy promote successful healing of an endo perio lesion. This is because, if there are bacteria in the root canal, there may be an inflammatory resorption, resulting in exposure of periodontal tissues, putting them in contact with toxic medications used in the canal. Early endodontic treatment in endo-perio therapy allows the cementum layer to be kept intact, reducing the chances of possible root resorption. In an acute situation, treatment must mandatorily be initiated by the system causing the pain or edema, that is, the primary disease must be treated initially and then proceed with the treatment of the secondary lesion.(9) There is also the possibility of simultaneous treatment, when there is a diagnosis of combined lesion.

In the present study, the medication of choice for the treatment was calcium hydroxide, which has the ability to activate tissue enzymes such as alkaline phosphatase, which Favor tissue restoration by mineralization. The pH value for activating this enzyme ranges from 8.6 to 10.3, which facilitates the release of organic phosphate (phosphate ions), which react with circulating calcium ions, creating a sediment of calcium phosphate in the



organic matrix. In this range, the high pH of calcium hydroxide with values reaching 12.6, which is caused by the release of hydroxyl ions, is capable of altering the integrity of the bacterial cytoplasmic membrane, resulting in the antimicrobial effect associated with mineralization. It is necessary to allow time for the calcium hydroxide paste to perform its action potential in endodontic infections.(10) Guimaraes, et al. advocates that the ideal use of the delay dressing with calcium hydroxide in teeth with pulp necrosis should be carried out after at least 15 days, as performed in the present study.

Bioactive glass was used due to its several unique properties like high bioactivity due to which the reaction layers appear to form within minutes of its implantation and the osteogenic cells freed by the surgery can rapidly colonize the particles. When this material comes into contact with tissue fluids, the surface of the particles becomes coated with hydroxycarbonate apatite, incorporates organic ground proteins such as chondroitin sulfate and glycosaminoglycans and attracts osteoblasts that rapidly form bone. This results in more rapid filling of the defects than that occurs with other less active materials, such as hydroxyapatite. With regard to periodontal treatment, supra and subgingival coverage must be performed. Periodontal treatment aims at restoring health and periodontal reconstruction, and may use bone graft and reconstruction of papillary aesthetics as a device.

Conclusion:

The healing of an endodontic lesion is highly predictable, but the repair or regeneration of periodontal tissues remains questionable if associated with it. Endodontic therapy mostly should precede periodontal pocket elimination procedures in the case of a primary endo and secondary periodontal involvement; however, endodontic therapy would result only in resolution of the endodontic component of involvement and would have a little effect on the periodontal lesion. Therefore, a thorough diagnostic examination usually will indicate the primary etiology and, thereby, direct the proper course of treatment plan as presented in this case.

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