

Managing an enigma of retrograde pulpitis secondary to periodontal lesion associated with Palatogingival Groove: A case report



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ABSTRACT

|| Brief Background

Palatogingival groove is a developmental anomaly, which initiates on the enamel and can extend to a significant distance on the root surface, providing a plaque retentive area that is difficult to instrument. Recognition of such a defect is critical and important, especially because of its diagnostic complexity and its further consequences. This report describes a case of palatogingival groove in a maxillary right lateral incisor with periodontal complications.

|| Materials and Methods

The management included a combination of endodontic therapy and periodontal regenerative techniques. The pulp was non-vital. Hence, pulpal necrosis was first managed by endodontic therapy. The groove extended up to 10 mm on the root surface from cingulum associated with intrabony defect on the palatal aspect. Groove was eliminated with odontoplasty and the bony defect was filled with a hydroxyapatite graft material followed by placement of a collagen resorbable membrane.

|| Discussion

Bacterial plaque and calculus on the irregular external surface of the groove result in onset and progression of periodontal disease, the progression of bacterial products through dentinal tubules secondarily compromise the pulp tissue, causing a primary periodontic/secondary endodontic lesion.

|| Summary and Conclusions

Combined endodontic - advanced periodontal regeneration treatment modalities can help us salvage the problems associated with this developmental anomaly.

|| Key Words

Palatogingival groove, Maxillary lateral incisor, Pulpal necrosis, Periodontal regeneration.

|| Introduction

Palatogingival groove or Radicular Lingual Groove is a developmental anomaly in which an infolding of the inner enamel epithelium and Hertwig's epithelial root sheath create a groove that passes from the cingulum of maxillary incisors apically onto the root¹. As the name implies this malformation is actually a groove which starts near the cingulum of the tooth and runs towards the cement-enamel junction in an apical direction at various depths along the root surface². In 1958, Oehlers described for the first time a radicular invagination of an upper lateral incisor in a Chinese female³.

Radicular lingual grooves can create periodontal and pulpal pathology. This groove creates an area where plaque accumulation can be difficult if not impossible to control using oral hygiene measures. Withers et al⁴ in 1981 observed that palatogingival grooves are found on 2.3% of maxillary incisors (4.4% maxillary laterals and 0.28% of maxillary centrals). Clinically these grooves may be symptomatic or asymptomatic. This case report describes the management of a maxillary lateral incisor with deep palatogingival groove using a combination of endodontic therapy and periodontal regenerative techniques.

|| Case Report

An apparently healthy 23-year-old male patient reported with the chief complaint of pain in the right upper incisor teeth region since 6 months. There was occasional bleeding from the affected teeth while brushing. There was no history of trauma or caries, nor was there any discolouration of the tooth. Examination of the maxillary incisors revealed the presence of palatogingival groove on distopalatal aspect of the right maxillary lateral incisor (Fig. 1). On probing, 11mm deep pocket was present on the palatal aspect of the affected tooth (Fig. 2), with no mobility. The pocket was present only along the groove. Radiographic examination after placement of guttapercha point was carried out to delineate the course and extent of the groove. Guttapercha point extended till the apical third of the root and the associated periapical radiolucency (Fig. 3). The tooth was non-vital on pulp testing. The diagnosis of combined endodontic-periodontal lesion associated with palate groove was made based on clinical and radiographic finding.



Fig. 1: Draining sinus tract in the alveolar mucosa adjacent to left maxillary lateral incisor.

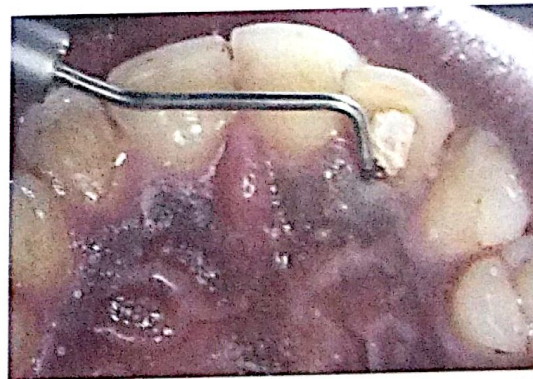


Fig. 2: Pre operative photograph showing palatogingival groove on the palatal surface of left maxillary lateral incisor.

In the initial phase of the therapy, thorough scaling and root planing were carried out followed by root canal treatment (Fig. 4). After anaesthetizing with 2% lidocaine hydrochloride with 1:200000 adrenaline, flap reflection and debridement allowed the complete visualization of the groove. The groove extended up to 10 mm on the root surface from cingulum. Also a deep intrabony defect was observed on the palatal aspect of the right maxillary lateral incisor (Fig. 5). Root planing was performed and odontoplasty was carried out with a high-speed diamond bur to eliminate the palatogingival groove completely (Fig. 6). The bony defect was filled with a hydroxyapatite graft material (Fig. 7), followed by placement of a collagen resorbable membrane (Fig. 8). Flaps were approximated with the interrupted sutures of 3-0 black silk (Fig. 9) and periodontal dressing – Coe-pak – was placed (Fig. 10).

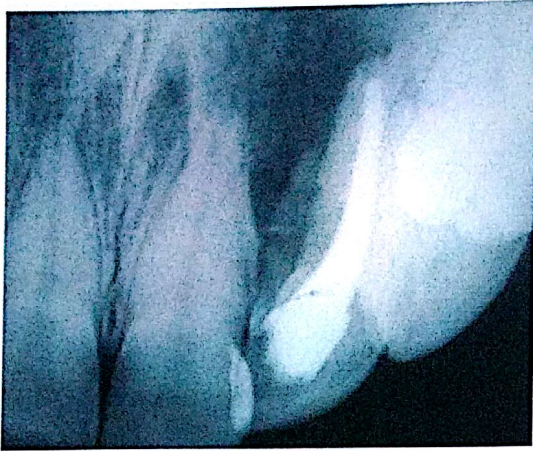


Fig. 3: An intra oral periapical radiograph showing periapical radiolucency and a radiolucent line running adjacent the root canal on the mesial aspect.

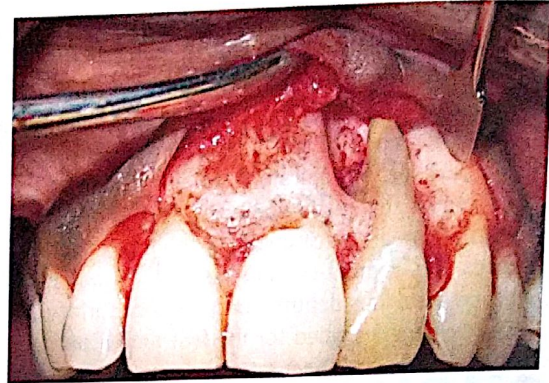


Fig. 6: Odontoplasty done to eliminate the palatogingival groove completely.

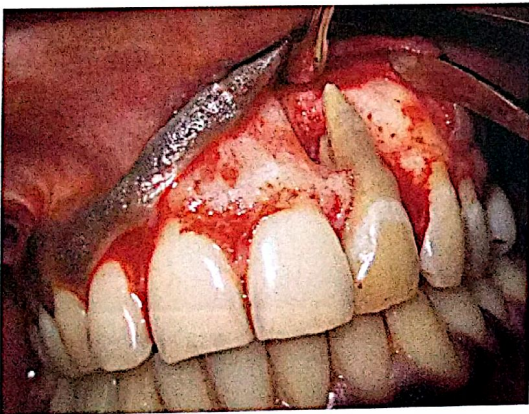


Fig. 4: An osseous defect on the buccal aspect extending from the middle of the root and involving the periapical area.

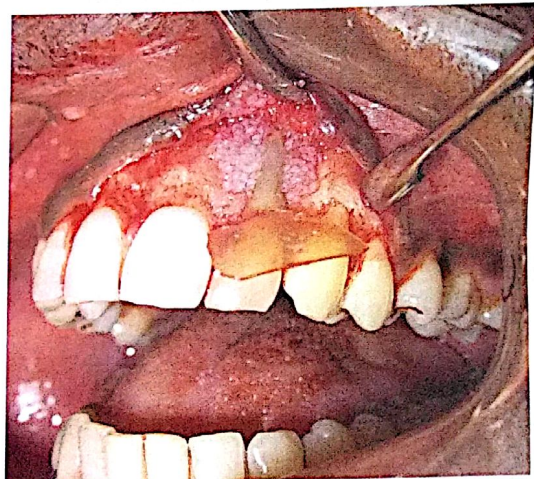


Fig. 7: The defect filled with particulate hydroxyapatite alloplast.



Fig. 5: On the palatal side, the palatogingival groove emerged from the cingulum, ran apically and mesially and finally terminated at the apical third of the root.



Fig. 8: Resorbable collagen membrane for guided tissue regeneration.



Fig. 9: Interrupted sutures of 3-0 black silk.



Fig. 10: Periodontal dressing -Coe-pak placed.

The patient was prescribed Cap Amox (Amoxicillin) 500 mg TID., Tab EnzoFlam (Paracetamol 500mg, Diclofenac sodium 50mg, Serratiopeptidase 15mg) TID for 5 days and mouthwash containing 0.2% chlorhexidine gluconate BD for two weeks.



Fig. 11: The sinus tract has closed.

|| Results

At 1-year recall appointment, complete elimination

of the groove (Fig. 11) and reduction in probing depth to 1 mm was noted in the treated area (Fig. 12). Radiograph showed complete resolution of the periapical radiolucency (Fig. 13).



Fig. 12: One-year postoperative radiograph showing complete resolution of periapical radiolucency.

|| Discussion

The presence of a morphological defect called a palatogingival groove is considered to be an important contributing factor to the development of localized chronic periodontitis, for it favours the accumulation and proliferation of bacterial plaque deep into the periodontium. This anomaly affects maxillary incisors, especially lateral incisors. Diagnosis of a palatogingival groove is not always easy because the defect may manifest itself with symptoms of true periodontal disease or it may be expressed as a true endodontic lesion, or it may appear as a combined lesion.

The epithelial attachment may be breached due to the accumulation of bacterial plaque and calculus⁵ on the irregular external surface of the groove resulting in onset and progression of periodontal disease. As a result of this breach in the epithelial attachment, the progression of bacterial products through dentinal tubules could secondarily compromise the pulp tissue, causing a primary periodontic / secondary endodontic lesion⁶.

If the teeth with palatogingival groove have an involvement of the pulp either by direct pulpal extension of the groove or apical extension of the

groove till the apical foramen then endodontic treatment of the teeth has to be completed first and then periodontal treatment has to be carried out.

The final diagnosis is greatly aided by detection of a notch in the lingual surface of the crown. In the present case, exploration of the lingual fossa revealed a funnel shaped defect obscured by plaque and calculus. Periodontal examination revealed a deep pocket running along the groove. The pulp was non vital. Hence, pulpal necrosis was first managed by endodontic therapy. The vertical bone loss due to the periodontal lesion can be treated using bone graft materials as explained by Ballal NV et al⁷ and a resorbable membrane can also be used for guided tissue regeneration as used by Anderegg CR et al⁸.

In the present case there was bone loss around the right maxillary lateral incisor only which was treated by hydroxyapatite bone graft and resorbable collagen membrane.

|| Conclusion

Deep radicular grooves can predispose to pulp necrosis and the establishment of combined endodontic periodontal problems. Evaluation of clinical signs and appropriate diagnostic tests are of paramount importance in order to prevent deterioration of attachment apparatus. Combined endodontic -advanced periodontal regeneration treatment modalities can help us to salvage the problems associated with this developmental anomaly.

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