

# A Novel Therapeutic Approach for a Palato-Gingival Groove: An Endo-Perio Treatment

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## **ABSTRACT:**

*Developmental grooves (palato-gingival groove), initiates on enamel & can extend a significant distance on the root surface, providing a plaque-retentive area that is difficult to instrument. Thus, it creates an accessibility problem. The simultaneous existence of pulpal problems & inflammatory periodontal disease can complicate diagnosis & treatment planning & affect the sequence of care to be performed. Hence, interdisciplinary treatment should be confined to teeth that are of critical importance to the overall treatment plan after due consideration of alternate treatment methods.*

*The present case report describes the endo-perio interdisciplinary treatment approach for treatment of palatogingival groove of maxillary left central incisor.*

## **KEYWORDS:**

*Developmental grooves, pulpal problems, periodontal disease*

## INTRODUCTION:

Palato-gingival groove is a rare developmental anomaly with important clinical implications. As the name implies, this malformation is actually a groove, which starts near the cervical one third of tooth & run towards the cemento-enamel junction (CEJ) in an apical direction of various depths along the root surface. This provides a plaque retentive area that is difficult to instrument. These palatogingival grooves are found on 5.6% of maxillary lateral incisors & 3.4% of maxillary central incisors [1].

Periodontitis is considered to be a multifactorial disease in which the normal balance between microbial plaque & host response is disrupted. This disruption can occur through changes in the plaque composition, changes in the host response, or environmental & behavioral influences on both plaque response & host response. In addition, periodontal destruction is frequently seen among family members & across different generations within a family, suggesting a genetic basis for the susceptibility to periodontal disease.

The major causes of pulpal inflammation are: progression of dental caries, direct local trauma such as tooth fracture & instrumentation during periodontal, restorative, or prosthetic dentistry. The extent of inflammation of pulp & the signs & symptoms that result vary with the severity of the insult & the ability of the host to ameliorate the inflammation that results. Pulpal infection is a polymicrobial process. Although a correlation between causation & any species of bacteria is not currently possible [2], studies based on culturing suggest that a mean of five bacterial strains may be cultured from infected root canals [3]. The organisms cultured are predominantly gram-negative anaerobes [4]. As the infection process proceeds, the proportion of strict anaerobic-to-facultative organisms & the total number of bacteria increase.

## CASE REPORT:

A 35 years male patient reported to the clinic with the chief complaint of pus discharge from upper front tooth since last 2-3 months. On examination, patient had palatogingival groove on upper right central incisor. The probing depth was 9 mm & the tooth had grade I mobility. Patient had mild, dull-aching intermittent pain on mastication. Patient had not taken ant medications for the same. No contributing medical history was found. On vitality testing, the tooth was found to be no-vital.

Also, radiograph revealed vertical bone defect in relation with right maxillary central incisor. Thus, it was decided that patient will undergo root canal therapy first followed by bone grafting. Patient was kept under observation for 3 months to observe the regeneration of bone through sequential radiographs.

## DISCUSSION:

There are numerous morphologic anomalies that can predispose to periodontal diseases such as cervical enamel projections, enamel pearls, palatogingival groove etc. It has been suggested that palatal grooves on maxillary incisor teeth are predisposing factor to localized severe periodontal destruction. The radicular groove involves the external surface of both the crown & root. This unique feature allows localized periodontal disease to develop readily & breakdown the periodontal attachment adjacent to the defect [5]. The groove can vary in depth, extent & complexity. Mild grooves are gentle depression of the coronal enamel which terminates at or immediately after crossing CEJ [6]. Moderate grooves continue to extend some distance apically to the root. In the case described above, the moderate type of groove was present.

The prognosis of teeth with radicular grooves depends on the severity of periodontal destruction, accessibility of the defect & the type of groove (mild/ moderate). Based on this, the following treatment modalities have been proposed:

- 1- Gingivectomy or subgingival curettage
- 2- Odontoplasty or saucerization
- 3- Conservative treatment by eliminating the grooves with restorative materials
- 4- Combined endodontic & periodontal treatment in severe cases
- 5- Orthodontic extrusion
- 6- Extraction

Although the effects of pulpal disease on periodontium are well documented, a clear-cut relationship between periodontitis & pulpal involvement is less evident. The inflammatory changes have been reported to adjacent canals exposed by periodontitis, periodontitis rarely produces significant changes in the dental pulp. Neither irreversible pulpitis nor pulpal necrosis has been consistently found in histologic studies of teeth extracted because of severe periodontal disease [7]. It has been suggested that the presence of an intact layer of cementum may protect the pulp from injurious elements

produced by plaque microbiota [8]. Hence, once the decision to retain the tooth is made, endodontic therapy should precede attempts at periodontal pocket elimination [9]. After successful endodontic treatment, the residual periodontal pocket that remains can be more predictably treated. The periodontal therapeutic objectives vary with the extent & configuration of the residual periodontal lesion. The elimination of etiologic factors, alteration in depth & configuration of the pocket, & facilitation of restorative dentistry may all be legitimate objectives. Thus, periodontal treatment may include scaling & root planing, as well as various surgical treatments.

## CONCLUSION:

With proper treatment, the healing of an endodontic lesion is highly predictable. However, the prognosis for teeth with combined lesions varies with the extent that each lesion contributes to the loss of attachment. Lesions resulting from pulpal disease tend to resolve with endodontic therapy, whereas the repair or regeneration of attachment loss resulting from periodontitis is less predictable. Thus, the long term prognosis for a tooth with a combined lesion is closely related to the extent & configuration of the periodontal attachment loss.

Therefore the decision to treat & retain teeth with combined periodontal & endodontic lesions should be carefully considered in regard to the overall dental treatment plan, because the time & cost of combined defect treatment may be considerable.

## Figures



Fig. 1

Fig. 2



Fig. 3

Fig. 4



Fig. 5

Fig. 6

## Legends of Figures:

- 1- Pre-operative palatal view
- 2- Intra-operative palatal view
- 3- Placement of bone graft
- 4- Placement of sutures
- 5- Pre-operative radiograph
- 6- Post-operative radiograph (after 3 months)

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