PALATOGINGIVAL GROOVE - CAUSE OF ROOT-CANAL FAILURE - A CASE REPORT.

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ABSTRACT:
Morphological defects occurring in dental structure can be sometimes predisposing factors for the onset of inflammatory processes in the periodontal and/or pulpal tissues. Palatogingival groove is one such defect, most frequently found on the lingual surface of maxillary laterals. They are easily overlooked as aetiologic factors, as these grooves are covered by periodontal tissues. This case report discusses successful management of a root-canal treated maxillary lateral incisor with an associated radicular lingual groove having persisting inflammatory condition. The management included a combination of endodontic therapy and periodontal regenerative techniques.

KEYWORDS: Palatogingival groove, periodontal breakdown, Maxillary lateral incisor

INTRODUCTION
A palatogingival groove is usually seen as a breach on the enamel surface traversing the cingulum extending on to the root surface in varying depth and extension. The groove itself may represent a channel of communication between pulp and periodontium other than neural, vasculolymphatic pathways, dentinal tubules, apical foramina and lateral canals. This anomaly is mostly seen on the maxillary lateral incisor which is notorious with regard to a number of morphologic and anatomic abnormalities.

The palatoradicular groove is a developmental anomaly, when present act as a site for plaque accumulation, often associated with localized periodontitis and a pulpal necrosis. Defects involving both pulpal and periodontal disease have caused confusion and controversy in dentistry.

Palatogingival grooves, which have also been termed radicular lingual groove, distolabial grooves, palatogingival grooves and radicular palatal grooves, are developmental anomalies that represent an infolding of the enamel organ and the epithelial sheath of Hertwig. Usually these grooves start coronal to the cingulum and continue for varying distance and directions along the root.

The location of the groove as well as its narrow V shaped configuration (type II) makes it a favorable site of plaque accumulation even in presence of generally good oral hygiene. In cases where the pulp has also become necrotic, the tooth requires endodontic treatment in addition to periodontal therapy. Most often patient will be presenting with a complaint of dull intermittent toothache, mobility, sinus tract formation. In addition a pathologic labial inclination of the concerned tooth may be seen.

Once the pulp is necrosed, endodontic treatment with thorough cleaning and shaping and tight sealing of the groove with a restorative material becomes mandatory. Suggested treatment modalities for radicular groove are curettage of the affected tissues, elimination of the groove by grinding (saucerization) or by sealing with a variety of filling materials, surgical procedures including placement of bone graft in addition to the conventional endodontic treatment.

Case Report:
A 28 year old male reported to the clinic with chief complain of recurrent swelling, pus discharge and recurrent episodes of dull pain associated with right maxillary lateral incisor.
Fig. 1. Pre-operative- Intra oral photograph

Fig. 2. Pre-operative - Intra Oral Peri apical Radiograph

Fig. 3. Post-endo periodontal lesion associated with palate groove i.r.t. 22

Fig. 4. Periodontal surgical management of lesion associated with palate groove is done i.r.t. 22

Fig. 5. Post-operative photograph
His chief complaint was, “swelling and pus discharge from the gums of the right side of the upper front tooth though it was root-canal treated 2 months back”. There was no history of trauma and the medical history was non contributory. A comprehensive periodontal examination was completed including extraoral, intraoral and radiographic evaluations.

On clinical examination, supragingival plaque formation was present on the palatal aspect of right maxillary lateral incisor and intraoral sinus formation was seen on the labial surface of right maxillary lateral incisor. On periodontal probing, a carious palatal groove was detected associated with pocket of more than 8 mm in depth. The surrounding palatal gingiva appeared bluish red and edematous with rolled out gingival margins. Bleeding on probing was also present. (Fig. 1.)

The tooth had no significant mobility. Thermal and Electrical Pulp Vitality Tests gave negative response. Periapical radiograph showed circumscribed radiolucency surrounding a well obturated canal in relation to maxillary right lateral incisor. (Fig. 2.)

The diagnosis of a post-endo periodontal lesion associated with palate groove was made based on clinical and radiographic finding. (Fig. 3.)

Our treatment plan consisted of elimination of the groove by grinding (saucerization) and sealing with a filling material, followed by surgical management of periodontal defect.

A palatal full thickness flap was reflected. Granulation tissue along the groove was curetted and Odontoplasty was performed on the root surface to eliminate the groove. Then the defect was sealed with GIC type-II. (Fig. 4.)

The flap was replaced and sutured. Patient was prescribed antibiotics, analgesics and a mouth wash containing 0.2% chlorexidine gluconate. At the recall visit post surgical healing was satisfactory and Sinus tract had healed. (Fig. 5.)

Discussion

Diagnosis of a palatogingival groove (PGG) 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. In some cases, the groove can be seen in periapical radiographs as a fine radiolucent line. The final diagnosis is greatly aided by detection of a notch in the lingual surface of the crown.

The treatment of palatal groove presents a clinical challenge to the operator. The variability size and shape of this anomaly coupled with bacterial invasion may affect both the periodontium and the pulp. Hence, conventional endodontic treatment alone will not be effective because the bacterial etiology is residing extra radicularly as a self sustaining lesion11.

The treatment of PGG presents a clinical challenge, as the long-term prognosis depends on the length, depth and complexity of the groove. Teeth with physiologic mobility and shallow grooves might be corrected by odontoplasty in conjunction with periodontal treatment including curettage of granulation tissue12. However, when the groove is more advanced and associated with extensive periodontal destruction, the treatment of the teeth is complex13.

Elimination of the groove and appropriate treatment of the periodontal defect would reduce inflammatory irritants, thus favourably influencing the prognosis of such teeth.14

In the present case combined endodontic and periodontal treatment was performed to eliminate the irritants causing inflammatory process. Radiculoplasty was performed to eliminate the groove which often harbors bacteria and debris leading to local inflammatory reaction.

Here Glass ionomer type II Cement has been used to seal the defect as it has chemical adhesion to the tooth structure providing good sealing ability. Clinical and histological studies have shown that there is an epithelial and connective tissue adherence to the Glass Ionomer Cement during the healing process, similar to the formation of long junctional epithelium.15

CONCLUSION

Conservation of teeth is the main criteria of today’s practice. There should be knowledge of different tooth anomalies, their significance in etiopathogenesis of periodontal disease. A proper diagnosis of lesions affected by both periodontal and pulpal disease is essential for the successful treatment of these complex lesions. It is important to recognize the role of deep palatoradicular groove as a contributing anatomical factor in the progression if localized periodontic-endodontic lesions. Combined endodontic - advanced periodontal regeneration treatment modalities can help us to salvage the problems associated with this developmental anomaly.

References


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