Palatogingival Groove: Management of an Innocuous Culprit of a Perio-endo Lesion

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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. Recognition of such a defect is critical and important, especially because of its diagnostic complexity and its further consequences. This case report discusses about the diagnosis and management of such a defect that predisposed the maxillary lateral incisor to periodontal defect leading to retrograde pulpitis.

Key Words: Palatogingival groove, Periodontal breakdown, Retrograde pulpitis, Bone graft.

Introduction:
Distolinguval groove, radicular lingual groove, palato-radicularg groove, coronoradicular groove and palatogingival groove are synonyms for a mild developmental malformation that occur in the lingual aspect of maxillary incisors and have been described by Everett & Kramer (1972) and Robison & Cooley (1988). This malformation starts near the cingulum and runs in an apical direction for varying lengths up to the entire length of root (Kerezoudis et al, 2003). This anomaly is said to represent an infolding of the enamel organ and epithelial sheath of Hertwig (Walker & Jones, 1983), where as other workers claim this to be a resultant attempt of the body to form another root on the affected tooth (Kerezoudis et al, 2003). The groove was first mentioned in a dental anatomy text in 1917, later described by Zeisz Nuckolin (1949). In 1965, Prichard described this as a defect predisposed to the formation of periodontal pockets. Lee et al (1968) named this as the palatogingival groove.

It is the funnel shaped appearance which forms a niche for bacterial plaque and calculus accumulation making it difficult for the patient as well as professional to clean it properly. Inflammation may thus develop in the periodontal tissue adjacent to the groove leading to the detachment of junctional epithelium, periodontal destruction, pocket formation and alveolar bone loss (Kerezoudis et al, 2003). Deeper periodontal pockets may cause pulpal pathosis. Hence, it is essential to recognize this anomaly so that the consequences that may arise due to its presence can be managed effectively. This case report discusses with the diagnosis and management of a maxillary lateral incisor showing a palatogingival groove that predisposed it to retrograde pulpitis after periodontal breakdown.

Case Report:
A 28 year old female reported to the department of Periodontics, ACPM Dental Collage and Hospital, Dhule, with the chief complaint of purulent discharge and swelling from gums in relation to upper left front tooth (22) for last 2 months. Examination showed localized swelling and an intraoral draining sinus pointing on the labial gingiva between the left lateral incisor and canine (Fig. Ia). There was no history of trauma, caries, nor was there any discoloration of the tooth. The palatal surface of lateral incisor showed fossa with mild calculus embedded in it (Fig. Ib). Periodontal examination revealed bleeding on probing and periodontal pocket more than 8mm deep on the distal aspect of the lateral incisor (22) along the groove. There was no mobility associated with it. To locate the origin of the sinus, a gutta percha cone was inserted into its course and another cone inserted along the groove, and a radiograph was taken (Fig. Ic). The cone inserted into the sinus pointed towards the apex of the tooth and the one inserted along the groove followed up to the depth of the periodontal defect.
Radiograph also revealed an angular defect. Following insertion of the cone along the groove, oozing of the purulent discharge from the sinus was noted.

On thermal and electric pulp testing, the associated tooth was found to be non-vital. Adjacent teeth elicited normal response. Findings were suggestive of retrograde pulpitis secondary to periodontal lesion.

Emergency access opening of root canal was done. The canal was enlarged up to 60 K file size and proper hermetic seal was achieved in obturation. A post obturation radiograph also revealed a radiolucent line running parallel to the main pulpal canal called as the parapulpal line (Fig. Id).

After satisfactory endodontic therapy, a decision to graft the bony defect was made. A full thickness mucoperiosteal flap was elevated on buccal and palatal aspects. The exposed root surface was planed with curettes and the exposed groove on the root was restored with glass ionomer cement after conditioning it with polyacrylic acid. Thorough degranulation helped in revealing a narrow, deep three walled intraosseous vertical defect extending upto 75% of the root length. Bone probing revealed around 10 mm deep defect (Fig. IIa). A sterile bone inductive demineralized bioresorbable xenograft (Osseograft) was placed in the defect under aseptic conditions (Fig. IIb). The flap was sutured with interrupted sutures using 3-0 mersilk. A periodontal dressing was placed. A course of antibiotics and analgesics (Amoxicillin trihydrate 500mg, metronidazole 400mg, and ibuprofen-paracetamol combination three times a day) was given. Chlorhexidine mouth rinse (0.2%) was prescribed for 2 weeks. Necessary post-operative instructions were given. Patient was recalled for suture removal after 10 days; the healing was observed to be satisfactory. The patient was put on maintenance therapy initially for three months, and when found symptom free, she was recalled every six months for follow up till 18 months (Fig. IIc). At the end of 18 months, probing depth was of 5 mm with 3mm gingival recession. Six months post-operatively, an intra oral periapical radiograph was advised (Fig. IId).
the period of maxillary growth. The tooth although still a germ, becomes surrounded by the central incisors, canine and first premolar that are in a more advanced phase of dental development. Mineralization of the crown of the maxillary lateral incisor starts later compared with other teeth, making this germ, under these condition highly susceptible to folding (Lara et al, 2000).

The palatogingival groove may or may not involve a communication between the pulp cavity and the periodontal tissue. But it can be a etiological factor for the ensuing endodontic/ periodontal lesion in the absence of trauma, caries or restoration. It is the irregular funnel shaped feature on the lingual aspect that causes bacterial ingression through this groove along the root surface causing detachment of the junctional epithelium leading to periodontal breakdown. Once periodontal disease reaches the apex through the groove’s depth, it can jeopardize the pulp, making it secondarily affected.

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. 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. 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 followed by conditioning and restoration of the groove by glass ionomer cement. Glass ionomer cement was used because of its antibacterial activity and its property of chemical adhesion to tooth structure. Clinical and histological studies have shown that there is an epithelial and connective tissue adherence to the glass ionomer cement during the healing process (Hans et al, 2010). Periodontal bony defect was grafted by Osseograft, a demineralized bone inductive xenograft shown to have regenerative properties. Other regenerative materials used by various authors include endogain by Cecilia et al (1998) and hydroxyapatite by Ballal et al (2007) with successful results. In the present case, with osseograft, there occurred a reduction in the probing depth from 8 mm to 5mm after a period of 18 months. The patient was symptom free and there was no reoccurrence. However, the patient is being followed.

Discussion:

Historically, the presence of this palato radicular groove is mentioned right from the development of mankind and its prevalence was said to be 12-21% during the megalithic period (Robison & Cooley, 1988). But there was no mention of potential of such an anomaly posing a periodontal and pulpal pathosis. Atkinson et al (1943) reported that the predominance of palatogingival groove in maxillary lateral incisor suggest possibility that the groove results from an undesirable position of the lateral incisor during
Bibliography:


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