

Case Report

Management of a Palatal Gingival Groove in a Maxillary Lateral Incisor: A Case Report

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Abstract

The palate-gingival grooves are an anatomical anomaly in maxillary incisors, which might result in local periodontal pocket formation, bone loss and sometimes pulpal necrosis. In the present case, there was a groove on the palatal side of a maxillary lateral incisor with vital pulp. The periodontal problem of the tooth was treated and the 6-month postoperative follow-up showed attachment gain and decreased pocket depth.

Key words: Anatomical anomaly, bone graft, palate-gingival groove.

Introduction

Anatomic variations are often seen in the human dentition. Many embryonic malformations such as cleft palate, globulomaxillary cyst, and missing and peg-shaped teeth happen in the area of maxillary lateral incisors. Another dental anomaly in this area is a palate-gingival groove in the palatal aspect of teeth.¹ This groove is described with other terms like radicular groove, vertical developmental groove and cingulo-radicular distolingual groove.² It is found in the enamel or cementum on the palatal aspect of maxillary incisors and usually starts from the cingulum surface and continues along the root. The majority of these grooves are found in the maxillary lateral incisors and may result from an invagination of the enamel organ and the epithelial sheath of Hertwig during odontogenesis.³ Some studies have suggested that groove formation is an endless at-

tempt to form an additional root or it can be the result of a change in genetic mechanisms.^{4,5} Clinically this groove causes accumulation of bacterial plaque and inflammation. The teeth with this anomaly are often associated with periodontal pockets, bone loss and sometimes pulpal necrosis, the latter indicating the presence of a combined endodontic-periodontal lesion.^{6,7} The prognosis of teeth with this developmental defect depends on the depth and width of the groove. Shallow grooves are treated by odontoplasty with periodontal therapy whereas deeper grooves are complicated cases with poor prognosis.⁶ This article presents management of a case of a palate-gingival groove in a maxillary lateral incisor.

Case report

In a routine dental examination of a 45-year-old man in the Post-graduate Division of Department of Periodontology, Tabriz Faculty of Dentistry, a notch in

the area of cingulum of tooth #12 toward the gingival margin was detected; the pocket depth in that area was 11 mm and bled during probing while other areas of the mentioned tooth were normal. There was also grade I mobility (Figures 1 & 2).

In radiographic examinations, an advanced bony defect was seen on the distal aspect of tooth #12 that extended toward the apical third of the root (Figure 3).

As the occurrence of palate-gingival groove may be bilateral, the tooth #22 was also examined in the clinic and radiographically but there was no evidence of a groove. The reaction of tooth #12 to thermal and electrical test was normal and thus no endodontic treatment was necessary. It seemed the problem was only periodontal in this case.

The treatment started under local anesthesia with 2% lidocaine with epinephrine at a concentration of 1:100000. A sulcular incision was made on the palatal side of the maxilla and then a full-thickness mucoperiosteal flap was reflected. Granulation tissue was curettaged from the defect. Odontoplasty and radiculoplasty were conducted with a polishing diamond round bur (Diamant GmbH, D&Z, Berlin, Germany) in a high-speed handpiece under air and



Figure 1. Preoperative photograph.



Figure 2. Probing of the pocket before surgery.



Figure 3. Preoperative radiographic view.

water cooling. The bony defect was filled with a bone graft and the surface of cingulum was restored with composite resin (Filtek Z250, 3M ESPE, St. Paul, USA). Then, the palatal flap was returned and fixed by sling suture technique with 3-0 silk suture and the area was covered with periodontal dressing (Coe-pak) (Figure 4).

Postsurgical instructions were given to the patient and these medications were prescribed: Amoxicillin 500 mg tid for 1 week, Ibuprofen 400 mg qid for 3 days and 0.12% CHX mouthwash twice daily for 2 weeks.

Ten days after surgery, sutures and periodontal dressing were removed. A periodic recall program was scheduled at 1, 3 and 6 months after surgery. At the end of this program, the patient had no complaints and the tooth mobility returned to normal. There was no bleeding on probing and the probing



Figure 4. Flap reflection during surgery.

depth decreased to about 4 mm. The bony defect was radiographically filled (Figure 5 & 6).

Discussion

The palate-gingival groove is a developmental anomaly that extends from the cingulum along the root of maxillary incisors and might involve the pulp.⁷ The prevalence of this groove has been reported to be 2.8–8.5%.⁸ Kogan reported a prevalence rate of 43% for the palatal groove on the root surface of maxillary lateral incisors that measured less than 5 mm and in 47% of cases they measured 6–10 mm.⁹ The shape of this developmental defect is generally funnel-like that creates a niche, causing bacterial plaque accumulation and calculus formation; it



Figure 5. Postoperative pocket depth.



Figure 6. Postoperative radiographic view.

makes proper cleaning difficult for both the patient and dentist.⁷ Patients with this groove may be associated with symptoms of periodontal abscess or true periodontal disease or true endodontic problem. Also, it may have no symptoms.¹⁰

This groove may be seen on radiographs as a dark line extending along the root that resembles a vertical root fracture. Detection of the groove is not always easy because it may be below the gingival margin or it may be hidden completely by bacterial plaque. For detecting these cases, periodontal probing is recommended because isolated periodontal pockets are associated with this anomaly. The depth and the extent of groove is an important factor in the prognosis of affected teeth. The shallow and narrow grooves are often successfully treated whereas deep grooves are associated with combined endodontic-periodontal problems and poor prognosis.⁷

In our case, the tooth #12 had a periodontal problem without pulpal involvement and therefore, it needed no root canal therapy. A successful treatment of this case depends on the ability to eliminate the groove because the groove favors plaque retention, giving rise to inflammation, periodontal pocket formation and bone loss. Through odontoplasty and curettage of granulation tissue the prognosis of teeth with shallow grooves can be improved. In our case, after eliminating the groove and curettage of granulation tissue, a bone graft was placed in the bony defect and the cingulum of tooth was restored. After 6 months of follow-up, the patient was asymptomatic and the tooth had about 4 mm of probing depth without bleeding on probing at the palatal side.

Conclusion

The presence of a palate-gingival groove on the palatal aspect of maxillary lateral incisors is not uncommon and lack of awareness of its existence can lead to inappropriate treatment and eventual tooth loss. Thus, during oral and dental examinations, the clinician should pay attention to the presence of this groove.

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