



MANAGEMENT OF BILATERAL CERVICAL GROOVE – AN EXQUISITE CLINICAL ENTITY

Dr. Varshini. S	Post-Graduate
Dr. K. Malathi	Professor and H.O.D
Dr. Sandhya Gnanasambandam*	Post-Graduate *Corresponding Author
Dr. Hima Bindu Reddy. C	Post-Graduate
Dr. Nithiyaraj S	Post-Graduate

ABSTRACT

Developmental grooves are anatomical considerations that present accessibility problem. They initiate on enamel and can extend a significant distance on the root surface, providing a plaque retentive area, that is difficult to instrument. When radicular grooves are presented with bone loss and attachment loss, removing the groove through odontoplasty or reducing its depth helps to minimize the plaque retention. This case report describes the appearance of Facial radicular grooves on maxillary central incisors extending from CEJ to middle third of the root in a 41-year-old female patient.

KEYWORDS : Palatogingival groove, cervical groove, plaque retention, management.

INTRODUCTION

Palatolaradicular groove also termed as Palatogingival groove, extends from the base of the cingulum in apical direction for a variable distance. Generally, it is present in the maxillary lateral incisors and majority of the radicular groove are seen on the palatal aspect of upper anteriors and rarely in the posterior teeth. When it is present with increased pocket depth, attachment loss and bone loss the removal of the groove through odontoplasty is helpful to minimize the retention of plaque [1]. These grooves are thought to act as tunnels for the accumulation of plaque and calculus in the depth of the groove due to inaccessibility for the patient and dentist [2]. Bacterial plaque accumulation in these areas quickly destroys the sulcular epithelium, advancing along the groove and apically destroying deeper parts of the periodontium resulting in the formation of a deeply localized periodontal lesion.

It is a developmental morphological anomaly also termed as radical anomaly in the distolingual groove and the radicular groove. Usually affecting the upper lateral incisor, it originates in the region of cingulum and most frequently ending up at the CEJ. Being in the central fossa the groove extends for variable distance and directions down to the root, often causing periodontal destruction due to accumulation of dental plaque, calculus and debris [3].

Buccal location of the radicular groove is rare. Pecora et al studied the incidence of radicular groove and reported that maxillary central incisors showed an incidence of 0.9% radicular grooves [4]. Facial radicular groove is a malformation which starts near the cervical one-third of the tooth and runs towards the CEJ in an apical direction at various depths along the root surface. Exact etiology of the defect is unclear but may be the mildest form of dens invaginatus or due to an attempt of the body to form another root on the affected tooth.

In this case report, a clinical case is presented with buccal radicular groove on the central incisor associated with the formation of periodontal pockets. Here we report a case in which access flap surgery combined with odontoplasty and GIC restoration were successfully employed to treat severe periodontal destruction associated with deep cervical groove.

CASE REPORT

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The patient was 41-year-old female who had complaints of sensitivity on consumption of hot and cold food for the past 1 year in the upper anteriors. No history of trauma, or injurious habits and had not undergone any orthodontic treatment before. Clinical examination revealed that deep pocket of 6-8mm was present at the labial surface of the tooth in relation to cervical groove (mid buccal region) which extends beyond the CEJ. Both the central incisors showed slight notch in buccal cervical area. The patient's oral hygiene was fair. Electrical pulp test showed that the pulp was still vital. Thus, endodontic treatment was not indicated. Past dental history revealed that patient had undergone extraction of lower anteriors due to mobility before a week time. Intra oral examination revealed Dental caries in 18,16,27,37 with pathological migration in 11,21,31 added to the history of removal of 26,36,41,46. Generalized spacing in the anterior region was noted with bilateral cervical groove in 11,21 that extends beyond the CEJ (Figure 1).

Investigations

Hemogram and biochemical investigations revealed appreciable levels only. Oral radiographic evaluation by OPG showed gingival marginal bone loss upto middle third of the root with discontinuous lamina dura and widened periodontal ligament space, giving the provisional diagnosis of Stage III Grade B periodontitis. After explaining these facts to the patient, her consent was obtained for the treatment of the condition. Phase I therapy was initiated and evaluated later. To eradicate the underlying problem prophylactic surgery with odontoplasty and GIC restoration was carried out. Diagnosis of Radicular groove is not easy due to differential diagnosis that includes long standing crack on the tooth and a crown root vertical fracture. The final diagnosis is established by detecting a notch on the crown, which is present in this case.

Procedure

After giving local anesthesia, mucoperiosteal flap was reflected labially and palatally, granulation tissue was removed from the bony defect and at that time the cervical gingival groove which terminated into the middle third of the root was noted. The groove was seen extending on the root surface of both 11 and 21 with a depth of 5mm and 4mm respectively (Figure 2). Root planing was performed and odontoplasty was carried out with a high-speed diamond

round bur to eliminate the groove completely (Figure 3). No pulpal response was observed. It was decided to eliminate the groove with GIC. GIC restoration was done to avoid sensitivity and polished thoroughly (Figure 4). The flap was readapted, stabilized, and covered with periodontal pack (Coe pak) for 1 week in adjunct with chlorhexidine mouthwash after 24 hours of surgery and continued for a week. The patient was advised to follow antibiotics and analgesics for a period of five days. Following surgery after 1 week suture removal was done (Figure 5). One month after the operation, the gingiva appeared healthy with neither inflammatory signs nor symptoms. Radiographs were taken after 3 months. Healing was uneventful and no recurrence was noted for three months postoperatively. During this period the patient maintained meticulous oral hygiene.

DISCUSSION

An association between palatoradicular groove and localized periodontitis was first reported by Lee et al [5]. The palatoradicular groove is a developmental morphological anomaly in the maxillary incisors that has been reported to be associated with severe periodontal disease. Koracks called it as 'Syndesmo corono radicular tooth' [6]. The significant feature associated with the groove was the alteration of level of CEJ where it passes from the crown to the root. Kogan said that a deep and tube-like groove was a predisposing factor for the development of periodontal disease [7]. Simon et al concluded that extraction was the better choice of treatment than to treat periodontitis associated with palatoradicular groove [8]. Everett and Kramer reported that the prevalence of distolingual groove was 1.9% and these grooves may be present radiographically as a radiolucent para pulpal line [9].

In this case the patient's symptoms were resolved and clinical improvement was there but the long-term prognosis remains unclear. This is due to the short post operative observation period. Periodontal lesions can arise due to developmental anomalies like enamel pearls in the furcation areas, palatoradicular grooves in the incisors. If there is an evident pulpal involvement, endodontic treatment may be required. Goon et al reported the first case of involvement of Facial radicular groove involving the facial aspect of maxillary lateral incisor [10] and Kozlovsky et al in maxillary central incisor [11]. Developmental defects provide ideal trap for plaque, promoting periodontal breakdown. The prognosis depends on the severity of periodontal problem, accessibility and the type of groove (shallow, deep, long, short).

CONCLUSION

This case report presents the successful treatment of a periodontal destruction occurring with buccal radicular groove in central incisor. Such defects cause bacterial plaque accumulation in this region causing irritation and subsequently localized periodontitis. Plaque accumulation in these areas quickly destroys the sulcular epithelium advancing along the grooves, apically destroying the deeper parts of periodontium. Deeper grooves may cause pulpal necrosis and the establishment of combined endodontic periodontal lesion (conservative treatment by eliminating the groove with restorative material). Elimination of the anomaly and the associated inflammatory irritants will show the favourable prognosis.



Figure 1 - Pre-operative

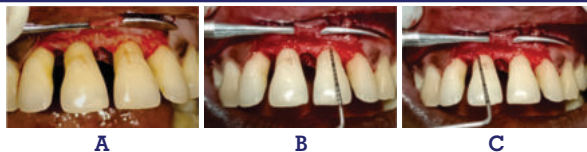


Figure 2 A,B,C - Flap Reflection



Figure 3 - Odontoplasty



Figure 4 - GIC Restoration



Figure 5 - Post-operative

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