

Case Report

Elimination of palatoradicular groove: a combined endo-perio effort

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Abstract:

Palatoradicular groove is an anomaly which is found more frequently in upper lateral and central incisors. This condition may lead to endo-perio lesions. A 19- year- old female presented with chief complaint of swelling and pus discharge from the gums of the right side of the upper front teeth and she also complained of loose tooth and intermittent pain. On clinical examination, probing pocket depth of 10 mm, grade II mobility and extrusion of the tooth was found. A combined endo-perio treatment was performed and elimination of the groove, pain and reduction in probing pocket depth and mobility was achieved. The purpose of this case is to highlight an interdisciplinary approach towards the management of an anomaly which may affect the endodontic status of the tooth and periodontal health of the patient.

Key words: endo-perio lesion; palatoradicular groove; tooth mobility

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Introduction

Dental plaque is an adherent biofilm of bacteria and their products that forms on all tooth surfaces and dental prosthesis¹. Factors that may contribute to plaque accumulation and retention include; marginal ridge discrepancies, food impaction, cervical enamel projections, open contacts, and pits and grooves on tooth surfaces.

The palatoradicular groove (PRG) is a developmental anomaly, when present acts as a site for plaque accumulation, often associated with localized periodontitis and pulpal necrosis². Pulpal inflammation and infections that extend into the periodontal space may present signs consistent with periodontitis. Likewise, destructive periodontitis that extends to the periapical regions may lead to pulpal pathoses and symptoms not typically found with periodontitis³.

Case Report

A 19- year- old female reported to the department of Periodontology, B. P. Koirala Institute of Health Sciences, with chief complaint of swelling and pus discharge from the gums of the right side of the upper front teeth and she also complained of loose tooth and intermittent pain. A comprehensive peri-

odontal examination was completed including extra-oral, intraoral and radiographic evaluation. On clinical examination there was grade II mobility in the upper right central incisor. The tooth was tender on percussion associated with deep bite and trauma from occlusion. (Fig:1)



Figure 1: On clinical examination there was grade II mobility in the upper right central incisor. The tooth was tender on percussion associated with deep bite and trauma from occlusion.

In that area the surrounding palatal gingiva was red and edematous and there was a deep periodontal pocket of about 10 mm. The initial periodontal examination included localized scaling and root

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planing on the upper right central incisor followed by oral hygiene instructions. Radiographic findings showed vertical bone loss.(Fig:2)

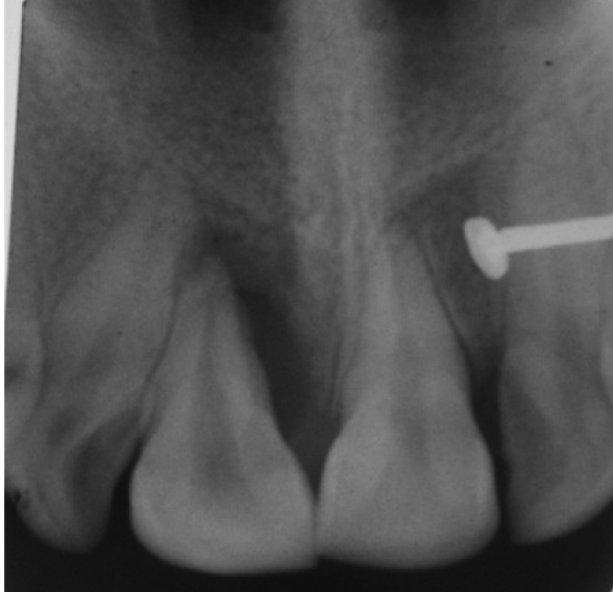


Figure 2: Radiographic findings showed vertical bone loss

Endodontic therapy- Root canal treatment was done for the upper right central incisor. A full thickness mucoperiosteal flap was reflected labially and palatally under local anaesthesia and an angular bony defect extending upto the apex of right central incisor was clinically visible. The diseased granulation tissue was curetted out (with Gracey curette number 1,2 and 5,6; Hu-Friedy Manufacturing Co, Chicago, IL) to leave the soft tissue more conducive to regeneration. The surgical site was debrided thoroughly and root planing was performed again. Trauma from occlusion was also eliminated. (Figure: 3,4)

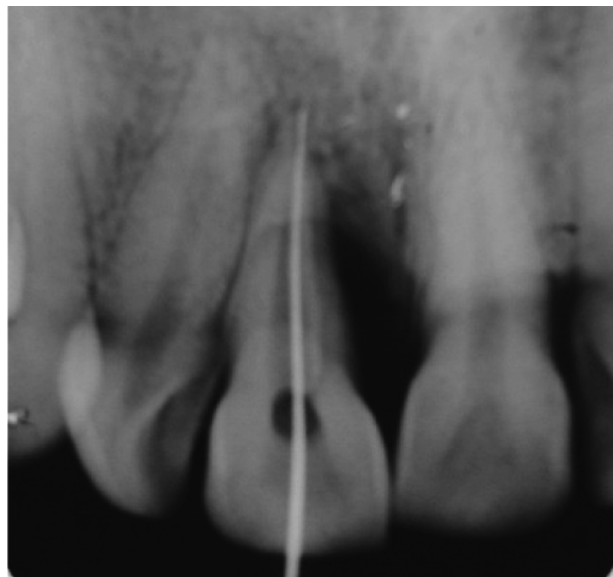


Figure 3: Endodontic therapy- Root canal treatment



Figure 4: Surgical site was debrided thoroughly and root planing performed

Palatoradicular groove was filled with glass ionomer cement(GIC). After the defect was filled, the site was grafted with hydroxyapatite granules with collagen. The flap were approximated and sutured and periodontal pack was applied. Splinting of the upper anteriors was done (from 13 to 23) for six weeks. Sutures were removed after one week. The patient was placed on a 3 months periodontal maintenance programme.(Figure 5)



Figure 5: Palatoradicular groove was filled with glass ionomer cement(GIC)

Radiographs were taken before, during and after the placement of bone graft and also three months after placing bone graft.(Fig: 6,7,8)

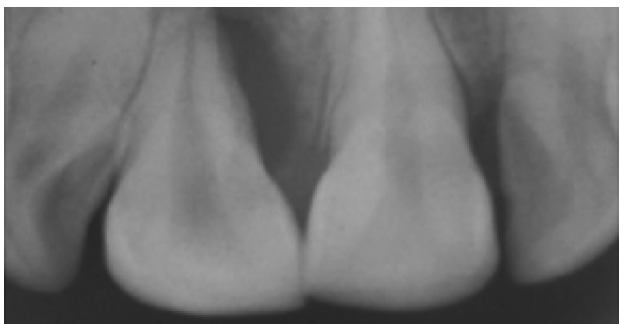


Figure 6: Radiographs were taken before the placement of bone graft.



Figure 7: Radiographs were taken during the placement of bone graft.

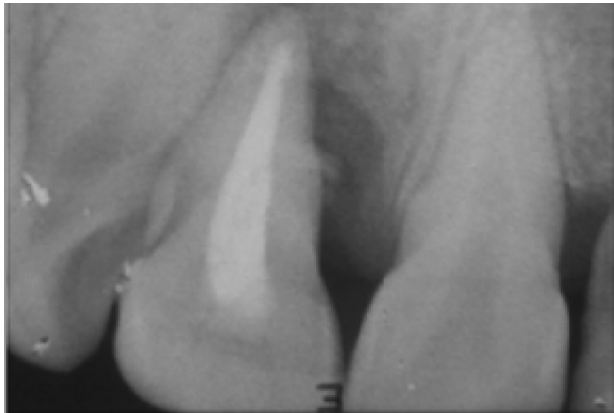


Figure 8: Radiographs were taken three months after the placement of bone graft. Since the defect did not heal even after three months as expected after using the allograft, autogenous bone grafting taken from the parasymphysis region was planned and placed in the bone defect for the upper right central incisor. Supportive periodontal maintenance at 3 months was prescribed to maintain periodontal health and to re-evaluate this area. At 6 months recall, the teeth were asymptomatic with successful healing, mobility was reduced to less than grade I and probing depth was minimal. The radiograph after 6 months follow-up, showed evidence of substantial bone fill with resolution of the osseous defect. (Fig: 9,10 and11)

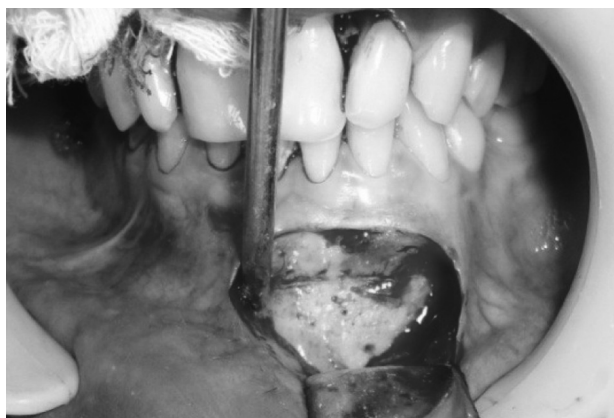


Figure 9,10: Autogenous bone grafting taken from the parasymphysis region.



Figure 11: The radiograph after 6 months follow-up, showed evidence of substantial bone fill with resolution of the osseous defect.

Discussion:

The Palatoradicular groove is a developmental anomaly of variable extent and depth that may or may not involve a communication between the pulp cavity and the periodontal tissue. The anomaly has a variety of names: the palatogingival groove, the radicular lingual groove, the radicular groove, the palatoradicular groove, the facial radicular groove, the developmental groove, and the disto lingual groove⁴. This PRG is a locus of plaque and calculus accumulation, which acts as a secondary local etiologic factor encouraging the development of periodontitis⁵.

Autogenous bone can be harvested from a variety of areas. It has been shown that membranous bone tissue grafts have less resorption than endochondral transplants. Therefore intraoral bone grafts for the

maxilla and mandible are favoured⁶. The grafts should be oversized with thick resorption-resistant cortex to maintain enough graft volume after the resorption phase is over⁷.

When the etiology is purely endodontic, calcium hydroxide can be used as an intracanal medicament. It is an excellent medicament in general, because it is bactericidal, anti-inflammatory and proteolytic; it inhibits resorption; and it favors repair. It is especially effective in endodontic lesions with extensive periapical pathology and pseudo pockets, because of its temporary obturating action which would inhibit periodontal contamination of the instrumented canals via patent channels of communication. This regimen usually will resolve the pseudo pocket within a few weeks.

However, lesions which are not true combined lesions, little or no improvement would be seen with the periodontal perspective after endodontic treatment, leaving a very poor and often hopeless prognosis. But with the advent of new regenerative materials, however, successful periodontal treatment of such lesions has been possible.

Generally, in a case of combined endo-perio lesion, an adequate endodontic therapy would result in healing of the endodontic component, and the prognosis would finally depend on the efficacy of periodontal repair/regeneration initiated by either of the treatment procedures. In this case, following endodontic treatment the periodontal lesion did reduce to an extent on radiographic evaluation after one month but did not subside completely with no change in the clinical parameters. This confirmed a secondary periodontal involvement along with primary endodontic component.

In the case reported here, the palatogingival groove which is an endo-perio lesion is being treated with both endodontic and periodontal approach. The palatoradicular groove was filled with GIC due to its property of resistance to water degradation at the tooth-cement interface, sealing ability and good chemical bonding^{8,9}. Moreover, studies have reported that during healing epithelial and connective tissue attachment occurs on the cement surface¹⁰.

The bone defect was filled with autogenous bone graft taken from the parasymphysis region from the mandible because of its less resorption rate⁶.

The result of this case report suggests that bone grafts (hydroxyapatite granules with collagen) along with autogenous bone grafts resulted in a significant amount of bone fill and improvements in the clinical parameters (reduction in probing pocket depth and tooth mobility).

Conclusion:

Early detection through meticulous examination by the clinician is the pre-requisite in the management of PRG. Successful management and long term prognosis of treating cases of PRG depends on its extent and the associated loss of attachment, bone loss and mobility of the tooth. Endodontic therapy would result only in resolution of the endodontic component of involvement and would have a little effect on the periodontal lesion.

It could also be concluded within the limits of this study that bone grafts (hydroxyapatite granules with collagen) along with autogenous bone grafts resulted in a significant amount of bone fill and clinical parameters (reduction in probing pocket depth and tooth mobility).

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