

CASE REPORT
**PALATO- RADICULAR GROOVE
AND LOCALIZED PERIODONTITIS:
A rare case report**

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ABSTRACT

Periodontitis is an immuno inflammatory disorder caused mainly by microorganisms. Various tooth developmental anomalies occur in maxillary anterior tooth region. One such abnormality is palato-radicular groove, which is most commonly found in maxillary and mandibular anterior. Numerous studies correlate the relation between palato-radicular groove and localized periodontitis. This case report described the management of tooth with palate-radicular groove associated with localized periodontitis and dull intermittent pain. Groove and associated periodontitis was treated by open flap debridement along with sybograf placement and saucerization.

Keywords: Palato- radicular groove, Localized periodontitis, Saucerization, RVG

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INTRODUCTION:

Periodontitis is a multifactorial disease, of which dental plaque play a definite role¹. Anatomical aberrations of dentition provide a favorable environment for dental plaque accumulation and subsequent periodontal destruction. One such abnormality is the palato - radicular groove (PRG), which is most commonly seen in maxillary incisor region². Palato-radicular groove is defined as developmental, anomalous groove usually found on the palatal aspect of maxillary central and lateral incisors³. It is also termed as palato - gingival groove, disto lingual groove, radicular groove, and palatal groove.

Palato radicular groove was first identified in upper lateral incisor of a Chinese female⁴. Koracs called palatoradicular groove as a syndesmo-coronoradicular teeth⁵. Radiographically, the groove is seen as a radiolucent line simulating the root canal of the involved teeth hence is referred to as parapulpal line. But this is not evident in all cases. Etiology of palato radicular groove is still unknown. Black et al was the first to describe PRG as a malformation during tooth development⁶. Atkin et al revealed that there is no enough space during tooth development in the maxilla, results in folding in the area of HERS, and development of PRG⁷. Goon et al said that PRG developed as an attempt for root partition⁸. Ennes J.P et al found PRG formation is due to genetic changes⁹.

Prevalence of palato radicular is varied. In a recent study by Albaricci et al 2008 reported prevalence of PRG as 11.1% in maxillary lateral incisors. Among them 62.8% of the grooves were proximally located; 57.8% originated from lingual fossa¹⁰.

According to Kogon, a definite association was found between palato radicular groove and periodontal destruction¹¹. Probing depths and attachment loss were significantly greater at sites adjacent to PRD than at control sites. Lee et al first reported the association between PRG and localized periodontitis¹². Various treatment have been proposed to treat PRG-associated periodontal bone defects such as scaling and root planning, odontoplasty, amalgam restoration, and tooth extraction. Recently, principles of guided tissue

regeneration (GTR), with or without associated bone grafts, have also been successfully used, which resulted in a significant reduction in probing depths and gain in attachment levels.

This article presents the course of successful management of a periodontally compromised maxillary lateral incisor, anatomically complicated with the presence of a PRG.

Case report

A 35-years-old female patient reported to outpatient department of JKK Nattraja dental college with the chief complaint of persistent dull pain and progressive spacing in the upper front teeth since few months and was referred to Department of Periodontology and Oral Implantology. On intra oral examination it was found that all the teeth in the maxillary right quadrant were intact, caries-free, with no mobility and non-tender on percussion. No relevant medical history was reported. The oral hygiene status of the patient was also satisfactory. Careful periodontal examination of the patient revealed a 10 mm pocket on the distal aspect of maxillary lateral incisor with no pus discharge. (Fig.1) On examination palato - radicular groove was noticed on the mid-palatal aspect of the maxillary right lateral incisor originating in the cingulum and extending apically on the root. The tooth was assessed for vitality using electric pulp tester and was found to be vital. Radiovisiograph (RVG) revealed no evidence of parapulpal line or peri-apical pathology. (Fig. 2)

Initially scaling and root planing followed by oral hygiene instructions was performed. After 4 weeks of phase 1 therapy, the inflammation in the marginal gingiva was subsided, but probing depth remains the same as noted in the preoperative phase (10 mm). The desired area was anesthetized by local infiltration using lignocaine hydrochloride injection (1:80.000). In the surgical phase of treatment a muco-periosteal flap was elevated up to the most apical extent of the groove. The flap elevation revealed a palato-gingival groove and deposition of calculus in the coronal portion of the root along the groove with localized bone loss on distal aspect.(Fig. 3) The groove was smoothed with a tapering fissure

bur.(Fig. 4) Thorough debridement was done to remove all the granulation tissue and a vertical defect was noted in the distal aspect, extending beyond the mid root portion of the root. (Fig. 5) Considering the architecture of the defect bone graft (sybografit - 200 - 300 microns of synthetic nano crystalline hydroxyapatite granules) was placed in the defect.(Fig.6) The flap was approximated and sutured with 3-0 non-resorbable silk suture material.(Fig. 7) Post-surgical instructions were given to the patient along with antibiotics (Amoxicillin-500 mg and Metronidazole-400 mg, both thrice daily) and 0.2% Chlorhexidine Gluconate rinses for 5 days. After 7 days the sutures were removed and the healing was found to be satisfactory. After 6 months the pocket depth was found to be 3 mm on the distal aspect of 12 and RVG showed adequate bone fill.(Fig. 8,9)

DISCUSSION

The link between PRG and localized periodontitis depends on the extent and depth of the groove on the root. It usually presents as a perio-endo lesion or periodontal lesion. Because of funnel shaped morphology, it serves as plaque retentive area. This leads to attachment loss and pulpal necrosis. PRGs may be symptomatic or asymptomatic. Grooves limited to the cingulum usually do not cause damage to the periodontium. Hence these grooves are asymptomatic and intensive treatment is not required. Deep grooves associated with intrabony defect require both periodontal and endodontic management. Symptomatic patient may report with concurrent episode of pain and swelling on the palate adjacent to the groove.

Parapulpal line observed radiographically is not a pathognomonic feature because these lines are most often obscured by the radiolucent root canal. It is not seen in our case radiographically. Recently computerized tomography (CT) has been used in determining the extent of the groove. CT shows the 3D image of the groove and also its proximity with the root canal¹³.

Successful management of PRG with localized periodontitis involves two aspects: treating the groove and the resultant pathology (intrabony

defects, if present) Prognosis of the tooth with PRG depends on the depth, location and termination on the root.

Saucerization has been a successful method in removing shallow grooves in single rooted teeth. Once the unfavourable anatomical condition is eliminated the condition can be viewed as a pure periodontal defect. Various regenerative materials currently used to fill the intra bony defects are bone grafts, platelet rich plasma, and enamel matrix derivative. Anderegg and Metzler¹⁴ have reported clinical success at 6 months for 10 cases treated with non-resorbable barrier. Jeng et al¹⁵ reported a case similar to the one presented in this article. These authors treated successfully by radiculoplasty, bone graft with DFDBA, and placement of a non-absorbable membrane. Similarly in this case, bone defect was filled with syografit in the distal aspect and it shows adequate bone fill, reduced probing depth and improved gingival appearance.

CONCLUSION

Presence of palato-radicular groove is not pathology always. Palato radicular groove become significant only when it possess associated symptoms like localized periodontitis. Different treatment modalities are offered to treat palato-radicular groove associated localized periodontitis and each treatment modality offers promising results. Treatment plan should be decided based on the groove morphology, bone defect morphology, tooth anatomy and patient compliance. Early detection through meticulous examination by the clinician is the pre-requisite in the management of PRG.



Fig 1: Pre-operative view showing 10 mm pocket depth



Fig 2: Pre-operative RVG



Fig 3: Palato radicular groove extend from the crown to the root apex



Fig 4: saucerization and degranulation done.



Fig 5: sybograft in place



Fig 6: coepak placed



Fig 7: Postoperative view showing 3mm pocket depth after 6 months



Fig 8: Postoperative RVG showing adequate bone fill after 6 months

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