

Interdisciplinary Management of Palatogingival Groove in Maxillary Lateral Incisor

Dr. Anjali Bhattarai,¹ Dr. Regan Pokharel,² Dr. Ameena Pradhan,¹ Dr. Neera Joshi²

¹Department of Periodontics and Oral Implantology, Peoples Dental College and Hospital, Sorhakhutte, Kathmandu, Nepal;

²Department of Conservative and Restorative Dentistry, Peoples Dental College and Hospital.

ABSTRACT

Palatogingival groove is a developmental anomaly usually affecting maxillary anterior teeth. This is often accompanied by bone destruction adjacent to the teeth with no carious or traumatic history. This groove can harbour plaque and bacteria, resulting in periodontal destruction, endodontic lesions, or combined endodontic-periodontal lesions. Disease severity and prognosis depend on several factors, including location, range, depth, and type of the groove. Several materials have been used and recommended for cases of extensive periodontal destruction to remove and block the inflammatory source and recover the health of surrounding periodontal tissues, hence successfully managing the condition.

Keywords: Endodontic therapy; mineral trioxide aggregate; palatogingival groove; periodontal management.

INTRODUCTION

Palatogingival groove is a developmental anomaly usually found on the lingual aspect of maxillary incisors. The incidence ranges from 2.8-18% with a higher prevalence in lateral incisors 4.4-5.6%.¹ It may be due to infolding of inner enamel epithelium and Hertwig's epithelial root sheath resulting in alteration of growth.² Some authors suggest it to be a variant of dens invaginatus,³ while some think it to be due to genetic mechanism.⁴ It can be classified as distal or mesial based on location, or mild, moderate, and severe based on the depth and complexity of the groove.⁵

CASE REPORT

A 24-year-old male presented to the Department of Periodontics and Oral Implantology with complaints of pain and swelling in the left upper front region for one month (Figure 1). On examination, the patient

had an intact crown without caries or fracture with a negative vitality test and positive vertical percussion. Draining sinus through the attached gingiva was present. Mobility was Miller's Grade I with a periodontal pocket of 8 mm along the groove on the palatal aspect of tooth in relation to (i.r.t.) 22 (according to two-digit tooth numbering system, Figure 2).

An intraoral periapical radiograph (IOPAR, Figure 3) i.r.t 22 revealed ill-defined periapical radiolucency and periodontal widening was evident. Diagnosis of primary periodontal lesion with secondary endodontic involvement was inferred.

An interdisciplinary treatment plan was formulated. Initially, Scaling and Root Planing (SRP) was completed. Endodontic treatment was carried out (Figure 4). Access opening was begun from the palatal surface with a round bur held perpendicular to the tooth surface. Working length was determined with an electronic apex locator and verified radiographically. Biomechanical preparation was done by step back technique and intracanal medicament was placed for a week, and obturation was done with cold lateral compaction technique.

After completion of endodontic treatment, the mucoperiosteal flap was reflected from the palatal

Correspondence

Dr. Anjali Bhattarai

Email: drbhattaraianjali@gmail.com

Citation

Bhattarai A, Pokharel R, Pradhan A, Joshi N. Management of Palatogingival Groove in Maxillary Lateral Incisor. J Nepal Soc Perio Oral Implantol. 2023 Jan-Jun;7(13):26-9.





Figure 1: Initial clinical presentation.



Figure 2: Preoperative pocket depth i.r.t 22: 8mm.

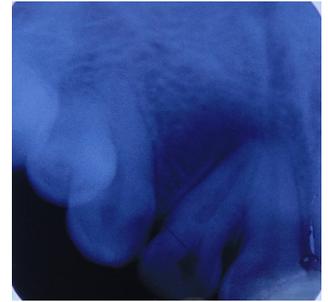


Figure 3: Preoperative IOPAR revealing periapical radiolucency i.r.t 22.



Figure 4: IOPAR after root canal treatment i.r.t. 22.



Figure 5: Flap reflection for exposure of palatogingival groove.



Figure 6: Degranulation and placement of Mineral trioxide aggregate.



Figure 7: 3-0 silk suture applied.



Figure 8: Two weeks follow-up with uneventful healing.

aspect, and the groove was isolated to its most apical part (Figure 5). Diseased granulation tissue was curetted and the groove was sealed with Mineral Trioxide Aggregate (MTA) (Figure 6). The flap was approximated with 3-0 silk sutures (Figure 7). Ibuprofen 400 mg thrice daily for three days, Amoxicillin 500 mg thrice daily, and Metronidazole 400 mg thrice daily was given for seven days.

The patient was instructed on post-surgical precautions and maintenance protocol. Post-operative healing was uneventful and sutures were removed after two weeks (Figure 8).

At six months follow-up, there was resolution of lesion and pocket depth was reduced to three mm (Figure 9). On radiograph, there was a resolution of

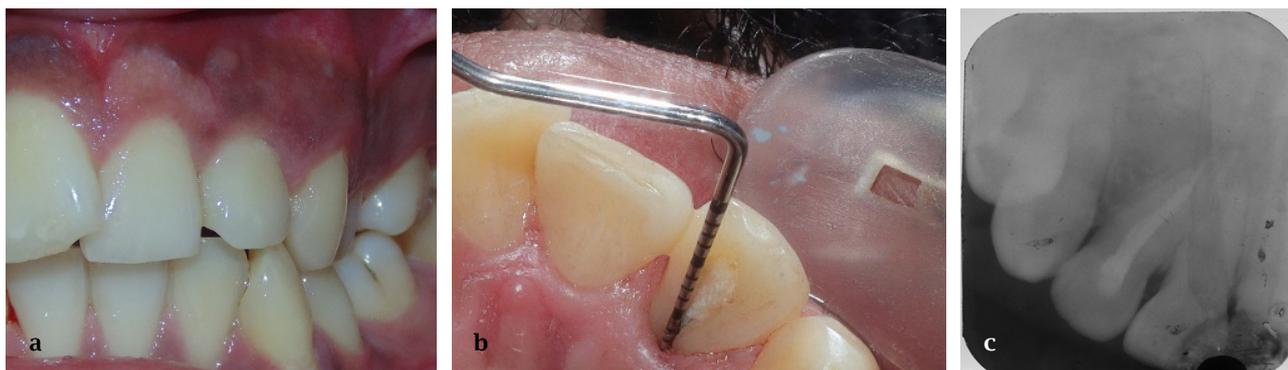


Figure 9: Post-operative six months follow-up. 9a) Clinical presentation after two years. 9b) Reduced probing depth after two years follow-up. 9c) IOPAR showing resolution of periapical radiolucency.



Figure 10: Post-operative two years follow-up 10a) Clinical presentation after two years 10b) Reduced probing depth after two years follow-up 10c) IOPAR showing resolution of periapical radiolucency.

the lesion. At two years follow-up, the findings were similar (Figure 10).

DISCUSSION

Morphological features of the palatogingival groove result in compromised patient's self-care. This favours plaque, and calculus accumulation. Localised periodontal inflammation initiates and progresses along the groove, resulting in the formation of the periodontal pocket, attachment loss, and bone loss. Similarly, endodontic involvement via apical or lateral canals can predispose to the development of complex endodontic-periodontal lesions.⁶

Simple grooves are less likely to cause severe destruction, and can be easily managed by saucerisation or odontoplasty. While a more complex groove which communicates with the pulp cavity as in this case, requires a combined endodontic-periodontal approach.⁵

In this case, after localisation of groove, it was sealed with MTA. The MTA shows excellent biocompatible characteristics, sealing ability, and have an ability to set in moisture. Some authors suggest it to be capable of stimulating healing and osteogenesis.^{7,8}

It is important to maintain the health and integrity of the periapical bone which is an important factor for tooth retention. Encouraging the periapical bone to regenerate with combined endodontic and periodontal treatment has been reported to be successful in the treatment of palatogingival groove.^{5,8} Similarly, with the development of new materials, diagnostic tools, and treatment principles, successful treatment outcomes have been reported.

Conflict of interest: None.

REFERENCES

1. Kogon SL. The prevalence, location and conformation of palato-radicular grooves in maxillary incisors. *J Periodontol.* 1986;57(4):231-4.
 2. Lee KW, Lee EC, Poon KY. Palato-gingival grooves in maxillary incisors. A possible predisposing factor to localised periodontal disease. *Br Dent J.* 1968;124(1):14-88.
 3. Withers JA, Brunsvold MA, Killoy WJ, Rahe AJ. The relationship of palato-gingival grooves to localized periodontal disease. *J Periodontol.* 1981;52(1):41-4.
 4. Peikoff MD, Perry JB, Chapnick LA. Endodontic failure attributable to a complex radicular lingual groove. *J Endod.* 1985;11:573-7.
 5. Goon WWY, Carpenter WM, Brace NM, Ahlfeld RJ. Complex facial radicular groove in a maxillary lateral incisor. 1991;17(5):244-8.
 6. Kim HJ, Choi Y, Yu MK, Lee KW, Min KS. Recognition and management of palatogingival groove for tooth survival: A literature review. *Restor Dent Endod.* 2017;42(2):77-86.
 7. Dragoo MR. Resin-ionomer and hybrid-ionomer cements: part II, human clinical and histologic wound healing responses in specific periodontal lesions. *Int J Periodontics Restorative Dent.* 1997;17(1):75-87.
 8. Gabriele C. Mineral trioxide aggregate applications in endodontics: A review. *Eur J Dent.* 2020;14(4): 683-691.
 9. Rijal AH, Dharni B, Ghimire P. Combined periodontal and endodontic management of palatal radicular groove with platelet-rich fibrin and Biodentine®. *Case Rep Dent.* 2022 Nov 9;2022:1-8.
-