A MODIFIED HORIZONTAL GINGIVAL INCISION: AN APPROACH TO ENDO-PERIO LESION - TWO CASE REPORTS

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Combined Endo-Perio lesions are treated with root canal therapy & periodontal flap surgeries, to rid off endodontic and periodontal lesions respectively. Clinical observations have revealed that the conventional flap techniques employed in the treatment of such conditions result in to loss of Inter dental papillae (IDP) & marginal gingiva to a certain degree, leading to open embrasures/recessions that pose problems of food lodgment eventuating in to periodontal problems again. Thus, iatrogenicaly induced open embrasures & food lodgments jeopardize the success of dental therapy. In view of this, a clinical trial has been carried out with an Objective of assessing whether 'Modified Horizontal Gingival Incision' could overcome afore mentioned postoperative sequelae associated with conventional envelope flap techniques. Materials and methods included 20 combined endo-perio lesions that were randomly treated by either of the techniques. Results showed significant loss of IDP as measured through Papilla Index Scores (PIS), followed by food lodgment due to conventional envelope flap techniques, where as the Modified Horizontal Gingival Incision alleviated any such sequelae. Hence it was concluded that this technique successfully aided in preservation of IDP.

Key Words: Flap surgery, Endodontic surgery, Apicectomy, Endo-perio lesions, Incisions, Periapical surgery.

INTRODUCTION

Time has witnessed great evolution in the treatment modalities of combined Endo-Perio lesions. These lesions have been classified in numerous ways. However the classification based on the etiology of lesions [1] is most widely accepted since it facilitates the clinician in treatment planning and thereby aids in better prognosis.

Specific endodontic flap designs have been advocated [2] for surgical approach to different classes of Endo-Perio lesions. Mucogingival incision, a horizontal incision used in the endodontic surgeries is placed along the mucogingival junction. Since it is placed too far apically (almost in the vestibule), lacks an exposure to the periodontal lesions that may be associated with the lateral aspects of the roots. As a result thorough treatment of a combined endo- perio lesion remains unaccomplished.

As an alternative, if one has to approach endo-perio lesion with periodontal flap procedure, it perhaps accomplishes the task, but unnecessarily involves surgical splitting of Inter Dental Papillae (IDP), to be included with buccal or lingual flaps. Owing to surgical manipulation, IDP suffers varying degrees of loss in its size and anatomy that disturbs its normal physiologic functioning in terms of loss of spillways or food retention leading to periodontal problems. This condition, clinically referred as black triangle, further necessitates papilla reconstruction procedure[3,4,5].

In view of these limitations & disadvantages inherent in the currently available endodontic or periodontal flap techniques, it is reasonable to desire for a modification in the conventional incisions that can selectively eliminate the combined Endo-Perio lesions, while sparing IDP from unnecessary surgical manipulation. In the present clinical trial a mucogingival incision that is employed in the endodontic surgeries has been modified (referred herein as Modified Horizontal Gingival Incision) with an objective of assessing if above mentioned disadvantages of conventional envelope flap technique could be overcome. Besides, its advantages such as accessibility & visibility to the surgical site too have been evaluated.

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MATERIALS & METHODS

A total of 20 patients diagnosed with combined endo-perio lesion (involving single or multiple teeth with pockets restricted to facial & lingual/palatal side, Fig A & F), who required periodontal surgical intervention were included in the trial. Wherein, 10 sites were treated by the Modified Horizontal Gingival Incision (Group 1) and the remaining 10 sites by the envelope flap technique (Group2). Teeth with pockets extending to the proximal surfaces were excluded.

During the procedures, accessibility & visibility of individual flaps were subjectively assessed. Clinical trial involved 3 months follow-up, during which period, condition of IDP, healing at incision lines & association of food lodgment were observed. Preoperative & 3 months postoperative assessment of IDP about the affected tooth/teeth was carried out with the help of Papilla Index Score[6] (PIS), which was further modified in respect to the natural dentition i.e the degree of papilla fill in the anatomic embrasure was assessed.

Modified Horizontal Gingival Incision

Step 1: After achieving an adequate anesthesia, an internal bevel incision is begun (using 15 no blade) from the mesial line angle of the tooth that is distal to the affected tooth, at the level of base of triangle formed by IDP & then carried anteriorly to disto-buccal line angle of affected tooth (Fig B).

Step 2: Incision continues as "crevicular Incision" on the midfacial surface of the affected tooth where the pocket exists (Fig C).

Step 3: After crossing the facial surface of the affected tooth, it is continued further anteriorly as an internal bevel incision again at the base of the IDP, as explained under step 1(Fig D). This alternating internal bevel incision at the base of IDP & crevicular incision on mid facial surface is collectively referred to as Modified Horizontal Gingival Incision (Fig E).

Step 4: Same incisions are then carried out on the lingual/palatal side too.

Step 5: A full thickness (mucoperiosteal) flap is to be reflected on both facial & lingual/palatal sides to expose endo-perio lesion entirely. The IDP would be left intact in their place (Fig 8). Thus combined Endo-Perio lesions are selectively accessed for debridement of infected granulation tissue & curettage of pocket lining.

Step 6: After a thorough debridement, flaps are repositioned and sutured with interrupted fig of 8 sutures. Care is taken not to involve IDP even while suturing, in order to avoid trauma.

RESULTS & OBSERVATIONS

Mean & standard deviations were computed for PIS for the group 1& group 2 preoperatively & postoperatively (3months). Reductions in the PIS from preoperative to 3 month postoperative period for both the groups were compared using paired 't' test.

Table 1 represents comparisons between preoperative & 3 months postoperative mean PIS values for Group1 & Group 2. As evident from the table 'none' of the sites exhibited any changes in the PIS values from pre-operative to 3 months post operative period in Group 1, implying that, size & anatomy of Interdental Papillae were absolutely unaffected by Modified Horizontal Gingival Incision technique. Comparison of preoperative & 3 months postoperative mean PIS values for Group2 shows a drop in the mean PIS values is evident ($d=1\pm0.74$), which is statistically significant ($p=0.0001$).

Clinical observations in group 1 showed uneventful healing at the incision lines with out any marginal recessions, except in 2 sites (lower right canine & upper right molar,), where slight clefting at the gingival margins (on facial side only) at incisional lines was noted 1 week postoperatively. However after 3 months, tissue seemed to have remodelled itself to gain smooth flow of contours at these sites even, thus not leaving any signs of surgical aftermath. Clinical observations in group 2 revealed obvious loss of IDP leading to open embrasures.

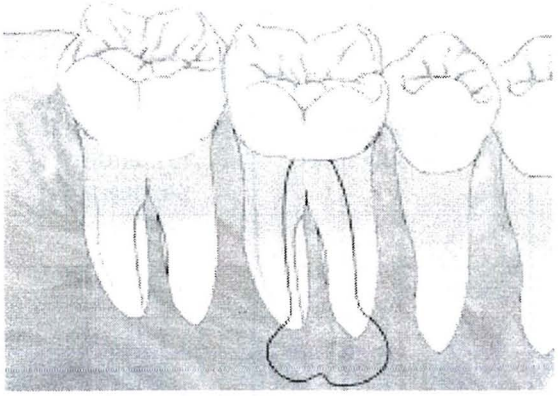


Fig. A: Schematic diagram showing combined endo-perio lesion in mandibular first molar.

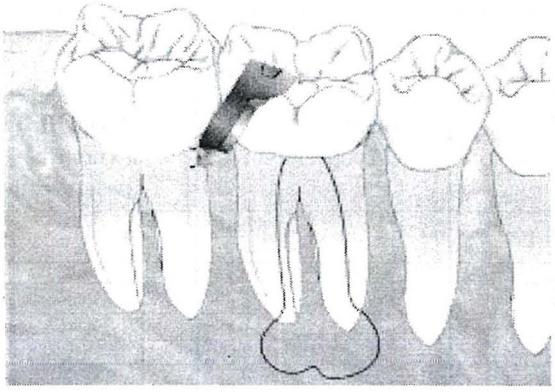


Fig. B: Internal bevel incision begun distal to the affected tooth.

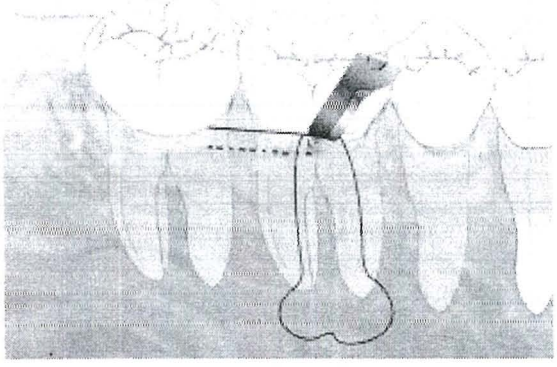


Fig. C: Crevicular incision on the mid facial region where pocket exists.

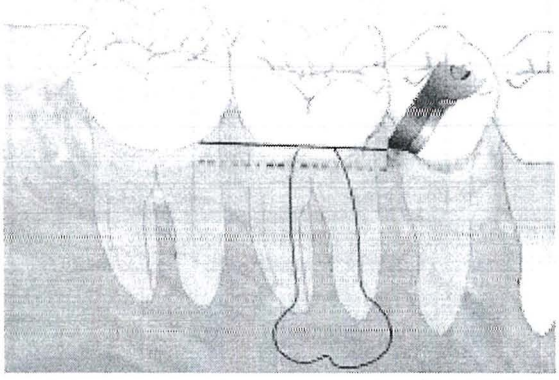


Fig. D: Incision continues as internal bevel mesial to the affected tooth.

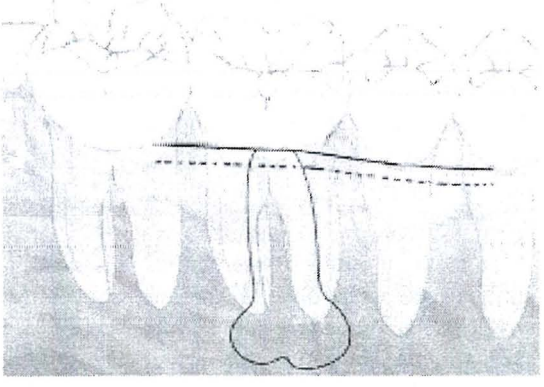


Fig. E: Modified horizontal gingival incision completed.

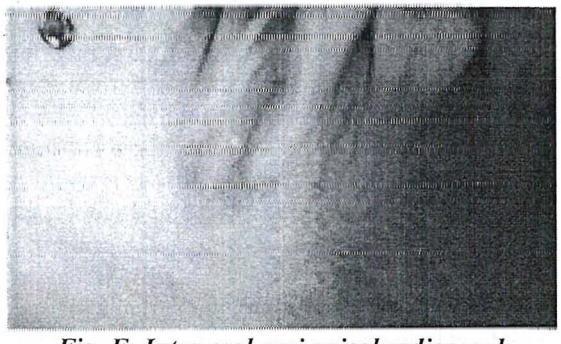


Fig. F: Intra oral peri apical radiograph depicting peri-apical lesion and furcation involvement with mandibular moloar, also showing extended gutta percha point.

Table 1: Comparison of preoperative & 3 months postoperative mean PIS values in Group 1 and Group 2.

	GROUP 1		GROUP 2	
Site	**Mean PIS (Preoperative)**	**Mean PIS (3 months postoperative)**	**Mean PIS (Preoperative)**	**Mean PIS (3 months postoperative)**
1	1	1	3	2
2	2.5	2.5	3	2
3	2	2	2	1
4	3	3	1.5	1
5	3	3	1	0
6	2.33	2.33	1	0
7	3	3	2.5	1
8	2	2	2	1
9	2	2	2	1
10	1	1	2	1
			***d=1±0.74, p = 0.0001 (S)**	

*Mean PISs (d=1±0.74) as compared to preoperative values in all the sites, which is statistically significant (S), (p=0.0001).

DISCUSSION

As observed from table 1, Modified Horizontal Gingival Incision in Group1 aided 100% success in the preservation of interdental papillae & marginal gingiva to their original size and anatomy without any complications. The IDP, though detached from the flaps on both sides, survived without any signs of sloughing or shrinkage (Fig 10). This could be attributed to the adequate crestal blood supply, fact that is well established[7]. During healing, the flap margins united with the base of IDP without any signs of gaping. Concurrently no patients reported with food lodgement, implying that the functions of IDE & IDP were well restored. Sites that healed with slight clefting at the gingival margin on the facial side, at a point where flap margin met IDP were incidentally associated with prominent roots that supposedly attributed to this consequence. These sites however recovered after 3 months contributing to 100% success. Thus esthetic & functional status of IDE & IDP was obviously unaffected. The Conventional envelope flap resulted into significant loss of IDP leading to open embrasures. The loss of function of IDP thereon was supported by the patients reporting with complaints of food lodgement.

In the light of these observations, it is clear that, surgical manipulation of IDP under conventional envelope flap procedure certainly leads to loss in its size and anatomy to varying degrees, which undoubtedly accounts to food lodgment, the commonest complaint amongst the people.

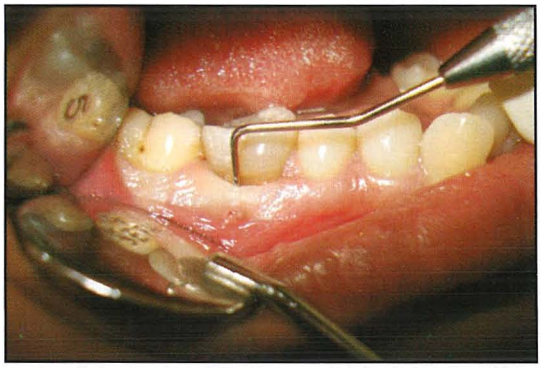


Fig. 1: Deep pocket present with mandibular first molar on facial side with combined endo-perio lesion.

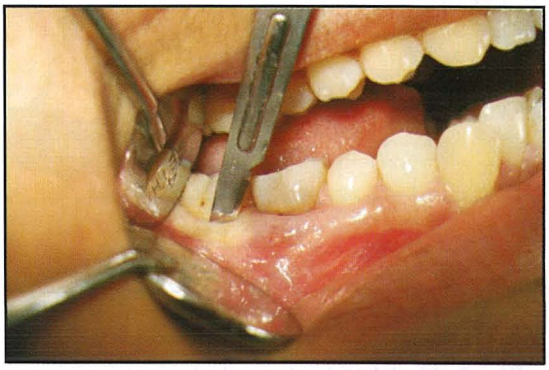


Fig. 2: Modified horizontal gingival incision begun distal to the affected tooth.

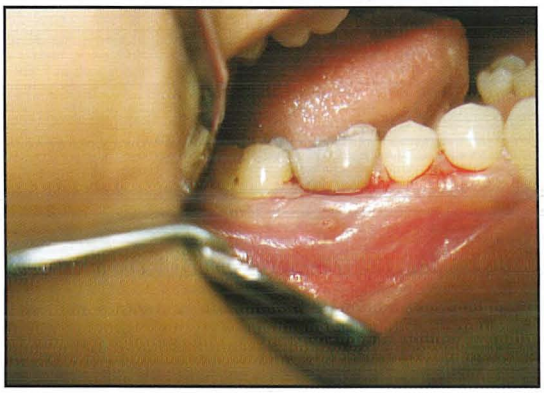


Fig. 3: Modified horizontal gingival incision completed.

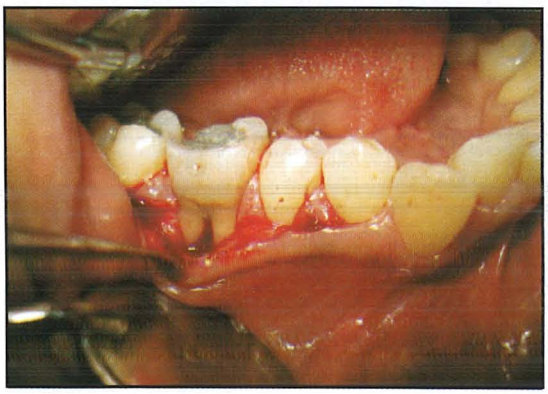


Fig. 4: Full thickness mucoperiosteal flap reflected leaving interdental papillae intact and debridement done.

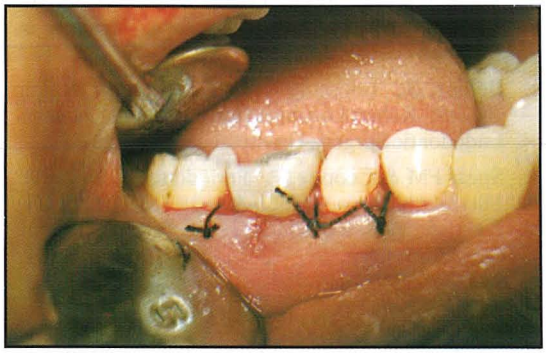


Fig. 5: Flap repositioned and sutured.



Fig 6: 3 months post-operative appearance of tissues. No shrinkage or necrosis seen with the interdental papilla in the treated site.

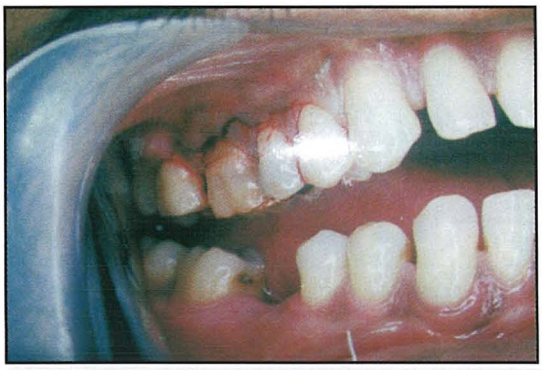


Fig. 7: Modified horizontal gingival incision completed on facial side of maxillary first molar with combined perio-endo lesion.

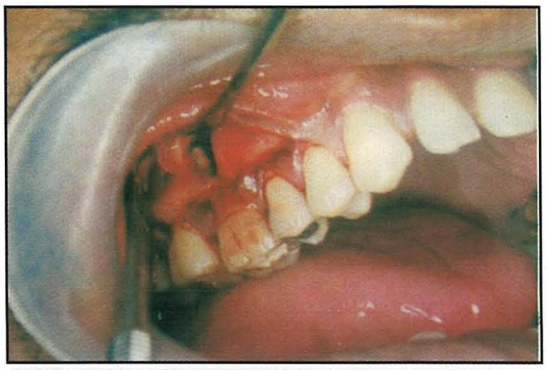


Fig. 8: Full thickness mucoperiosteal flap reflected on buccal side.

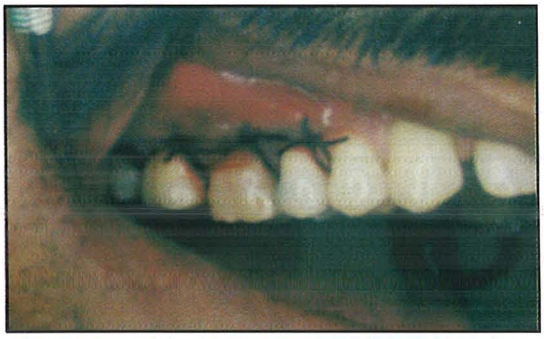


Fig. 9: Flap repositioned & sutured.

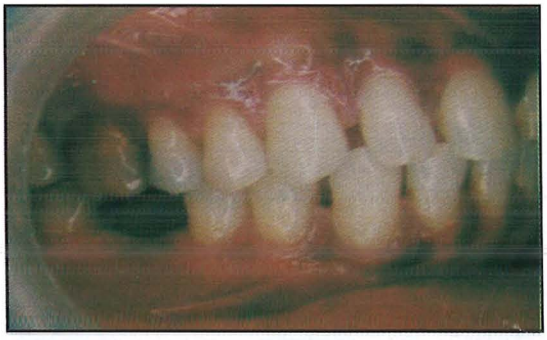


Fig. 10: Post operative facial view after 3 months.

Extension of incision to 1 or 2 teeth mesial to the affected tooth/teeth for accessibility & visibility has been another variation in this technique from vertical incision, which is conventionally employed for the similar purpose. With this extension of incision, those limitations & disadvantages of vertical incision are ruled out facilitating adequate accessibility & visibility to the lesion.

CONCLUSION

Surgical manipulation of IDP in conventional envelope flap technique leads to significant loss of IDP that accounts to food lodgment.

Use of Modified Horizontal Gingival Incision gives adequate accessibility & visibility for instrumentation, 100% preservation of IDP& prevents food lodgment. It is inapplicable when pockets extend to interproximal areas, where again conventional flap technique becomes mandatory.

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Conclusion

This case report demonstrates that with the stringent case selection criteria, aseptic endodontic procedure along with periodontal regenerative procedure along with bone graft material could successfully treat an endodontic –periodontal combined lesion. In this case no histological examination was performed, it is difficult to conclude unequivocally that true regeneration occurred or if repair was the result. However from clinical and radiographic findings ,the result of this combined technique was quite impressive.

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