

Comparative Evaluation of ENAP Vs Gingival Curettage in Pocket Reduction in Periodontitis Patients – A Clinical Study

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ABSTRACT

Background - Scaling and root planing (SRP) is essential for preventing bacterial infection, it is always the first step of periodontal treatment. The treatment of periodontal pockets with excisional new attachment procedure (ENAP) and gingival curettage as an adjunct to SRP in the treatment of periodontitis represents yet another novel causative therapy.

Introduction - Gingival Curettage is the process of debriding the soft tissue wall of a periodontal pocket. The ENAP approach was created to solve the technical issues associated with sub gingival curettage by allowing for improved access, root surface visualization, and more thorough removal of pocket epithelium. Present study was carried out to assess the stated advantage of ENAP over gingival curettage.

Objectives – To evaluate the improvement in clinical parameters GI, PI, BOP, PPD and CAL at sites to be treated with ENAP and gingival curettage at 1 month follow up.

Methodology- A total of 30 sites with probing pocket depth of 4-6 mm in patients with Periodontitis were selected followed by Phase I therapy. The sites were randomly allocated into two groups to undergo either gingival curettage or ENAP. Clinical parameters of Plaque Index, Gingival Index, Gingival Bleeding Index, probing pocket Depth were recorded at baseline and follow up at 1 week and 1 month.

Results – Statistical analysis was done using students unpaired t- test for intergroup comparison, one-way ANOVA for intragroup comparison and Tukey's post hoc analysis for subgroup analysis. Both procedures were effective in improving PI, GI, PPD, and BOP, but sites treated with ENAP showed more significant results.

Conclusion: - Considering the better clinical outcomes, ENAP can be a reliable technique as compared to gingival curettage for pocket reduction in periodontitis patients.

Keywords: - Periodontitis, SRP, gingival curettage, Excisional new attachment procedure.

INTRODUCTION:

The most prevalent reason for tooth loss in the globe is periodontal disease, which is an infection of the tooth's supporting tissues, including the gingiva, periodontal ligament, cementum, and alveolar bone¹. 51% of Indians are affected by periodontal disease, which is thought to be a contributing factor to the country's oral health issues². Untreated gingivitis caused the initial inflammation, which would spread to the

underlying structures and result in pockets that harm the tissues and bones supporting the teeth^{3,4}. The formation of a new connective tissue attachment and the regrowth of alveolar bone are the ultimate goals of periodontal therapy. This new connective tissue attachment can only be achieved by preventing epithelial migration on the treated root surface. Initially, gingival curettage was defined as the removal of the junctional epithelium and pocket lining with the use of a curette in order to promote the attachment of new connective tissue to the root surface⁵. Typically, hand instruments are used for this debridement (curettes and scalers). For the majority of patients with Periodontitis, this traditional approach represents the gold standard of periodontal care. Many studies have shown that gingival curettage increases clinical attachment levels (CAL), decreases probing pocket depths (PPD), and decreases the incidence of bleeding during probing (BOP)⁶. But gingival curettage is a blind procedure that does not ensure thorough removal of inflamed sulcular epithelium. According to reports, ENAP is "curettage with a knife." The main objective of ENAP is to make it easier to treat the root surface. To gain access to the root surface, a mucosal flap is reflected without exposing the alveolar bone, and the epithelium of the soft pocket wall is excised. Interdental sutures are then used to reposition the mucosal flap. The removal of the pocket epithelium is the main objective of this procedure⁷. This study was aimed to investigate whether the reduction in periodontal pockets in periodontitis patients is better with the ENAP or with gingival curettage.

MATERIALS AND METHODS:

Patients who are otherwise systemically healthy, reporting to Department of Periodontology, at Sri Aurobindo College of Dentistry, Indore, Madhya Pradesh with Periodontitis were selected for the study. After an informed consent a total of 60 sites were randomly selected from these patients and assigned to one of the groups as follows:

Group I: Sites to be treated with ENAP.

Group II: Sites to be treated with Gingival Curettage.

The study was carried out under Split mouth design.

Inclusion criteria:

1. Patients diagnosed with Periodontitis, who are Systemically healthy
2. Both male and female patients in the age group 30 to 50 years.
3. Patients with more than 20 teeth present
4. Sites with Probing pocket depth of 4-6 mm and having inflamed pocket wall.
5. Patients who had not received antibiotics or corticosteroids in past 1 months and 3 months respectively.

Exclusion criteria:

1. Patient with poor oral compliance.
2. Systemically compromised patients.
3. Pregnant and Lactating Women
4. Smokers

5. Alcoholics

6. Mobile teeth.

Clinical Procedure: -

ENAP Procedure: -

After SRP in Group I, a local anaesthetic was injected into the designated area, and an internal bevel incision was made with a No. 15 or 11 scalpel blade from the crest of the gingiva to the base of the sulcus. Scalers and curettes were used to remove excised pocket wall and granulation tissue. Root planning was carried out, tissue tags, blood clots, and debris were removed from the area by irrigation with normal saline. Interdental papillae sutures were secured with sutures. Periodontal pack was placed.

Gingival Curettage: -

In Group II, local anaesthetic was administered into the designated area following SRP, inflamed wall of pocket was scraped with curette with horizontal strokes. This was followed by root planing removal of tissue tags, blood clots, debris and irrigation with normal saline.

Post –Operative Instructions: -

Patients were instructed not to brush the treated sites for 12 hours; and to follow charters method of brushing as regular self-performed plaque control method till the completion of study period.

Data Collection and analysis: -

Clinical parameters Modified Quigley-Hein Plaque index, Gingival index, Gingival bleeding Index, Probing Pocket depth, Clinical attachment level, were recorded. PI, GI, BOP were recorded on the day of surgery (pre- operative), 1 week and 1 month. PPD, CAL, (pre-operative) and 1 month.

SPSS (Statistical Package for Social Sciences), version 21.0, IBM, Chicago, was used to analyze the data. The Kolmogorov-Smirnov test was used to determine the probability distribution of the data. When descriptive statistics were used, the data's median and inter-quartile range were displayed (IQR). Wilcoxon sign rank test was used for intergroup comparison. Using the Friedman test, intra-group comparison was conducted. P value 0.05 and higher were regarded as statistically significant.



Fig. 1. Measuring PPD with UNC -15 probe using acrylic stent w.r.t 14 &15



Fig. 2 Internal bevel incision given for excising pocket epithelium w.r.t 14 &15



Fig. 3. Removing excised pocket epithelium with curette w.r.t 14 &15



Fig. 4. Excised pocket epithelium w.r.t 14 &15



Fig. 5. Suture placement done w.r.t 14 &15



Fig. 6. Measuring PPD with UNC -15 probe using acrylic stent w.r.t 14 &15 after 1 month



Fig. 7. Measuring PPD with UNC -15 probe w.r.t 24 & 25



Fig. 8. Gingival curettage done w.r.t 24 & 25



Fig. 9. Measuring PPD with UNC -15 probe w.r.t 24 &25 after 1 month

RESULTS AND OBSERVATIONS:

Table. 1 Intergroup comparison of Plaque Index score, Gingival index score, PPD and CAL of the participants.

		Median (Inter-Quartile Range)		Z value	P value [∞]
		Group I	Group II		
Plaque index score	Baseline	1.75 (1.25-2.75)	1.75 (1.25-2.75)	0.000	>0.05
	Pre-operative	1.0 (1.0-2.0)	1.5 (1.25-1.75)	-1.842	>0.05
	1 week	0.75 (0.5-1.0)	1.25 (1.25-1.75)	-3.205	<.001*
	1 month	0.75 (0.75-.75)	1.0 (0.75-1.25)	-1.437	>0.05
Gingival index score	Baseline	2.0(1.75-2.5)	2.0(2.0-2.5)	-2.46	0.80
	Pre-operative	1.75 (1.5-2.0)	1.75 (1.5-2.0)	-0.108	>0.05
	1 week	1.0 (0.75-1.25)	1.0 (0.5-1.25)	-0.435	>0.05
	1 month	0.75 (0.75-1.0)	0.75 (0.5-1.0)	-0.744	>0.05
Bleeding on Probing	Baseline	2.75 (2.0 - 3.0)	2.75 (2.0 - 3.0)	-0.088	0.93
	Pre-operative	2.25 (1.75-2.75)	2.25 (1.75-2.75)	-0.739	>0.05
	1 week	1.75 (1.5-2.25)	1.75 (1.5-1.75)	-1.528	>0.05

	1 month	1.0 (0.75-1.25)	1.0 (0.75-1.5)	-0.680	>0.05
Periodontal pocket depth	Baseline	5.33 (5.0 -5.66)	5.33 (5.0- 5.66)	-0.02	0.98
	Pre-operative	5.0 (4.66-5.33)	5.0 (4.66-5.33)	-0.360	>0.05
	1 month	3.33 (3.33-3.66)	4.33 (4.0-4.66)	-2.988	<0.05*
Clinical attachment level	Baseline	5.33 (5.0- 5.66)	5.66 (5.0 – 5.66)	-0.27	0.78
	Pre-operative	5.33 (4.66-5.66)	5.33 (4.66-5.66)	-0.090	>0.05
	1 month	3.66 (3.33-4.0)	4.66 (4.0-5.0)	-2.793	<0.05*

*p value<0.05 was considered statistically significant. ^oWilcoxon-sign rank test. ^aFriedman test

The present study's findings showed that, when compared from baseline to follow-up visits, the ENAP and Gingival Curettage groups' mean values of PI, GI, BOP, PPD, and CAL decreased which were statistically significant.

Only a statistically significant decrease in plaque index score was seen at 1 week when PI, GI, and BOP were compared between the two groups. When compared to group treated with gingival curettage, the group treated with ENAP showed significant decrease in probing pocket depth and an increase in clinical attachment level were seen.

Figure 10. Comparison of Plaque index score of the participants.

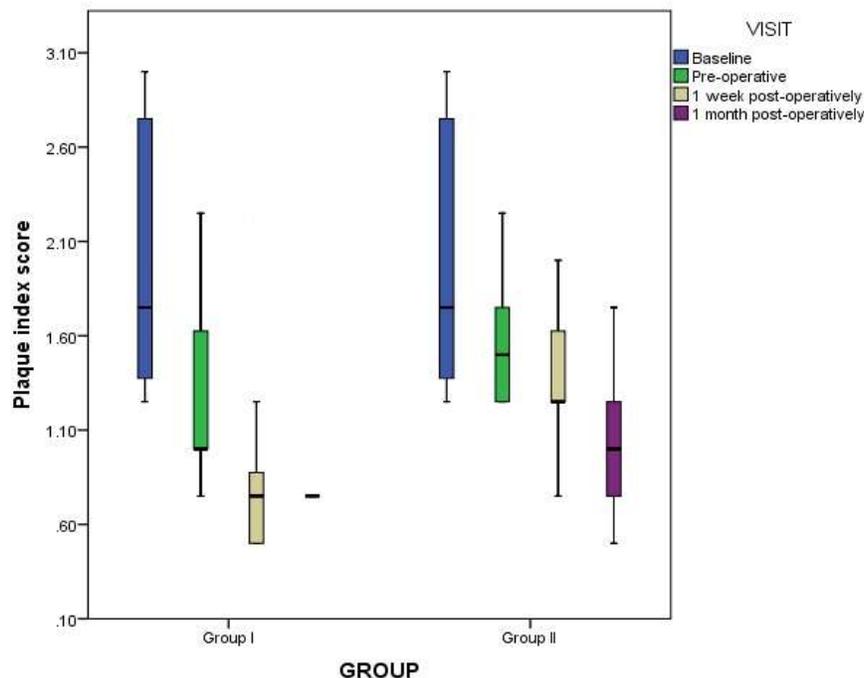


Figure 11. Comparison of Gingival Index score of the participants.

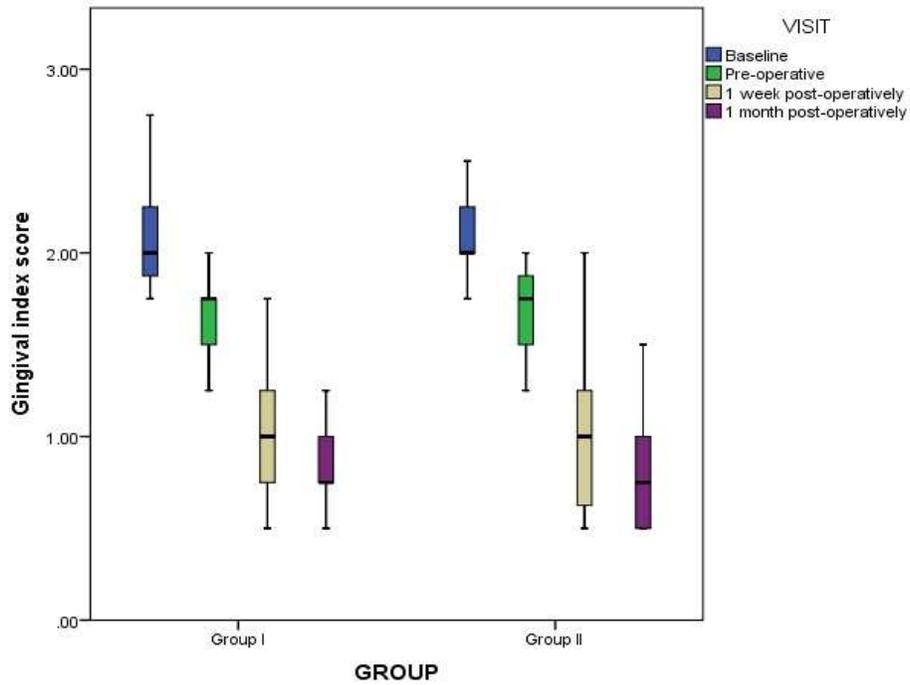


Figure 12. Comparison of bleeding on probing of the participants.

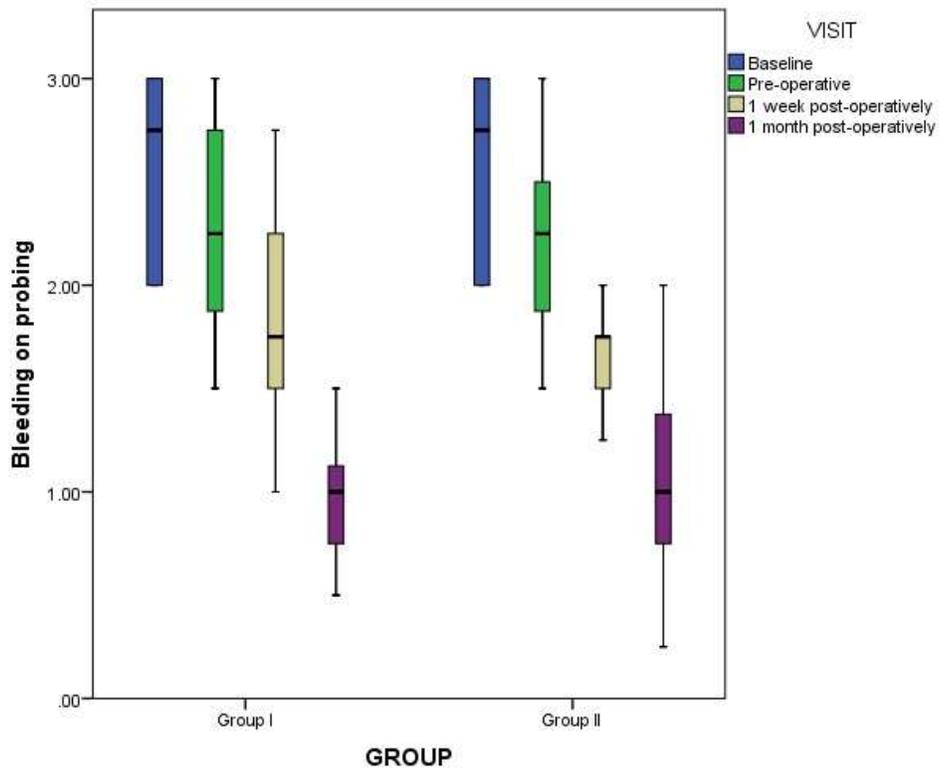


Figure13. Comparison of periodontal pocket depth (mm) of the participant

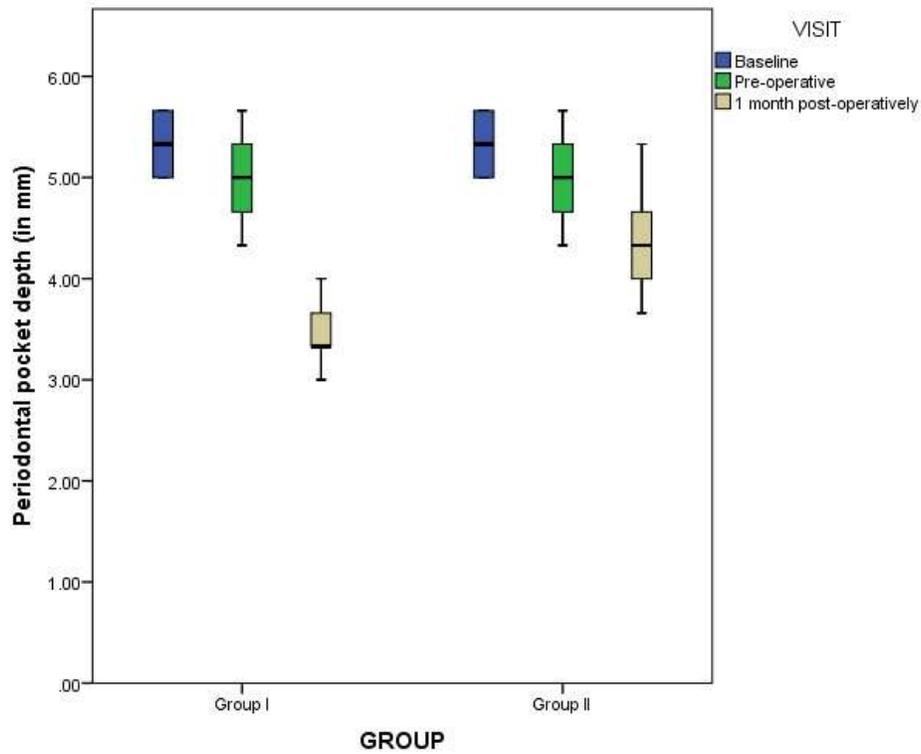
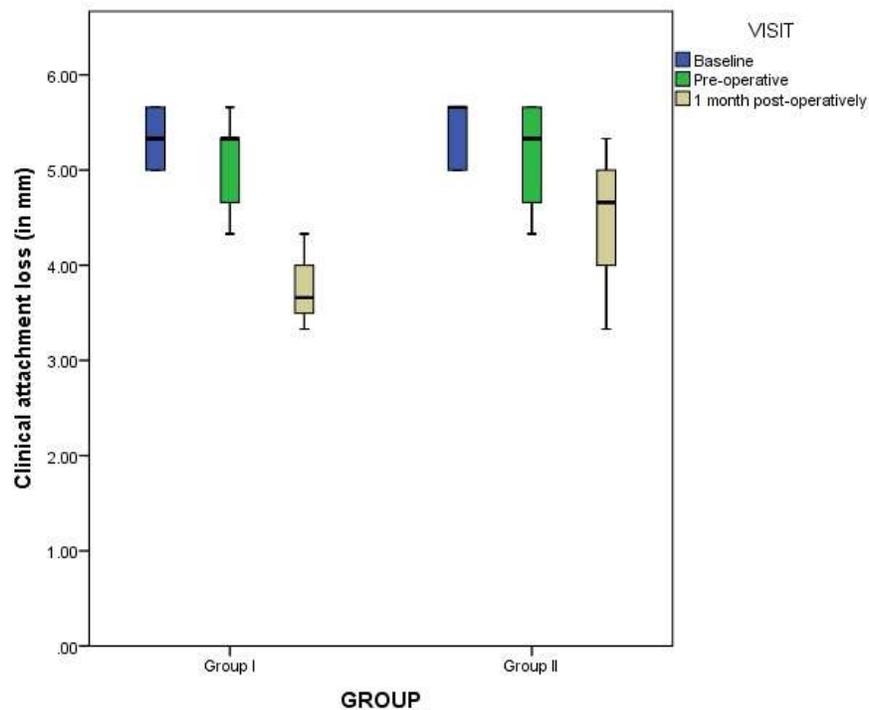


Figure 14. Comparison of clinical attachment loss (mm) of the participants.



DISCUSSION:

The purpose of the present study is to evaluate the advantages of ENAP over gingival curettage in pocket depth reduction in Periodontitis patients. There is insufficient literature to compare the effectiveness of ENAP over curettage. According to Yukna et al., the ENAP tends to higher reduction in periodontal pocket because of the complete eradication of the sulcular epithelium and the potential for soft tissue attachment to the tooth, which was evidenced in the present study. Histological investigations show that the mode of this attachment is most likely a long junctional epithelium⁸. Bian et al. stated that combination therapy of curettage and root planing therapy elicited valid effects in terms of reducing PI, GI, PD in his study⁹. Harsas et al. also reported reduction in probing pocket depth which was similar to the present study¹⁰. Also, Kumari et al., in a study revealed reduction in PI, GI, BOP, PPD and gain in clinical attachment level in the sites treated with ENAP¹¹. Gudakuwala et al. in a study stated that there was reduction in PI, GI, PPD and gain in clinical attachment level in the sites treated with ENAP which was similar to the present study¹².

CONCLUSION:

The present study revealed reduction in all the clinical parameters in both the groups but clinically more reduction in Probing pocket depth was observed in ENAP when compared to Gingival curettage. So, Considering the better clinical outcomes, ENAP can be routinely employed with SRP in the treatment of periodontal pockets of patients with moderate-to-severe periodontitis.

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