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COMPARATIVE EVALUATION OF PATIENT'S ACCEPTABILITY BETWEEN POLYETHER AND NON - EUGENOL BASED PERIODONTAL DRESSINGS - A RANDOMISED CONTROL CLINICAL TRIAL

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ABSTRACT: Periodontal dressings were widely used after flap surgery to protect the surgical site since long. This study compared polyether urethane dimethacrylate resin based Barricaid dressing and non-eugenol based periodontal dressings in the perspective of pain, esthetics and patient acceptance using a randomized split-mouth study design. Fifteen patients coming to the Department of Periodontics at ITS Dental College and diagnosed as a case of generalized chronic periodontitis were selected. Total 30sites (2 sites in each patient) requiring the flap surgery were selected and contralateral sites in each patient were randomly allocated into two groups. At baseline plaque index, Modified gingival index were recorded. In group-1 non-eugenol dressing and in group-II light cured periodontal dressing were applied to secure the surgical sites after flap surgery. At day1,2 and 3 pain and discomort was assessed using Numeric Pain Rating Scale.(NPRS) After 7 days patients were recalled for removal of dressing, recording the indices and asked to fill a questionarrie regarding the patient acceptability. Collected data were subjected to statistical analysis and non-significant difference was found in mean NPRS between both groups. After 7 days there was statistically significant better taste, smell and appearance for Barricaid group patients as compared to Coe-pack group. In summation, Barricaid is more preferred dressing over Coe-pack.

INTRODUCTION: Periodontal surgery deals with the surgical manipulation of the mucosa covering the oral cavity especially alveolar bone. Within 24-72 hrs after any periodontal surgery pain, swelling, root hypersensitivity, post op bleeding are most common complications.[1] In 19th century eugenol based periodontal dressings was introduced by Ward to cover and protect surgical area, reduce hemorrhage, pain and prevent bacterial colonization.[2]

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Eugenol was included in these dressings because of its anodyne and antiseptic properties. These periodontal dressings were found to cause allergic reaction, hence non – eugenol periodontal dressings mainly "Coe - pak" (GC America, Inc. USA) offers a standard and widely used after periodontal surgery.[3] Coe – pak has been successfully used after locally delivered drug,[4] gingivectomy,[5] apically repositioned flap[6], periodontal regenerative surgery [7], mucogingival surgery [8]. Even after long term use, Coe - pak has some drawbacks related to handling, manipulation, appearance and adhesive properties.

These days visible light cured periodontal dressing material were suggested to be better and advanced alternate to protect periodontal surgical sites.[9]

Comercially available Barricaid (Densply International Inc. Milford, DE 19963-0359, U.S.A) is polyether urethane dimethacrylate (UDMA) resin based light cured periodontal dressing. This has superior physical properties [10], which allow easier manipulation, better retension and mechanical stability. Moreover it has esthetically pleasing translucent pink color. Till date very few studies illustrate its properties [11] but none of the study compared it with Coe – pak as periodontal dressing in term of clinical response. Therefore the aim of the study was to compare the tissue response and patient compliance of Barricaid with Coe-pak following periodontal flap surgery especially in anterior esthetic region.

MATERIAL AND METHODS: The study design (**Fig. 2**) and protocol were approved by the ethical committee of the Institutional Review Board (ITS Dental College, Hospital and Research Centre, Greater Noida, India) as per the Helsinki guidelines.

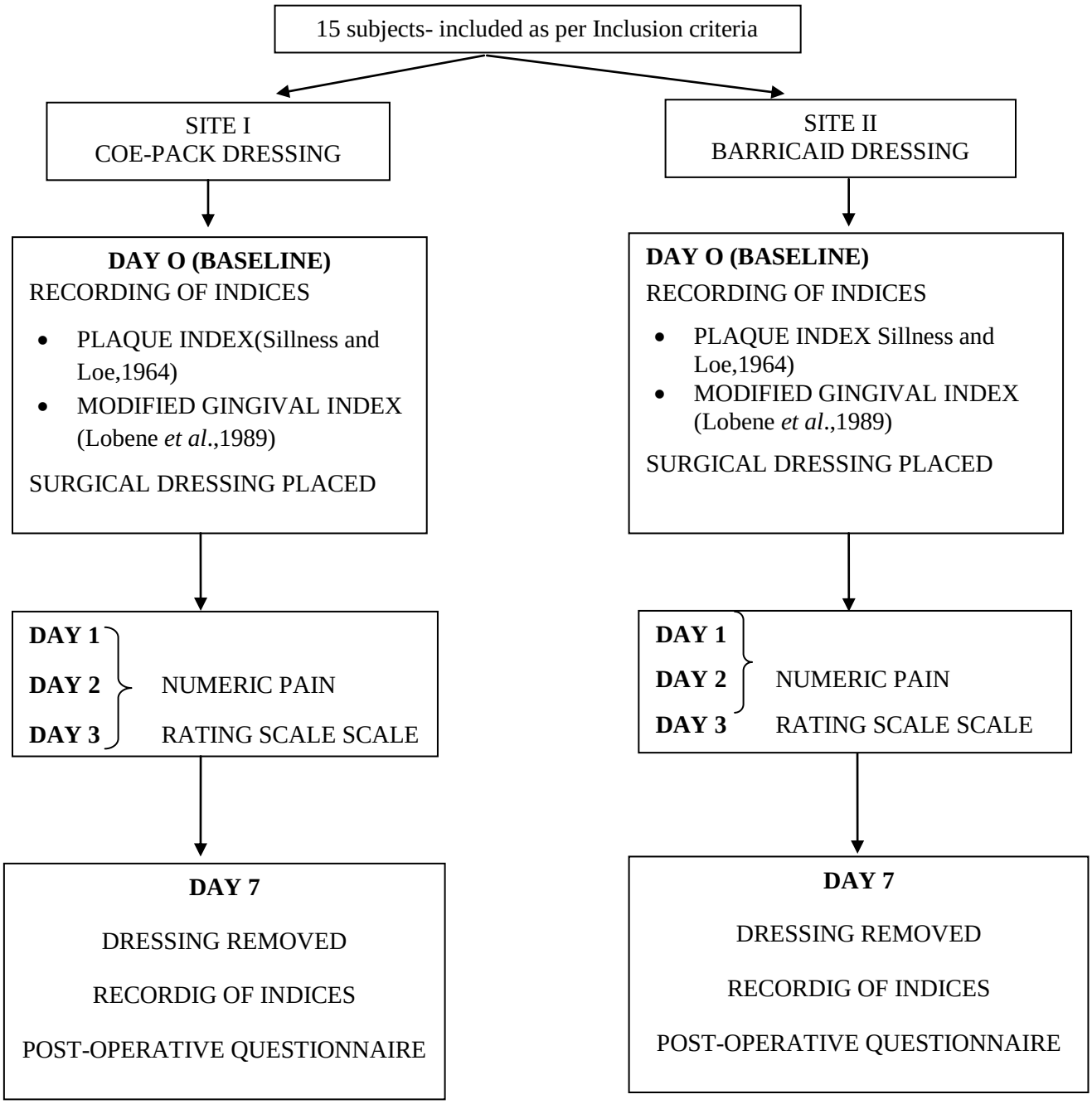


FIG. 2: STUDY DESIGN

Case Selection: Fifteen patients (9 males and 6 females) between age group of 30 - 55 yrs who reported to the Department of Periodontics and diagnosed as a case of chronic generalized periodontitis with attachment loss of 3-6mm requiring periodontal flap surgery were selected. Complete study design was explained to each patient and co operative, non- alcoholic, non – smoker systemically healthy patients were included in the study. After obtaining informed consent from the patients, they had undergone complete clinical and radiographic assessment and selected maxillary and mandibular sites randomly divided into 2 groups - Group 1(application of Coe-pak after periodontal surgery) and Group 2 (placement of Barricaid after periodontal surgery)

Study Design: At baseline Plaque Index[12], gingival index[13] were recorded at both selected sites in both the groups. At baseline periodontal surgery was performed simultaneously at both sites. After drying the surgical sites randomly Coe- pak or Barricaid was placed as periodontal dressing. (**Fig. 3)** Barricaid is a periodontal dressing composed of <50% of Quartz, 10% fumed silica in polyether urethane dimethacrylate resin base supplied in syringe by Dentsply. (**Fig. 1**) At day '1, 2 and 3' pain and discomfort were recorded using the Numeric Pain rating scale [14]. (Mc Caffery, Beebe *et al.*,1989) All parameters were recorded by a third examiner. At the '7th' day all patients were recalled to remove the dressing, recording the indices and fill the questionnaire.

This questionnaire proforma based on taste, smell, appearance, retention and difficulty in speech after application of both periodontal dressing within these 7 days.

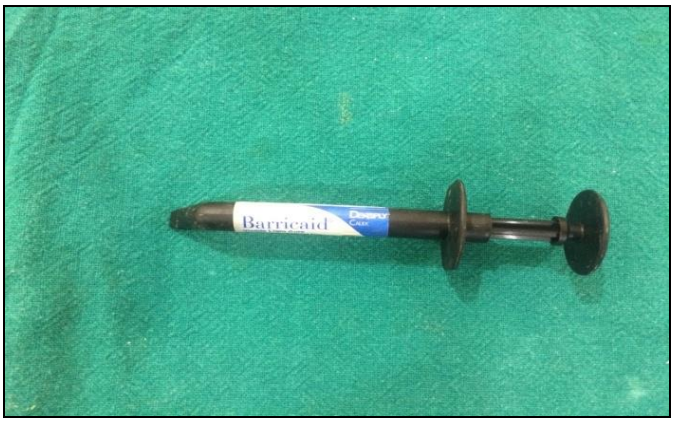


FIG. 1: BARRICAID SYRINGE

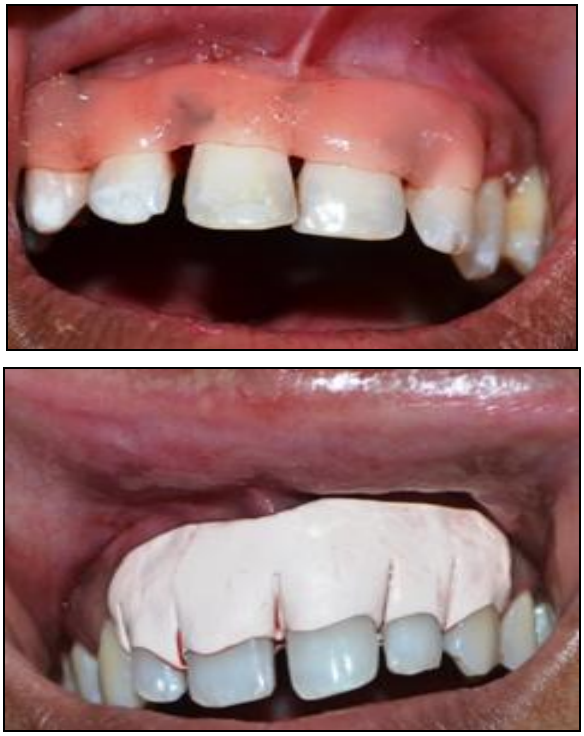


FIG. 3: APPLICATION OF BARRICAID AND COE-PACK

Application of Periodontal Dressing (Barricaid): Barricaid® syringe are designed for both Direct and Indirect placement.

In our study we have used indirect method of placement. A thin layer of lubricant was placed on a clean mixing pad and dispensed the desired amount onto the pad. Gloved fingers were moistened with water to prevent material to stick to the gloves. With gloved fingers, roll the ribbon of dressing off the pad. Place it on the cervical area to the teeth and the surgical site as per your normal placement technique. The material was muscle molded, contoured with a carver and finger pressure.

Barricaid® was exposed to a visible light-curing unit for at least 10 seconds per tooth per side (buccal or lingual). Uncured material can be detected with an explorer or a blunt instrument. Repeat exposure, as needed, until the entire dressing is cured. (A segment of approximately four teeth requires 40 seconds),

These steps were repeated for the opposing side (buccal or lingual) of the surgical site. Occlusion and coverage of material was checked. The material may be curved and contoured with finishing burs in a low-speed handpiece. Additional

material may be added to cure dressing at any time during the placement appointment and incrementally cured for an additional 40 seconds.

RESULTS: All the data obtained were subjected to statistical analysis. Data was analysed using SPSS (version 21). Continuous variables were summarized as Mean and standard deviation. Catagorical variables were summarized as frequencies. Independent t test and Paired t test were used for inter-group and intra-group comparison of variables respectively. Catagorical variables were compared using Chi square test.

The level of significance was set at 95% confidence interwal. Graphs were prepared in Microsoft Excel. Intragroup comparison of Plaque Index (PI) among both the groups showed that there is a significant increase ($p<0.001$) in PI scores from baseline to 7 days. Intergroup comparison of PI showed that there was no significant difference ($p>0.05$) in mean PI scores among Co-Pak group and Barricade group at baseline and at 7 days. (**Table 1**) Moreover, intergroup comparison of absolute change in PI from baseline to 7 days showed that there was no significant difference ($p>0.05$) between Co-Pak group and Barricade group. Intragroup comparison of Modified Gingival Index (MGI) among both the groups showed that there is a significant increase ($p<0.001$) in MGI scores from baseline to 7 days. Intergroup comparison of MGI showed that there was no significant difference ($p>0.05$) in Mean MGI scores among Co-Pak group and Barricade group at baseline and at 7 days. (**Table 2**)

TABLE 1: INTERGROUP AND INTRAGROUP COMPARISON OF PLAQUE INDEX

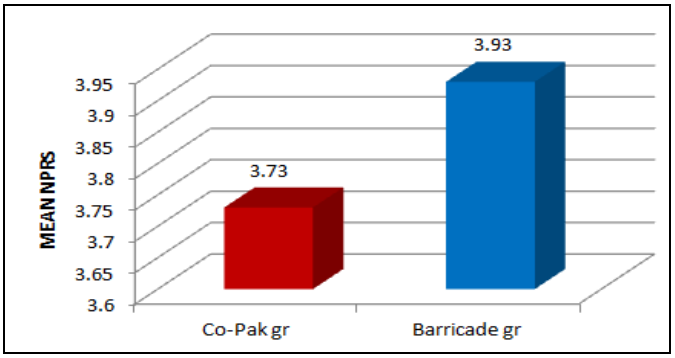
Plaque Index	Coe-Pak group		Barricade group		P value of Inter group comparison
	Mean	SD	Mean	SD	
At Baseline	0.74	0.29	0.86	0.26	0.246, NS
At 7 days	1.27	0.34	1.39	0.39	0.389, NS
P value of Intra group comparison	<0.001, S		<0.001, S		

TABLE 2: INTERGROUP AND INTRAGROUP COMPARISON OF MODIFIED GINGIVAL INDEX

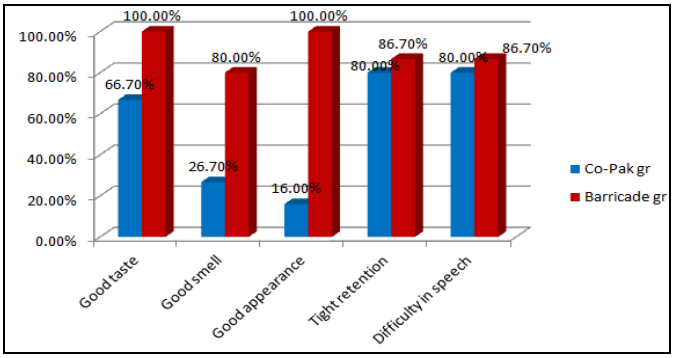
Modified Gingival Index	Co-Pak group		Barricade group		P value of Inter group compariosn
	Mean	SD	Mean	SD	
At Baseline	0.81	0.31	0.71	0.33	0.402, NS
At 7 days	1.16	0.33	1.06	0.41	0.491, NS
P value of Intra group comparison	0.001, S		0.008, S		

Intergroup comparison of absolute change in MGI from baseline to 7 days showed that there was no significant difference ($p>0.05$) between Co-Pak group and Barricade group. Intergroup comparison showed that no significant difference ($p>0.05$) in Mean NPRS was found between Co-Pak group and Barricade group. (**Graph 1**)

Significantly higher number of subjects in barricade group perceived the taste, smell and appearance as good as compared to Co-Pak group. While the proportion of subjects among both the groups who found tight retention and difficulty in speech was not significantly different. (**Table 3**, **Graph 2**)



GRAPH 1: INTERGROUP COMPARISON OF NPRS SCALE



GRAPH 2: INTERGROUP COMPARISON OF ESTHETICS AND DISCOMFORT

TABLE 3: INTERGROUP COMPARISON OF DISCOMFORT AND ESTHETICS AMONG BOTH GROUPS

	Co Pak gr (N=15)		Barricade gr (N=15)		P value
	Count	% within group	Count	% within group	
Good taste	10	66.7%	15	100.0%	0.042, S
Good smell	4	26.7%	12	80.0%	0.009, S
Good appearance	9	16.0%	15	100.0%	0.017, S
Tight retention	12	80.0%	13	86.7%	0.999, NS
Difficulty in speech	12	80.0%	13	86.7%	0.999, NS

DISCUSSION: In this evolutionary era new surgical technologies has been introduced in dental field and urge the need for more clinically pleasing and acceptable dressing after surgery. Coe-pak as periodontal dressing has been used since long, however its justified and reasoning for application is still questionable. Recently application of light cure dressing material Barricaid offers more superior and acceptable results as compared to standard periodontal dressings especially for anterior region [3, 11]. According to manufacture guidelines this material is aesthetically pleasing, ease to handle and manipulate and under operator's control for rate of curing. Moreover several studies [15, 16] claim for the same.

Hence a randomized split mouth study was conducted to compare the tissue response and patient acceptability for this periodontal dressing as compared to Coe-pak in chronic generalized periodontitis patients. A split mouth study was used to allow each patient to act as their own control. Random allocation reduced the risk of bias in order to selection of periodontal dressing.

To evaluate the effect of periodontal dressing on patient oral hygiene performance and more plaque retention plaque index was recorded at baseline and after 7 days. In each group there was significant change in plaque index from baseline to 7th day, however after 7 days absolute change in plaque score in Group II was slightly less as compared to Group I which was not statistically significant. The results are in accordance to the findings of Newman and Addy [17] suggesting after application of periodontal dressings does not affect the healing. Modified gingival index was recorded to evaluate the healing response of the tissue after application of periodontal dressings. Both groups show intragroup significant increase of MGI after 7 days which might be related to inflammatory response after periodontal flap surgery.

Mean pain and discomfort score in patients of Group 1 were slightly less as compared to sites allocated in Barricaid group after 1, 2 and 3 days following surgery which is statistically non significant. This slight more discomfort at Barricaid treated sites might be contributed by uncured residual monomer underlying the cured surface at deeper strata. This was previously justified by the study of Gilbert AD[18] showing the effect of light cured Periodontal dressing material on gingival cells. This problem can be countersink by raising the curing time upto 40 second especially in interproximal area where it was thickest after placement. Furthermore Coe - pak is a non - eugenol dressing that might exert local anesthetic effect leading to slight discomfort to the patient.

To explore the patient acceptability every patient filled a questionnaire on 7th day and patients treated with Barricaid had much better taste/ smell/ appearance as compared to coe-pak sites which was statistically significant. These findings mimic the results of Madan E *et al.*, advocating Barricaid as a biocompatible dressing. A slight decrease in retension and adhesion found in Coe - pak sites as compared to Barricaid sites even after proper adaptation at interproximal and embrasure sites. This difference is statistically insignificant and might be in accordance to the solubility behaviour of both periodontal dressings [10]. Patients feel difficulty in chewing and speaking after any periodontal dressing but Barricaid is more appreciable than Coe -pak.

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CONFLICTS OF INTEREST: Nil.

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