ORIGINAL RESEARCH PAPER
VOLUME-6 | ISSUE-5 | MAY - 2017 | ISSN No 2277 - 8179 | IF : 4.176 | IC Value : 78.46
INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

An esthetic alternative to conventional periodontal dressing- a clinical study

Dental Science

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ABSTRACT

Aim- Periodontal dressings have been used for protection of the surgical site. This study was designed to compare the clinical efficacy of light-cured periodontal dressing (Barricaid) with non-eugenol periodontal dressing (Coe-Pak) following conventional flap surgery.

Methods- Fifteen chronic periodontitis subjects requiring flap surgery on contralateral sides of the arch were selected and divided randomly into Site-A (Coe-Pak) and Site-B (Barricaid) on the basis of dressing placed post operatively. Parameters recorded were pain and discomfort scores, plaque index and modified gingival index and preferred dressing material.

Results- Site-B showed better results when scores of modified gingival index, pain and discomfort were compared, though the differences were statistically non-significant (P>0.05). A significant number of subjects (93.3%) found Coe-Pak to have an unpleasant appearance and thus preferred Barricaid.

Conclusion- Barricaid showed better patient acceptability and proved to be a good alternative to Coe-Pak periodontal dressing.

KEYWORDS:

Barricaid, Coe-Pak, Flap surgery, Periodontal dressing.

INTRODUCTION

Periodontal surgery involves the surgical manipulation of the oral mucosa and the tooth supporting structures to alleviate a variety of problems. However its sequelae are pain, swelling, inflammation, bleeding. Hence, most periodontists advocate that some form of protection should be applied over the surgically traumatized tissue so that it is shielded from further insult.[1]

Periodontal dressings were first introduced in 1923 when Dr. A.W.Ward advocated use of dressing material around the necks of the teeth and adjacent tissue, to cover and protect the wound after periodontal surgery.They are applied to serve as a bandage over the surgical site with the objective of holding the flap in place; protecting newly formed tissue; minimizing postoperative pain, infection and haemorrhage; protecting the surgical site from trauma during eating and drinking and finally, supporting mobile teeth during the healing process.[2] Periodontal dressings are generally grouped into three categories: (i) those containing zinc oxide and eugenol, (ii) those containing zinc oxide without eugenol and (iii) those containing neither zinc oxide nor eugenol. Due to the various side-effects of eugenol, latest periodontal dressings are usually formulated without it.[3]

A very widely used periodontal dressing is the non-eugenol dressing "Coe-Pak" (GC AMERICA, INC. ALSIP, IL 60803 U.S.A.), which offers a standard, to which other periodontal dressings can be compared. Although widely accepted, Coe-pak has a number of disadvantages, e.g., poor appearance, ill-defined setting time, poor flow properties during manipulation and poor adherence to mucosal surfaces.[4]

Recently developed visible light-cured periodontal dressing material based on a polyether urethane dimethacrylate resin is stated to be an advanced concept in the protection of periodontal wound sites.[5] Commercially known as Barricaid (Dentsply International Inc. Milford, DE 19963-0359, U.S.A.), its superior physical properties like easy manipulation, better surface smoothness, interdental retention and mechanical stability favor its clinical application. Additionally, it possesses a translucent pink colour, which is esthetically pleasing.

The aim of the present study was to compare the clinical efficacy of light-cured periodontal dressing (Barricaid) with noneugenol periodontal dressing (Coe-Pak) following conventional flap surgery.

MATERIALS AND METHOD

The study design and protocol were approved by the Institutional Review Board.

Study design

From the OPD, Department of Periodontology, fifteen subjects with chronic periodontitis requiring conventional flap surgery on contralateral sides of the arch, were selected. On the basis of periodontal dressing that was to be placed post-operatively, the sides were divided into Site-A (Coe-Pak) and Site-B (Barricaid).

The inclusion criteria were- age group of 30-55 years of either sex, systemically healthy and cooperative subjects showing acceptable oral hygiene during phase-1 therapy and similar periodontal involvement bilaterally as determined by clinical and radiographic assessment.

The exclusion criteria were- smokers and tobacco chewers, subjects on antibiotics or anti-inflammatory drugs in past 3 months, those with history of any gingival and/ or periodontal surgical treatment in past 6 months and subjects allergic to polyacrylic acid.

A detailed case history of the subjects participating in the study was recorded.Signed informed consent was taken prior to the start of study. Oral hygiene instructions were given and Phase-I therapy was completed for all the subjects.

Assessment of clinical parameters

The Plaque Index (Silness and Loe 1964) and Modified Gingival Index

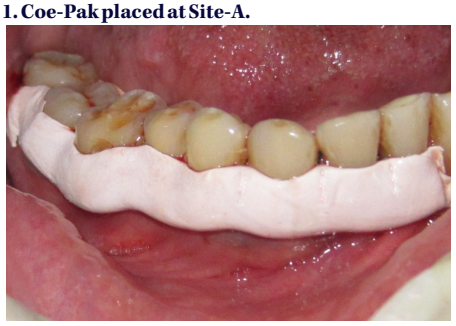
(Lobene RR 1986)[6] were recorded at baseline (pre-operative) and one week post-operatively. Using a visual analog scale (VAS), ratings for pain and discomfort were recorded at Day 1, Day 2, Day 3 and Day 7 post-operatively. All these parameters were recorded by a single examiner who was blinded for the surgical procedures and pack applications.

In addition, patients were also given a post-operative assessment questionnaire in which they were asked about taste, appearance, and retention of both the dressings and following the second procedure, they were requested to state their preference, if any, for a particular dressing.

Surgical procedure

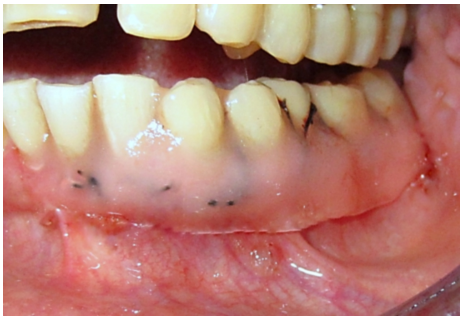
Periodontal flap surgery was performed under local anaesthesia, following aseptic techniques. At Site-A, following sulcular incisions, a full thickness mucoperiosteal flap was reflected both facially and lingually. After thorough debridement and root planing of the exposed root surface, the flap was placed in its original position and sutured using non-resorbable silk thread. The surgical site was dried using gauze, and Coe-Pak was then applied.

Figure 1. Coe-Pak placed at Site-A.



Similar surgical procedure was done on the contralateral side, and photocured dressing (Barricaid) was applied thereafter at Site-B.

Figure 2. Barricaid placed at Site-B.



The photocured dressing was dispensed at the juncture of the cervical one-third of the teeth and the margin of the surgical site on the facial aspect. It was exposed to a visible light-curing unit for 10 seconds per site per tooth until the entire dressing was cured. Same procedure was repeated for the lingual side. All the surgical procedures were carried out by the same operator. The dressings were removed after seven days.

All the data obtained was statistically analysed. Descriptive statistics were expressed as mean ± standard deviation (SD) for each group. The change in mean scores of Plaque Index and Modified Gingival Index over a period of 1 week in each group was analysed using Paired-t test. Intergroup comparison was done using Unpaired-t test. The post-operative assessment variables were analysed using Chi Square test. In the above tests, p value less than or equal to 0.05 (P≤0.05) was taken to be statistically significant. All analyses were performed using SPSS software version 17.

RESULTS

At Site-A and Site-B, the mean increase in Plaque index scores from baseline to day 7 were 1.01±0.25 and 0.74±0.28 respectively, which was statistically significant (P<0.001). On comparison, the change in score at Site-B was significantly lesser than Site-A.

Table 1. Change in plaque index scores at Site-A and Site-B.

Plaque Index score (Mean ± SD)	Site-A (Coe-Pak)	Site-B (Barricaid)	Unpaired t test (p value)
Baseline	0.62 ± 0.27	0.62 ± 0.28	0.009*
1 week	1.63 ± 0.13	1.36 ± 0.14	
Change (1 week - baseline)	1.01 ± 0.25	0.74 ± 0.28	
Paired t test (p value)	<0.001*	<0.001*	

*P ≤ 0.05 is statistically significant.

At Site-A and Site-B, the mean increase in Modified Gingival index scores from baseline to day 7 were 0.95±0.34 and 0.75±0.32 respectively, which was statistically significant (P<0.001). On comparison, the change in score was less at Site-B, but statistically non-significant.

Table 2. Change in modified gingival index scores at Site-A and Site-B.

Modified Gingival Index score (Mean ± SD)	Site-A (Coe-Pak)	Site-B (Barricaid)	Unpaired t test (p value)
Baseline	0.71 ± 0.34	0.73 ± 0.30	0.111
1 week	1.66 ± 0.15	1.47 ± 0.11	
Change (1 week - baseline)	0.95 ± 0.34	0.75 ± 0.32	
Paired t test (p value)	<0.001*	<0.001*	

At both the sites, the mean values of pain and discomfort showed a significant decrease from day 1 to day 3 and day 7 post-operatively (p<0.001).

Table 3. Change in visual analog scale (VAS) scores at Site-A and Site-B.

VAS score (Time interval)	Site-A (Coe-Pak) (Mean ± SD)	Site-B (Barricaid) (Mean ± SD)
Day 1	4.67 ± 0.72	4.87 ± 1.06
Day 2	3.53 ± 0.99	3.80 ± 1.15
Day 3	2.60 ± 1.18	2.73 ± 1.10
Day 7	1.33 ± 0.62	1.47 ± 0.92
P value (Repeated Measures ANOVA)	<0.001*	<0.001*

The change in VAS scores at Site-B on day 3 and 7 following surgery was found to be slightly higher, although statistically non-significant.

Table 4. Comparison of change in visual analog scale (VAS) scores at Site-A and Site-B.

VAS score (Time interval)	Site-A (Coe-Pak) (Mean ± SD)	Site-B (Barricaid) (Mean ± SD)	Unpaired t test (p value)
1-2 days	1.13 ± 0.64	1.07 ± 0.59	0.770
1-3 days	2.07 ± 1.16	2.13 ± 0.83	0.858
1-7 days	3.33 ± 0.82	3.40 ± 0.74	0.816

A significantly higher number of subjects (14 out of 15) complained of an unpleasant appearance of Coe-Pak as compared to Barricaid (P<0.001) and a higher number of subjects (10 out of 15) preferred Barricaid as a periodontal dressing.

Table 5. Comparative post-operative assessment of Site-A and Site-B.

	COE-PAK (yes)	BARRICAID (yes)	P value (Chi square test)
Loose/ fragmented/ displaced dressings	5 (33.3%)	4 (26.7%)	1.000
Unpleasant appearance	14 (93.3%)	1 (6.7%)	<0.001*

Unpleasant taste/ smell	6 (40%)	2 (13.3%)	0.215
Irritation/ burning sensation	2 (13.3%)	3 (20%)	1.000
Difficulty in speech/ mastication	3 (20%)	2 (13.3%)	1.000
Ulceration/ discomfort	1 (6.7%)	2 (13.3%)	1.000
Preferred dressing	5 (33.3%)	10 (66.7)	0.197

DISCUSSION

Use of dressing materials in periodontics has remained debatable. Various schools of thought have their own reasoning and claims. However, one of the most widely used non-eugenol dressings is Coe-Pak. When new dressing materials with claims of superior properties are developed, their clinical performance should be assessed and compared with established products.[4]

In this study, a greater number of subjects preferred Barricaid as a post-operative periodontal dressing over Coe-Pak. The results of this study are in accordance with those of other studies that have been carried out earlier.

Application of dressing has been said to be associated with more plaque accumulation. The results for plaque index showed a significant increase in the scores at both sites- A and B after 1 week. These results are in accordance with the study of Heaney and Appleton(1976),[7] Pluss et al(1975),[8] Newman and Addy (1982),[9] Sachs et al (1984)[10] who reported accumulation of plaque beneath the periodontal dressings but not to a detrimental level to retard the healing process.

The modified gingival index of Lobene et al. was assessed pre-.and post-operatively and an increase was noted. According to Lekneset al (2005)[11] and Abi Rached et al (1992)[12] this increase may be attributed to the normal inflammatory response of tissues after surgical manipulation.

Further, studies done by Alpar B et al (1999)[13] showed that Barricaid did not inhibit growth of human primary gingival fibroblasts, while Coe-Pak reduced their proliferation. Schmalz G and Bindslev AD (2009)[14] found that light-cured periodontal dressings were not cytotoxic in cell cultures and different cell types. Madan E et al (2013)[15] in their study concluded that Barricaid is easily applied and offers a perfect colour match; hence the patient is not hesitant to carry out his routine activities.

With due consideration to the above, it is important to emphasize that a larger sample size needs to be taken up to compare the efficacy of these two periodontal dressings.

CONCLUSION

The results of this study showed that visible light-cured periodontal dressing Barricaid had better patient acceptability and proved to be an esthetic alternative to conventional Coe-Pak as a dressing material. Thus it can be preferred over Coe-Pak for application in the anterior esthetic region following periodontal surgery.

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