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Research Article

COMPARISON OF LIGHT-CURED PERIODONTAL DRESSING WITH NON-EUGENOL PERIODONTAL DRESSING IN TERMS OF AESTHETICS, ACCEPTANCE AND HEALING FOLLOWING CONVENTIONAL FLAP SURGERY

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ABSTRACT

Background: Periodontal Dressings are usually placed following periodontal surgery to obtain optimal healing and to insure a minimal patient discomfort. Several dressings are commercially available. A light-cured resin, used as a periodontal dressing claimed to be more biocompatible and esthetic.
Aim: To compare the clinical efficacy of light-cured periodontal dressing with non-eugenol periodontal dressing following conventional flap surgery.
Materials and Methods: In a split mouth study, 20 chronic periodontitis subjects requiring periodontal flap surgery on contralateral sides of the arch were selected and grouped into Group-1 (Barricaid) and Group-2 (Coe-Pak) on the basis of dressing placed post-operatively. Parameters recorded were Plaque Index, Modified Gingival Index at baseline, 1 week, 2 weeks and pain and discomfort were recorded at day-1, day-3 and day-7.
Statistical analysis: Intragroup and intergroup comparison was done using Unpaired t test for parametric variables, repeated measure ANOVA and Mann Whitney U test for non-parametric variable. The post-operative assessment variables were analyzed using Chi Square test.
Results: On intergroup comparison there was statistically significant reduction in plaque index and pain and discomfort scores in Group-1 as compared to Group-2. However when modified gingival index scores were compared, the differences were not statistically significant. Subjects found no unpleasant taste/smell, no burning sensation and better perception.
Conclusions: The light-cured dressing showed better patient acceptability and proves to be a better alternative to non-eugenol dressing as a dressing material.

INTRODUCTION

Periodontal surgery involves the surgical manipulation of the oral mucosa and the tooth supporting structures to alleviate a variety of problems. The common sequelae of periodontal surgery are pain, swelling, inflammation, and bleeding. Many periodontists advocate that some form of protection should be applied over the surgically traumatized tissue so that it is shielded from further insult.[1] Such protection is offered by periodontal dressing or packs that cover and protect the wounds from post-operative irritation, trauma, salivary contamination, food stagnation, alleviate pain, reduce hemorrhage and facilitate recovery.[2]

Periodontal dressing materials were first introduced and described by Dr A.W. Ward in 1923.[3] He advocated the use of a packing material; Wondrpak, around teeth following periodontal flap surgery. Traditionally, periodontal dressings were based on zinc oxide eugenol system. Due to the various side-effects of eugenol, latest periodontal dressings are usually formulated without it. Various periodontal dressing materials used are Wonder-Pak, non-eugenol dressing material (Coe-Pak™), Peripac, Reso-Pak, Cyanoacrylate, Methacrylate, light-cured periodontal dressing.[4]

A very widely used periodontal dressing is the non-eugenol dressing (Coe-Pak), which offer a standard, to which other periodontal dressings can be compared. Although widely accepted, "Coe-Pak" has a number of disadvantages, namely; poor appearance, ill-defined setting time, and poor flow properties during manipulation.[5]

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Recently developed visible light-cured periodontal dressing material which consists of polyether urethane dimethacrylate resin is stated to be an advanced concept in the protection of periodontal wound sites, known as Barricaid.[6] It has superior physical properties like easy manipulation, better surface smoothness, interdental retention, and mechanical stability. Additionally it possesses translucent pink color, which is aesthetically pleasing and rate of curing, which is easily controlled by illumination with visible light.[7]

Only two studies have been conducted till date, comparing Barricaid and Coe-Pak. Hence, the present study was conducted to compare aesthetics, acceptance and healing after use of light-cured periodontal dressing Barricaid and Coe-Pak following conventional flap surgery.

MATERIAL AND METHODS

Subjects for this study were selected from Out Patient Department of Periodontology. Approval by the Ethical Committee was obtained prior to commencement of the study. In this split mouth clinical study, a total of 40 quadrants in selected 20 subjects having chronic periodontitis requiring periodontal flap surgery, were grouped as follows:

Group-1 –20 quadrants were treated with conventional flap surgery followed by placement of Barricaid dressing.
Group-2 –20 quadrants were treated with conventional flap surgery followed by placement of Coe-Pak.

The subjects were selected on the basis of following inclusion criteria: 1) Age group of 20-55 years of either sex, 2) Systemically healthy and cooperative subjects, 3) Similar periodontal involvement bilaterally as determined by clinical and radiographic assessment, 4) Probing pocket depth of ≤ 6 mm and 5) Presence of bilateral horizontal bone loss as determined by orthopantomograph.(OPG)

The exclusion criteria were: 1) subjects hypersensitive to polyacrylic acid, 2) smokers and tobacco chewers, 3) pregnant or lactating women and those using oral contraceptive pills, 4) subjects on antibiotics or anti-inflammatory drugs in past 3 months and 5) subjects with history of any gingival and/or periodontal surgical treatment in past 6 months.

Informed written signed consent of the subjects participating in the study was obtained.

The clinical parameters assessed were:

- Plaque Index (PI) score (Turesky-Gilmore-Glickman Modification of the Quigley-Hein plaque index 1970) was recorded at baseline, 1 week and 2 weeks
- Modified Gingival Index score (MGI) (Lobene RR 1986) was recorded at baseline, 1 week and 2 weeks
- Visual Analogue Scale (VAS) ratings for pain and discomfort were recorded at day 1, day 3 and day 7.
- In addition: loose/ fragmented/ displaced dressing, unpleasant appearance, unpleasant taste, smell, irritation/ burning sensation, difficulty in speech/mastication, ulceration/ discomfort and preferred dressing were assessed.

A detailed case history of the subjects was recorded. Phase - I therapy (scaling and root planing) was carried out and oral hygiene instructions were given. Subjects were recalled 3 weeks post phase-I therapy and the baseline clinical parameters were assessed.

Surgical procedure was performed under local anaesthesia. Crevicular incision were placed from base of the pocket on interdental area and extended in the mesial and distal direction. Full thickness flap was then raised with the help of mucoperiosteal elevator. Complete debridement was done. After thorough debridement, interrupted sutures were placed using a 3/8 reverse cutting 19 mm needle with 3-0 black braided silk suture followed by placement of periodontal dressing. Group-1 were applied light-cured periodontal dressing (Barricaid) and Group-2 were applied non-eugenol periodontal dressing (Coe-Pak). (Figure-1) (Figure-2)

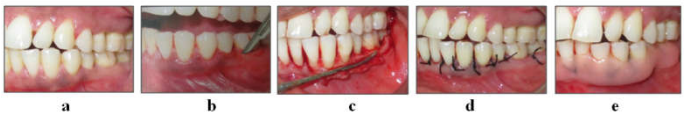

Figure 1 Surgical procedure at Group-1

a - Baseline pre-operative photograph
b - incision placement
c - flap reflection with periosteal elevator and debridement
d - flap approximation and suturing
e - Barricaid placement

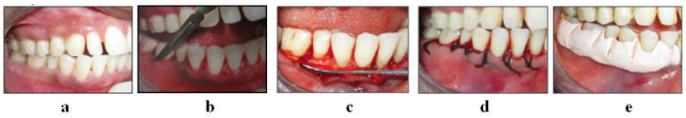

Figure 2 Surgical procedure at Group-2

a - Baseline pre-operative photograph
b – incision placement
c – flap reflection with periosteal elevator and debridement
d – flap approximation and suturing
e – Coe-Pak placement

Subjects were advised to rinse the mouth with chlorhexidine digluconate mouthwash twice daily. The dressing and sutures were removed one week after surgery. Subjects were recalled at 1 week and 2 weeks for follow up. (Figure-3) (Figure-4)

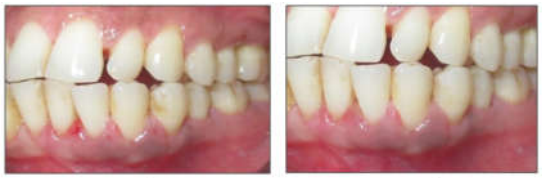

Figure 3 Post-operative follow-up at Group-1

a – 1 week
b – 2 weeks

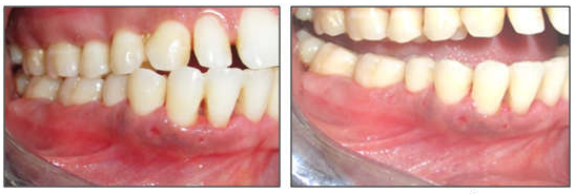

Figure 4 Post-operative follow-up at Group-2

a – 1 week
b – 2 weeks

The clinical parameters were assessed and the observations were tabulated. The results of the study were subjected to statistical analysis.

RESULTS

Descriptive statistics were expressed as mean ± standard deviation (SD) for each group.

Intragroup and intergroup variations in the various clinical parameters over a period of 2 weeks, were analysed using unpaired t test, Repeated measures ANOVA followed by post hoc Bonferroni's test and Mann Whitney U test for non-parametric variable. In the above tests, p value less than or equal to 0.05 ($p \leq 0.05$) was taken to be statistically significant and $p \leq 0.001$ was taken to be statistically highly significant. All analyses were performed using SPSS software version 17.

On Intragroup comparison there was statistically highly significant change in the plaque index and modified gingival index over a period of 2 weeks in Group-1 (Barricaid) ($p<0.001$). At 1 week, there was a significant increase in the scores of both the indices ($p <0.001$), followed by a significant reduction in scores from 1 week to 2 weeks ($p <0.001$). However, from baseline to 2 weeks there was significant increase in plaque index score ($p = 0.037$) in Group-2, whereas there was no significant change in modified gingival index score. (Table-1)

Table no 1 Change in Plaque Index scores and Modified Gingival Index scores in Group-1 study participants (Barricaid) and in Group-2 study participants (Coe-Pak)

Groups	Parameters	Baseline Mean± SD	1 week Mean ±SD	2 weeks Mean±SD	P value (Repeated measures ANOVA)
Group-1	Plaque index	0.74 ± 0.19	1.07 ± 0.15	0.74 ± 0.22	<0.001*
	Modified gingival index	0.69 ± 0.20	1.09 ± 0.23	0.81 ± 0.17	<0.001*
Group-2	Plaque index	0.72 ± 0.22	1.38 ± 0.26	0.90 ± 0.17	<0.001*
	Modified gingival index	0.71 ± 0.21	1.20 ± 0.21	0.82 ± 0.21	<0.001*

On intergroup comparison there was an increase in plaque index scores in Group-2 at 1 week as compared to Group-1 scores ($p <0.001$). However, at 2 weeks on intergroup comparison there was no significant difference between the two groups for change in plaque and modified gingival indices score. (Table-2) (Figure-5)

Table no. 2 Comparison of change in Plaque Index scores and Modified gingival index scores in Group-1 (Barricaid) and Group-2 (Coe-Pak) study participants

		Baseline – 1 week	Baseline – 2 weeks	1 week – 2 weeks
Plaque Index	Group-1	-0.33 ± 0.20	-0.01 ± 0.25	0.33 ± 0.19
	Group-2	-0.66 ± 0.28	-0.17 ± 0.28	0.49 ± 0.22
P value (Unpaired t test)		<0.001*	0.054	0.054
Modified Gingival Index	Group-1	-0.41 ± 0.20	-0.12 ± 0.23	0.29 ± 0.21
	Group-2	-0.49 ± 0.22	-0.11 ± 0.29	0.38 ± 0.30
P value(Unpaired t test)		0.219	0.892	0.249

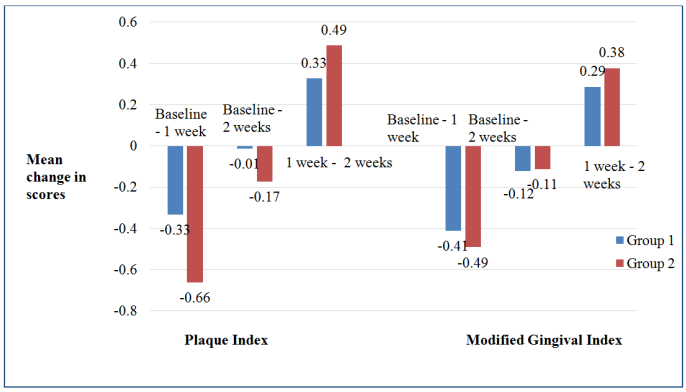

Figure 5 Comparison of change in Plaque Index scores and Modified gingival index scores in Group-1 (Barricaid) and Group-2 (Coe-Pak) study participants.

On Intragroup comparison there was an overall statistically highly significant reduction in the VAS score over a period of 7 days for both the groups ($p<0.001$). The VAS scores at Day 3 and Day 7 are significantly lower as compared to Day 1 scores in both the groups. (Table-3) (Figure-6)

Table No 3 Change in VAS Scores (post-operative pain and discomfort) in Group-1 study participants (Barricaid) and Group-2 study participants (Coe-Pak)

VAS Score	At Day 1	At Day 3	At Day 7	P value (Repeated Measures ANOVA)
Group-1 (Barricaid)	3.60 ± 1.39	1.25 ± 1.37	0.45 ± 1.39	<0.001*
Group-2 (Coe pack)	4.15 ± 0.81	2.45 ± 1.46	0.40 ± 0.88	<0.001*

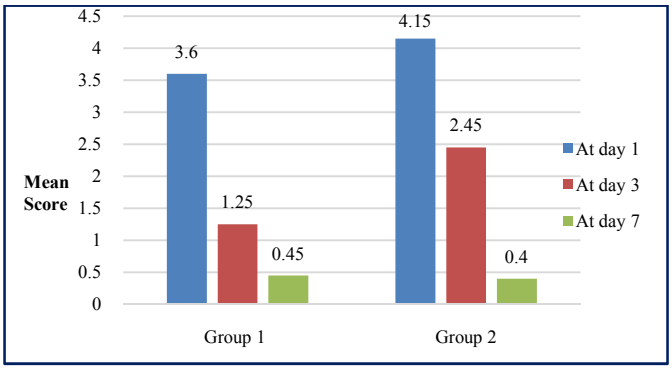

Figure 6 Change in VAS Scores (post-operative pain and discomfort) in Group-1 study participants (Barricaid) and Group-2 study participants (Coe-Pak).

On intergroup comparison from day 1 to day 3, there was no statistically significant difference in the change in VAS scores in Group-1 and Group-2 ($p=0.075$). The reduction in VAS scores are higher in Group-2 as compared to Group-1 from Day 3 to Day 7 ($p<0.001$) and Day 1 to Day 7 ($p = 0.021$). (Table-4) (Figure-7)

Table no. 4 Comparison of change in VAS scores (post-operative pain and discomfort) in Group-1 (Barricaid) and Group-2 (Coe-Pak) study participants

VAS score (Mean ± SD)	Group-1 (Barricaid)	Group-2 (Coe Pack)	Unpaired t test (p value)
Day 1 – Day 3	2.35 ± 0.49	1.70 ± 1.30	0.075
Day 3 – Day 7	0.80 ± 0.83	2.05 ± 1.00	<0.001*
Day 1 – Day 7	3.15 ±0.81	3.75 ± 1.02	0.021*

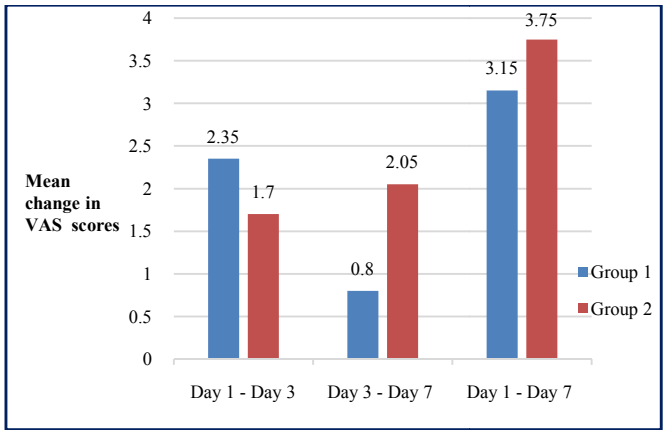

Figure 7 Comparison of change in VAS scores (post-operative pain and discomfort) in Group-1 (Barricaid) and Group-2 (Coe-Pak) study participants.

On Intergroup comparison of post-operative assessment, Group-2 participants had higher complaints of loose/ fragmented/ displaced dressings, unpleasant appearance, taste/ smell, irritation/ burning sensation, difficulty in speech/ mastication and ulceration/ discomfort. The choice of preferred dressing was equal among both the group participants. (Table-5) (Figure-8)

Table No 5 Comparison of post-operative assessment in Group-1(Barricaid) and Group-2 (Coe-Pak) study participants.

	Group-1 (Yes)	Group-2 (Yes)
Loose/ fragmented/ displaced dressings, N = 20	2 (10%)	5 (25%)
Unpleasant appearance, N = 20	0 (0%)	5 (25%)
Unpleasant taste/ smell, N = 20	0 (0%)	5 (25%)
Irritation/ burning sensation, N = 20	2 (10%)	4 (20%)
Difficulty in speech/ mastication, N = 20	2 (10%)	4 (20%)
Ulceration/ discomfort, N = 20	2 (10%)	3 (15%)
Preferred dressing, N = 20	17 (85%)	17 (85%)

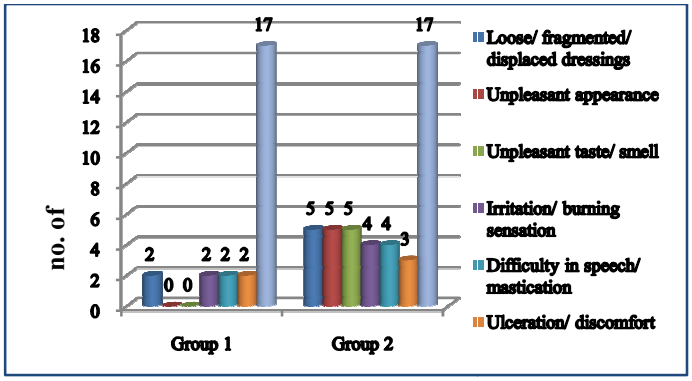

Figure 8 Comparison of post-operative assessment in Group-1(Barricaid) and Group-2 (Coe-Pak) study participants.

DISCUSSION

Many authors have appreciated the advantage of periodontal dressing specially because of their ability to prevent persistent bleeding and mechanical influences during the healing phase postoperatively (Bernier and Kaplan 1947; Baer *et al* 1969; Prichard 1972; Sachs *et al* 1984)[8] as they provide a close adaptive, adhesive and non permeable barrier and also prevent salivary leakage (Gjerdet and Haugen 1977; Haugen, Espevik and Mjor 1979; Watts and Combe 1982).[9]

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 Barricaid has been introduced with claims of superior properties are developed, their clinical performance should be assessed and compared with established products.[5]

Hence this split mouth study was conducted to compare the clinical efficacy of light-cured periodontal dressing (Barricaid) with non-eugenol periodontal dressing (Coe-Pak) following conventional flap surgery.

There was statistically highly significant increase in the plaque index and modified gingival index scores over a period of 1 weeks in both the groups, but there was a significant increase in plaque index score in Group-2 compared to Group-1 at 1week. These results were in accordance with studies conducted by Sanadi RM *et al* (2017);[10] Kulkarni *et al*, (2007);[11] Cheshire *et al*, (1996);[5] who reported increase in mean plaque index and modified gingival index score from baseline to 1 week. Increase in plaque score was due to increased plaque accumulation beneath the periodontal dressings which can be attributed to difficulty in maintaining oral hygiene post-surgically. Modified gingival index of Lobene *et al.* was assessed pre-and post-operatively and a statistically significant increase in its value was noted. This was similar to finding of Leknes *et al* (2005) and Abi Rached *et al* (1992) who reported significant increase in modified gingival index score, which could be due to the normal inflammatory tissue response post surgically. Presence of silk sutures within the tissue may act as foreign material that can lead to provoked tissue reaction. It can also be attributed to trauma during suturing and increased plaque accumulation at the suture site. (Macht and krizek, 1978; Levin, 1980; Cheshire *et al* 1996, Giray *et al*, 1997).[4]

There was an overall statistically highly significant reduction in the VAS score over a period of 7 days for both the groups ($p<0.001$). The VAS scores at day 3 and day 7 are significantly lower as compared to day 1 scores in both the groups.

Similar study conducted by Sanadi RM *et al* (2017);[10] Madan E *et al* (2013);[4] who reported that the mean VAS score for pain and discomfort showed significant reduction from day 1 to day 3 in both the groups. On comparison, the mean pain and discomfort scores between Group I (non eugenol dressing) and Group II (light cured periodontal dressing) on day 1 and day 3 following surgery, difference was statistically non-significant at all time intervals, but the scores were found to be slightly lower for Group II

Study conducted by Jorkjend L and Skoglund L (1990);[12] who reported a higher incidence of pain following the use of Coe-pak as a periodontal dressing when compared to eugenol-containing dressings. This was attributed to the fact that Coe-pak lacks eugenol that exerts local anesthetic effect. But, eugenol-containing dressings have their own demerits, due to which they are no more in vogue. Lower pain scores with Barricaid seem to have influenced the better acceptance of the dressing which was in contrast with the present study where lower pain scores with Coe-Pak was observed.

Post-operative assessment shows that Group-2 participants had higher complaints of loose/ fragmented/ displaced dressings, unpleasant appearance, taste/ smell, irritation/ burning sensation, difficulty in speech/ mastication and ulceration/ discomfort. The choice of preferred dressing was equal among both the group participants.

These results were in accordance with study conducted by Sanadi RM *et al*, (2017);[10] who reported that a significantly higher number of subjects (14 out of 15) complained of an unpleasant appearance of Coe-Pak as compared to Barricaid ($P<0.001$) but a higher number of subjects (10 out of 15) preferred Barricaid as a periodontal dressing which was in contrast with the present study where subjects accepted both Barricaid and Coe-Pak equally.

Within the limits of this study both Barricaid and Coe-Pak showed comparable results as postsurgical dressing in terms of clinical assessment. Both dressings were biocompatible and no adverse allergic reaction was reported in any of the sites. However based on the subjective assessment, both the dressings were equally preferred among both the group participants. But plaque index score was less in Barricaid as compared to Coe-Pak. Also better ease of manipulation with Barricaid may favour its clinical application.

CONCLUSION

The present study concluded that visible light-cured periodontal dressing, Barricaid is aesthetically pleasing, easily applied, offers a perfect color match with no unpleasant taste or smell. It is biocompatible, offers good retentivity, and only a thin layer is required to be applied. However the higher cost of dressing is a mere illusion, and it does not limit its application in clinical practice.

References

1. Fraunhofr JA, Argyropoulos DC. Properties of periodontal dressings. *Dent Mater*. 1990; 6: 51-5.
2. CDA Council for Dental Materials and Devices; Status report: Periodontal Dressings. *Dent J*.1977; 10: 501-2.
3. Alpar B, Glinay H, Geurtsen W, Leyhausen G. Cytocompatibility of periodontal dressing materials in fibroblast and primary human osteoblast- like culture. *J Clin Oral Invest* 1999; 41-48.
4. Madan E, Bharti V, Chaubey K K, Vipin K R, Thakur R K, Nirwal A. Light-cured resin "Barricaid"- An aesthetic and biocompatible dressing: A step ahead. J *Indian Soc Periodontol* 2013; 17(6): 753-756.
5. Cheshire P, Griffiths G, Griffiths B, Newman H: Evaluation of the healing response following placement of Coe-pak and experimental pack after periodontal flap surgery. *J Clin Periodontol* 1996; 23:188-193.
6. Nalmas S, Prakash S, Mehta DS. Periodontal dressings in periodontal therapy – an update. *J Ind Dent Assoc*. 2000; 71: 74 -179.
7. Thorstensen AE, Duguid R, Lloyd CH. The effects of adding chlorhexidine and polyhexamethylenebisguanide to a light-cured periodontal dressing material. *J Oral Rehabil.*1996; 23: 729-37.
8. Kathariya R, Jain H, Jadhav T. To pack or not to pack: the current status of periodontal dressings. *J Appl Biomater Funct Mater* 2014; 13(2): 73-86.
9. Haugen E, Pettersen A: The sensitizing potential of periodontal dressings. *J Dent Res* 1978; 57: 950-953.
10. Sanadi R, Chelani L, Dere S, Suthar N: An esthetic alternative to conventional periodontal dressing- a clinical study. *IJSR* 2017; 6 (5): 422-424.
11. Kondoh S, Matsuo K, Yuzuriha S, Kikuchi N, Ban R: Dressing for alveolopalatal wounds after alveolar bone grafting. *Ann Plast Surg*. 2003; 51: 290–293.
12. Jorkjend L, Skoglund L: Effect of non-eugenol and eugenol containing periodontal dressings on the incidence and severity of pain after periodontal soft tissue surgery. *J Clin Periodontol* 1990; 17:341-344.

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