

**Research Article****Evaluation of post operative healing response and patient comfort with two periodontal dressings- ResoPac and CoePak following periodontal flap surgery- A comparative clinical study.**Gautami S Penmetsa<sup>1</sup>, Ramya Teja G<sup>2</sup>, Anudeep M<sup>3</sup>, Chaitanya A<sup>4</sup><sup>1</sup>PROFESSOR, DEPARTMENT OF PERIODONTICS, VISHNU DENTAL COLLEGE<sup>2</sup>PG STUDENT, DEPARTMENT OF PERIODONTICS, VISHNU DENTAL COLLEGE<sup>3</sup>PG STUDENT, DEPARTMENT OF PERIODONTICS, VISHNU DENTAL COLLEGE<sup>4</sup>PG STUDENT, DEPARTMENT OF PERIODONTICS, VISHNU DENTAL COLLEGE

Received 28 Feb. 2017; Accepted 03 April. 2017

**ABSTRACT**

**Aim:** to assess the patient comfort early wound healing with a periodontal dressing in patients who underwent periodontal flap surgeries.

**Materials and methods:** A split mouth randomized comparative clinical study was conducted in 30 patients who required periodontal flap surgery. After completion of the surgery, Coepak and resopac were placed in the control and test sites respectively and palatability, retainability, irritability, interference with function and pain was measured 7<sup>th</sup> day postoperatively and statistically analysed using Kruskal Wallis test, Z test and Man W hitney U test.

**Results:** Intergroup comparison of both the packs at 7<sup>th</sup> day in terms of retainability revealed that 96% of coepak group retained the pack all through 7 days whereas 52% retained resopack for only 1 day, 36% retained for 2 days and 12% of them retained for 3 days. Intergroup comparison of Early healing index showed that the mean score was 2 for both the packs at 7<sup>th</sup> day of reevaluation which were statistically non significant.

**Conclusion:** There was no statistically significant difference between the two groups regarding the healing parameters. Coe pak seems to serve the ideal role of protecting immediate post surgical wound. Resopac reported certain uneasiness due to leaching of material in oral cavity over a period of time, thereby owing to less preference compared to Coe pak by the patient.

**Keywords:** surgical wound, healing index, periodontal flap surgery, retainability

**INTRODUCTION:**

Periodontitis results from infection with subgingival plaque-forming bacteria followed by host immune responses<sup>1</sup>. Therefore, removal and control of microbial deposits is critical for successful periodontal therapy<sup>2</sup>. Surgical periodontal procedures are in general use for treating periodontal disease<sup>3</sup>. The fact that "diseased" roots can be cleaned more efficiently by enhanced accessibility and "visual instrumentation" is the reason why surgical therapy is successful<sup>3</sup>.

The objective of flap surgery is to gain access to the root surface for proper root debridement and granulation tissue removal. The healing followed

by surgical therapy is one of the main phases of a successful periodontal therapy and literature suggests that periodontal wounds appear to heal faster in sites with fewer -plaque score. In an attempt to minimize the deposits within the wound site, Ward in 1920 advocated the use of periodontal dressing for routine periodontal surgical procedures in order to reduce pain, infection, root sensitivity thereby minimizing deposits within the wound site.<sup>4,5,6,7</sup>

A variety of periodontal dressings have been employed over several years for the purpose of protection of surgical sites, to prevent postoperative infection and to accelerate wound healing after periodontal surgery. Periodontal dressings, also known as periodontal packs can

broadly be categorized as eugenol-based dressings and noneugenol based dressings. Due to tissue irritating properties of eugenol dressings their usage has been decreased. To overcome this, non eugenol dressings have been developed, out of which Coe pak is the most widely used. Over the years, many modifications have been made to the composition of such dressings to improve their physical and therapeutic properties.

Among the various modifications Reso-Pac™, a soft and soluble material is a cellulose based adhesive which is hydrophilic and self-resorbable elastic material. Unlike conventional periodontal dressings, it remains elastic at all times and it need not be mixed and slowly gets dissolved over a period of 2 – 3 days. Aside from a cellulose based matrix, it contains myrrh, which acts as an astringent and disinfectant with haemostatic characteristics.<sup>8</sup>

Though many comparisons have been made to evaluate the efficacy of the conventional non eugenol pack (Coe- Pak™) with other types of non eugenol and eugenol based dressings, limited information is available about the efficacy of cellulose based dressing (Resopac™).

Hence there is a need for a study, to assess the patient comfort and healing response using ResoPac™. Thus the aim of this study was to assess the patient comfort and early wound healing with a periodontal dressing in patients who underwent periodontal flap surgeries.

#### Materials and methods:

A total of 30 patients were included in the study attending the Department of Periodontics and Implantology Vishnu Dental College, Bhimavaram, Andhra Pradesh, India.

Patients diagnosed with moderate to severe periodontitis indicated for periodontal flap surgery in at least two sextants were included in the study and all patients who were contraindicated for flap surgery were excluded from the study. Ethical clearance was obtained from the concerned Institution Review Board and Ethical committee. A split mouth simple randomized study was conducted to compare the efficacy of ResoPac™ (Hager werken) with Coe pak™ as a periodontal dressing following periodontal flap

surgery. Sites were randomly assigned to the test and control groups using coin toss method.

Patients satisfying the above mentioned criteria were recruited for the study. Medical and dental history was recorded and routine blood investigations were done. An informed consent was obtained from the patient. Two access flap surgery were performed in each patient within a week interval under aseptic conditions and patients were given dressings following surgery and post operative instructions were given. In the control group, Coepak was placed (figure 1a) and in the test group Resopac was placed (figure 2a). Patients who were treated with Reso Pac were asked to refrain from consuming hot food or drinks for 3 days to avoid the dissolution of the pack. After 7 days from the day of surgery, the dressing was removed and suture removal was done. (figure 1a and figure 2a).

The following parameters were measured 7<sup>th</sup> day postoperatively:

1. Patient comfort
2. Early healing index (EHI) (Wachtel et al, 2003)
3. Pain

Patient comfort was assessed through a questionnaire which included irritability (yes/no), Palatability, Retainability (number of days), interference with function (if any) and patient preference. The post-operative pain was assessed by VAS score (on a scale of 0 to 10).

Early healing index was measured by the index introduced by Wachtel et al 2003<sup>11</sup>

- 1 – Complete flap closure – no fibrin line in the interproximal area
- 2 - Complete flap closure – fine fibrin line in the interproximal area
- 3 – Complete flap closure – fibrin clot in the interproximal area
- 4 – Incomplete flap closure – partial necrosis of the interproximal tissue
- 5 – Incomplete flap closure – complete necrosis of the interproximal tissue



Figure 1a



Figure 1b

Figure1a – Coepak placed after flap surgery; 1b – healing on 7<sup>th</sup> day postoperative after removal of Coe pak.



Figure 2a



Figure 2b

Figure 2a – Resopac placed afer flap surgery; 2b – healing on 7<sup>th</sup> day postoperative after.

### Statistical analysis

All the patient comfort parameters that includes irritability, palatability, interference with function (if any), retainability , patient preference were compared among the two groups using chi square test and student t test for proportion. EHI between the two groups was analysed by Man Whitney U test. Normality of the data was assessed by Kolmogorov Smirnov test. Sample size was calculated based on previous literature using standard deviation 2.28 and a difference in VAS score 0.8 with 80% power; 95% confidence interval.

### Results:

#### ***Irritability:***

Although 5 patients reported irritability with coepak, intergroup comparison of irritability revealed that the difference for both the packs is statistically non significant.( table 1)

#### ***Palatability:***

Intergroup comparison of palatability revealed that there was 0% palatability for both the packs at 7<sup>th</sup> day of reevaluation which were statistically non significant.( table 1).

#### ***Interference with function:***

Intergroup comparison of interference with function showed that there was 0% interference with function for both the packs at 7<sup>th</sup> day of reevaluation which were statistically non significant.( table 1).

**Retainability :**

Intergroup comparison of both the packs at 7<sup>th</sup> day in terms of retainability revealed that 96% (of coepak group retained the pack all through 7 days whereas 52% (p value <0.001 S ) retained resopack

for only 1 day, 36% retained for 2 days and 12% of them retained for 3 days. Hence, there was a statistical significance between the two groups regarding the retainability (table 2)

**Table 1**

Parameter	Question	COEPAK (n%)	RESOPAC(n%)
Irritability	YES	0	0
	NO	30(100.0)	30 (100.0)
Palatability	YES	0 (0.0)	0 (0.0)
	NO	30 (100.0)	30 (100.0)
Interference with function	YES	0 (0.0)	0 (0.0)
	NO	30 (100.0)	30 (100.0)

**Table 2**

Retainability	Mean	Standard deviation	T value	P value
Coepak	1.6	0.707	29.7	0.00
Resopac	7.12	0.60		

**Pain score and Early Healing Index**

Intergroup comparison of both the groups in terms of pain score based on the VAS score taken ( table 3) and the early healing index showed no statistically significant differences between both the packs.

**Table 3**

Pain vas score	Mean	Standard deviation	T value	P value
Coepak	0.92	0.400	1.48	0.14
Resopac	0.72	0.54		

**Discussion**

The most common and widely used periodontal dressing is the non-eugenol dressing, Coepak whereas Reso-Pac, a novel dressing which has been introduced a couple of years back is a completely different dressing from conventional periodontal dressing preparations. The reason for this is the hydrophilic nature of the material that has excellent adhesion properties to the oral tissue. The base material consists of cellulose and contains extracts of myrrh, an aromatic resin and has antiseptic, astringent and haemostatic properties. The pack being ready to use, easy to handle and most importantly being non allergic makes this material unique.<sup>8</sup> In the literature, only one study has been done comparing Resopac and Coepak and this study is the second of its kind. The periodontal pocket wound must be regarded as an

open wound that is directly exposed to the bacterially contaminated oral environment.<sup>9</sup> Furthermore, the prophylaxis against infections, mediated by the dressing, should not be underestimated, because especially periodontopathogenic bacteria can also be found in extracrevicular regions and presumably are also responsible for re-infection.<sup>10,11</sup> The dressing plays an important role by protecting the wound from bacterial influences, respectively, the dreaded wound infection. A study by Ariaudo et al 1957, Wikesjo 1992 also stated that dressing plays an important role by protecting the wound from bacterial influences.<sup>12</sup> In a study by Linsky et al. (1981), they showed that wounds that have been provided with a dressing were approximated faster and produced inflammations to a significantly lesser extent than openwounds.<sup>13</sup>

The present study showed that the early healing index scores were similar in both the groups. This shows that the use of a dressing gives better clinical healing, irrespective of the type of dressing placed. Sigusch et al 2005 examined the influence of periodontal dressing on long term clinical results and showed positive effects while using dressing and they concluded that removing the dressing after 7–8 days leads to clearly better results than removing it earlier. Several authors demand wound protection by a dressing after primary periodontal surgery (Pritchard 1972, Sachset al. 1984, Plagmann 1998).<sup>14</sup> It is assumed that the dressing provides some sort of a stent for the repositioned flap and improves the patient's comfort (Asboe-Jorgensen et al, 1974).<sup>15</sup> In the present study there was no difference regarding the irritability, palatability and interference with function of the packs in both the groups following periodontal surgery with and without dressing. There are no added benefits of Resopac and in terms of patients comfort even though there is no much statistical difference between the two packs, Resopac owes to less preference as it is dissolved sooner exposing the wound and unacceptable to the patient. In a study by Soheilifar S et al, 2014 it showed that most patients had no nutritional problem during the first 3 days following surgery and periodontal dressing did not decrease or increase post-surgical nutritional problems, this showed that there was no interference with function. Bae et al 1999, and Moghare Abed et al 1978 found no difference in patient discomfort between groups with and without periodontal dressing. In the present study also a similar results were obtained showing no interference with function with both the packs. In a recent study by Savitha A N et al in 2015 both Coe pak and Resopac groups showed similar mean pain score on all the 7 days.<sup>16</sup> In the present study pain assessment showed that the VAS score taken during the first 3 days post surgery was similar in both the groups. Clearly, the application time plays an important role, too, i.e. 7–8 days of application led to distinctively better long-term results in the observation period than the short-term application. Patients exhibit a psychological feeling of protection and well being when a periodontal dressing was put in place. Since there is less evidence available regarding Resopac ,

further studies have to be conducted to evaluate the efficacy of the pack.

### Conclusion

At this point of time , even though there is a great deal and debate over the value and usefulness of periodontal dressings, based on the results of our study there is no statistically significant difference between the two groups regarding the healing parameters. Coe pak seem to serve the ideal role of protecting immediate post surgical wound. However more studies need to be conducted regarding Resopac efficacy and acceptability to the patient.

### References

1. Ishikawa I, Nakasimha K, Kosekei T. Induction of immune response to periodontopathic bacteria and its role in pathogenesis of periodontitis. *Perio 2000* 1997; 14: 79-111
2. Lowenguth R, Greenstein G. Clinical and microbiological response to nonsurgical mechanical periodontal therapy. *Perio 2000* 1995; 9: 14 - 22
3. Jacoby L , Mengel R. Conventional surgical procedure. *Perio 2000* 1995 ; 9: 38-54.
4. Stahl S , Witkin. G, Heller A, Brown R. Gingival Healing III. The effects of periodontal dressings on gingivectomy repair. *J Periodontol* 1969 ; 40: 34- 37.
5. Allen, D. R, Caffesse, R. G. Comparison of results following modified Widman flap surgery with and without surgical dressing. *J Periodontol* 1983; 54: 470-475.
6. Jones T M and Cassingham, R J Comparison of healing following periodontal surgery with and without dressing in humans. *J Periodontol* 1979 ; 50: 387-393.
7. Checchi L , Trombelli L . Postoperative pain and discomfort with and without periodontal dressing in conjunction with 0.2% chlorhexidine mouthwash after apically positioned flap procedure. *J Periodontol* 1993; 64(12):1238-42.
8. Dragana G, Markco M. Refinement in treatment of surgical wounds –Reso-Pac® periodontal bandage.
9. Sigusch BW, Pfitzner A, Nietzsche T, Glockmann E. Periodontal dressing (Vocopac) influences outcomes in a two-step treatment procedure. *J Clin Periodontol* 2005; 32: 401–405.

10. Asikainen, S., Alalusua, S. &Saxen, L. Recovery of *A. actinomycetemcomitans* fromteeth, tongue, and saliva. *J Periodontol* 1991; 62, 203.
11. Mu"ller, H. P., Eickholz, P., Heinecke, A., Pohl, S., Mu"ller, R. F.Lange, D. E. Simultaneous isolation of *Actinobacillusactinomycetemcomitans* from subgingival and extracrevicular location of the mouth. *J Clin Periodontology* 1995 ;22 :413–419
12. Christersson, L. A., Albin, B., Zambon, J. J. Wikesjö, K. M. ,Genco, R. J. Tissue localization of *Actinobacillusactinomycetemcomitans*in human periodontitis. Light, immunofluorescence and electron microscopic studies. *J Periodontol*: 1987;58: 529–539
13. Linsky, C. B., Rovee, D. T. Dow, T. Effect of dressings on wound inflammation and scar tissue. In: Dineen, P. &Hildick- Smith, G. (eds). 1981 *The Surgical Wound*, pp.191. Philadelphia: Lea &Febiger.
14. Sachs, H. A., Farnoush, A., Checchi, L. Joseph, C. E. Current status of periodontal dressings. *J Periodontol*1984 ; 55: 689–696.
15. Asboe-Jorgensen, V., Attstro"m, R., Lang, N. P. &Loe, H. Effect of a chlorhexidine dressing on the healing after periodontal surgery. *J Periodontol*1974 ;45: 13
16. Savitha AN, Christopher S, Bose S. ResoPac™ - A Novel Periodontal Dressing in Comparison with Coe-Pak: A Clinical Study. *I J Pre Clin Dent Res* 2015;2(5):32-37.
17. Zahra Baghani , Mahdi Kadkhodazadeh. Periodontal Dressing: A Review Article. *J Dent Res Dent Clin Dent Prospect* 2013;7(4):183-191.
18. Jorkend L, Skoglund L A.Effect of non-eugenol and eugenol containing periodontal dressings on the incidence and severity of pain after periodontal soft tissue surgery. *J ClinPeriodontol*1990;17:341-344.