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Feracrylum –A Haemostatic Becomes a Boon for Treating Chronic Periodontitis In Patients Under Anti-Coagulant Therapy

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ABSTRACT

Background: Chronic periodontitis is an inflammatory disease of many origins that compromises tooth-supporting structures.(1,2) Patients with bleeding tendencies usually have compromised periodontal health.(1,2,3,4) While scaling and root planing (SRP) remains the main stay of non-surgical management, adjunctive drug delivery agents can enhance therapeutic outcomes. Patients with compromised bleeding and coagulation pathways are usually unable to receive optimum dental treatment often. Feracrylum, a lesser-explored topical hemostatic with antimicrobial properties, may be an ideal agent which can be utilized in such patients to provide supportive periodontal therapy.(3,4)

Aim: To determine the efficacy of Feracrylum in the management of chronic periodontitis, in patients under anti-coagulant therapy.

Materials and Methods:A total of 30 patients, undergoing anti-coagulant therapy, with associated chronic periodontitis were randomized into two groups, after acquiring informed consent and cardiologist consultation. Taking into account the dropouts in the study, the final count of patients in each group were as follows: Feracrylum (n=13) and Control (SRP + saline, n=12). Intervention was as follows, Feracrylum group, received oral prophylaxis and subingival irrigation of 1% Feracrylum, while the control group received saline irrigation. Both groups were advised regarding chemical plaque control with 1% feracrylum mouthwash and saline mouth rinse respectively. Clinical parameters including probing pocket depth (PPD), clinical attachment level (CAL), plaque index (PI), and modified sulcus bleeding index (MSBI) were recorded at baseline and one month post-treatment respectively. Subgingival plaque samples were tested for the presence of red complex organisms with BANA enzymatic test.

Results: The Feracrylum group exhibited a significant mean PPD reduction (1.4 mm), CAL gain (1 mm), and MSBI scores. BANA Test, scores were co-relative with the clinical findings indicating that feracrylum group clearly outperformed the placebo group (<0.05)

Conclusion: The results clearly indicate the significance of Feracrylum, in non-surgical Periodontal therapy, in patients undergoing anti-coagulant therapy for miscellaneous cardiovascular disorders

Keywords: *Feracrylum, anti-coagulant therapy, chronic periodontitis, nonsurgical therapy, red complex bacteria, BANA test*

1. INTRODUCTION

Periodontal disease impacts a wide range of population and causes significant damage to the well-being of the patient. (1,2) Periodontitis also accompanies metabolic disorders and affects patients with compromised cardiovascular health. Management of Chronic Periodontitis in medically compromised patients is always a challenging prospect.(3,4) Many patients under medication to reduce coagulability seem to have a severe degree of periodontal breakdown. According to the American Heart Association and American Dental Association, guidelines are laid down to help dental practioners and Periodontjsts manage such patients with ease and efficiency.(5,6) According to the recent AHA guidelines, patients undergoing anti-coagulant therapy, can undergo oral prophylaxis without stopping the medication. However, cases of spontaneous bleeding from the gums are reported in clinical practice in patients who are under long term anti-coagulant

therapy, which can be attributed to sensitization of the gingiva and poor oral hygiene practices.(7,8) Due to this unpredictability dental management of every patient, who is on medication with blood thinners needs to be planned and executed with care. (9,10,11,12,13)

DRUG CLASS	DRUG NAME
Anticoagulants	Warfarin
Antiplatelet agents	Clopidogrel, Ticlopididne, Prasurgel, Ticagrelor, Aspirin
Direct acting oral anticoagulants	Dabigatra, rivaroxaban, apixaban, edoxaban,

Table: Source: www.ada.org

Topical hemostatic agents are a good line of management, incase of uncontrolled gingival bleeding, especially in patients with compromised cardiovascular health, under anticoagulant medication.(14,15,16,17,18,19,20)

Several hemostatic agents are used to control bleeding. However hemostatic agents with a blanket anti-microbial coverage are rarely used. Feracrylum is an acrylic derivative which has found applications in managing bleeding events in oral exodontia and limitedly in endodontia as well. However its use as a periodontal drug delivery agent is unexplored(21,22,23,24).

2. MATERIALS AND METHODS

This study evaluates, the use of Feracrylum in patients, under anti-coagulants, with chronic periodontitis who need to be managed non- surgically, however the risk of in-office and out bleeding episodes cannot be ruled out and hence compromises adequate dental care. Hence this study was carried out on patients under anti-coagulants with moderate periodontitis. A total of 30 patients, who fulfilled the inclusion criteria of patients under blood thinners, were recruited in this study, after acquiring written consent and consultation with their respective cardiologists. Five patients missed follow up due to personal reasons. A total of 25 patients were evaluated for a duration of one month.

Clinical parameters like Probing Pocket Depth, Clinical attachment Level and Modified sulcus Bleeding Scores were recored at Baseline and at the end of the month. Subgingival samples of these patients was also subjected to BANA testing at Baseline and at the end of the study. The test groups were subjected to oral prophylaxis and subgingival irrigation with 1% Feracrylum in one group and Saline in the other group. Both of the groups were instructed in plaque control measures, with the Feracrylum group, advised on usage of Feacrylum 1% mouthwash and the control group a saline rinse. At the end of the study duration, Feracrylum group showed impressive and statistically significant reduction in Probing pocket depth and Clinical attachment loss and Modified Sulcus Bleeding Scores (<0.05) compared to the Control group. Patients, in the Feracrylum test group also reported reduced bleeding post tooth brushing, during the month long study. The BANA Test scores were progressively negative in the Feracrylum group, over the month long study, while the control group did not show any significant positive improvements.

3. RESULTS AND COMPARISON

GROUP				
	FERACRYLUM		CONTROL	
	Baseline	30th day	Baseline	30th Day
PARAMETERS				
PPD	6.2 $\pm$ 0.5	4.2$\pm$ 0.5	6.5 $\pm$ 0.3	5.7$\pm$ 0.3
CAL	3.4$\pm$ 0.2	2.3 $\pm$ 0.2	3.8 $\pm$ 0.3	3.7$\pm$ 0.3
MSBI	3.2$\pm$ 0.2	1.2$\pm$ 0.3	3.5$\pm$0.5	3.5$\pm$0.3
P VALUE	> 0.05	>0.05	>0.05	>0.05

Table 1: Clinical Parameters over the duration of one month

	GROUP					
	FERACRYLUM			CONTROL		
BANA TEST	P	WP	N	P	WP	N
BASELINE	91%	8%	1%	90%	9%	1%
30TH DAY	1%	1%	98%	89%	10%	1%
P VALUE	>0.5	>0.5	>0.5	>0.5	>0.5	>0.5

Table 2: Percentage of red complex organisms as per BANA test results over the duration of one month

4. DISCUSSION

Local drug delivery has been a significant part of non-surgical therapy, especially indicated in patients who aren't indicated for surgical treatment.(25,26,27,28,29). Patients who are under lifelong anticoagulant therapy for resolution and management of cardiovascular conditions are usually considered for non-surgical periodontal therapy to manage chronic periodontitis.(30,31,32, 33, 34)

The current study has evaluated Feracrylum which is a hemostatic agent for its ability to reduce clincal parameters indicative of chronic periodontitis in patients under anti-coagulants. Through the course of the study, Feracrylum demonstrated significantly more improvement compared to the control group, that was administered saline. The scores of the BANA enzymatic test clearly dictate that the test group, that was administered Feracrylum showed greater improvements in periodontal clinical parameters and microbial profiles, indicating the improvements are noteworthy when compared to a placebo.

5. CONCLUSION

Feracrylum is a novel drug, which has dual characteristics of hemostasis and an anti-microbial profile, which is extremely effective in controlling and improving clinical and microbiological periodontal parameters and hence could be considered to be a useful addition in the non-surgical and supportive periodontal therapy arsenal

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