



## Evaluation of Persica-added Periodontal Pack on Post-Surgical Complications of Periodontal Flap Surgery

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### ABSTRACT

Periodontal flap surgery to eliminate pockets may result in unpleasant consequences such as pain, bleeding and difficulty in eating. The goal of this study was to evaluate the local application of Persica mouthwash mixed with periodontal dressing for a direct and maximal impact on the surgical wound. A split-mouth study design was performed on 30 patients who had moderate to severe chronic periodontitis and were periodontal surgery candidates. The Persica-containing dressing was applied to case side and compared to the dressing containing Serum Physiologic Solution on the control side according to the interdental bleeding index, postoperative pain and discomfort during eating, and the data were analyzed by independent t-test. In all cases evaluated, the Persica mouthwash application brought about more unfavorable results than the control dressing ( $p \leq 0.05$ ). Addition of Persica mouthwash to periodontal dressing has adverse effects on surgical wound healing and therefore is not recommended.

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### Introduction

Periodontal flap surgery to eliminate pockets may result in unpleasant consequences such as pain, bleeding and difficulty in eating that negatively affect quality of life for patients (1). Currently, an increasing effort to control postoperative complications following pocket removal surgeries as well as periodontal surgeries has been done, such as prescription painkillers, antibiotics and mouth rinses. Notably, the goal of all of these efforts is to minimize inflammation and reduce the risk of infection of the surgical area that reduces problems such as pain and bleeding (2). Given that systemic prescription of these drugs has several side effects such as gastrointestinal problems, antimicrobial resistance and the impact on other organs, which would limit their use. For this reason, using mouthwashes are being used more frequently and numerous studies have been done on them (3). Currently, Chlorhexidine mouthwash is known as the most effective oral antiseptic mouthwash that can cause symptoms such as teeth discoloration and increase in subgingival calculus formation (4).

Persica mouthwash is an herbal mouthwash that has been shown in many instances effects similar to of chlorhexidine mouthwashes. Note that given the unpleasant side effects of chlorhexidine mouthwash, herbal mouthwashes such as Persica may be considered as a viable alternative to chlorhexidine (2, 5-8). Adding mouthwash to a periodontal pack as a post-surgical dressing to the wound area maintains the antiseptic effects at higher concentrations in the environment in addition to the protective effect on fresh surgical wounds.

Considering the no need for cooperation from the patient, it is plausible to envision more positive effects from these mouthwashes.

So far, studies on Persica mouthwash have been limited and none of them has evaluated the direct application of the mouthwash in a periodontal. Accordingly, the purpose of this study is to evaluate the effect of Persica-modified dressing and introduce a confident way to control inflammation and pain following periodontal surgery.

### Materials and Method

In this intervention clinical trial study, conducted in Department of Periodontology at the Shiraz University of Medical Sciences, International Unit, during 2012-2013, the effect of adding Persica mouthwash to periodontal dressing<sup>1</sup> to reduce complications after flap surgery such as pain, bleeding and inflammation has been studied.

Patients selected for this study were nominated from patients with moderate to severe chronic periodontitis who were referred to the Department of Periodontics Clinic. Selected patients went through first phase of periodontal treatment and were called a month later to re-evaluate.

Patients with pockets greater than 5 mm on both sides of their jaws were considered for inclusion into the study and filled out and signed the consent form after being informed about treatment procedures. Evaluation was conducted as split-mouth method, meaning that at the first meeting of the patients, open flap curettage surgery was conducted on a half

<sup>1</sup> COE-PAK periodontal dressing, regular set GC

jaw and after handling a single loop suture<sup>2</sup>, a periodontal pack containing Persica or a regular dressing without Persica was placed on the site of surgical area. Note that the selection process of dressing containing mouthwash versus regular dressing for each side of the jaw occurred randomly.

The dressing was prepared by mixing 1.5-cm of periodontal dressing material from each tube equally. In a dressing that randomly Persica mouthwash was being added, 15 drops of diluted Persica solution with a ratio of 20 drops Persica to 7 milliliter of serum were added to the dressing mixture in order to apply to the surgical area. In a regular dressing, instead of Persica solution, 15 drops of Serum Physiologic Solution were poured and mixed with dressing mixture.

The above mentioned concentration was designed according to the instructions on the Persica packaging to prevent or reduce post-surgical bleeding and infection. The number of droplets was determined during a pilot study, so that this number was the maximum number of droplets that could provide Persica use. It should be noted that pure Persica solution was able to stop setting of the periodontal dressing and create a sticky consistency.

A week after the first surgery, the patient information form was completed after the sutures were removed. Two weeks after the first surgery, a second surgery on the other half jaw was performed and covered with the periodontal dressing different from the first session on the surgical area and a week after the operation patient data form was completed while removing the sutures. Patients who lost their dressings in less than 3 days after periodontal flap surgery before suture removal were excluded from the study.

In the questionnaire to collect information, papilla bleeding index<sup>3</sup> (9) was measured in two areas of mesial and distal surfaces of each tooth using periodontal probe during the suture removal meeting and the data was recorded as 0, 1, 2, and 3, where 0 indicated no bleeding and 3 showed most bleeding in papilla.

To assess pain and difficulty in eating, the patient was asked to qualitatively rate the pain and difficulty in eating a number between 0 and 10, where in this pain index 0 is the least pain and difficulty in eating experienced and 10 is the worst pain and difficulty in eating.

To describe the data, descriptive statistics (mean and standard deviation) of data as well as through independent t-test were analyzed using statistical analysis software (SPSS).

## Results

This study was initially conducted with 45 patients, of whom 15 patients were excluded for various reasons, including falling early periodontal dressing, infection in the studied area, missing the suture removal appointment on the requested return date, and lack of desire to continue to participate in the project.

<sup>2</sup> Surgical silk suture 3-0

<sup>3</sup> PBI

In completely studied patients, quadrants receiving Persica dressing were considered as the treatment group while quadrants receiving the regular dressing were considered as the control group. Evaluations were conducted in several areas. Results of descriptive statistics are summarized in **Table 1**.

In order to compare the mean between the treatment and control groups in terms of pain, bleeding and difficulty in eating, independent t-test was conducted. Results of t-test analyses are summarized in **Table 2**.

**Table 2. Results of independent t-test analysis.**

| Parameter                               | t     | Significance |
|---|-------|--------------|
| Pain score in control group             | 1.87  | 0.00         |
| Pain score in treatment group           | 2.27  |              |
| Bleeding index in control group         | 7.50  | 0.00         |
| Bleeding index in treatment group       | 6.62  |              |
| Eating Comfort score in control group   | 16.97 | 0.00         |
| Eating Comfort score in treatment group | 16.43 |              |

In terms of post-operative pain, minimum and maximum levels recorded in the treatment and control groups were 0 and 10, respectively, that resulted in an average of 1.87 for the control group and 2.26 for the treatment group. Consequently, independent t-test showed that the difference between the two groups was significant ( $p \leq 0.05$ ).

In terms of bleeding index, minimum and maximum levels recorded in the treatment and control groups were 0 and 3, respectively, that resulted in an average of 0.85 for the control group and 0.99 for the treatment group. Independent t-test showed that the difference between the two groups was statistically significant and the treatment group had acquired statistically higher score in the interdental bleeding index ( $p \leq 0.05$ ).

In terms of comfort in eating, minimum and maximum levels recorded in the treatment and control groups were 2 and 10, respectively, that resulted in an average of 8.2 for the control group and 8.4 for the treatment group. Independent t-test showed that the difference between the two groups was statistically significant and the treatment group experienced more difficulty (less comfort) in eating in comparison to the control group ( $p \leq 0.05$ ).

## Discussion

This study included 30 patients with chronic periodontitis who were undergoing periodontal flap surgery. In each session, one type of dressing (i.e., containing Persica Solution versus Serum Physiologic Solution) was placed on the surgery area and on the next appointment the other type of dressing was applied to the opposite quadrant.

According to the results, the use of Persica with concentrations used in this study had a negative effect on the studied parameters. The bleeding index, pain, and discomfort during eating in the area of applied Persica dressing was significantly higher than the control area.

**Table 1. Summary of descriptive statistics.**

| Parameter                               | Minimum | Maximum | Average | Standard Deviation | Variance |
|---|---------|---------|---------|--------------------|----------|
| Pain score in control group             | 0       | 10      | 1.87    | 2.87               | 8.26     |
| Pain score in treatment group           | 0       | 10      | 2.27    | 2.98               | 8.89     |
| Bleeding index in control group         | 0       | 3       | 0.85    | 0.74               | 0.55     |
| Bleeding index in treatment group       | 0       | 3       | 0.99    | 0.72               | 0.53     |
| Eating Comfort score in control group   | 2       | 10      | 8.40    | 2.71               | 7.35     |
| Eating Comfort score in treatment group | 2       | 10      | 8.20    | 2.73               | 7.48     |

As previously mentioned, during the preliminary study in this research, pure Persica stopped polymerization of periodontal dressing.

As the concentration of Persica solution in dressing mixture decreased, viscosity and consistency of the dressing increased. Considering the purpose of this study and the concentration proposed by the manufacturer, the dressing containing Persica had a softer consistency than the dressing containing Serum Physiologic Solution. This resulted in longer setting times.

Thus, it appears that the cause for increased interdental bleeding, pain and difficulty while eating stems from the dressing movement on the surgical wound area that, in addition to physical stimulation of the area, does not have the ability to withstand the forces of chewing and bacterial influence. Therefore, although according to previous studies Persica has important effects in reducing inflammation, bleeding and infection of mouth ulcers (10-12), certain chemical properties that inhibit the polymerization of periodontal dressing play more decisive factor in the state of tissue repair. Therefore, the use of Persica mouthwash as periodontal co-pack should be limited and is not recommended.

### Conclusion

Although the normal use of the Persica mouthwash can help restoration, Persica's topical application within the periodontal dressing has a negative effect on healing of wounds resulted from periodontal surgeries, and increases the pain and discomfort of patient.

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