ORIGINAL RESEARCH

EVALUATION AND COMPARISON OF SHORT TERM SIDE EFFECTS OF 0.2% AND 0.12% CHLORHEXIDINE MOUTHWASH

Parminder Kaur[1], Harsimranjit Singh[2], Amit Khatri[3], Karanbeer Singh Aulakh[4]

[1]Senior Lecturer, M.D.S. Oral & Maxillofacial Surgery, [2]Senior Lecturer, M.D.S. Periodontology, Adesh Institute of Dental Sciences, Bathinda, [3]M.D.S. Prosthodontics, 423- Narela,Delhi, [4]BDS

ABSTRACT:
Chlorhexidine is one of the most widely and commonly used antiplaque and antigingivitis agent. The present study was carried out in 40 patients to evaluate and compare the short term side effects of 0.2% and 0.12% chlorhexidine. Pain, burning sensation, taste disturbance and tooth discoloration were evaluated at first, third and seventh day. No statistical significant difference was observed in two groups with respect to these side effects. However, the taste of 0.12% was better accepted as compared to 0.2% chlorhexidine mouthwash.
Key words: Antiplaque, Chlorhexidine, Gingivitis

Corresponding Author: Dr. Harsimranjit Singh, Senior Lecturer, Department of Periodontology, Adesh Institute of Dental Sciences, Bathinda, E-mail: dr.harsimranbhatia@gmail.com

This article may be cited as: Kaur P, Singh H, Khatri A, Aulakh KS. Evaluation and Comparison of Short Term Side Effects of 0.2% and 0.12% Chlorhexidine Mouthwash. J Adv Med Dent Scie Res 2015;3(3):26-28.

INTRODUCTION

Plaque is known to be initiating factor in the development of gingivitis when in contact with the gingival tissues. Hence, plaque control represents the cornerstone of good oral hygiene practice. The most commonly used tools in control of supragingival plaque are toothbrushes (manual or electric), floss, woodsticks and interdental brushes. Despite the availability of these oral hygiene devices, even the most meticulous patient will not be able to completely remove the plaque.[1] To overcome these, one of the effective chemical agent known to control the plaque development is chlorhexidine. Chlorhexidine is a bisguanide antiseptic that is symmetrical molecule consisting of four chlorphenyl rings and two bisguanide groups connected by a central haxamethylene bridge.[2] Chlorhexidine gluconate mouthwash can provide an important adjunct to the prevention and control of gingivitis when used with the regular personnel oral hygiene procedures. Although chlorhexidine has a relatively low toxic effects following oral use, it is not without local side effects. Adverse dose dependent effects include brown staining, increased calculus formation and rarely sensitization and oral mucosal desquamation. An additional side effect of regular use of chlorhexidine is an impairment of taste perception.[3] Less commonly, it causes mucosal erosion which appears to be idiosyncratic. Commercially available concentrations for plaque control are 0.2% used with 10 ml volume and 0.12% used with 15 ml volume. The rationale for lowering the concentration of chlorhexidine is to reduce side effects while maintaining comparable efficacy.[1]

The purpose of this present study was to compare the short term (7 days of rinsing) subjective side effects of 0.2% and 0.12% chlorhexidine mouthwash used as an adjunct to non-surgical periodontal treatment.

MATERIAL AND METHODS

The study was carried out in 40 students of National Dental College and Hospital, Derabassi, Punjab. The patients were selected irrespective of gender, caste, creed and socioeconomic status. Patients were informed about the study and written consent was obtained.

SELECTION CRITERIA

Inclusion criteria

- Age range: 17-29 years
- No history of periodontal disease

- Presence of at least 20 teeth with no caries or complex restorations
- No history of smoking
- No history of alcohol consumption

Exclusion criteria

- Patients with the periodontal disease
- Patients with history of recurrent aphthous ulcer
- History of any systemic disease
- Patients with altered taste sensation
- Patients on medication affecting the oral microflora

The subjects were divided into two groups:
Group I: Patients receiving 0.2% chlorhexidine mouthwash
Group II: Patients receiving 0.12% chlorhexidine mouthwash
Thorough oral prophylaxis (scaling and polishing) was carried out in all the patients. Group I patients were instructed to rinse with 10 ml of 0.2% chlorhexidine for 60 seconds twice a day and Group II patients rinsed with 15 ml of 0.12% chlohexidine for 15 seconds. Patients were evaluated for pain, burning sensation, taste disturbance and tooth discoloration at first, third and seventh day.
All the patients were instructed to brush at least 30 minutes before using mouthwash and not to use any other chemical dental hygiene products during the evaluation period. Rinsing with water after the procedure was not allowed.

RESULTS

During the evaluation period of seven days, the subjects were recalled for assessing the side effects on first, third and seventh day after the commencement of rinsing.
Pain: No patient in group I and group II experienced pain till the seventh day after the commencement of rinsing with chlorhexidine mouthwash
Burning sensation: In both group I and group II, no patient experienced any burning sensation at the first and third day. At the seventh day, 3 patients in group I and 5 patients in group II experienced the mild burning sensation.
Taste disturbance: In group I, 4 patients reported with mild and 3 patients reported with severe taste disturbance at the first day. At third day, 8 patients reported with the mild and 3 patients reported with the severe taste disturbance. There was the mild taste disturbance in 6 patients and moderate taste disturbance in 5 patients, seventh day after commencement of rinsing with chlorhexidine mouthwash.
In group II, mild taste disturbance was reported in 5,8 6 patients at the first, third and seventh day respectively, after rinsing with chlorhexidine mouthwash.
Tooth discoloration: No patient in group I developed any tooth discoloration whereas 2 patients reported with the tooth discoloration at the seventh day

DISCUSSION

Chlorhexidine was developed in 1940's and marketed in 1954 as an antiseptic for skin wounds. Initially it was used for presurgical disinfection of mouth. The use of Chlorhexidine for plaque inhibition was first investigated in 1962 by Loe and Schiott. They showed that rinsing for 60 seconds twice per day with 10ml of 0.2% CHX (20mg dose) inhibited plaque regrowth and the development of gingivitis.[4]
Later, a 0.12% CHX mouthwash was manufactured using a 15ml rinse volume (18mg dose) in order to maintain the 20 mg dose present in the 10ml of 0.2% rinse. Concentrations of 0.12% appear as effective as 0.2%, if the volume of the rinse was increased to 15ml. The optimum dose of CHX delivered by mouthwash, which balances efficacy against local side effects, is generally in about 20 mg twice daily.
The present study has shown that there was no statistically significant difference in the frequency of reported side effects between Chlorhexidine 0.2% and 0.12% mouthwash.
McCoy LC et al in 2008 reported adverse effects related to the use of 0.12% Chlorhexidine gluconate mouthwash in patients with uncontrolled diabetes. 31% cases reported taste changes, tooth staining, sore mouth and/or throat and tongue irritation. Most of the adverse effects resolved easily by discontinuing the use of mouthwash and receiving dental prophylaxis.[5]
Pain was not reported in the present study. One patient of group I and two patients of group II reported mild burning sensation which is in accordance with study by Flotra L et al[3]. They evaluated the side effects of chlorhexidine mouthwash (0.2% and 0.1%) in a group of 50 soldiers during a period of 4 months. Some desquamations and soreness in the oral mucosa were observed. 12% of the tooth surfaces and 62% of the silicate fillings were discoloured, while 36 % of the test persons developed discoloured tongues. In the present study, only two patients reported with the tooth discoloration.

Mild taste disturbance was reported with 0.12% Chlorhexidine which is in accordance with the study by Hepso et al in 1988, which studied the side effects and patient acceptance of 0.2% and 0.1% Chlorhexidine when used as a postoperative prophylactic mouthwash. There was no statistical significant difference in the reported side effects of the two groups. However, taste of Chlorhexidine 0.1% was better accepted.[6]

Gurgan CA et al in a double-blind clinical study evaluated the short-term side effects of 0.2% alcohol-free chlorhexidine mouthwash when used as an adjunct to non-surgical periodontal treatment. They found that rinsing with 0.2% alcohol-free CHX for 1 week caused more irritation to oral mucosa, greater burning sensation, and increased altered taste perception compared to the placebo rinse.[2]

Further a study by Ernst CP et al, compared the effects of two commercial chlorhexidine mouthwashes (0.1% and 0.2%) on dental plaque and gingival inflammation, their side effects and patient acceptance. The increase in concentration of chlorhexidine provided no clinical advantages or disadvantages.[7]

When comparing 0.2% versus 0.12% chlorhexidine (15ml for 30 sec), better compliance was reported with mouthwashes containing less than 0.2% Chlorhexidine.[8] Keijser et al in a single blind randomized study of 80 volunteers evaluated the inhibition of plaque growth using 0.12 & 0.2% chlorhexidine. No statistically significant difference was found with respect to plaque inhibition. However, subjects favoured the shorter rinsing time of 30 seconds.[1] Further, Smith et al evaluated the efficacy of 0.12% and 0.2% chlorhexidine on plaque accumulation for using 4 days (60 seconds rinsing time). Both concentrations of CHX resulted in considerably less plaque accumulation compared to the control, but both were similar in their effects.[9]

CONCLUSION:

Although CHX mouthwash has been proven to be effective in reducing plaque, its use in daily practice is still limited due to its several side effects. The present study evaluated the subject's attitude towards the side effects of chlorhexdine. No significant difference was found with regard to attitude of patients towards the two products. The present study recommends 0.12% Chlorhexidine mouthwash as compared to 0.2% Chlorhexidine mouthwash as an adjunct to non-surgical periodontal therapy.

REFERENCES

1. Keijser JAM, Verkade H, Timmeermen MF, Van der Weijden FA. Comparison of 2 commercialy available chlorhexidine mouthrinses. J Periodontol. 2003;74:214-218.
2. Gurgan CA, Zaim E, Bakirsoy I, Soykan E. Short term side effects of 0.2% alcohol-free chlorhexidine mouthrinse used as an adjunct to non-surgical periodontal treatment: a double blind clinical study. J Periodontol 2006;77:370-384.
3. Flotra L, Gjermo P, Rolla G, Waerhaug J. Side-effects of chlorhexidine mouth washes. Scand J Dent Res 1971;79:119-125.
4. Loe H, Schiott CR. The effects of mouthrinses and topical application of chlorhexidine on the development of dental plaque and gingivitis in man. J Periodont Res 1970;5:79-83.
5. McCoy LC, Wehler CJ, Rich SE, Garcia RI, Miller DR, Jones JA. Adverse events associated with chlorhexidine use: results from the Department of Veterans Affairs J Am Dent Assoc. 2008;139(2):178-183.
6. Hespo hu, Bjornland T, Skoglund A. Side-effects and patient acceptance of 0.2% versus 0.1% chlorhexidine used as postoperative prophylactic mouthwash. Int J Oral Maxillofac Surg. 1988;17:17-20.
7. Ernst CP, Prockl K, Willershausen B. The effectiveness and side effects of 0.1% and 0.2% chlorhexidine mouthrinses: a clinical study. Quintessence Int. 1998;29(7):443-448.
8. Segreto VA, Collins M,Beiswanger B, De la Rosa M, Isaacs RL, Lang NP, Mallatt ME, Meckel AH. A comparison of mouthrinses containing two concentrations of chlorhexidine. J Periodontal Research Supplement. 1986:23-32.
9. Smith RG, Moran J, Addy M, Doherty F, Newcombe RG. Comparative staining in vitro and plaque inhibitory properties in vivo of 0.12% and 0.2% chlorhexidine mouthrinses. J Clin Periodontol 1995;22:611-613.

Source of support: Nil

Conflict of interest: None declared