

Original Research

To assess efficacy of denture cleansers in removal of stains and plaque from complete denture

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ABSTRACT

Background: The ideal denture cleansing products must be ease to handle; effective on the removal of organic and inorganic deposits and stains. The present study was conducted to assess efficacy of dentifrices in removal of stains and plaque from complete denture. **Materials & Methods:** The present study was conducted on 90 complete denture wearer patients of both genders. Patients were divided into 3 groups. In group I, water was used, in group II, Clinsodent powder and in group III, fittydent tablets were used. Modified Quigley-Hein Scale was used to assess plaque on denture after the treatment procedure.

Results: In group I, score 4 was seen in 10, score 3 in 12, score 2 in 3 and score 1 in 5, in group II, score 4 was seen in 1, score 3 in 4, score 2 in 10 and score 1 in 15, in group III, score 4 was seen in 2, score 3 in 7, score 2 in 12 and score 1 in 9 patients. The difference was significant ($P < 0.05$). **Conclusion:** Authors found that Clinsodent powder was more effective in removal of plaque than fittydent tablets.

Key words: Clinsodent, fittydent, Modified Quigley-Hein Scale

Received: 14 October, 2019

Revised: 12 November, 2019

Accepted: 15 November, 2019

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This article may be cited as: Gupta RK, Singh P. To assess efficacy of denture cleansers in removal of stains and plaque from complete denture. J Adv Med Dent Res 2019;7(12): 19-21.

INTRODUCTION

Complete denture biofilm is defined as a dense microbial layer formed by microorganisms and its metabolic products, being composed by more than 10^{11} microorganisms by gram in dry weight.¹ Protected by the biofilm structure, microorganisms, especially *Candida albicans*, start the colonization of denture surface. The pathogenic biofilm can cause oral or systemic infections. Therefore, it is necessary an effective biofilm control with adequate denture cleansing because the adherence of microorganisms and residues are facilitated by irregular and rough surfaces, reducing the efficacy of the cleansing agent.²

The use of heat cure acrylic resin for denture fabrication is a common procedure; however, it has a micro-porous surface which provides a favorable platform for microorganisms to organize "denture plaque." It also acts as a plaque applicator, by holding the plaque in contact with the oral mucosa for extended periods of time, thereby increasing the toxic effects, leading to mucosal abnormalities such as denture stomatitis, chronic candidiasis, and inflammatory papillary hyperplasia. When this intimate relationship is interrupted; the tissue health improves, and the most common method of controlling this interface is good denture hygiene, which can be achieved with the proper denture cleansing practice.³

The ideal denture cleansing products must be ease to handle; effective on the removal of organic and inorganic deposits and stains; bactericidal and fungicidal; nontoxic to the patient; harmless to denture materials, and have low cost. Denture cleansing methods can be divided in two main groups: mechanical and chemical.⁴ The present study was conducted to assess efficacy of dentifrices in removal of stains and plaque from complete denture.

MATERIALS & METHODS

The present study was conducted in the department of Prosthodontics. It comprised of 90 complete denture

wearer patients of both genders. All were informed regarding the study and written consent was obtained. Ethical clearance was obtained prior to the study.

Data such as name, age, gender etc. was recorded. Patients were divided into 3 groups. In group I, water was used, in group II, Clinsodent powder and in group III, fittydent tablets were used. Modified Quigley-Hein Scale was used to assess plaque on denture before and after the treatment procedure. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Groups	Group I	Group II	Group III
Agent	Water	Clinsodent powder	fittydent tablets
Number	30	30	30

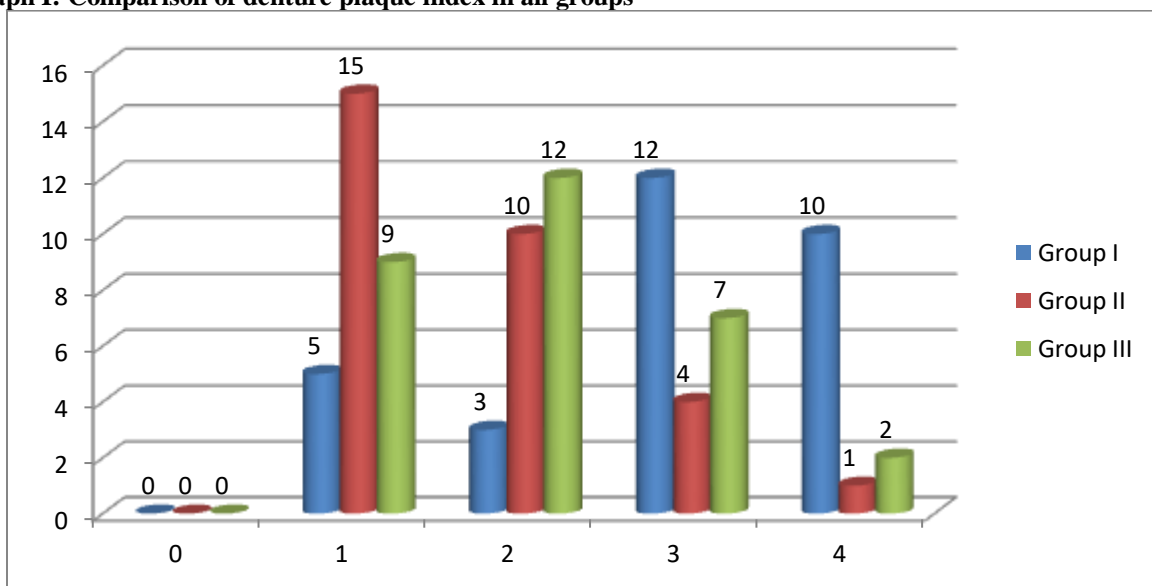
Table I shows that in group I, water was used, in group II, Clinsodent powder and in group III, fittydent tablets were used.

Table II Comparison of denture plaque index in all groups

Score	Group I	Group II	Group III	P value
0	0	0	0	0
1	5	15	9	0.05
2	3	10	12	0.01
3	12	4	7	0.002
4	10	1	2	0.02

Table II, graph I shows that in group I, score 4 was seen in 10, score 3 in 12, score 2 in 3 and score 1 in 5, in group II, score 4 was seen in 1, score 3 in 4, score 2 in 10 and score 1 in 15, in group III, score 4 was seen in 2, score 3 in 7, score 2 in 12 and score 1 in 9 patients. The difference was significant (P< 0.05).

Graph I: Comparison of denture plaque index in all groups



DISCUSSION

The mechanical methods of denture cleaning are classified in brushing (with water, soap, dentifrice and abrasives) and ultrasonic devices.⁵ Brushing with dental brush and dentifrice or soap is the most diffused mechanical method. It has the advantage of being a simple method, low cost and effective in the removal of stains and organic deposits. It has the disadvantages of difficulty of use, mainly for patients with motor coordination problems, possibility of surface damage to the acrylic resin and relines because of incorrect use.⁶

The magnitude of the abrasiveness by brushing depends on some factors: dentifrice abrasiveness, characteristics of the brush bristles, brushing technique and frequency, strength applied on the brush and hardness of the brushed substrate.⁷ The dentifrices are comprised of thickening agents, abrasives, humectants, surfactants, sweeteners and flavors. They enhance the action of the brush through its abrasive agents and detergents. Denture brushing with less abrasive or no dentifrice can result in the increasing of extrinsic stains on acrylic surface, but the worse effect of brushing with abrasive dentifrices is the wear of tooth structure and restorative and prosthetic materials.⁸ The present study was conducted to assess efficacy of dentifrices in removal of stains and plaque from complete denture.

In present study, in group I, water was used, in group II, Clinsodent powder and in group III, fittydent tablets were used. Kumar et al⁹ in their study a total of 140 healthy complete denture patients were selected and checked for denture cleansing using toothpaste, liquid handwashing soap, and two chemical denture cleansers: Clinsodent powder and fittydent tablets. Cleansing with plain water was kept as control for twenty patients. The data were analyzed using Wilcoxon signed ranks test for checking the efficacy. The Kruskal–Wallis test was used for comparing the plaque removing efficacies of each denture cleanser used in the study. All four denture cleansers were significantly effective in removing plaque when compared with plain water, but there was no significant difference among them.

We found that in group I, score 4 was seen in 10, score 3 in 12, score 2 in 3 and score 1 in 5, in group II, score 4 was seen in 1, score 3 in 4, score 2 in 10 and score 1 in 15, in group III, score 4 was seen in 2, score 3 in 7, score 2 in 12 and score 1 in 9 patients. Khan et al¹⁰ in a single-blind, randomized controlled trial, 77 volunteers were included from a residential professional college. All study subjects (control toothpaste users and test toothpowder users) plaque control measures. All study subjects were instructed to rinse with 5 ml 0.12% chlorhexidine mouthwash for 1 minute, twice and one cup of double tea bag solution three times daily for three weeks. Subjects were randomized into test (n=36) and control (n=36) groups. Toothpaste (control) and toothpowder (test) was used for two weeks to see the

effects on removing stains on the labial surfaces of 12 anterior teeth. For measuring dental extrinsic stains Lobene Stain Index (SI) was used. The amount of stain following the use of toothpaste and toothpowder was more controlled with the experimental toothpowder. For all sites combined, there was evidence that the experimental toothpowder was significantly superior to toothpaste in reducing stain area ($p<.001$), stain intensity ($p<.001$) and composite/product (area \times intensity) ($p<.001$).

CONCLUSION

Authors found that Clinsodent powder was more effective in removal of plaque than fittydent tablets.

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