

## Conventional Dentifrice in Controlling Periodontal Disease: A Clinical Study

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### ABSTRACT

**Background:** Elimination of microbial dental plaque biofilm prevents gingivitis, periodontitis, and dental cavities. The present study was conducted to assess the efficacy of conventional dentifrice in controlling periodontal diseases.

**Materials & Methods:** This study was conducted on 60 patients with periodontal diseases. Plaque index, Bleeding index and Gingival index was recorded on all teeth.

**Results:** There was significantly reduction in plaque index from baseline to 2 weeks, 4 weeks and 6 weeks ( $P < 0.05$ ). The plaque index was 1.7, 1.51, 1.40 and 1.01 at baseline, 2 weeks, 4 weeks and 6 weeks respectively. The gingival index at baseline, 2 weeks, 4 weeks and 6 weeks was 2.5, 1.6, 1.2 and 0.74 respectively. There was significant reduction in gingival index from baseline to 2 weeks, 4 weeks and 6 weeks ( $P < 0.05$ ). The bleeding index at baseline was 2.2, at 2 weeks was 2, at 4 weeks was 1.6 and at 6 weeks was 0.9. There was significant reduction in gingival index ( $P < 0.05$ ).

**Conclusion:** Conventional tooth paste found effective in treating gingivitis and periodontitis. There is need to motivate the general population regarding usefulness of tooth brushing with conventional tooth paste.

**Keywords:** Gingival index, Tooth paste, periodontal diseases.

### INTRODUCTION

Dental plaque is a soft, non-mineralized, microbial biofilm that consists of complex communities of bacterial species that reside on tooth surfaces or soft tissues. It accumulates on and adheres to teeth, dental restorations and artificial appliances in the mouth. It is composed of bacteria, salivary glycoprotein arranged in matrix of extracellular material.<sup>1</sup> Dental plaque appears as yellowish or grey deposits which can be only removed mechanically. Its removal is necessary in controlling disease activity. Regular removal of the plaque is, therefore, essential and has been the cornerstone of disease prevention. It can be sub gingival or supragingival depending upon their location.<sup>1</sup> Elimination of microbial dental plaque biofilm prevents gingivitis, periodontitis, and dental

cavities. Although, brushing teeth twice a day and daily flossing is highly effective in plaque reduction, over 50% of adults have gingivitis on an average of 3 to 4 teeth.<sup>2</sup>

For removal of plaque, approaches such as mechanical removal of plaque, local or systemical use of antimicrobial drugs, alteration in plaque biochemistry, prevention of bacterial attachment to the tooth surface; and alteration of plaque ecology is important. The removal of plaque from interdental surfaces remains an important life-long objective for dental patients.<sup>3</sup>

Various antiplaque agents such as tooth paste, tooth powder are of paramount importance in preventing accumulation of plaque and hence dental caries. In market various dentifrices are available. It should

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have anti-inflammatory, antioxidant, and antiplaque activity. A good quality tooth paste should be able to remove dental plaque effectively.<sup>4</sup> The present study was conducted to assess usefulness of conventional dentifrice in controlling periodontal diseases.

## MATERIALS & METHODS

This study was conducted in the department of Periodontics. It comprised of 84 patients (males- 42, females- 42) diagnosed with periodontal diseases. All were informed regarding the study and written consent was taken. Information such as name, age, sex, etc was recorded. Plaque index was recorded on buccal, lingual, mesial, and distal surfaces of teeth. Bleeding index was measured by guiding probe through the gingival sulcus. Gingival index was scored on the buccal marginal gingival of the teeth. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

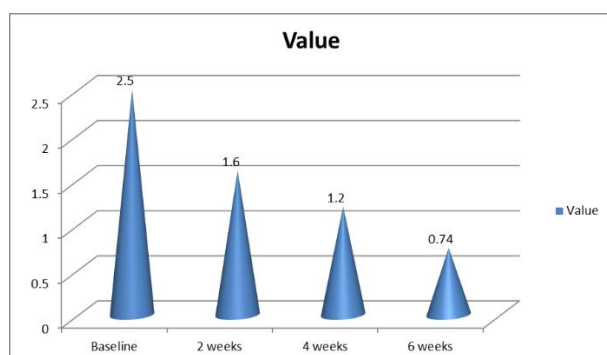
## RESULTS

Table 1: Plaque index.

| Time     | Value | P value |
|----------|-------|---------|
| Baseline | 1.7   | 0.01    |
| 2 weeks  | 1.51  |         |
| 4 weeks  | 1.40  |         |
| 6 weeks  | 1.01  |         |

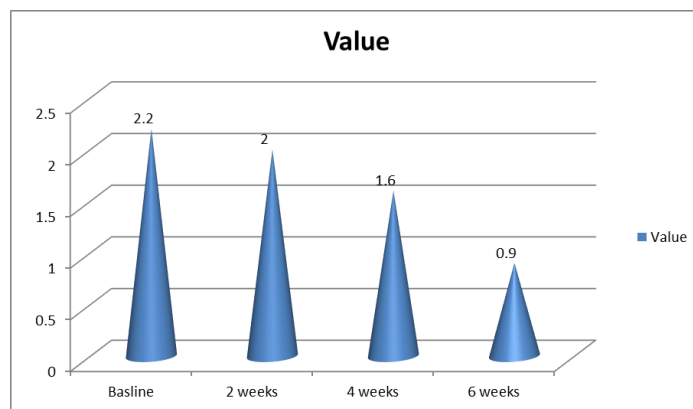
There was significantly reduction in plaque index from baseline to 2 weeks, 4 weeks and 6 weeks ( $P < 0.05$ ). The plaque index was 1.7, 1.51, 1.40 and 1.01 at baseline, 2 weeks, 4 weeks and 6 weeks respectively.

Graph 1: Gingival index.



The gingival index at baseline, 2 weeks, 4 weeks and 6 weeks was 2.5, 1.6, 1.2 and 0.74 respectively. There was significant reduction in gingival index from baseline to 2 weeks, 4 weeks and 6 weeks ( $P < 0.05$ ).

Graph 2: Bleeding index.



The bleeding index at baseline was 2.2, at 2 weeks was 2, at 4 weeks was 1.6 and at 6 weeks was 0.9. There was significant reduction in gingival index ( $P < 0.05$ ).

## DISCUSSION

Bacteria in dental plaque are one of the main factors causing periodontal inflammation, therefore, careful plaque control is very important. However, mechanical plaque removal is inadequately performed by most members of the population. The need for additional help in controlling bacterial plaque provides the rationale for patients to use antimicrobial dentifrices in addition to their mechanical oral hygiene regimens. A common problem with all interdental cleaning aids is patient dexterity and motivation.<sup>5</sup> Current understanding of the pathogenesis of periodontal diseases indicates that the presence of gingivitis is a pre-requisite for the development of periodontitis. However, it is also well recognized that even long-standing severe gingivitis will not necessarily lead to loss of attachment. These observations have led some authors to question the relevance of mild to moderate forms of gingivitis as a public health problem, and if efforts to control this disease at a population level would be justifiable.

It was observed that there was significant reduction in plaque index, bleeding index and gingival index. This is similar to Sunil et al.<sup>6</sup> Talic et al.<sup>7</sup> compared

toothbrushing with dentifrice and with water and found that the former was more efficient in removing dental plaque. In that study, the authors used parallel groups and toothbrushing was not performed by the participants, but rather by a dentist.

Regular oral hygiene is mandatory for dental plaque control. It is dependent on the individual's instruction and motivation and use of appropriate means. This way, within the available arsenal for controlling supragingival plaque, toothbrush, dental floss, interdental brushes, and end-tufted brushes among others are often used. Toothbrush is the most used plaque control device. As adjuncts to toothbrushing, dentifrices and rinsing solutions have been proposed, in order to enhance the plaque removal efficacy.<sup>8</sup>

Dentifrices have also been used as plaque removal aids, especially because of their abrasive agents. The commonly used abrasive agents include silica, carbonates, alumina and perlite. In addition to fluoride release and presence of antimicrobial agents, the actual adjunct role of dentifrices to mechanical removal of dental plaque is contradictory.<sup>9</sup>

In a study by Bay et al<sup>10</sup> 50 children wearing fixed orthodontic appliances with an age range of 9 to 13 years were randomly assigned into 2 groups (test and control).

The test group received the Colgate Total toothpaste containing 0.32% sodium fluoride and 0.3% Triclosan. The control group received maxfresh toothpaste containing 0.22% sodium fluoride. All patients were examined clinically to assess their gingival condition using the Plaque index (PI), Gingival Index (GI), sulcular bleeding index (SBI) at follow up periods of 1, 2 and 3 months. Each group shifted to use the alternative agent after a washout period of 10 days to prevent the carryover effect of triclosan. The triclosan toothpaste users experienced significant reduction in plaque accumulation and gingivitis compared to the fluoride toothpaste users in the first and second follow up periods. The results also showed significant difference compared to the baseline.

## CONCLUSION

Conventional tooth paste found effective in treating gingivitis and periodontitis. There is need to motivate the general population regarding usefulness of tooth brushing with conventional tooth paste.

## CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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