Clinical Efficacy and Safety of Mouthrinse in Removal of Pathogenic Bacteria from Plaque and Oral Cavity

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The purpose of this study is to propose active oral dentistry prevention in dentist’s office. For this purpose, literature on oral diseases was briefly reviewed. A total of 75% of the oral cavity cannot be cleaned even if it is managed hard by brushing. Therefore, it is possible to manage the oral health of a lifetime by finishing cleanly without using the toothbrush. Dentists should encourage their patients to identify and characterize the various characteristics of various mouthwashes currently on the market. The tooth coloring presented in the existing textbooks is no longer a problem. Also, considering the fact that the frequency of using oral appliances is very low compared to advanced countries, Koreans now want dentists to remind patients about the importance of prevention as a part of their care. In conclusion, I recommend 123 exercise as a method of using dental floss once a day, using 2 gauze agents, and 3 times of gauze for patients visiting preventive dentistry. Good lifestyle habits lead to a lifelong oral health. On the other hand, the author likes to change the habits of brushing habits. It is no longer 333 movement, but 123 movement, brushing within one minute, brushing over 2 minutes, brushing 3 times a day.

Keywords: dental floss, dentist, dentistry prevention, mouthwashes

Management and Prevention of Periodontal Disease and Periodontitis

The number of patients who are hospitalized for periodontal disease and gingivitis is growing. According to the statistics from the National Health Insurance Review and Assessment Service, the number of patients with periodontal disease and gingivitis reached 15.33 million in 2017 compared to 10.47 million in 2013 [1]. The change can be interpreted as that more people are paying attention to and seeking active treatment of oral health or that the number of patients with oral diseases has increased. In either case, it means that dentists are facing a task to be tackled on, and it is time to think seriously about treatment options. Oral disease caused by the failure to practice proper oral care tends to recur after treatment because of the individual habits. Therefore, it is important for dentists to help their patients to establish clinically proven oral care behaviors as their habits.

Keywords: periodontal disease, periodontitis, prevention, management

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© https://orcid.org/0000-0002-9815-0896
Received August 22, 2018, Accepted September 1, 2018

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gum area, which can be reached by mechanical oral hygiene technology such as brushing, is less than 25% [2].

Koreans’ brushing habits are also insufficient. The results of the Korea Oral Health and Fetish Habits Research Report released by the Korean Academy of Preventive Dentistry in 2017 show that only 29.1% of the respondents said that they properly wiped between the gums and teeth [3]. In other words, the conclusion can be drawn that the oral surface area of less than 30% is wiped by the toothbrush as a result of the human act of brushing while the rest of the area is overlooked.

Koreans, on the other hand, are also less likely to use oral healthcare supplies outside toothbrushes. This means that there is little or no control over the oral cavity surface areas that are not covered by the toothbrush or that over 70% of the surface is hardly managed. Moreover, according to the 2016 Year Book of the Korean Dentistry, it is important to note that only about 1 out of every 5 users of toothbrushes use dental floss, interdental toothbrushes and mouthwash, and the number has not changed compared to 2012 (Table 1) [4]. Dental floss, interdental toothbrushes and electric toothbrushes, which are used for manually conducted mechanical operations like toothbrushes, are not effective in addressing the 70% of the oral cavity that is not reached. Therefore, dentists need to pay attention to the use of mouthwash which can freely reach the oral cavity in liquid form, and to actively educate their patients about mouthrinse as an effective tool for oral care. This is the role of oral health professionals.

Considerations for Use of Mouthwashes in Clinical Practice

Is there evidence that can support the use of mouthwashes as the proper habit which helps manage good oral health?

1. The effect of inhibiting growth of pathogenic bacteria in plaque and oral cavity

As mentioned above, one of the options is to use mouthrinse in space where brushing or floss cannot reach. The role of dentists is to provide appropriate guides based on clinical evidence including the reduced plaque in association with many mouthwashes.

Currently marketed mouthrinses include products which are based either on cetylpyridinium chloride hydrate (CPC) and chlorhexidine (CHX) or on essential oils (eucalyptol, menthol, thymol, salicylic acid). All of these products have been shown to inhibit plaque growth an in-vitro study in which four essential oil-based products were associated with up to seven times greater plaque inhibition compared to CPC and CHX (Table 2) [5].

The results of an in vitro comparison study of essential oil-based products, amine fluoride-containing products, and triclosan and polyvinyl methyl ether/maleic acid-based products show a 99.9% reduction effect on bacteria including actinobacillus actinomycetemcomitans floating in plankton (Figure 1) [6].

Mouthrinses, which have been proven to be effective in preventing plaque and bacteria, are also effective in reducing gingivitis when used with conventional brushing and flossing. In a study involving 246 patients with gingivitis, a 21% reduction in gingivitis and a 52% reduction in plaque was observed in patients who used brushing, flossing and rinsing with an essential oil-containing mouthrinse (BFEO: brushing, flossing, and rinsing with a control mouthrinse) for six months compared to patients who used only brushing and flossing (BFC, brushing, flossing, and rinsing with a control mouthrinse) [7].

2. Association with other oral diseases

Despite these findings, Korean patients remain skeptical about using a mouthrinse. In particular, there is the concern that the use of mouthrinses may be associated with dry mouth and the risk of oral cancer, an issue which has already been resolved.

<table>
<thead>
<tr>
<th>Year</th>
<th>Dental floss (%)</th>
<th>Interdental floss (%)</th>
<th>Mouthwash (%)</th>
<th>Toothbrush (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>19.4</td>
<td>18.2</td>
<td>18.5</td>
<td>6.8</td>
</tr>
<tr>
<td>2013</td>
<td>19.3</td>
<td>20.5</td>
<td>16.6</td>
<td>5.1</td>
</tr>
<tr>
<td>2014</td>
<td>22.3</td>
<td>20.4</td>
<td>21.1</td>
<td>5.2</td>
</tr>
<tr>
<td>2015</td>
<td>23.3</td>
<td>20.3</td>
<td>20.9</td>
<td>5.0</td>
</tr>
</tbody>
</table>

Data from Korean Dental Association and Health Policy Institute (Korean Dental Association, 2016) [4].
by the FDA and the academia. Dentists need to assure their patients who still have the concern.

First, let’s look at the results of an experimental study which examined the concern that alcohol-containing mouthrinses will dry oral mucosa. The results of the study by Fischman et al. [8] in 2004 show that 14 days of use of an alcohol-containing mouthrinse over a recommended amount did not result in drying of oral mucosa or reduction of saliva secretion. Similarly, the results of the 2015 study by Kerr et al. [9] published in ‘oral medicine, oral pathology, oral radiology’, show that no drying occurred in the three-month comparison of alcohol-containing and nonalcoholic mouthrinses. There are many other data from reliable literature that are not mentioned in this article.

On the other hand, a widely recognized and trusted organization has announced its position on the concern over the risk of oral cancer. In 2003, the USA Food and Drug Administration (FDA) Advisory Committee reviewed seven studies, and concluded unanimously that there was no association between mouthrinses and oral cancer [10]. In a study published in the Journal of the American Dental Association (ADA), analysis of nine studies found that alcohol-containing mouthwash did not increase the risk of oral cancer as in the announcement of the FDA [11].

3. Controversy over “extrinsic stain” caused by mouthwashes

There have been media reports on the controversy surrounding mouthrinses and staining (discoloration). The controversy says that CPC or CHX contained in mouthwash products may cause discoloration when it is mixed with toothpaste surfactant remaining in the mouth after brushing [12]. Having bright and clean teeth is one of the important factors for patients. For dentists who focus on prevention of oral diseases, it is better to avoid controversy. If you feel uneasy about the controversy, you may consider using an essential oil-based mouthwash. The results of a study show that long-term use of essential oil-based products did not cause tooth erosion or staining [13].

**Conclusions**

The 3-step oral care needs to be adopted widely and properly in Korea.

Seeing many different patients who come to my clinic, I often feel sorry for the way they practice oral care. Although it is important to provide appropriate treatment options, as a dentist in the field of preventive medicine, I believe that it is important to pay attention to and manage dental health from the prevention stage. Especially in the aging population, seniors often lack in physical strength when brushing their teeth or use oral aid products which could lead to oral diseases more easily, and oral health problems are directly linked to their quality of life. It is also important to manage carefully patients who have received prosthetic and orthodontic treatment or implants. Although there are many kinds of toothbrushes and floss products on the market, it is still difficult to manage gaps completely. In addition, since gum is weakened during the course of treatment, patients are more susceptible to diseases such as gingivitis, which is why it is important for dentists to advise their patients properly on management of oral care.

The ADA, which emphasizes the importance of oral health,
recommends that dental patients should use mouthwash in everyday life in addition to brushing and flossing. I also introduce the so-called “123 Campaign” to my patients, recommending that they should floss once a day, mouthrinse twice a day and brush three times a day. I hope that the 3-step oral care practice including mouthwash will be widely recognized and adopted in Korea, helping to address the remaining 70% of the surface that has not been covered by oral tooth brushing.

References


