Advances in Dentistry & Oral Health
ISSN: 2472-6389

Juniper Publishers
key to the Researchers

Mini Review
Volume 7 Issue 3 – January 2018
DOI: 10.19080/ADOH.2018.07.555714

Adv Dent & Oral Health

Literature Review of Gingival Massage

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Submission: November 06, 2017; **Published:** January 22, 2018

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Abstract

Prevention and treatment for periodontal disease have emphasized brushing using a toothbrush as a means of controlling plaque. However, gingival massage, which is one of the main objectives of brushing using a toothbrush, is also known to be effective and has been employed using a variety of approaches in recent years. After a multifaceted and comprehensive review of major research reports on gingival massage, we discovered the importance of gingival massage and simultaneously realized the need to build research outcomes in order to transfer these to more effective gingival massage practice.

Keywords: Gums; Massage; Literature review

Introduction

The main objective of brushing using a toothbrush is to remove dental plaque and to massage the gums [1]. However, since the role of dental plaque in the onset of gingivitis was first identified [2], plaque control by means of brushing with a toothbrush has been emphasized in prevention and treatment for periodontal disease.

Some studies have pointed out that gingival massage has a greater promotional effect on gingival cell growth than the removal of dental plaque [3], and that overstimulation from brushing using a toothbrush causes gingival laceration and retraction [4]. In recent clinical dentistry practice in Japan, gingival massage done by hand by dental professionals has been performed as part of professional care at some clinics to alleviate mental strain and increase gingival blood flow in patients during dental consultations [5]. We hereby review previous research into gingival massage by considering the effects of gingival mechanical stimulation.

Effects of Mechanical Stimulation of the Gums

The efficacy of gingival massage in increasing peripheral circulation [6], promoting metabolic function and improving inflammation in the gums has long been disputed [7,8]. Animal experiments have shown that mechanical stimulation of the gums activates microcirculatory function in gingival tissue [9], promotes keratinization of gingival epithelium [10], improves oxygen sufficiency of the gums [11], reduces gingival crevicular fluid volume [12], increases capillary permeability [13], and enhances proliferative activity of crevicular epithelial basal cells [3]. Mechanical stimulation by brushing using a toothbrush is also reported to lead to increased gingival oxygen saturation and temperature in human gums [14,15].

Gingival Massage

Massage by means of brushing with a toothbrush is only effective immediately below the gums where the toothbrush makes contact. Massage reportedly has no effect at 0.5mm or beyond the point of contact with the toothbrush [16] and the increase in hemoglobin oxygen saturation in the gums only lasts 30 minutes [11]. In regard to massage by means of tools other than a toothbrush, it is reported from the viewpoint of cell proliferation that the efficacy of massage using a sonic toothbrush made of silicone rubber can be obtained in a shorter period of time than massage using a regular manual toothbrush [17]. Furthermore, it is reported that a greater post-massage increased blood flow and a longer duration of increase are achieved through massage with an originally developed electric gum massager with a rubber tip than through massage with a normal bristled toothbrush or the fingers [18].

Many previous studies regarding gingival massage using the fingers have been done in young people and merely evaluate temporary changes measured in gingival blood flow before and after gingival massage by a practitioner [5,18]. The effects of materials and shapes that come into direct contact with the gums during gingival massage therefore need to be elucidated and discussed. Investigation into changes over time and the long-term effects of gingival massage using clinical evaluations is also needed in subjects of a wider range of ages.

It is important to apply stimulation as far as the attached gingiva in gingival massage in order to achieve a greater and more prolonged effect that extends to the attached gingiva as well as the marginal gingiva [11]. Furthermore, to achieve a lasting gingival

massage effect, gingival massage needs to be performed at least once a day [19]. The functions of both mechanical stimulation using devices such as toothbrushes and physical stimulation using the fingers therefore need to be clarified and applied in clinical practice. Future research should focus especially on clarifying the action and effects at the point of contact with the finger during gingival massage and on proposing methods of gingival massage supported by scientific evidence.

Conclusion

Gingival massage is important for the removal of dental plaque and the prevention and treatment of periodontal disease. Research to date into the effects of gingival massage has been conducted with a focus on basic research. Moving forward, scientific evidence for gingival massage needs to be accumulated through investigative research focusing on clinical evaluations, which should contribute to the study of more effective gingival massage measures.

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