

Miswak and its relation in healing of ulcers in patients with minor aphthous stomatitis

Abdullah I. Hamad,

Dept. of Oral Diagnosis, College of Dentistry, Tikrit University

Abstract

Recurrent aphthous stomatitis (RAS) is a disorder characterized by recurring ulcers in the oral mucosa in patients with no other signs of disease. RAS is classified according to clinical characteristics as minor ulcers, major ulcers and herpetiform ulcers. Minor ulcers are well-circumscribed, round, sometimes covered by a yellow-gray pseudo-membrane and surrounded by an erythematous halo. Forty-six male patients between the age of 14-59 years with minor recurrent aphthous stomatitis (mRAS) were referred to private dental clinic in Tikrit city between February and August 2007. The healing time of the large single ulcer for patients in group B which used (orabase, chlorhexidine and mixture of miswak powder with tooth-paste and miswak stick) were 6-12 days \pm 1-1.5; while for patients of group A used only orabase and chlorhexidine were 7-14 days \pm 2-4 days. The reason for shortening of healing time of the ulcers in patients used miswak, may be related to that the miswak has natural antiseptic, anti-bacterial, anti-viral effects, multi-purpose stick, inhibits the growth and acid production of the pathogenic bacteria, helps in the purification of the mouth according to the recommendation of the prophet Mohammad (pbuh), that (siwak is a purification for the mouth), contains many healing substances like vitamin C, tannin and saponins. The beneficial effects of miswak may be related to its mechanical rub, pharmacological actions and chemical contents. Antiseptics may shorten healing time, presumably by reducing bacterial colonization of the ulcer surface. Healing lasts in proportion to the severity and size of the ulcers. In conclusion, miswak powder and miswak stick are excellent tools for oral cleanliness. Recommendations should be made to manufacture of tooth paste to include the powdered form of miswak in an abrasive form of tooth paste. It is easy to apply either in paste or powder form, inexpensive and easily available. Proper oral hygiene should be taught by dentists, but it requires a person's time and dexterity. Among those Muslims who ritually practice the use of siwak, rigid oral hygiene by a dentist may not be required. Further study is needed to know the relation between miswak and recurrence rate of ulcers.

Introduction

Recurrent aphthous stomatitis (RAS) is a disorder characterized by recurring ulcers in the oral mucosa in patients with no other signs of disease. It appears to represent several pathological states with similar clinical manifestations, and allergic or psychological abnormalities. RAS is classified according to clinical characteristics as minor ulcers, major ulcers and herpetiform ulcers. Minor ulcers, which comprise more than 80 % of RAS cases, are well-circumscribed, round, sometimes covered by a yellow-gray pseudo-membrane and surrounded by an erythematous halo. Their duration is about 1-2 weeks. Ulcerations heal without scarring, and are usually confined to non-keratinized oral mucosa (1).

The etiology for RAS is heredity. Studies indicate that there is an increased susceptibility to RAS among children of

RAS- positive parents. Other associated factors include local trauma and nutritional disorders, such as deficiencies in vitamin B12, folic acid and serum iron ((2).

A variety of oral hygiene measures have been performed since the dawn of time. This has been verified by various excavations throughout the world where toothpicks, chew-sticks, twigs, linen strips, birds feathers, animal bones and porcupine quills were recovered. Those that originated from plants, although primitive, represent a transitional step towards the modern toothbrush. About 17 different plants have been used as natural instruments of oral hygiene (3). The most widely used twig since early times is the siwak or miswak. The stick is obtained from a plant called *salvadore persica* that grows around Makkah and in the Middle East in general. There are several hadith mentioning the benefits of miswak in

maintaining oral hygiene; hence it has been used widely among muslims since the prophet Muhammad. In this respect, our prophet (pbuh) can be considered among the first dental instructors of proper oral hygiene (4). Based on chemical research, *Salvadora Persica* contains of tri-methyl amine, alkaloid, chlorine, fluoride, saponin, tannin, resin, sulfur, vitamin C and sterol. Chlorine is useful to remove stains, silica as teeth cleaner, rennin as enamel protective coating preventing the teeth from decays problem. Vitamin C and tri-methylamine help to cure and support gingival tissue. Sulfur, alkaloid and fluoride protect the teeth from cariogenic bacteria (5).

Al-lafit reports reduction in plaque in miswak users, noticed that there was a reduction of plaque on the front teeth more than the posterior teeth and recommended miswak as a tool for oral hygiene and found 75 per cent plaque reduction after eight days of miswak use (6).

In this study, we prescribed a preparation of miswak powder mixed with tooth paste through the process of tooth brushing to treat minor recurrent aphthous stomatitis by shortening the time of healing of ulcers.

Subjects and Methods

Forty-six male patients between the ages of 14-59 years with minor recurrent aphthous stomatitis (mRAS) were referred to private dental clinic in Tikrit city between February and August 2007. Medical history was taken for each patient for the presence of any systemic disease. Intra and extra oral examination was done for each patient, using dental light, mirror, probe and tweezers.

The patients were divided into two main groups:

1. Group A: this group consists of twenty (20) patients with mRAS and treated with orabase ointment and chlorhexidine gargle only.
2. Group B: this group composed of twenty-six (26) patients and treated with orabase, chlorhexidine gargle, Miswak powder, miswak stick, tooth brush, tooth paste were needed for each patient for cleaning and brushing the teeth and oral mucosa by a mixture of miswak powder and tooth paste together for four times per day in a special time (07:00, 13:00, 18:00 and 23:00 o'clock).

The patient must hold in the mouth for 3-4 minutes for maximum effect. We used ruler to measure the size of the some largest single ulcer for both groups for determination of healing time.

Results

Forty-six male patients between the age of (14-59) years with a mean age of 24.83 years with minor recurrent aphthous stomatitis (mRAS) were included in this study. The healing time of the large single ulcer for patients in group B which used (orabase, chlorhexidine and mixture of miswak powder with toothpaste and miswak stick) were 6-12 days \pm 1-1.5; while for patients of group A used only orabase and chlorhexidine were 7-14 days \pm 2-4 days. The results revealed that patients belong to group B reported a shortening of healing time of ulcers from 6-12 days when compared with healing time of ulcers from 7-14 days for patients belong to group A with a significant differences ($p < 0.05$) by t-test. Healing lasts in proportion to the severity and size of the ulcers.

Discussion

In this study, the results showed that patients used miswak powder with toothpaste, miswak stick, orabase and chlorhexidine reported a shorten healing time (6-12 days) of the some large single ulcers when compared with the healing time (7-14 days) of the ulcers for patients used only the orabase and chlorhexidine gargle. The shortening of the healing time of patients used miswak, may be related to that the miswak has antiseptic, anti-bacterial, anti-viral effects, inhibits the growth and acid production of the pathogenic bacteria, helps in the purification for the mouth according to the recommendation of the prophet Mohammad (pbuh), in many hadiths such as (siwak is a purification for the mouth and the way for seeking of allah pleasures), and possess the ability and property to repair and remodeling of the injured tissues. Antiseptics may shorten healing time, presumably by reducing bacterial colonization of the ulcer surface. The beneficial effects of miswak may be related to its mechanical rub, pharmacological actions and chemical contents.

The results of our study are in agreement with the findings of (Abo Al-Samh D. and Al-Bagieh N, 1996), who reported that the sulfur compounds present in miswak as shown by their pungent taste and smell have a bacterial effect. Vitamin C helps in the healing and repair of tissues. Tannins (tannic acid) are used in the treatment of bedsores, minor ulcerations and show anti-tumor effect.

Our findings agree with the findings of (Almas, 1997), who reported that repeated use of miswak during the day produces an unusually high level of oral cleanliness. It can be effective in removing soft oral deposits; they can even be promoted as effective instruments in oral health and dental programs for the population at large. The main cause of healing properties is may be due to its nourishing effect on the ulcer and its anti-microbial properties.

Miswak is used to treat minor recurrent aphthous stomatitis (mRAS) because the process of sewak and tooth brushing considered as a massage process of the oral tissues that may be lead to increase the flexibility of red blood cells and enhances blood flow to gum (gingiva) and oral mucosa. The macrophages remodeling capacity of wounds or ulcers not just only mediated by phagocytosis of localized pathogenic and normal flora present at the site of this wounded area, and but also by macrophage secretion system in which they secrete several important mediators contribute actively in this remodeling process (Raed I, Almas K, 2008).

Our results revealed that miswak is more efficient for healing of ulcers than chlorhexidine (CHX). This result is in disagreement with the findings of (Al-lafit & Ababneh; 1995), who compared between the chlorhexidine and miswak and found that chlorhexidine is more effective than miswak in healing process. It was also found that *streptococcus mutans* were eliminated in the miswak group and were less in chlorhexidine.

In conclusion, miswak powder and miswak stick are excellent tools for oral cleanliness. Miswak has an anti-microbial effect, and so shorten the healing time of ulcers. Recommendations should be made to manufacture of tooth paste to include the powdered form of miswak in an abrasive

form of tooth paste. It is easy to apply either in paste or powder form, inexpensive and easily available. Proper oral hygiene should be taught by dentists, but it requires a person's time and dexterity. Among those Muslims who ritually practice the use of siwak, rigid oral hygiene by a dentist may not be required.

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