

What's new for the clinician?

Summaries of and excerpts from recently published papers

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1. Efficacy of honey in comparison to topical corticosteroid for treatment of recurrent minor aphthous ulceration: a randomised, blind, controlled, parallel, double centre clinical trial.

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Recurrent aphthous ulceration is an affliction which has been known to man throughout recorded history. Hippocrates (460 – 370BC) used the term “aphthai” to describe the painful lesions, which in modern society, have a frequency of between 5% and 25% with a higher rate of between 50% and 60% in selected groups such as students of Medicine and Dentistry. Victims may suffer multiple recurrences over a short period of time.

The ulcers may occur in three presentations, depending on size, number and duration: minor, major and herpetiform, with the minor variety being the most commonly encountered. These are small, round to ovoid lesions, with a crater-form base, covered by a gray- white pseudomembrane and surrounded by a distinct erythematous halo. They may last from four to fourteen days, most episodes being of seven to ten days duration.

The etiology is elusive with a variety of possibilities being proposed, such as trauma, immune-deficiency and allergic agents and consequently treatment regimens are also numerous.

Most management is directed towards symptomatic relief and relies mainly on topical treatments which commonly include glucocorticoids and antibiotics, local anaesthetics, astringents and laser therapy. It would seem desirable that the least toxic and most safe agent be used which can offer symptomatic relief and which may be applied topically.

For at least 2,700 years honey has been used to treat a variety of ailments by topical application. Studies have demonstrated that severely infected cutaneous wounds are rapidly cleared of infection and tissue healing is improved by the application of honey, which has been shown to contain approximately 200 substances.... carbohydrates, organic acids, proteins, amino-acids, vitamins, enzymes and minerals, amongst others.

This study sets out to investigate whether the local application of honey to minor recurrent aphthous ulcers shortens the course and recurrence of the ulcers, in comparison with the efficacies of triamcinolone acetonide and of Orabase. The comparative successes in controlling symptoms were assessed by a randomised, blind, controlled, parallel, double centre clinical trial. Patients presenting in two oral health centres, seeking treatment for minor recurrent aphthous ulcers, were recruited to the programme. The age of the ulcers was less than 48 hours, i.e. patients presented less than two days after onset of the lesions. Each subject was assessed throughout the study by the same researcher who was blinded to the treatment regimens. There were 94 subjects, assigned randomly to treatment and control groups. The objectives were to evaluate the size of the ulcers and the healing process, the pain levels and the degree of erythema at baseline and after treatment by the various agents.

The size of ulcers was measured, using a calibrated dental probe with a millimetre scale and measurements recording maximum length and breadth of the lesion. The degree of erythema was evaluated on a four point scale as had been used by previous workers.² Pain scores were recorded by the patient using a Visual Analogue scale, in this case a vertical line between poles, the top indicating unbearable pain, to the other end connoting no pain. Patients marked their estimate of pain at their chosen level along the line.

- Group One received topical commercial honey.
- Group Two received 0.1% triamcinolone acetonide ointment (Kenalog)
- Group Three received Orabase which acts as a protective paste.

In each case the medication was applied three times each day using a wet sterile cotton applicator.

Comprehensive statistical evaluations were conducted to determine whether there were statistically significant differences ($p < .05$) between the data for the three groups.

The mean number of days to pain relief were 1.04 ± 0.21 for the honey group, 3.4 ± 0.49 for the triamcinolone acetonide group and 5.96 ± 1.45 for the Orabase group. Days required for reduction in size of the lesion followed a similar pattern, with honey achieving a low score of 2.73 ± 0.57 days versus 5.91 ± 0.91 and 7.14 ± 0.92 for the other medicaments respectively. Complete reduction of erythema and healing required on average two to three days for Group One, six to seven days for Group Two and more than eight days for Group Three. There were significant differences between the groups for the reduction of erythema, and highly significant differences for efficacy of healing and reduction in size of the lesions, honey being shown to be the more efficacious.

The healing effect of honey is ascribed to the content of broad spectrum antibiotics, high acidity (pH between 3.2 and 4.5) that inhibits the growth of micro-organisms, high sugar content, high viscosity, immunomodulatory action, stimulation of inflammatory cytokines, anti-oxidant and anti-inflammatory properties, together with kynurenic acid with its anti-nociceptive action.³

The current study revealed that honey application was safe and efficient in reducing ulcer size, pain, in encouraging healing and reducing the recurrence of apthous ulcerations. The absence of adverse effects makes honey an attractive alternative to topical corticosteroids and honey may provide significant advantages in the management of recurrent minor apthous ulcerations.

References

1. El-Haddad SA, Asiri FYL, Al-Qahtani HH, Al-Ghmlas AS. Efficacy of honey in comparison to topical corticosteroid for treatment of recurrent minor apthous ulceration: A randomised, blind, controlled, parallel, double center clinical trial. *Quintessence International* 2014; 45 (8): 691-701.
2. Greer RO, Lindenmuth JE, Juarez T, Khandwala A. A double blind study of topically applied 5% amlexanox in the treatment of apthous ulcers. *J Oral MaxFacial Surg* 1993;51: 221-34
3. Lee DS, Sinno S, Khachemoune A. Honey and wound healing: an overview. *Am J Clin Dermatol* 2011;12:181-90.

2. Graft stabilisation with cyanoacrylate decreases shrinkage of free gingival grafts.

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Free gingival graft is widely used as a technique to increase the dimensions of the attached gingiva, indicated when there is insufficient width to enable effective patient plaque control. It is in fact the gold standard in these circumstances. Post operative shrinkage of the graft is an undesirable sequence and various precautions are recommended including adequate thickness of the graft, atraumatic surgical technique, quick stabilisation of the tissue and meticulous suture placement. Sutureless stabilisation may therefore help to decrease or even prevent shrinkage.

Cyanoacrylates are a group of simple and inexpensive adhesives which are used in medicine and dentistry. Butyl cyanoacrylate is bacteriostatic, biodegradable and haemostatic. It adheres in moist environments and may be used in the oral cavity.

The study was planned to compare the effects of three stabilisation techniques on the dimensions of free gingival grafts and to relate such changes to the observed periodontal conditions and to the incidence of pain. It was a randomised, controlled clinical trial over six months involving 45 patients, all of whom were fully apprised of the intent of the study and all had signed Informed consent agreements. Clinical measurements included plaque index, probing depth and clinical attachment level at six sites around the teeth, recorded at baseline and at one, three and six month intervals after surgery. All patients received initial routine periodontal surgery and were examined two months later to determine whether a free gingival graft was indicated for the mandibular anterior region, as evidenced by the presence of plaque and bleeding.

Three groups of 15 patients each were established, using a blinded procedure:

Group One had conventional stabilisation.

Group Two was stabilised with cyanoacrylate and

Group Three with a microsurgery technique. All procedures were performed by an experienced periodontist.

Recipient beds were prepared to receive a graft of 5 x 10 mms by lifting a partial thickness flap which was then sutured to the apical border of the recipient site. Specific suture material was used for each group. After the flap was secured, gauze moistened with saline was folded over the site until the graft was placed.

The donor site was palatal mucosa between the first premolar and the first molar at about two mms from the gingival margins. A template of sterile aluminium foil ensured standardisation of the size of the grafts. The graft was harvested to a thickness of 1 to 1.3 mms, confirmed by calliper measurements at six points. There was no adipose tissue included on any of the grafts.

A minimum number of sutures were used in Group One grafts, and the graft was then subjected to gentle finger pressure for five minutes. In Group Two, the graft was placed and finger pressure applied for five minutes. Then, using a special 0.2 mm pipette, cyanoacrylate was placed along the borders so that there was an approximately 2mm width of adhesive all along the edges.

In the microsurgery group, 7-0 propylene sutures secured the graft, the sutures being placed under a magnifying loupe. Two sutures in the coronal portion, two in the apical region, one each in the midpoints of the coronal and apical borders. Again light pressure was applied for five minutes.

The donor site was protected by a bioplast plaque and no toothbrushing was permitted in the area until sutures were removed.

Assessment was undertaken at baseline, and at one, three and six months, using standard clinical photographs. A length of 1 mm diameter wire, 4mm in length, was placed adjacent to the site to allow for magnification correction factors to be applied. Measurements were performed with the Java based analytical programme "Image". The muco-gingival junction was used as a reference point for measurements of keratinised tissue width and the cemento- enamel junction as the reference for gingival recession. The differences in the area of the graft at the various timelines was regarded as the shrinkage which was also expressed as a percentage. Pain was assessed by means of a 10cm Visual Analogue Sscale on which patients recorded their experience of pain as a mark indicating the level... maximum being unbearable, minimum being no pain.

All results were statistically analysed with parametric tests as the variables distributed normally. Paired t and t tests were used for intra- and inter- group comparisons respectively.

The cyano-acrylate group showed significantly lower percentage of shrinkage and had less change in graft area. Keratinised tissue width decreased significantly from baseline to six months and there were no significant differences between the groups. The record of pain in the recipient site as expressed by patients on the Visual Analogue Scale showed significantly lower levels for the cyano-acrylate group for the first five days. Operation time had also been recorded and the cyano-acrylate group had required the least amount of time under the knife.

It is possible that stabilising the graft with finger pressure before securing it, as was done with the cyano-acrylate group, has beneficial effects, perhaps associated with maintaining avascular plasmatic circulation by avoiding movement as the cyano-acrylate immediately bonds the borders without any "jiggle".

Not all previous studies have shown similar results. The differences may be explained by differing techniques. The authors of the present paper suggest that their method of measuring and the use of a computer programme renders results more accurate. In addition, previous studies used mucoperiosteal sutures in all experimental groups.

Cyano-acrylate may be a promising alternative in the stabilisation of free gingival grafts.

Reference

1. Gümüş P, Buduneli E. Graft stabilization with cyanoacrylate decreases shrinkage of free gingival grafts. *Australian Dental Journal* 2014; 59: 57 -64.