

BRIEF REPORT

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## Manuka Honey Used to Heal a Recalcitrant Surgical Wound

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This report documents the use of manuka honey to successfully treat a recalcitrant wound resulting from surgical treatment of hidradenitis suppurativa. The wound had failed to heal during 3 years of treatment with conventional therapies and following four surgical procedures. After treatment with dressings impregnated with irradiated manuka honey was initiated, the patient's recurrent staphylococcal infections ceased, and healing was achieved within 4 months.

In March 1999 a 38-year-old female with a recalcitrant surgical wound of 36 months' duration requested treatment with topical honey. She had first been diagnosed with hidradenitis suppurativa localised in the left axilla in January 1977. Her right axilla, inframammary folds and groin were unaffected, and she was otherwise fit and healthy. Abscesses in the left axilla were treated with incision and drainage in 1977, 1991 and, again, in March 1996. However, the wound that resulted from the surgical treatment in 1996 failed to heal, and the patient complained of pain, limited movement and offensive odour emanating from the wound. Wide excisions of chronically indurated, recalcitrant tissue from the left axilla were performed in 1997 and 1998, but the wound still failed to heal. A wide range of therapeutic dressings was applied with limited effect.

Recurrent wound infections complicated the healing process. *Staphylococcus aureus* (resistant to penicillin but sensitive to methicillin, flucloxacillin, erythromycin,

fusidic acid, cephalexin and gentamicin) was isolated on five occasions, twice in combination with coryneform bacteria, and once with nonhaemolytic streptococci. Atypical mycobacteria were not sought. Antimicrobial treatment regimens included systemic co-amoxiclav, ciprofloxacin, flucloxacillin, metronidazole, topical silver sulphadiazine, silver nitrate and povidone-iodine. During September and October 1997 a prolonged course of flucloxacillin combined with metronidazole was administered. Although healing progressed with this therapy, abnormal granulation tissue developed and regression occurred within 10–14 days of treatment cessation.

The patient's shoulder was marginally abducted as a result of scarring. In an attempt to reintroduce healthy undamaged skin to the area and to improve the range of shoulder movement, the scarred area was excised and covered by a rotational skin flap in November 1998. Initially, the range of movement of the shoulder joint improved, but 3 months later the distal end of the flap broke down and *Staphylococcus aureus* was again isolated. At this point (having endured 4 operations and 36 months of failure to heal), the patient requested treatment with honey.

Thus, in March 1999, co-amoxiclav was prescribed (375 mg thrice daily for 7 days) and Combine dressings (Smith & Nephew, UK) impregnated with 25–35 g active manuka honey and sterilised by gamma radiation were applied to the infected wound and covered by absorbent pads. The manuka honey used had inhibitory activity against *Staphylococcus aureus* ATCC 25923 equivalent to that of 13% (w/v) phenol, as determined by an in vitro assay with catalase added to exclude activity due to hydrogen peroxide [1]. The patient was provided with honey dressings and instructed to redress the wound at 24-h intervals, following showering. The wound was monitored and swabbed at weekly visits to the clinic.

A noticeable improvement in the appearance of the wound was observed within 1 week of applying the honey-impregnated dressings; it became smaller and less inflamed, and the already healed, scarred area became more pliable. Bacteria were absent at 7 days, and the re-

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current infections ceased. The honey dressings did not adhere to or irritate the wound, and they were easily and painlessly renewed. The patient found the dressings convenient to use; within 3 days of starting to apply them she reported improvements in comfort and mobility and significant reduction of pain. Healing occurred within 1 month of treatment initiation, but discontinuation of the honey-dressing treatment led to immediate tightening of the scar and superficial splitting of the newly formed scar on three occasions. Immediate reapplication of the honey promoted rapid healing, softening of the scar and cessation of pain. Four months following initial closure of the wound, the patient discontinued the honey-dressing treatment, and she maintained the flexible, healed scar with daily application of a moisturising cream. The patient was discharged in October 1999 and reported no further problems at follow-up in June 2001.

Hidradenitis suppurativa is a notoriously difficult condition to manage. In this case, manuka honey appears to have facilitated healing, whereas conventional dressings and antimicrobial therapies failed to achieve healing in 36 months. Potent antibacterial properties of selected honeys have been demonstrated in vitro [2, 3] and in vivo [4, 5, 6, 7]. Although there is evidence that honey has additional healing properties [8, 9], such as anti-inflammatory action, debriding action and a stimulatory effect on granulation and epithelialisation, the mechanisms by which honey might influence healing have not yet been elucidated at a molecular level. Some proposals have been advanced [9], but it is unlikely that the osmolarity of manuka honey accounts for much of the antibacterial effect [2] or for the healing effect [9, 10]. However, until a fuller understanding of the therapeutic properties of honey is achieved, antibacterial activity is the only available selection criterion for honey intended for clinical use.

In New Zealand and in Australia commercial wound-care products contain gamma-irradiated honeys of proven potency derived from *Leptospermum* species (manuka and jellybush, respectively). These products are not yet licensed for use in the UK, and the use of non-irradiated, local honey is not recommended. Although ancient civilisations used honey to heal wounds, modern clinicians remain sceptical. In order to elucidate the healing properties of honey, randomised clinical trials and laboratory studies on cellular effects are urgently needed.

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