

CHAPTER 4

PRACTICAL USE OF MODERN HONEY DRESSINGS IN CHRONIC WOUNDS

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Choosing to use a honey dressing

As with any other dressing product, the choice of honey as a wound dressing product must be linked to the properties ascribed to it. Nor is it different with respect to gaining informed consent from the patient. The practitioner using it needs to be knowledgeable about the benefits and the problems of application to negotiate a care plan with the patient. This aspect of negotiation may come into sharp focus, as products that could be considered alternative or complementary by some, can lead to vociferous demands for use by the patient. From the author's experience to date, honey appears to be associated with positive attitudes and interest by patients when it has been introduced into discussion as a treatment possibility. For those patients who request honey, it can be necessary to temper a degree of over-optimism about outcomes with realism gained from clinical practice: expectations of 'miracle cures' have a tendency to disappoint in the field of chronic wound healing. In this situation, patients have usually purchased a non-medical grade honey from a health-food shop, so it may be necessary to discuss sensitively the pros and cons of this and, in some cases, source a suitable alternative honey product for use.

Molan (1999) describes the following key therapeutic attributes for honey:

- ⌘ Antimicrobial
- ⌘ Deodorisation
- ⌘ Debriding
- ⌘ Anti-inflammatory
- ⌘ Stimulation of new tissue growth.

Currently, the literature on honey in wound care is mostly at case study level. This is useful in gaining a practical feel for what honey is capable of and, from an accountability point of view, the types of cases/situations in which it could be considered reasonable to use. But, this does not definitively inform us as to its value. There have been some clinical trials, but these studies are considered to be of low quality (Moore *et al*, 2001). As in most clinical situations, honey may not be the only active intervention being employed to effect a result, for example; antibiotics, pressure relief, bed rest and limb elevation, compression bandaging, and serial debridement may be being used simultaneously, thus making it difficult to determine outcomes attributable to honey. The clinical interest is aroused when these items have been recorded without the wound responding until the later addition of honey as a single additional measure.

Honey has a number of properties that could allow the reduction in the number of primary interface products on the shelf, making decision making in wound dressing choice far simpler (*Table 4.1*). So long as simple absorbent gauze and pads are available as backing dressings, a great many wounds can be treated. Provided that honey remains in contact with the wound and does not dilute and completely wash away before dressings are changed, then it is non-stick. It is also antimicrobial with no known resistance, aids debridement of necrotic tissue and slough, controls fluid through osmotic potential, and, in combination with alginate or simple backing dressings, prevents the maceration often seen with hydrogels and hydrocolloids. The main problem is that, in general, frequent dressing changes are needed, making it less convenient and challenging cost-effectiveness. Consideration needs to be given as to whether it is used in the short term, ie. to set a wound on the right track before transferring to products that will maintain the advantage, but be less time-consuming to administer. For example, honey would not be suitable under a four-layer compression bandage because of the infrequent changes associated with that bandaging.

The decision to employ a honey regime can be considered utilising the wound bed preparation/TIME concept and can be put into local dressing choice algorithms (*Figures 4.1 and 4.2*).

Table 4.1: Matching the dressing to the wound

Clinical activity/need	Current common use product	Honey alternative
Debridement: ❖ hard/leathery black or dark brown ❖ softening yellow brown eschar ❖ sloughy/wet	Hydrogel Hydrogel sheet Hydrocolloid; hydrofibre; alginate	Liquid/gel honey* Honey tulle* Honey alginate
Draining/cleaning sinuses	Capillary action absorbents	Liquid honey/honey soaked ribbon gauze or honey tulle strips
Cavity management	Alginates; hydrofibres; foams/hydropolymers	Honey alginate — using soft gauze to back fill larger cavities behind the primary honey dressing — small cavity/depressions managed with liquid/gel honey and occlusive film dressing
Critically colonised wounds	Silver and iodine products	Honey alginate or tulle
Infected wounds	Silver and iodine products with systemic antibiotics	Honey alginate or tulle with systemic antibiotics
Overgranulation	Topical steroid or steroid/antibiotic formulations; silver nitrate; silver and iodine dressings; local pressure; foams/hydropolymers	Honey tulle (does not require localisation to wound — it can overlap surrounding skin without causing maceration)
Indolence (no granulation; no edge advancement)	Protease inhibitors; silver or iodine products; sharp debridement	Honey tulle
Odour control	Metronidazole gel; silver products; charcoal products	Honey tulle or liquid honey — honey alginate might be useful in fungating breast wounds if the alginate maintains its haemostatic properties

* Caution may further dehydrate eschar preventing removal — although this may be a valuable feature in the ischaemic diabetic foot to prevent increase in size of lesions which can extend due to wet necrosis. It may also be a valuable effect prior to surgical debridement to demarcate the lesion and make it easier to grip and cut away (collaborate with the surgeon to find out if this is their preference).

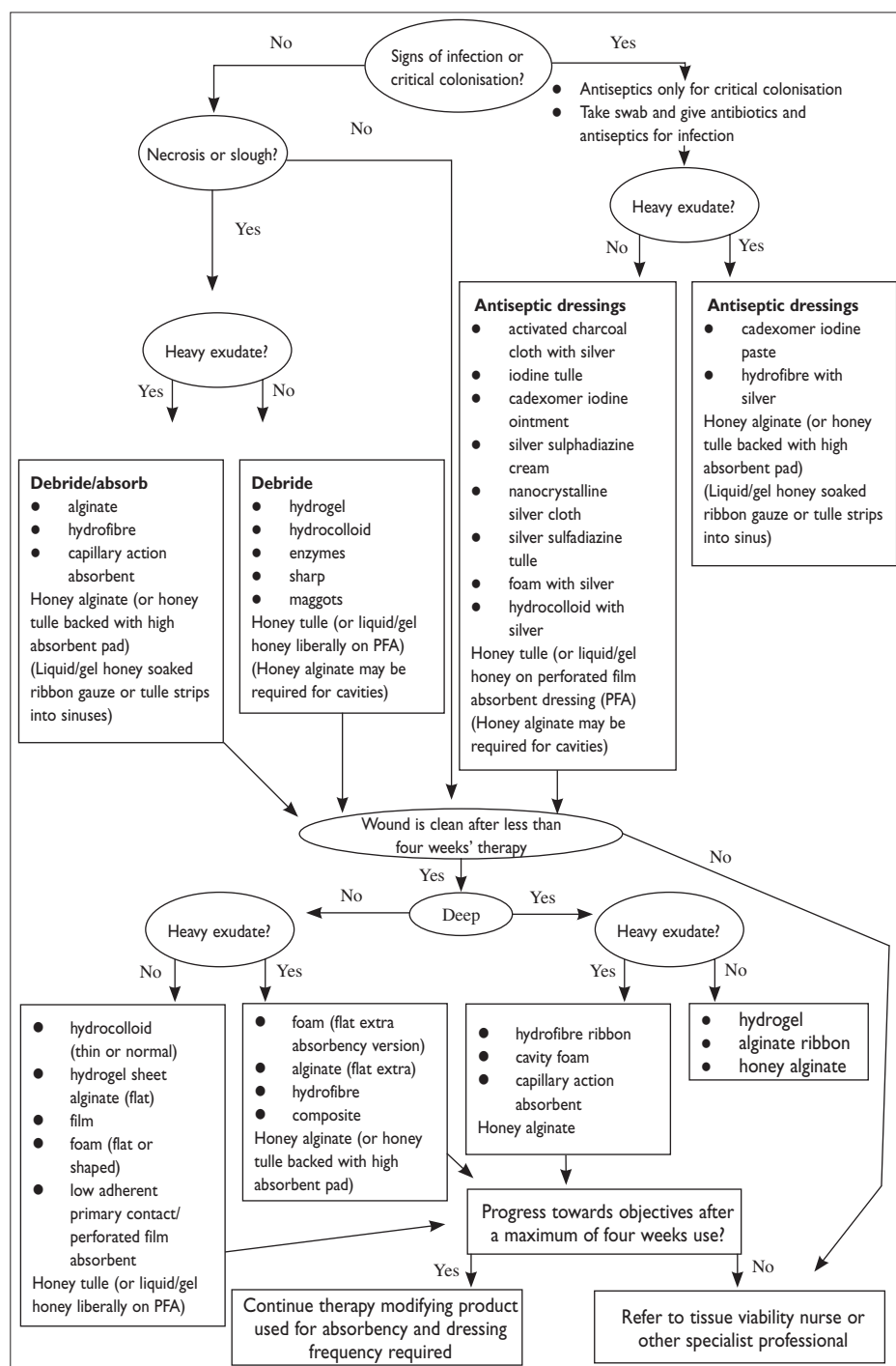


Figure 4.1: Primary dressing selection flow chart including honey

Clinical Observations	Proposed patho-physiology	WBP clinical actions	My trust/organisation nursing formulary choices	Effect of WBP actions
Tissue non-viable or deficient	Defective matrix and cell debris impair healing	Debridement (episodic or continuous) Autolytic, Sharp/surgical, Enzymatic, Mechanical, Biological	1st choice: hydrogel 2nd choice: liquid/gel honey applied thickly onto suitable carrier, or occluded using a film dressing, or in a tulle or alginate ready to apply format. Dressing frequency dictated by the duration that honey remains in contact — probable change every 2 days when necrosis is dry, daily — twice daily when wound is autolysing and wet. Refer to TVN if no activity at 4 weeks' use. Expect result to be noticeable reduction of necrotic tissue within 2 weeks	Restoration of wound base and functional extra-cellular matrix proteins (Viable wound base)
Infection or inflammation	High bacterial counts or prolonged inflammation: ↑ Inflammatory cytokines ↑ Protease activity ↓ Growth factor activity	Remove infected foci using topical/systemic • antimicrobials • anti-inflammatories • protease inhibitors	Wounds with cellulitis 1st choice: antibiotics +/- antiseptic iodine or silver compound in formulation to suit moisture levels 2nd choice: honey in format to suit wound Critically colonised wounds 1st choice: antiseptic iodine or silver compound in formulation to suit moisture levels 2nd choice: honey in suitable format Overgranulated wounds 1st choice: honey tulle	Low bacterial counts or controlled inflammation: ↓ Inflammatory cytokines ↓ Protease activity ↑ Growth factor activity (Bacterial balance and reduced inflammation)
Moisture imbalance	Dessication slows epithelial cell migration Excessive fluid causes maceration of wound margin	Apply moisture balancing dressings Compression, negative pressure or other methods of removing fluid	Macerated wounds 1st choice: honey alginate (or honey tulle plus absorbent backing) to increase exudate absorption and bind water from saturated skin High exudate wounds 1st choices: alginate/hydrofibre or foam 2nd choice: honey alginate to reduce output via osmotic potential of honey Dry wounds 1st choice: hydrogel	Restored epithelial cell migration, dessication avoided, oedema, excessive fluid controlled, maceration avoided (Moisture balanced)
Epidermal margin, non-advancing or undermined	Non-migrating keratinocytes. Non-responsive wound cells and abnormalities in extra-cellular matrix or protease activity	Reassess cause or consider corrective therapies: • debridement • skin grafts • biological agents • adjunctive therapies	Recently 'stuck' wound 1st choice: silver or iodine antiseptic dressing in formulation to suit moisture levels 2nd choice: honey in suitable format Long-standing 'stuck' wound 1st choice: honey in suitable format	Migrating keratinocytes and responsive wound cells. Restoration of appropriate protease profile. (Advancing edge of wound)

Figure 4.2: Local dressing choice

Case studies

The following section examines the various attributes listed above from a clinical case perspective.

Case study 1

Mr A — an eighty-year-old man with mixed arterial/venous ulcers on his right calf and medial malleolus. The ulcerations have occasionally shown signs of improvement, but never completely healed. On examination on 23 November 2004, the ulcers were indolent and considered critically colonised despite previous protease inhibitor (Promogran™, Johnson and Johnson) and cadexomer iodine (Iodoflex™, Smith and Nephew) use. Consequently, the treatment objectives were to debride, reduce bioburden and promote healing (see *Table 4.1*). Sharp debridement of the ulcer surface was undertaken and a calcification removed from the proximal ulcer bed. On review at 21 December 2004, honey tulle was applied to achieve the set treatment objectives. This was continued by the district nurse (*Figures 4.3 and 4.4*).

Case study 2

Mr B — an eighty-year-old man with rheumatoid arthritis has had leg ulceration for two and a half years. He is fully mobile but has restricted ankle movement and fallen foot arches, and walks with a stiff leg gait. The ulcers are of venous aetiology. Compression bandaging was the mainstay of therapy. He is awaiting a hernia repair which is delayed due to presence of ulceration which increases the risk of infection should repair be performed whilst an ulcer is present. The treatment objectives were to heal the wound as quickly as possible to facilitate the planned surgery (*Figures 4.5, 4.6 and 4.7*).



Figure 4.3: Mr A — 23.11.04 — Right leg medial aspect after sharp debridement and removal of a calcification from the proximal ulcer. Purulent exudate, some pain surrounding the ulcer but no obvious cellulitis. The ulcer is critically colonised and treatment continues with a protease inhibitor and cadexomer iodine. The glistening surface is just applied skin sealant (Cavilon cream™, 3M)

Case study 3

Mr C — was a forty-nine-year-old man with a twenty-five-year history of painful venous ulceration refractory to vein surgery and compression bandaging. He was hospitalised in 2000 for topical wound care of these painful, sloughy, malodorous, highly exuding ulcers, with associated varicose eczema. Initial debridement was undertaken using maggots (Kingsley, 2001). Honey dressings were applied to address the need for debridement, control of malodour, and reduction of exudate attributed to high bioburden.

Case study 4

Mr D — a seventy-six-year-old man with a history of mixed arterial and venous disease had stopped going to bed at night due to ischaemic pain. His right leg was chronically swollen and very wet, which was the reason why he would not return to bed. Exposed swollen tendon was present and covered with soft yellow slough. Mr D had arterial bypass surgery

in late 2004 but Doppler ABPI remained low at 0.67 (left = 0.54). To improve the wound it is necessary to reduce swelling which might best be effected by elevation, given that poor arterial supply rules out continuous compression bandaging. Going to bed at night was only possible if full containment of exudates was achieved, as current bandages, however well padded, become wet through within a few hours (*Figure 4.8*).

Case study 5

Ms E — a young woman with a seemingly spontaneous abscess eruption on her left cheek, which was neither tooth infection or of trauma origin. She was given antibiotics and the abscess was drained by a maxillo-facial surgeon. The lump started rising again a few days after with slightly haemorrhagic colouration but without tenderness or exudation (*Figure 4.9*).



Figure 4.4: Mr A — 21.12.04 — Right leg medial aspect mixed aetiology ulceration. Distal ulcer is infected (painful, erythematous and enlarged) despite use of cadexomer iodine, antibiotics have been prescribed. Other ulcers remain critically colonised (static). Honey tulle application to start today



Figure 4.5: Mr B — 18.11.04 — Right leg medial aspect venous ulcer after ten days treatment with SSD cream and systemic antibiotics



Figure 4.6: Mr B — 18.11.04 — Right leg lateral aspect venous ulcer after ten days treatment with SSD cream and systemic antibiotics



Figure 4.7: Mr B — 26.11.04 — Right leg lateral aspect venous ulcer after eighteen days treatment with SSD cream and systemic antibiotics



Figure 4.8: Mr D — 18.1.05 — Right leg mixed ulcer for treatment with honey tulle and Kerraboot to reduce swelling, control exudate and deslough ulcer surface



Figure 4.9: Ms E — 12.1.05 — Recent facial abscess site, following drainage and use of systemic antibiotics, a non-painful lump is appearing

Case study 6

Mrs F — a sixty-seven-year-old, fully mobile woman was admitted to a community hospital with painful infected ulcers. The ulcers had been static for some time and, despite antibiotic therapy, had continued to be painful although lessened. The left leg had suffered recurrent ulcerations and the patient had had phlebitis, eczema, ankle flare, dry skin and past venous surgery. The right leg ulcerated recently following traumatic injury from a bicycle accident in September 2004. The left medial ulcer presents in a stained atrophie blanche area posterior to the malleolus covered with a fibrinous slough and was considered critically colonised at the time of honey tulle application. A larger left lateral malleolus ulcer was considered borderline critically colonised/locally infected due to pain description by the patient and was also treated with honey tulle. In addition, a right medial ulcer was also concurrent and there were obvious varicosities on both legs. Further vein surgery was scheduled for March 2005. The right leg was treated with a silver hydrofibre dressing and weekly four-layer compression bandaging. The left leg was not compression bandaged due to ulcer pain. See *Figures 4.10 and 4.11*.



Figure 4.10: Mrs F — 11.1.05 — Left lateral malleolar venous ulcer prior to initial application of honey tulle



Figure 4.11: Mrs F — 11.1.5 — Left medial malleolar venous ulcer, indolent painful ulcer recently treated for infection by hospital admission, antibiotics and bed rest. Photo taken prior to initial application of honey tulle

Antimicrobial action

Mr B — during the course of the bilateral ulcerations he experienced recurrent infections, requiring multiple courses of antibiotics. These infections caused noticeable deterioration and enlargements, which recurred soon after ceasing use prompting the GP to prescribe Co-amoxiclav for six-week periods. The aerobic/anaerobic cover provided by this antibiotic appeared to produce the best results in this case. Silver-based antimicrobial dressings were used for long periods, and were continued during the periods when antibiotics were prescribed. Antiseptic dressings alone had been insufficient to prevent recurrent infection, but odour had not been a problem between bouts of infection. In November 2004 a bout of cellulitis and significant deterioration caused hospitalisation for intravenous antibiotics, bed rest with foot-end elevation, analgesia and local wound care. The ulcers on the right leg which had been cellullitic on admission were covered with soft necrotic tissue, were very wet and painful to touch. Debridement was effected using silver sulfadiazine cream (Flamazine®) between 0.5–1 x 50g tube applied daily with judicious use of sharp debridement to remove loose flaps of necrotic tissue. This continued from a few days after admission on 8 November 2004 until 8 December 2004. Following the majority of the debridement, honey tulle was instigated to continue antimicrobial action prior to discharge just before Christmas. As at 21.1.05 no further infection had occurred in the presence of the honey tulle, however Mr B had been taking flucloxacillin 500mgs QDS while in hospital as treatment for infection and, due to recurrent infection history, 250mgs bd flucloxacillin was advised as long-term, low dose therapy, starting shortly after Christmas after discharge home on 22 December 2004. The low dose therapy was stopped in the presence of the honey tulle but infection started to recur on 14 January 2005, with increased wetness and pain. At 24.1.05, the community nurse reported haemopurulent green exudates and odour and the patient was still experiencing pain, with the bandages saturating within one hour of redressing. Mr B attributed these problems to the recent introduction of tubular compression bandages (Tubigrip™, Medlock Medical Ltd), which had been instigated to apply some compression and facilitate daily application of the honey tulle dressing. In Mr B's mind, the increase in wetness was due to the compression squeezing out more fluid from the tissues. The extra pain was unlikely to have been from the Tubigrip™ compression, given that he had tolerated four-layer bandages

for over twelve months in the previous years. The GP re-prescribed Co-Amoxiclav on 24 January 2005.

Antimicrobial activity is not always assured by topical therapies, such as silver and honey, despite expectations and laboratory evidence that it should work. Case study literature is normally populated by positive examples but it remains important to show those occasions when the effect was not demonstrated (Kingsley, 2001). Honey tulle continued and on review on 1 February 2005, there was a mild odour in the absorbent pads and dressings, which were fully soaked with serous exudate. The exudate could be clearly seen running down the surface after dressing removal. No odour was present from the wound surface after dressing removal, and granulation tissue was evident and level with surrounding skin. There appeared to be little edge advancement over the main circumferential ulcer, although some reduction in surface area of a smaller proximal ulcer had occurred (*Figure 4.12 and 4.13*).



**Figure 4.12: Mr B — 21.12.04 —
Right leg antero-medial aspect after
fourteen days treatment with honey
tulle**

Mrs F – following review by the tissue viability nurse on 11 January 2005, the wound had no cellulitis, although it was painful and the patient was fit enough for discharge. Honey tulle was discussed as being suitable on the grounds of antimicrobial, debriding and stimulatory actions and was applied on 11 January 2005. The patient was informed of the likelihood of stinging post application but was keen to proceed. Stinging was clearly evident but started to reduce to a tolerable level after thirty minutes. Review on 25 January 2005 found that the left medial ulcer, although not painful, was giving mild discomfort and had deteriorated with the surface area increasing by

20%. There was no obvious improvement to the left lateral ulcer (+1% surface area in four weeks) either. Despite honey, the left lateral ulcer has since become infected again, it is painful and stings for at least one hour after honey tulle application and gives discomfort all day of the dressing change. Honey therapy to ulcers has been stopped, antibiotics and silver foam dressings have been instituted to combat infection and reduce pain from honey application. Prevention of recurrent infection in the left lateral and improvement of the critical colonisation in the left medial in two weeks of therapy did not, in this case, occur in the ulcers to which honey was applied (Figures 4.14 and 4.15).

Deodorisation

Mr C — was keen to try honey on his ulcers after seeing a television programme. It was agreed to source a UMF10 liquid Manuka medical grade honey (Active 10+ Manuka Honey® from Comvita). Complete deodorisation was noted at the first dressing change at twenty-four hours — something which had not been achieved for him with other antiseptic dressings up to that date.



Figure 4.13: Mr B — 21.12.04 Right leg lateral aspect after fourteen days treatment with honey tulle



Figure 4.14: Mrs F — 25.1.05 — Left lateral malleolar venous ulcer diagnosed as infected from patient description of pain, continuing redness and darkening of ulcer tissue



Figure 4.15: Mrs F — 25.1.05 — Left medial malleolar venous ulcer demonstrating an increase in size, despite fourteen-day use of honey tulle

Debriding

Mr D — after consulting with the tissue viability nurse, Mr D agreed to try a regime using Kerraboot® (Ark Therapeutics) to contain exudate at night so that he could return to bed rather than sleeping in the chair. Honey tulle was applied to effect debridement of the soft slough covering the wounds, notably the tendon. In addition, it was placed to aid control of exudate production by exerting osmotic control and reduce maceration present around the wounds. Despite encouragement, Mr D did not utilise the Kerraboot or return to sleeping in bed at night. The honey tulle increased his pain but did act to remove slough. A reasonably high elevation whilst sitting and sleeping in his chair did appear to reduce the generalised leg swelling, though the tendon remains proud (*Figure 4.8*).

Anti-inflammatory

Mr B — concurrent with the ulceration on the right leg, there remained a static ulcer on the left which had been treated with protease inhibitor under activated charcoal silver (Actisorb Silver™, Johnson and Johnson) and compression bandaging. From admission, the wound was clean but overgranulated. It had remained static despite the systemic antibiotic regime of the first three weeks of hospitalisation. Honey was initiated and healing took three weeks (in the continued presence of antibiotics, bed rest and without compression) (*Figures 4.16a, b, c*).

Ms E — honey was applied to the facial lump which arose following the drainage of the abscess to see if it would reduce the lump. It has been reported anecdotally that rising boils can be ‘cured’ by application (personal communication, P Molan, Harrogate Wounds UK conference 2004). After three applications, each less than twenty-four hours, Ms E reported that the lump had reduced in size. Following discussion with the TVN, she decided to try some further applications to see if it would reduce further. These facial dressings were applied overnight to avoid potential embarrassment of wearing the dressing during the day (*Figure 4.17*).

Two recent anecdotal reports have been received of the significant effect on teenage facial acne within five days of overnight treatment with

Manuka honey (UMF 18+). The correspondent noted, 'it changed my daughter's life' (practice nurse, R Poile, personal communication, March 2005).



Figure 4.16a: Mr B — 26.11.04 — Left leg venous ulcer, overgranulation in clean but static left ulcer since admission on 18.11.05



Figure 4.16b: Mr B — 21.12.04 — Left leg previously overgranulated venous ulcer, pre-crust removal



Figure 4.16c: Mr B — 21.12.04 — Left leg previously overgranulated venous ulcer, post-crust removal, healed wound



Figure 4.17: Ms E — 19.1.05 — Recent facial abscess site following three applications, each for less than twenty-four hours of honey tulle under simple paper island dressing. Patient reports swelling reduced. There were no other concurrent treatments

Stimulation of new tissue growth

Mr A — needed control of critical colonisation and also stimulation of new tissue, a difficult task considering the backdrop of ischaemia in the affected limb. Clinic review on 25 January 2005 showed an improvement through a reduction in surface area of 23.6% in four weeks of use, and full epithelialisation of a small $<1\text{cm}^2$ ulcer in the calf cluster (Figures 4.18, 4.19, 4.20 and 4.21).



Figure 4.18: Mr A — 25.1.05 — Right leg medial aspect mixed aetiology ulcers, showing 23.6% area reduction after approximately four weeks use of honey tulle



Figure 4.19: Mr A — 25.1.05 — Right leg medial malleolar ulcer improving under the influence of honey



Figure 4.20: Mr A — 22.2.05 — Right leg medial aspect mixed aetiology ulcer cluster continuing to heal under the influence of honey



Figure 4.21: Mr A — 22.2.05 — Right leg medial malleolar ulcer continuing to improve under the influence of honey

Clinical outcomes

The outcome to measure the intervention with honey depends on the objective set when constructing a care plan. Firstly, it is necessary to set an overall goal of care, either to heal a wound and restore full function; or secondly, to alleviate symptoms. Controlling symptoms will also be necessary when progressing towards healing. Taking the healing goal first, the objective for the intervention will also depend on where the wound currently fits in the Wound Healing Continuum (Gray *et al*, 2004), and, whether there is any wound bed preparation to undertake before the wound can actually start to heal. For example, if a wound is covered with soft necrotic eschar, the objective would be to remove that within a certain length of time. This time period should be the time you would expect your usual therapy, such as a hydrogel, to achieve this on a patient in the same condition, such as three weeks. At the end of that period, the objective is posed as a question, 'Was all the necrotic tissue removed as planned in three weeks?', the answer being yes or no. In addition, you can also determine how much faster or slower than expected the intervention took. Over time, the use of this simple technique will give the practitioner a good idea of the value of the intervention, whether it is better, same, or worse than the usual therapy. Outcomes can be plotted and documented using the Applied Wound Management system (Gray *et al*, 2004), which uses three continuums to monitor key features in the wound: tissue colour, infection and exudate. The system will soon be widely available as software and in paper formats, perhaps for the first time supporting the routine gathering of clear outcome data in the UK to demonstrate efficacy of interventions. Outside specialist centres in the UK, outcome monitoring has been rarely undertaken routinely, with practitioners focusing more on the journey quality rather than the speed to the final destination: so, establishing efficacy of honey over other regimes in general clinical practice is presently likely to be anecdotal at best.

Once the wound is prepared, outcomes, in terms of size reduction, can be undertaken most simply by serial recording of maximum length and breadth, or by using simple tracing on squared acetate transparencies. A digital planimetry system is now widely available called Visitrak® (Smith and Nephew) that combines the acetate with automatic calculation of surface area, allowing repeat tracings to demonstrate surface area reduction over time. It is easy to use and within the budget of many clinical teams who only need one unit to share between team members (for example,

all district and practice nurses at a surgery, as the tracing of the wound can be brought back to base for calculation on the Visitrak®). Flanagan (2003) stated in a literature review that healing wounds should reduce by over 40% surface area in two to three weeks. Clinical experience would suggest that this measure of time should begin as soon as the wound bed is prepared; that is, cleared of any initial presenting necrotic tissue and control of infection. Anything less than 20% in the two- to three-week period following initial wound bed preparation, shows that the wound is not responding. Measurement linked to time is crucial to evaluation of wound care interventions.

Instead of healing outcomes, symptom control can be monitored in a variety of ways. For example, if the objective of using a honey product is to unblock a critical colonisation, as evidenced by the blue green staining produced by *Pseudomonas aeruginosa* seen on dressings, then the timepoint at which to measure the outcome and, therefore, the effectiveness of the product is short. A result for a topical antimicrobial strategy should be short, eg. seven days. If any antimicrobial intervention takes longer to achieve the desired outcome, the wound may have enlarged in the meantime suggesting that the intervention is either not effective or not optimal. Pain control using a visual analogue scale or one to ten point scale could be undertaken at dressing change to gauge background, breakthrough and procedural pain to determine if trends are in the appropriate direction. Honey does have a tendency to sting, probably due to its acidic pH, for up to an hour after application, so the use of analgesia pre-application is often necessary. Odour control could be monitored using TELER (Browne *et al*, 2004) type statements, such as odour experienced on entry to house, on entry to the bedroom, when at bedside, or on removal of dressing, allowing a quantification of sorts of odour experienced. Depending on what the level of experience was at the outset of the intervention, a patient negotiated outcome point could be worked towards, such as absence of odour until dressing is removed. Odour can contribute to social isolation and nausea leading to poor nutrition so the time to outcome is important. Honey might be expected to make an impact on long-standing odour problems in seven days, any later would indicate lack of efficacy.

Conclusion

The use of modern honey products shows clinical promise for the wound care practitioner. The honey in the 'Medical Devices' seems to be an excellent and rapid deodoriser. Quick resolution of this unpleasant occurrence may aid concordance with the whole wound care regime. Correction of overgranulation seems to suggest it is directly anti-inflammatory, or indirectly so through an antimicrobial action, and, in the case study described, facilitated epithelialisation (p. 72). Whether this effect resulted from stimulation of cells to divide, or removal of hindrance to healing, is not known. The reduction of the facial swelling below unbroken skin would suggest that an active component penetrates the epidermis. This is particularly interesting as there is little evidence to demonstrate that conventional antiseptics penetrate into the interstitium and act below wound beds, where invasive pathogens cause damage, let alone enter through intact skin. However, it is known that silver and iodine can be found at sites in the body remote to the wound, demonstrating systemic absorption from open wounds. In addition to the benefits listed by Molan, there may be benefit in the direction of healing without scarring which has been touched on by Topham (2002) and Lusby *et al* (2002).

There are two principal downsides of honey. Firstly, it often stings on application, though this can be ameliorated by pre-procedural analgesia and tolerated by the patient if they are prepared in advance to expect this for a limited time. Secondly, honey requires frequent reapplication, often once or twice daily at the start of a regime and, from experience, does not last longer than three days. It should also be remembered that not all honeys have the same activity: careful selection of a medical grade product is necessary. Honey has certainly started to capture the imagination of patients, practitioners and dressing manufacturers but, whether it gains full acceptance as a routine, rather than as a specialist product, remains to be seen.

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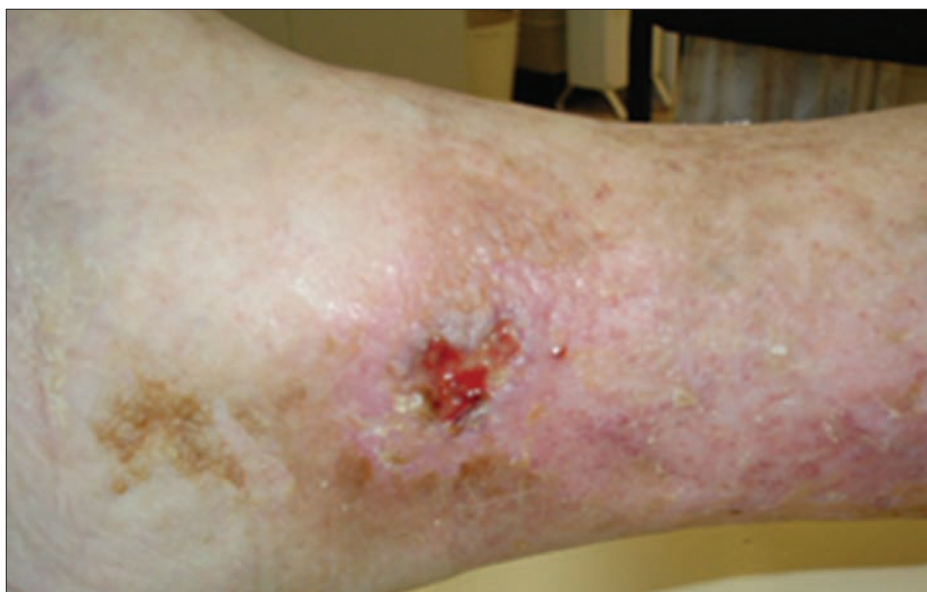


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