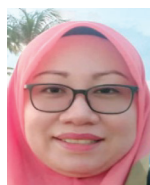


# Managing an unstageable sacral pressure injury with honey-based dressing: a case study



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Pressure injuries have a devastating effect on patients and on healthcare as a whole (Ocampo et al, 2017). This case report illustrates the wound healing progress of a 44-year-old hypertensive male with newly-diagnosed cerebellar stroke with an unstageable sacral pressure injury acquired during his hospital stay. The wound was effectively treated with honey-based dressings. Despite advanced wound care management and incontinence care, the patient required frequent repositioning and physiotherapy to keep the skin, muscles and joint subtle. Good dietary intake alongside appropriate usage of preventive devices, such as a pressure-relieving mattress, collectively played a part in the patient's wound healing and the prevention of new pressure ulcers from forming.

Almost 70% of all in-patient referrals to the authors' unit are due to pressure injuries. A pressure injury is defined as 'localized damage to the skin or underlying soft tissue usually over a bony prominence or related to a medical or other device' (National Pressure Ulcer Advisory Panel, 2016). Pressure injuries have been cited as a cause of increased economic burden, prolonged hospital admissions, reduced quality of life for patients and, in some cases, increased morbidity (Dealey et al, 2012; Chan et al, 2013). Researchers have reported that during a time period of 6 months of healing, 72% of grade 2 pressure ulcers will heal in the elderly, while 45.2% and 30.6% of those with grade 3 and 4 pressure injuries will have healed at the 6-month mark (Schoonhoven et al, 2007).

Pressure injuries can frequently recur frequent and they are difficult to heal once they develop, especially in the older people who may be bed-ridden. International studies have suggested that between 5% and 53% of hospital-acquired pressure injuries occur in patients who have experienced prolonged or multiple surgical procedures (Kirkland-Walsh et al, 2015).

Traditionally, honey has been used to treat burns, boils and pilonidal sinus, alongside infected and non-healing wounds including

venous and diabetic foot ulcers (Zohdi et al, 2012). The authors used a medical-grade honey dressing to observe the potential effect honey might have on the wound healing in this case of pressure injury.

### Case study

#### Medical history

A 44-year old male patient with newly-diagnosed cerebellar stroke presented with a wound over the sacrum region that had developed during his hospital stay.

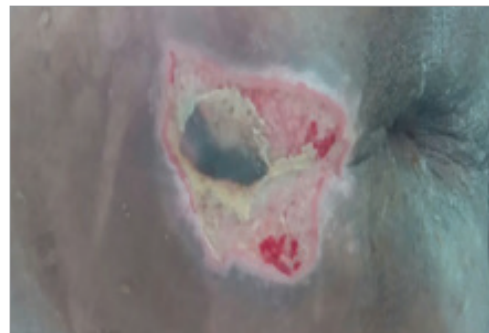


**Figure 1.** Day 1: Unstageable sacral pressure injury measuring 10.0 cm x 8.5 cm x 0.5 cm with 60% slough and 40% necrotic tissue.

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**Figure 2.** Day 5: Unstageable sacral pressure injury with 60% slough, 30% necrotic tissue and 10% granulation tissue



**Figure 3.** Day 7: Unstageable sacral pressure injury with 30% slough, 20% necrotic tissue and 50% granulation tissue



**Figure 4.** Day 11: Unstageable sacral pressure injury with 20% slough, 70% granulation tissue and 10% epithelialization tissue



**Figure 5.** Day 13: Grade 3 sacral pressure injury with 10% slough, 70% granulation tissue and 20% epithelialization tissue

The patient was admitted to hospital following the onset of sudden seizures at his place of work. A computed tomography scan revealed an acute cerebellar stroke. Subsequently, the patient was bedridden and developed pressure injury on Day 4 of admission. Regular repositioning had not been carried out and the wound was not responding well to conventional dressings, which included normal saline and gauze dressing.

The patient was referred to the wound care unit on Day 6 of admission due to worsening of the wound. The initial wound assessment showed an unstageable pressure injury, measuring 10.0 cm x 8.5 cm x 0.5 cm with signs of local infection [Figure 1]. The wound consisted of almost 60% slough and 40% necrotic tissue. It had minimal amount of exudate and was 6 cm from the anus. Minimal periwound skin excoriation was observed.

#### Treatment

The wound progression was charted using the hospital's wound assessment form. The dressing regimen involved cleansing the wound with sterile water and then applying honey gel onto the wound bed followed by

honey hydrocolloidal sheet. The wound was covered with conventional dressings that were secured by surgical tape. The dressing was changed every 2 days. All dressing changes were conducted following the Malaysian Ministry of Health Standard Operating procedures. All nursing interventions were pre-planned by the multidisciplinary medical team.

The patient was turned regularly as per nursing protocol and was placed on pressure-relieving mattress. Supplementary milk formula was added to improve the patient's nutritional intake. All nursing procedures were explained and taught to the patient's carer. The physiotherapist was also consulted and relevant limb and chest exercises were prescribed.

#### Results

The local wound infection had subsided at Day 5 and granulation tissue had started to form [Figure 2]. The pain lessened from Day 7 onwards. A reduction of wound surface of 23% was observed on Day 7 as the slough and necrotic tissue gradually decreased [Figure 3]. At this time, the patient was able to sit up with assistance but still needed wheelchair support for ambulation. There were no new wound formations.



**Figure 6.** Day 15: Grade 3 sacral pressure injury with 10% slough, 65% granulation tissue and 25% epithelialization tissue

The necrotic and sloughy tissues were debrided on Day 11 at the patient's bedside and it was noted that epithelialization tissue had started to form [Figure 4]. Healing continued to progress, with granulation tissue covered about 70% of the wound area on Day 13 [Figure 5] and by Day 15 the amount of epithelialization tissue had increased to cover 25% of the pressure injury [Figure 6]. The patient was discharged home on Day 17.

## Discussion

Before using the honey-based dressing on the patient in this case report, the authors investigated the effects of medical-grade honey on wound healing and its importance in advanced wound care management. The efficacy of honey products in wound healing is well documented by Molan (1992; 2006). Honey's antibacterial properties, anti-inflammatory function, and efficacy as an enzymatic debriding agent accelerate the rate of wound healing (Molan, 1992; 2006).

Medical-grade honey is sterilized by gamma irradiation that destroys all the spores without reducing its effectiveness (Jull et al, 2013). It has a low pH, due to the hydrogen peroxide produced during its contact with exudate, which protects the wound from invasion by microorganisms (Molan, 1992). It also has high osmolarity and viscosity, which lead to the production of a moist wound bed and low concentration of hydrogen peroxide during its contact with exudate (Molan, 1992). Honey is known to act as an enzymatic debriding agent and breaks up slough tissue, thus promoting cell proliferation and granulation while maintaining a moist wound healing environment (Lusby et al, 2002). These properties are crucial for managing pressure injuries, which may contain a combination of sloughy and necrotic tissues. The honey used on the patient in this case study contained unique Manuka factor (UMF) 15+, which is responsible for the wound healing properties of Manuka honey (Molan, 2006).

The authors believe that honey-based dressing played a pivotal role in healing the pressure injury wound in this patient. The outcome of this case report appears promising; however, the underlying aetiology of any pressure injury should be addressed before initiating treatment with honey. Further large-

scale studies are required to conclude the efficacy of honey in wound healing.

## Conclusion

Honey-based dressing aided the healing of this patient's pressure injury, however a holistic approach is needed to combat pressure injuries. Such an approach should comprise of regular repositioning, good nutritional support, incontinence care, and appropriate use of pressure injury preventive devices, such as a Ripple mattress, in addition to best wound care practice. WAS

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## References

- Chan B, Ieraci L, Mitsakakis N et al (2013) Net costs of hospital-acquired and pre-admission PUs among older people hospitalised in Ontario. *J Wound Care* 22(7): 341–46
- Dealey C, Posnett J, and Walker A (2012) The cost of pressure ulcers in the United Kingdom. *J Wound Care* 21(6): 261–6
- Jull Ab, Walker N, Deshpande S (2013) Honey as a topical treatment for wounds. *Cochrane Database Syst Rev* 2:CD005083.
- Kirkland-Walsh H, Wilson M, Raingruber B (2015) Pressure mapping comparison of four OR surfaces. *AORN J* 102(1): 61.e1–9
- Lusby Pe, Coombes A, Wilkinson JM (2002) Honey: a potent agent for wound healing? *J Wound Ostomy Continence Nurs* 29(6): 295–300
- Molan PC (1992) The antibacterial activity of honey 1. The nature of the antibacterial activity. *Bee World* 73(1): 5–28
- Molan PC (2006) The evidence supporting the use of honey as a wound dressing. *Int J Low Extrem Wounds* 5(1): 40–54
- National Pressure Ulcer Advisory Panel (2016) *NPUAP Pressure Injury Stages*. Available at: <http://www.npuap.org/resources/educational-and-clinical-resources/npuap-pressure-injury-stages/> (accessed 7.01.2019)
- Ocampo W, Cheung A, Baylis B (2017) Economic evaluations of strategies to prevent hospital-acquired pressure injuries. *Adv Skin Wound Care* 30(7): 319–33
- Schoonhoven L, Bousema Mt, Buskens E: E prePURSE-study group (2007) The prevalence and incidence of pressure ulcers in hospitalized patients in the Netherlands: a prospective inception cohort study. *Int J Nurs Stud* 44(6): 927–35
- Zohdi RM, Zakaria ZAB, Yusof N et al (2012) Gelam (Melaleuca spp.) Honey-based hydrogel as burn wound dressing. *Evid Based Complement Alternat Med* 2012: 843025