

Hip disarticulation wound treated with antibacterial medical honey: a case report

Key words:

- Antibacterial
- Hip disarticulation
- Medical honey
- Wound infection

Abstract: Hip disarticulation accounts for approximately 0.5% of the lower limb amputation. Wound management post-hip disarticulation is an arduous task. Honey has antioxidant, antibacterial and anti-inflammatory properties. Antibacterial medical honey (Medihoney) usage is proven in wound care especially its role against antibiotic-resistant bacteria such as methicillin-resistant *Staphylococcus aureus* (MRSA). Antibacterial medical honey in surgical wounds promotes faster healing, impedes tumour implantation and reduces amputation rate in diabetic wound. We report a case of an infected wound post-hip disarticulation in a 55-year-old Indian man that was treated successfully with antibacterial medical honey dressings.

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Hip disarticulation is a surgical procedure involving the amputation of the entire lower limb through the hip joint (Loon, 1957). Hip disarticulation accounts for approximately 0.5% of the lower limb amputation procedure performed (Dillingham et al, 2002). We report a case of an infected wound post hip disarticulation in a 55 years old Indian man that was treated successfully with antibacterial medical honey dressings.

Case report

A 55-years-old Indian man presented to the hospital for worsening post-traumatic infection of his left foot and ankle. He is a diabetic that had not taken his medication since six months ago. He was diagnosed with necrotising fasciitis of left lower limb and was started on intravenous Piperacillin/Tazobactam 4.5gm four times a day and intravenous Clindamycin 600mg three times a day and underwent emergent extensive wound debridement. Due to worsening wound condition, hip disarticulation was performed. Initial tissue culture yielded *Streptococcus pyogenes* group A. He still required multiple wound debridement post-hip disarticulation to control his infection. He was initially on povidone-iodine dressing for two months on the ward and subsequently change to medihoney dressing. Tissue culture and sensitivity obtained later yield methicillin-resistant *Staphylococcus aureus* (MRSA). His wound

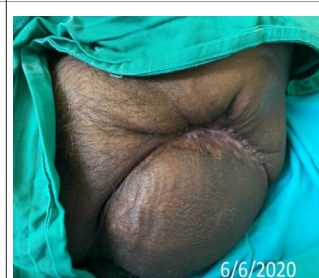
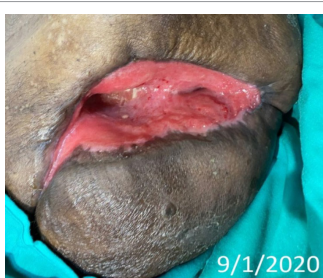
bed preparation was managed accordingly to TIME principle (Fletcher et al, 2005). Unhealthy tissue was found and surgically debrided and using autolytic debridement. Infection was controlled with appropriate antibiotics according to the cultures and sensitivities obtained. Initially debridement cultures yield *Streptococcus pyogenes*, or Group A *Streptococcus* (GAS) and he was on IV Piperacillin/Tazobactam and IV Clindamycin. Later debridement found methicillin-resistant MRSA and was on IV Vancomycin. Moisture balance was achieved and edges were kept optimum. The patient diabetes and hypertension were well controlled through-out admission. The hip disarticulation wound showed good improvement and patient was discharged after one month using the medicated honey dressing. Wound progression was shown as in **Figure 1**. The patient is currently using a wheelchair for ambulation and under rehabilitation while awaiting a prosthesis.

Discussion

Honey been used since ancient time for wound management where prescription for standard wound care discovered Smith papyrus (an Egyptian text dating from between 2600 and 2200 BC) calls for a mixture of mrht (grease), byt (honey) and ftt (lint/fibre) as transliterated from hieroglyphic symbols (Zumla et al, 1989). The ancient Egyptians, Chinese, Assyrians, Greeks

Case 1.

- A 55-years-old Indian man
- Condition of wound on starting medihoney dressing, wound size 26cm x 14cm, (Figure 1a)
- On day 23 of medihoney dressing wound size 22cm x 12cm (Figure 1b), On day 30 of medihoney dressing. (20cm x 10cm) (Figure 1c)
- Fig. 4: Day 40 of medihoney dressing. (18cm x 8cm) (Figure 1d)
- Fig. 5: Day 51 of medihoney dressing. (12cm x 6cm) (Figure 1e)
- Fig. 6: Day 100 of medihoney dressing. (8cm x 3cm) (Figure 1f)
- Fig. 7: Fully healed wound (Figure 1h)



and Romans applied honey for wounds and diseases of the gut. Honey was very popular Egyptian drug as being mentioned 500 times in 900 remedies (Zumla et al,1989).

Honey usage in wound care, especially its role against antibiotic-resistant bacteria such as methicillin-resistant *Staphylococcus aureus* (MRSA), has renewed interest in its use managing wounds. Honey derived from the floral source *Leptospermum scoparium* (manuka)

appears to have a therapeutic advantages over other honeys because of its notable antibacterial effects. A recent *in vitro* investigation confirmed that therapeutic honey (Medihoney) displays bactericidal activity against planktonic bacteria and other bacteria embedded in biofilm (Yaghoobi et al, 2013). Honey has antioxidant, antibacterial and anti-inflammatory properties. These effects are due to honey's antibacterial action, secondary to its high acidity, osmotic

effect, anti-oxidant content and hydrogen peroxide content (Yaghoobi et al, 2013).

Medicated honey is used compared with raw honey as raw honey has *Clostridium botulinum* spores that exist in our environment (soil, air, dust and in agricultural products) (Simon et al, 2009). There is a possibility of proliferation of spores and production of botulinum toxin if a deep wound is contaminated by bacteria in an anaerobic environment (Simon et al, 2009). Therefore, Medihoney is sterilised by gamma irradiation (Simon et al 2009). Honey is used in management of mild-to-moderate superficial and partial-thickness burns, infected wound, surgical wound, gingivitis and periodontal disease (Khan et al, 2007; Yaghoobi et al, 2013). Application of honey on surgical wounds promotes faster healing and impedes tumour implantation, while in diabetic wound it shows reduced rate of amputation (Khan et al, 2007). In this case study we notice slough and necrotic tissue management was effective with Medihoney. This corresponds with study by Cavanagh et al where usage of honey reduces the need of surgical debridement and it promote the rapid growth of granulation tissue (Cavanagh et al, 1970). It has been reported that on honey dressing, sloughs and necrotic tissue are quickly replaced with granulation tissue and promote epithelialisation (Khan et al, 2007) thus caused heal to patient hip disarticulation wound. The reduction of wound size in this patient was 50% of reduction of size in 7 weeks duration. In a study comparing medical grade honey with conventional treatment on healing rate of wound healing by secondary intention done among 105 patient noted healing rate at 12 weeks was 46.2% in the honey group compared to 34% in conventional group (Robson et al, 2009).

Other option of dressings that might seem suitable to this type of wounds were Negative pressure wound therapy (NPWT) and chemical debrider. NPWT promotes wound healing in tight control of sub-atmospheric pressure range. However, these devices are expensive and hardly affordable by patient who receive treatment in government hospital (Kah et al, 2019). The management of this patient using Medihoney was 10 times cheaper compared with NPWT cost with the total duration of treatment on this patient of 6 months. On the other, a modified NPWT using wall suction port with negative pressure gauge, Ryle's tube, polyurethane foam enhanced with sticky clear film will compromise patient mobility (Kah et al, 2019). Dressings with sticky clear film at the amputation site that was

near to perineal area make it more difficult to dress or maintain the negative pressure therapy. Enzymatic debridement such as streptokinase is contraindicated in acute wound, because the cleavage of fibrin can lead to an increased risk of bleeding (Strohal et al, 2013). Taken into these considerations, NPWT and enzymatic debridement is not done in this patient due to above reasons. Standard of care of wound management in Hospital Teluk Intan are hydrogel dressing after infection of the wound is under control.

Conclusion

Hip disarticulation wound management prompt a challenging issue for both medical professionals and patient. Medicated honey can be one of those dressing used to manage chronic and resistance post hip disarticulation wound management.

WAS

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