

Enterobacter cloacae contamination in a postoperative wound

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The purpose of this case report was to investigate healing by secondary intention of a large *Enterobacter cloacae* infected, postoperative wound after removal of a purulent abscess on the right tibia (Figure 1), using a new honey-based wound dressing.

A 48-year-old obese woman presented with intermittent clinical stitches on the right tibia after earlier surgical removal of a purulent abscess. On day one the wound was malodorous, necrotic, with subcutaneous tissue exudate. The peri-wound area showed signs of severe infection (redness, increased temperature), and the popliteal fossa was oedematous. A culture swab taken showed the presence of *E. cloacae*. The patient was treated with intravenous (IV) antibiotics. The size of the wound at this stage was 9.6x9x0.6cm. For the first three days of treatment the wound was treated twice-daily with a povidone iodine solution, povidone iodine paste and paraffin gauze. However, there was no improvement.

Enterobacter is a Gram negative bacillus that belongs to the Enterobacteriaceae family. Enterobacteriaceae are the most common bacterial isolates recovered from clinical specimens. *Enterobacter* wound infections have been reported in the literature, mainly in burns and injuries, involving trauma to multiple sites (Guggenheim et al, 2009). Some authors have noted a trend of traditional wound bacteria (e.g. *Staphylococcus aureus*) being replaced by *Enterobacter* species and other nosocomial pathogens (Fraser, 2008; Livermore et al, 2008). The prevalence of *Enterobacter* resistance to beta-



Figure 1. The wound at the start of treatment with honey (7/10/2008).

lactam antibiotics, aminoglycosides, trimethoprim-sulfamethoxazole (TMP-SMZ), and quinolones seems to be higher in certain European countries

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than in the United States and Canada (Chow et al, 2005; Rossi et al, 2006; Fraser, 2008). *E. cloacae* infection is associated with the highest mortality rate of all *Enterobacter* infections (Fraser, 2008).

In this case the practitioners decided to try a honey-based ointment and

mesh. Honey is known for being an effective agent against Gram negative bacteriae (Al-Waili, 1999), and, in a recent study, honey was shown to stimulate the growth of new cells (keratinocytes and fibroblasts) significantly in comparison with a control group using silver dressings (Du Toit, 2009).

Method and observations

The wound was cleaned daily with saline. A honey-mesh (L-Mesitran® net, Aspen medical) was then applied over the wound and covered with a layer of the honey-ointment (L-Mesitran® ointment, Aspen medical). This was covered with gauze. The applications with the L-Mesitran ointment were easy and did not irritate the surrounding area. Dressing changes took place every 24 hours during the

five-day stay of the patient in hospital. On the third day after using the honey products, the wound's appearance changed. The necrosis was dissolving and debridement was apparent. On the fifth day, the malodour, debris, swelling and wound exudate had dramatically improved (Figure 2). The patient was discharged and treated with the same regimen on an outpatient basis every two days until complete wound healing had been achieved.

Discharge from hospital and the apparent improvement of the wound had a positive impact on the patient's psychological health, as there had been a possibility of 'losing' her leg, which obviously had been a cause of great concern to her. Treatment continued (dressing changes every two days, Figures 3–5) without any adverse effects and the wound epithelialised completely within two months. The fully healed wound was photographed two and a half months after the start with the L-Mesitran honey-treatment and showed little to no scarring (Figure 6).

Conclusion

The honey products used in this case report contributed to the quick and efficient healing of a postoperative surgical wound, without recourse to antibiotics, as has previously been shown in the literature (Vardi et al, 1998; Molan, 2006; Morris, 2008). **WUK**

Declaration of interest

This case report was done independently and with the patient's consent. The products used were provided free of charge by Theraskin Care Products, Thessaloniki, Greece.

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Figure 2. After five days of treatment with honey, the malodour and debris had improved (12/10/2008).



Figure 3. After fifteen days of treatment with honey granulation tissue was present (22/10/2008).



Figure 4. After six weeks of treatment the wound size had decreased (21/11/2008).



Figure 5. A week later (after Figure 4), the wound size had decreased dramatically to roughly half the size (03/12/2008).



Figure 6. After two and a half months, the wound had fully healed with little to no scarring (22/12/2008).

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