Clinical efficacy of a monofilament fiber wound debridement product for trauma wounds and bites

J Alblas, PA, Wound Expert Center, Bovenij Hospital, Amsterdam, The Netherlands. j.alblas@bovenij.nl
R.J. Klicks, MD Wound Expert Center, Bovenij Hospital, Amsterdam, The Netherlands.

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Introduction

The aim of this pilot was to evaluate the wound debridement efficacy (achievement of 100% granulation tissue) and level of discomfort during the procedure using a *monofilament fiber product in patients with trauma wounds and bites. The product has been shown to successfully debride chronic wounds and the peri-wound skin.[1,2] Moreover in the patients with chronic wounds patient reported pain (VAS) during the procedure was low.[2] Patients with acute and trauma wounds generally report severe pain, especially in the first hours after injury. For debridement often local anesthesia is used and pain medication is given. For chronic wounds mostly debridement at the bedside can be performed without the need of local anesthesia.

Methods

This observational pilot assessed the debridement efficacy, safety, patient comfort and user satisfaction of the *monofilament product in ten patients. Time taken to perform the debridement procedure was also recorded. For the procedure the product was wetted with polyhexanide (PHMB) and lidocane 2% was used, as per protocol. After debridement the wounds were covered with a **bio-cellulose dressing + PHMB and an ***absorbent pad was used as a secondary dressing. Clinical outcome was scored by a trained clinician. Additionally, before and after photographs were assessed by one and the same clinician, who was blinded to the treatment given. Patients were followed until wound closure.

Results

Ten patients were included in the study. Patients had crush wounds on the shin (n=1), extensive soft tissue trauma on the lower leg (n=5), cut off fingertip (n=1), bite wounds caused by two fighting dogs (n=1 fingertip bitten off, n=2 wounds on the lower limb). Debridement was fast and effective in all of the treated wounds, already after one session the wound was completely debrided in n=3 and ready for grafting. A mean of 2,1 sessions (SD ± 0,83) (min 1 – max 3) was required to obtain a clean wound bed. In all of the sessions the product remained intact. The mean time for the debridement sessions was 2,57 minutes (SD ± 0,04) (range 2–4 minutes). Visible debris and slough were successfully removed with the *monofilament fiber product. Patients

Case 1:

The 62-year old woman injured her finger with a cleaver while cutting meat in the kitchen (Fig 1a). At day 0 she reported pain VAS: 5, which did not change during the procedure. The wound and peri-wound skin was debrided with the *monofilament product (Fig 1b and Fig 1c) after which split skin grafting was performed (Fig 1d). The wound had healed within a week without complications (Fig 1e).

Fig 1a Bleeding was stopped

Fig 1b Situation after debridement

Fig 1c On the right the debridement is shown

Fig 1d Skin graft is placed

Fig 1e The wound had healed within 1 week

Case 2:

The 87-year old man injured his head in a fall against a concrete wall (Fig 2a). At day 0 he reported pain VAS: 4, which did not change during the debridement procedure. The wound and peri-wound skin was debrided with the *monofilament product (Fig 2b and Fig 2c) during 4 days. The wound had healed within 14 days without complications (Fig 2d).

Fig 2a Day 0: Situation before debridement

Fig 2b Day 0: after one session

Fig 2c Day 2: after two sessions

Fig 2d Day 4: after the last session

Fig 2e Day 10: the wound is almost healed

Case 3:

The 89-year old male patient injured his right shin during an accident he suffered while crossing on a ferry. The otherwise healthy male is immunocompromised. Four debridement sessions over four days resulted in an almost clean wound. After debridement the wound was covered with a bio-cellulose dressing + PHMB.

Fig 3a Day 0: Before debridement

Fig 3b Day 2: after two sessions

Fig 3c Day 4: almost completely debrided

Case 4:

The 61-year old woman had her middle finger bitten off at distal interphalangial while intervening in a dog fight. After one debridement session and excision of the wound edges the wound was closed and healed without complications.

Fig 4a Distal interphalangial is amputated due to a bite from a dog

Fig 4b

reported slight discomfort for a short duration (2.0 minutes on average) in 35% of cases and in 65% of cases they reported no discomfort. No secondary infections occurred. Four typical cases are presented to illustrate the results.

Conclusion

The results indicate the potential for this *monofilament fibre product to effectively and safely debride trauma wounds and bites. ■

References

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