AN EVALUATION OF A NEW SUPERABSORBENT WOUND DRESSING ON PATIENTS WITH EXUDING BURN WOUNDS

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INTRODUCTION

Burn wounds produce significant amounts of exudate in the first 72 hours, which can lead to dehydration and hypothermia[1,2], wound and skin maceration and increased risk of infection[3]. Treatment strategies include using appropriate wound dressings. According to clinicians and patients, the ideal burn dressing should be non-adhering, absorbent and prevent infection[4,5].

Leaving dressed wounds undisturbed for longer periods of time minimizes tissue disturbance and has been proved to help healing[6,7]. Choosing super absorbent polymer (SAP) wound dressings which are both highly absorbent and retentive of exudate may not only lead to a reduced risk of infection and complications, but also diminish dressing wastage and costs[8].

The superabsorbent dressing* in this evaluation absorbs wound exudate quickly and effectively, providing maximum comfort and hygiene for both patient and caregiver. The ultra-thin, soft and highly conformable material allows close skin contact, even on challenging body parts where stiffer dressings are not suitable. Also the predecessor dressing to this softer superabsorbent* version has proved to be user friendly, efficient and cost effective[9,10,11]. In addition, one of the studies shows that SAP wound dressings absorb bacteria and can limit production of bacterial toxin, possibly making them less virulent, thereby inhibiting the formation of biofilm[11].

AIM

The aim of this study was to evaluate the performance of the new superabsorbent dressing* on patients with exuding burn wounds.

METHODS

Eight patients, aged 28-77 years, participated in this open case study. The patients were recruited and selected from a Swedish University hospital burn center during a period of 20 months because of their exuding wounds, ranging from superficial dermal to full thickness burns.

Standard protocols were applied to patients included in the study. Normal procedure for this type of injury is to cover the wound with silver sulfadiazine cream to prevent infection, followed by a non-adherent wound contact layer covered by fluffy gauze and secured with roller and/or tubular bandages. During the study period, fluffy gauze was replaced with the superabsorbent dressing*.

A majority of the patients were anesthetized or sedated, at least during cleaning and dressing changes. The time of participation in the study ranged between two and 12 days with an average length of seven days.

RESULT

Clinicians' evaluations

In all the eight cases, the clinicians found the new superabsorbent wound dressing* superior to standard treatment, i.e. fluffy gauze, in its ability to manage exudate and prevent maceration and hypothermia. The dressing* absorbed not only thin but thick wound fluid efficiently, compared to other dressings, and also absorbed blood into the dressing*, although the red blood cells were trapped on the dressing surface. Furthermore, the dressing* was easy to use, and the big sizes could cover large wound areas. In seven out of eight cases, the clinicians would recommend the new superabsorbent wound dressing* for their local wound treatment program.

In this study, dressing changes were generally performed because of routine procedure and the need for wound inspection and not because of leakage. The majority of dressings* were used for more than 48 hours on the wounds.

Fig. 1 Wear time (hours) of a superabsorbent dressing* on burn wounds

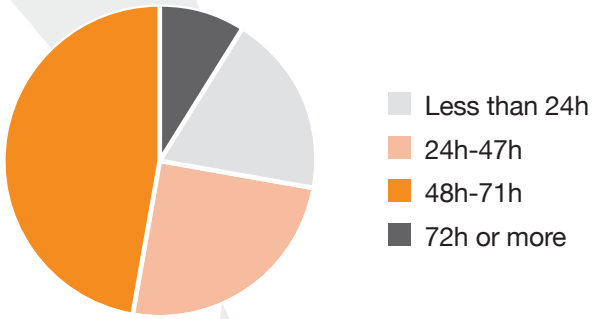
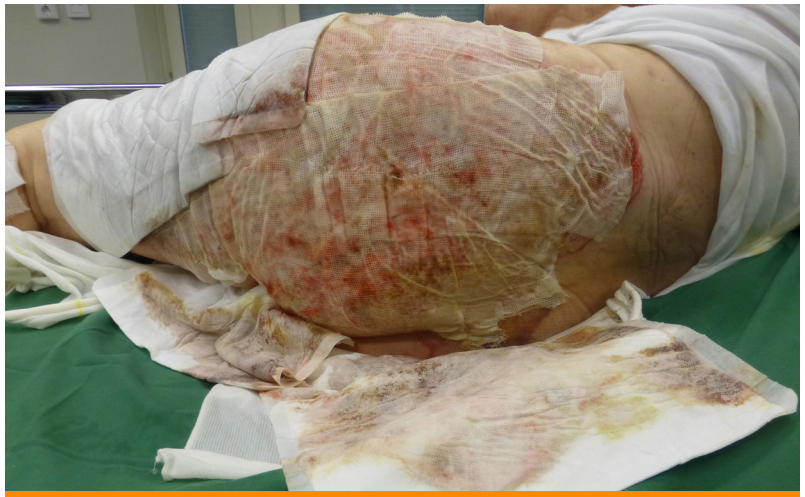


Fig. 2 Burn injury treated with a superabsorbent dressing* used together with silver sulfadiazine cream and a non-adherent wound contact layer.



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Case 1

A forty-four year old man with circumferential fire burns on both thighs. The injuries were 2,5% deep dermal and 2,5% full thickness burns.

Starting 12 hours after the injury, the wounds were treated for 12 days with standard procedure, but the fluffy gauze was replaced with a superabsorbent dressing*. During this time, the wounds were cleaned and the dressings* changed on six occasions, while the patient was anesthetized or sedated. The patient and the bed remained dry, there was no maceration to the surrounding skin and no decrease in skin temperature.

In connection with each dressing change, the removed superabsorbent dressings* from each thigh were weighed and reached their highest weight on day 4. The superabsorbent dressing* did not stick to the wounds. On the 12th day, the patient had an operation and skin transplants.

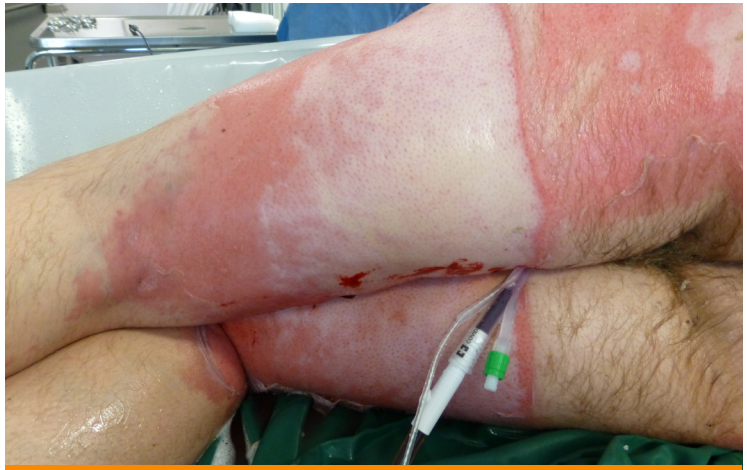

Fig 3. **Case 1, day 0**

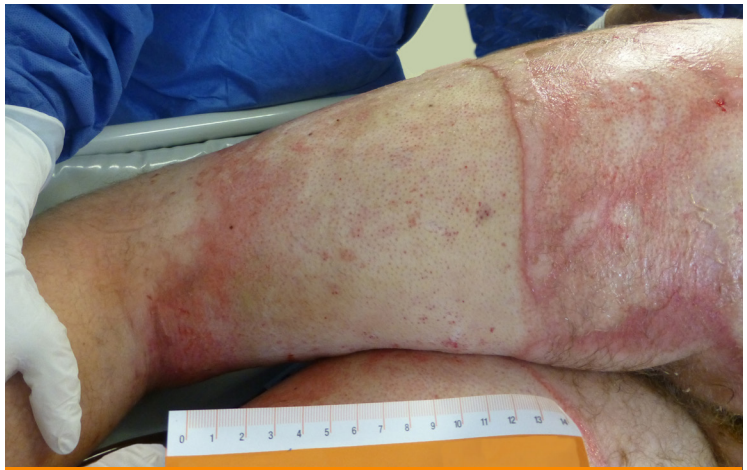

Fig 4. **Case 1, day 4**

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Case 2

A seventy-seven year old woman with contact burns on the left hip, buttock and leg. The injuries were 1,5% superficial dermal, 2,5% deep dermal and 3% full thickness burns.

Starting 24 hours after the injury, the wounds were treated for seven days with standard procedure, but the silver sulfadiazine cream was omitted, and the fluffy gauze was replaced with the superabsorbent dressing*. Due to the use of bromelain based debridement, the wounds were cleaned and the dressings* changed daily although they were not completely saturated.

The patient had continuous pain relief with paracetamol and oxycodone/naloxone and was also premedicated or sedated prior to wound cleaning and dressing changes. On three occasions, the reports mention slight or moderate pain when the dressings* were removed, but no pain was reported during wear time. The patient and the bed remained dry and there was no maceration to the surrounding skin, except on day 4 when there was slight maceration to the wound edges of the upper part of the hip where there had been more exudation. There was no decrease in skin temperature.

The superabsorbent dressing* did not stick to the wounds. In connection with each dressing change, the removed superabsorbent dressings* were weighed and reached their highest weight on day 3.

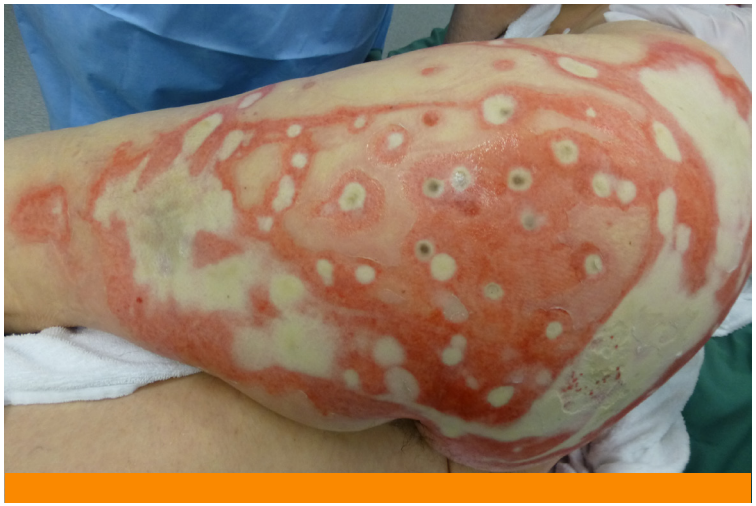

Fig 5. **Case 2, day 0**

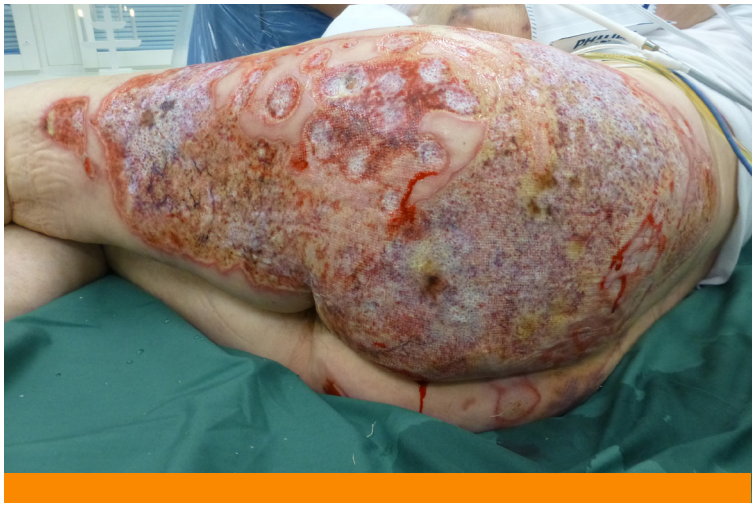

Fig 6. **Case 2, day 4**

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DISCUSSION

This study aims to evaluate the performance of the superabsorbent dressing* on patients with exuding burn wounds. The results from the study indicate that the evaluated superabsorbent dressing* meets the requirements for an ideal burn wound dressing [4,5] in terms of its absorption and retention capacity of both thick and thin wound fluid and, unlike most other dressings also blood, properties which have been demonstrated in other studies [9,10,11]. It has been verified that leaving dressed wounds undisturbed by using wound dressings that allow longer wear time helps healing[6,7]. In this study, the superabsorbent dressings* were not left in place until fully saturated but were removed based on routine procedure and the need for wound inspection. Consequently, the efficiency and cost effectiveness of the superabsorbent dressing* on patients with exuding burn wounds cannot be fully evaluated. Other limitations of this study include the lack of uniformity regarding reporting of data, despite standard protocols, and the absence of records on use of antibiotics.

Further studies with a focus on wound dressings' ability to control infection are needed. It would be interesting to study the frequency of wound infection in burn injuries treated with traditional wound dressings compared to superabsorbent dressings, as well as the frequency of wound infections in burn injuries where wound dressings are changed according to routine procedure compared to superabsorbent dressings that are left in place until fully saturated.

CONCLUSION

Results from this case series indicate that the evaluated superabsorbent dressing* is a suitable choice for exuding burn wounds because of its excellent capacity to manage various types of wound exudate and prevent leakage, maceration and hypothermia, thus supporting patient recovery. Larger scale clinical studies will be necessary to confirm these findings and provide more data for further analysis.

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