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TenderWet: an innovation in moist wound healing

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Abstract

The use of moisture-retentive dressings (dressings that are capable of maintaining a warm moist environment) has been shown to provide the optimal environment for wound healing, accelerating the healing process and promoting tissue growth. TenderWet, produced by Paul Hartmann, is an innovative dressing that not only provides a moist warm environment but also incorporates the unique properties of Ringer's solution which actively cleanses (debrides) the wound.

Figure 1. TenderWet multilayered wound dressing pad.

Table 1. Presentations of TenderWet dressing and volumes of TenderWet solution required for activation

Dressing size	Pack size	TenderWet solution
4 cm round	12 dressings	8–10 ml Ringer's
4 cm round	32 dressings	8–10 ml Ringer's
5.5 cm round	12 dressings	15 ml Ringer's
5.5 cm round	32 dressings	15 ml Ringer's
7.5 x 7.5 cm	12 dressings	30 ml Ringer's
7.5 x 7.5 cm	32 dressings	30 ml Ringer's
10 x 10 cm	12 dressings	60 ml Ringer's
10 x 10 cm	32 dressings	60 ml Ringer's

Since the publication of Winter's article in 1962 describing the benefits of moist wound healing, the market has been saturated with a plethora of wound care products designed to promote moist wound healing.

TenderWet is an interactive therapy that incorporates a unique 'self-acting rinsing mechanism'. It is indicated for the management of chronic wounds, i.e. wounds where there is a deficit of tissue as the result of long-standing injury or insult or frequent occurrence (Fowler, 1990). Despite expert medical and nursing care, chronic wounds are still proving difficult to manage and costly in monetary terms, as well as causing the patient considerable pain and inconvenience.

TENDERWET

TenderWet (*Figure 1*) is a multilayered wound dressing pad that is designed to be in primary contact with the wound bed. The pad is made of a superabsorbent polyacrylate (SAP). The wound contact layer is composed of a hydrophobic knitted fabric which conforms well to the wound contours, allows secretions to pass through freely, and does not adhere to the wound bed.

Before application to the wound the dressing is activated by an appropriate amount of TenderWet solution (*Table 1*), which is then given off to the wound continuously over a 12-hour period. TenderWet solution is identical in composition to Ringer's solution.

Mechanism of action

TenderWet is suitable for wounds that require both debridement and stimulation of cell proliferation during the granulation phase. TenderWet promotes the transference or exchange of fluids between the wound

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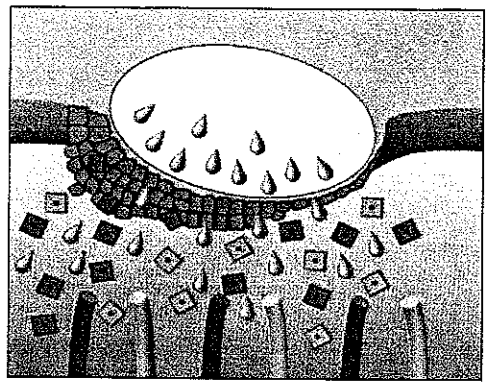

Figure 2. At the onset of wound cleansing, necrotic tissue is softened and detached as the result of the action of TenderWet solution.

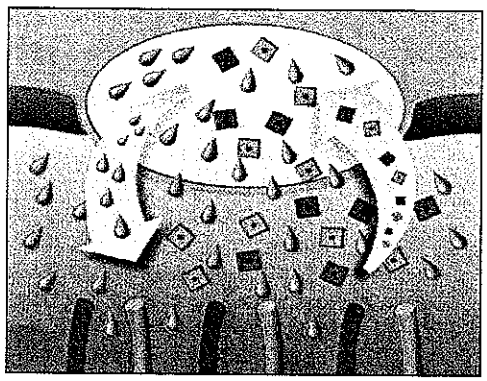

Figure 3. TenderWet then renews the TenderWet solution on the wound surface, and at the same time absorbs free microorganisms, released detritus and toxins. Depending on the size of the pad, the 'rinsing action' persists for up to 12 hours.

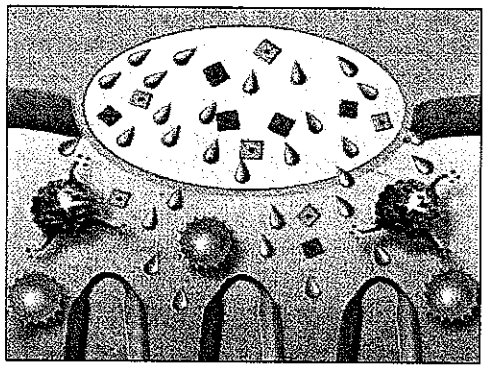

Figure 4. As soon as inhibitory factors have been removed and the wound floor is clean, granulation tissue formation can begin, with immigration of cells and regeneration of blood vessels. Simultaneously, epithelial cells start to proliferate from the edge of the wound and bring about complete closure of the wound. During the whole process, TenderWet prevents dessication of the wound, provides essential electrolytes, and protects the wound from further trauma.

and the dressing because the SAP has a higher affinity for protein than for salt solutions. The TenderWet solution (Ringer's solution) in the pad is thus displaced by wound exudate. This process is termed 'rinsing' of the wound.

The continual supply of TenderWet solution to the wound facilitates softening and debridement of necrotic tissue by providing the extra moisture required (*Wound Forum*, 1996). The SAP absorbs the wound exudate, which contains bacteria, toxins and released detritus, and thereby removes all wound debris from the wound bed.

The TenderWet solution also provides sodium, potassium and calcium which contribute to the stimulation of cell proliferation during the granulation phase (*Figures 2, 3* and *4*).

TENDERWET 24

TenderWet 24 has a similar design to TenderWet, with a few technological modifications. The SAP is slightly different in that it has a water-repellent layer beneath the knitted fabric, at the side facing away from the wound (identifiable by its coloured stripes), which largely prevents the more superficial layers of the dressing from becoming wet. TenderWet 24 can retain large amounts of TenderWet solution and wound exudate, and can thus remain in situ for up to 24 hours.

TenderWet and TenderWet 24 are available in various shapes and sizes (*Table 1*). To activate the absorbent pad, the TenderWet dressing is soaked with the appropriate amount of TenderWet solution (*Table 1*) while remaining in the sterile pack. The dressing should be secured in place with an appropriate secondary dressing.

TENDERWET SOLUTION

TenderWet solution is a sterile, pyrogen-free, isotonic solution that is identical in composition to Ringer's solution. It is produced for activation of TenderWet dressings. TenderWet solution is available in packs of 20 x 15 ml bottles; 10 and 30 ml bottles will be available early next year.

The wide availability of the TenderWet solution ensures easier use of the product. If TenderWet solution is unavailable, then either

Ringer's infusion solution or Ringer's irrigation can be used. The lifespan and re-usability of the product are specified in the manufacturer's guidelines.

CASE STUDY

An 86-year-old woman with a long medical history was admitted as an emergency with haematemesis/epistaxis and in a collapsed state. Clinical examination revealed an ulcer on her right leg. The ulcer was well established and had been managed by the district nurses twice weekly for the past 5 years. She had been reviewed by the vascular surgeons who were unable to offer any treatment as her medical condition was so unstable. The wound had been managed conservatively with no evidence of improvment. On clinical examination (*Figure 5*), the wound was approximately 8 x 4 cm in size and covered in yellow slough which required debridement.

The patient was commenced on TenderWet therapy — two 7.5 x 7.5 cm dressings, each soaked in 30 ml of TenderWet solution, and held in place by a foam dressing. This treatment was changed 12 hourly and the patient was reviewed 2 days later. *Figure 6* clearly shows the effective and rapid debridment of the yellow slough, with the wound bed now containing healthy granulation tissue. The TenderWet treatment was continued (Cooper and Gray, 1998).

CONCLUSION

TenderWet offers a new innovation for the often difficult and arduous management of chronic wounds. These wounds prove costly in both monetary terms and the pain and inconvenience caused to not only the patient but also his/her family and carers. BJN

Cooper P, Gray D (1998) TenderWet — case studies. Poster presentation to be presented at the European Wound Management Association and *Journal of Wound Care* Autumn Conference, November, 1998

Fowler E (1990) Chronic wounds: an overview. In: Krasner D, ed. *Chronic Wound Care: A Clinical Sourcebook for Healthcare Professionals*. Health Management Publications Inc., King of Prussia, Pennsylvania

Winter GD (1962) Formation of the scab and the rate of epithelialisation of superficial wounds in the skin of the domestic pig. *Nature* 193: 293

Wound Forum (1996) Paul Hartmann, Unit P2, Parklands Distribution, Heywood Park, Pilsworth Road, Heywood, Lancashire OL10 2TT. (http://www.hartmann-online.com)

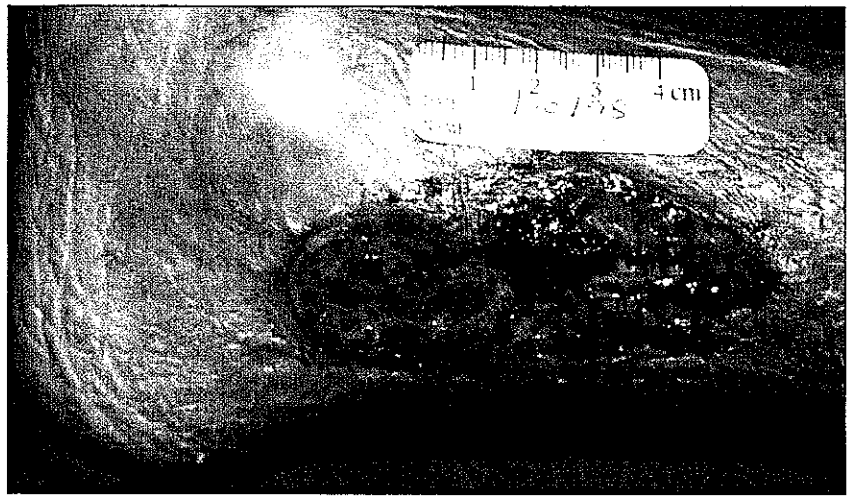

Figure 5. Appearance of the wound on emergency admission; the wound bed is covered extensively by yellow slough requiring debridement.

Figure 6. Appearance of the wound 2 days after commencement of TenderWet therapy; the yellow slough has been effectively and rapidly debrided and the wound bed now contains healthy granulation tissue.

KEY POINTS

- TenderWet dressing has been designed specifically for the management of chronic wounds.
- It has a unique 'self-acting rinsing mechanism', in which wound exudate displaces Ringer's solution from the dressing pad.
- TenderWet (Ringer's) solution facilitates the softening and debridement of necrotic tissue as well as stimulating cell proliferation during the granulation phase.
- The superabsorbent polyacrylate absorbs all wound debris from the wound bed surface.