

CHOOSING THE APPROPRIATE DRESSING: HYDROGELS AND SHEETS

This article looks at the benefits of using hydrogels in the treatment of sloughy and necrotic wounds, by providing an environment to deslough and hydrate tissue to aid autolytic debridement.

Wound healing is physiological and dependent on the patient's overall health. Both holistic and wound assessments are essential to determine the cause of the wound and the elements needed to promote the healing process. Wounds need a moist environment; not enough or too much exudate can hinder or delay healing.

Dressings account for only one element of wound care; they do not heal wounds and need to be chosen with care as each performs differently. Treating the underlying cause, the wound, and the surrounding skin, will help lead to achieve healing. Wounds that are not making progress should be reassessed and if the reasons for this cannot be identified, further assessment by a specialist is recommended before the wound becomes chronic.

The individual should be made aware of the cause of their wound and the actions they can take to improve wound healing. Improving diet, mobility, and skin care regimens can make a considerable difference. It is advisable not to change dressing types frequently; if a dressing has been chosen for a particular purpose,

it should be allowed to achieve its objective so long as there are no adverse effects. There are many categories of dressings, such as:

- ▶▶ Alginates.
- ▶▶ Antimicrobials.
- ▶▶ Foams.
- ▶▶ Honey.
- ▶▶ Hydrocolloids.
- ▶▶ Hydrofibers® (Convatec).
- ▶▶ Hydrogels.

All of these dressings have a place in promoting wound healing and the choice is dependent on the clinician weighing up the available options.

This article is part of an ongoing series on choosing the appropriate dressing. You can find an article on hydrocolloids in *Wound Essentials* 7(2) – available online at: <http://www.wounds-uk.com/wound-essentials>.

Hydrogels

Hydrogels occur naturally in our bodies in the cornea and cartilage. Synthetic hydrogels have been used as a dressing material in wound care for more than 20 years (Thomas, 2010). They are available in a range of formulations; semi-transparent, amorphous (shapeless) gel (*Figure 1a*), gel sheets that are more solid, but pliable (*Figure 1b*), or an already

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impregnated dressing (*Figure 1c*) (MA Healthcare, 2013). The amorphous gel is usually supplied in pods so that the gel can be squeezed directly onto the wound using gentle pressure. The gel sheets and impregnated dressings are supplied in dressing packages with a more conventional appearance, but are designed so that the moisture is retained. All these product types require a secondary dressing.

Some examples of gels are:

- ▶▶ ActiFormCool (Activa Healthcare).
- ▶▶ Granugel® (Convatec).
- ▶▶ Intrasite Conformable (Smith & Nephew).
- ▶▶ Intrasite Gel (Smith & Nephew).
- ▶▶ Nu-Gel® Hydrogel (Systagenix).
- ▶▶ Purilon® gel (Coloplast).

Mode of action

Hydrogels provide and maintain a moist wound environment. Most hydrogels used in clinical practice either absorb exudate or donate moisture to dry tissue (Thomas, 2010).

Hydrogels have the ability to donate water molecules to dehydrated tissue while allowing oxygen to the wound surface, and the removal of water vapour (Jones and Milton, 2000). Individual hydrogels may appear similar, but their fluid handling properties differ (Thomas and Hay, 1995). The gels comprise different levels of water and contain different dressing materials, such as hydrocolloids and alginates, so may perform differently.

While hydrating and aiding autolysis, the hydrogel can make the wound appear larger as it breaks down devitalised tissue, giving the appearance of enlarging the wound. However, this is part of wound healing. This can be worrisome for both patient and nurse, so it is important to understand the mode of action before application and for this to be carefully communicated to the patient or their carer.

Clinical indications

Hydrogels are generally chosen for their ability to rehydrate a

dry, necrotic, or sloughy wound (*Figures 2a–2b*) to encourage autolytic debridement. They can also be used on wounds in which a loss of moisture due to dressing materials has reduced wound bed cellular activity. The wound healing process requires a moist environment.

Depending on the composition of the gel and the level of hydration of the wound, the gel enhances autolytic debridement (Thomas and Leigh, 1998; Pudner, 2001). They can be used throughout the wound healing process, as long as there are no adverse effects to the wound or the surrounding skin.

Hydrogels have also been used as carriers for analgesics, especially in the treatment of wounds in palliative care. This use of hydrogels should be prescribed by a physician, and applied at appropriate time intervals.

Wound types

Hydrogels are suitable for both cavity and shallow wounds. When considering using gels in a cavity wound, the wound must be probed to establish its depth and size. When probing, the wound bed must be identified in all directions. Where fistulas are present, or where it is not possible to feel the wound bed, further investigations, such as a sinogram, are needed to determine depth.

Hydrogels can be used on:

- ▶▶ Burns.
- ▶▶ Diabetic foot wounds (see contraindications).
- ▶▶ Leg ulcers.
- ▶▶ Pressure ulcers.
- ▶▶ Radiotherapy burns.
- ▶▶ Skin grafts.

Hydrogels can also be used in painful wounds as they have a cooling, soothing effect, and also reduce pain (Trudigan, 2000).

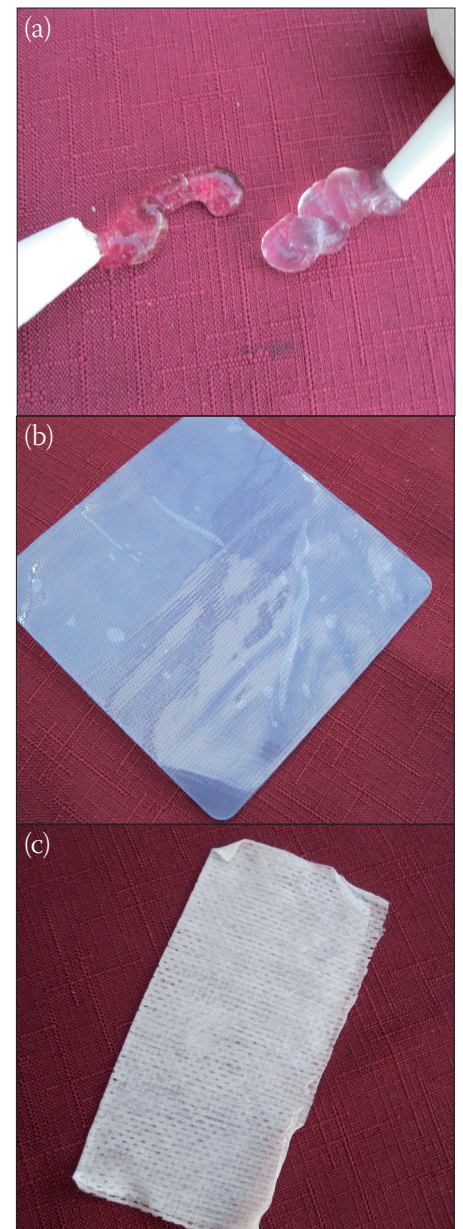


Figure 1. Hydrogels are available in a number of formulations: (a) semi-transparent amorphous gel; (b) sheets; (c) impregnated dressings.

Considerations and contraindications

Before using a hydrogel, the clinician should:

- ▶▶ Consider the risks of using hydrogels to debride dry, black necrotic heels. The European Pressure Ulcer Advisory Panel's (2009) guidelines suggest that heels be kept dry and the limb assessed to ensure that an adequate arterial blood supply is present.

- ▶ Consider that hydrogels contain a high percentage of water; if they are left on the skin for too long maceration can occur. They are not suitable for heavily exuding wounds because their absorbency is limited. Increased moisture can increase the risk of skin breakdown in an already macerated wound.
- ▶ Be aware that it is inadvisable to use hydrogels on infected wounds; the increased moisture may increase the risk of bacterial growth and infection (Jones and Milton, 2000).
- ▶ Assess the vascular supply to diabetic foot ulcers. Hydrogels should not be used on diabetic feet where there is arterial disease because the increased moisture may increase the risk of infection and, with a compromised arterial supply, antibiotics may not be effective.
- ▶ Not use hydrogels in excess as this may cause leakage from the secondary dressing and maceration of the periwound skin.
- ▶ Be aware that alginates and hydrofiber dressings should not be used as secondary dressings with hydrogels as they will absorb the product, potentially reducing its effectiveness.

Application

Before application of the selected hydrogel, the surrounding skin should be coated with a skin protector, such as Cavilon™ (3M™), to prevent periwound maceration. Hydrogel viscous gel can be squeezed onto the wound bed. The gel requires a secondary dressing; a film dressing will reduce the escape of water vapour, preventing the dressing from drying out and maintaining a moist environment (Thomas et al, 1997).

Foam dressings can be applied over both the gel and gel sheets, however, as the gel warms and breaks down,

the foam can absorb it. The gel sheets and impregnated dressings are easier to keep in place on the wound as they keep their integrity for longer, stay in place, and do not slide if applied to a weight-bearing surface, such as the heel.

Gels are provided in single-use packages or pods. However, clinicians in the community are known to reseal pods to use later to avoid waste. The hydrogel sheets can be cut to size and, again, clinicians must be aware of this to ensure patient safety at all times.

The specific area of the body that the hydrogel is going to be used on must be considered. For example, a mobile person with a leg ulcer would benefit more from a gel sheet or impregnated dressing as it will stay in place for longer than the liquid gel.

Conclusion

Wound dressing choice remains a challenge for clinicians, especially due to the many products available and differences in their properties and actions. Hydrogels can be effective in wound care, but success is dependant on the clinician making the correct choice and using it appropriately. It is up to the clinician to develop the knowledge about dressing actions and contraindications before use.

Hydrogels are best used for wound hydration and the removal of

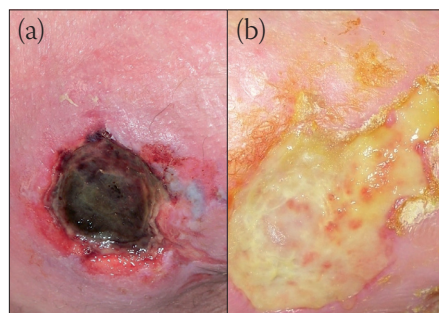


Figure 2. Hydrogels are commonly used on (a) dry, necrotic, or (b) sloughy wounds.

slough in devitalised wounds. Once these goals have been achieved, the wound should be reassessed. Clinicians need to keep themselves updated on the actions of dressings, understanding the benefits, and the potential harms, to achieve best outcomes for patients. **WE**

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