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Hydration, Its Role In Wound Healing

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The skin itself. Fluid retention in skin also depends upon the composition and its chemical removal of water can lead to tissue oedema. The uncontrolled clinical problems. For example, uncontrolled influx or deficient lymphatic system drainage) from the skin is an ongoing supply (via blood circulation) and removal of fluid (via corneum, are important for maintenance of skin hydration. The outermost layers of the skin, the epidermal stratum corneum, are important for maintenance of skin hydration (Figure 1). Both the physical structure and its chemical balance and maintain an optimised level of wound hydration. More recently, some dressings have been developed to help balance and maintain an optimised level of wound hydration (Figure 2). Clinical experience in chronic wound care has led to the development of a number of types of modern wound dressings, all designed to manage various levels of exudate. The initiation of the blood coagulation system quickly "plugs" the open wound to limit fluid loss and to provide tissues from bacterial contamination. Once plugged, wound healing can commence.

**3. WOUND HEALING AND HYDRATION**

Optimal wound healing is very dependent upon the level of tissue hydration and it has been suggested to be the single most important external factor. Skin wound results in an imbalance of the skin’s hydration status and exposure of tissues to air leads to tissue drying. The disruption of blood vessels and the increased outflow of fluid in an attempt to maintain moisture balance leads to exudate formation. The initiation of the blood coagulation system quickly "plugs" the open wound to limit fluid loss and to provide tissues from bacterial contamination. Once plugged, wound healing can commence.

**4. MOIST WOUND HEALING**

Skin wounds exposed to air dry out. This drying of the wound and the initiation of the blood coagulation system leads to the formation of a wound scab/scar. Landmark studies from Winter's early work has provided evidence of the benefits of a moist wound healing environment (see Table). The adoption of the concept of moist wound healing in wound care has led to the development of a number of types of modern wound dressings, all designed to manage various levels of exudate. More recently, some dressings have been developed to help balance and maintain an optimised level of wound hydration (Figure 2). Clinical experience in chronic wound management, however, has suggested that excessive levels of fluid in and around the wound are detrimental to positive clinical outcomes, resulting in tissue maceration, skin reddening and tissue damage.

**5. WET WOUND HEALING**

Despite the assumption that excessive hydration of wounds should be avoided, several studies have suggested that wet wound healing, i.e., the presence of free fluid at the wound site, may be beneficial for wound healing. The immersion of wounds with saline or cell culture solutions to create "wet wounds" results in enhanced wound healing, reduced tissue necrosis and scarring compared with dry wounds. Wet wounds show little evidence of tissue maceration.

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**6. WOUND HYDRATION IS GOOD?**

Optimising the hydration/moisture balance of the wound optimises healing. Both moist and wet wound healing offers significant healing benefits compared with dry wound healing. The clinical experience of excessive wound healing being damaging to tissue and the studies suggesting that wet wounds heal with similar benefits previously ascribed to moist healing seem, at first glance, to be contradictory. However, this information, together with the knowledge that chronic wound exudates are fundamentally different from acute wounds, offers an explanation for the apparent contradiction. Chronic wound exudates contain high levels of protein-degrading enzymes and other tissue-damaging components that are able to damage tissues. Acute wounds, however, contain low and controllable levels of these components that are little able to act on tissues. Chronic wound exudates damage tissues because of these components and not as result of exposure to the water itself.

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**7. CONCLUSION: WOUND DRESSINGS AND HYDRATION**

Wound hydration levels are important for wound healing. Optimising moisture balance is a key property of modern wound dressings. Recently, wound dressings better able to manage both the fluid levels and the damaging components contained within chronic exudates are better placed to manage these damaging fluids effectively. dressings are now available that manage both of these sides to chronic wound exudate but are now able to donate “fresh” solutions (e.g., Ringer’s solution) from the dressings, further optimising hydration levels at the wound site and enhancing the healing benefits of a hydrated wound (Figure 3).