Current Concepts in Wound Management and Wound Healing Products

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KEYWORDS

• Wound management • Wound products • Moist wound healing • Bandaging
• Autolytic debridement

KEY POINTS

- Autolytic debridement is a type of selective debridement in which the body's own immune system removes unhealthy tissue and contaminants.
- The contact layer of the bandage can be used to maintain a moist wound environment, which can promote autolytic debridement and wound healing.
- Selection of the most appropriate contact layer is based on the stage of wound healing and the amount of exudate being produced.

INTRODUCTION

Open wounds must often be managed for days to weeks until they can be closed or they heal by second intention. Most wounds will heal without complications. Basic wound care incorporates the principles of aseptic technique and gentle tissue handling. In addition, many wound care products are available that will potentially debride the wound without damaging healthy tissue, reduce infection, and improve the rate of wound healing. This article is an overview of some of the current wound dressings, topical products, and modalities used in the management of open wounds.

INITIAL MANAGEMENT

Care of traumatic wounds may begin immediately after wounding by covering the wound with a clean, dry bandage to prevent further contamination and reduce hemorrhage (**Box 1**). A bandage also stabilizes the tissues to reduce further trauma and improve comfort. Potentially life-threatening conditions should be addressed before performing detailed wound management. Thorough wound assessment may require

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Box 1
Initial wound management

- Cover wound with clean bandage
- Address potentially life-threatening conditions (eg, shock)
- Sedate or anesthetize when patient is stable
- Cover wound surface with sterile, water-soluble gel
- Surgically clip hair with wide margin around wound for bandage to adhere well
- Irrigate the wound with balanced electrolyte solution, avoiding high pressure
- Consider surgical debridement, but avoid if there is any question
- Bandage with a semiocclusive dressing

sedation or general anesthesia, which may need to be delayed until patients have been stabilized. Definitive wound management should begin as soon as patients are stable. The skin adjacent to an open wound should be prepared as for aseptic surgery. However, the surgical scrub detergents are cytotoxic and should not be allowed to contact the wound surface. Whenever the wound is uncovered, the principles of strict aseptic technique should be followed. At a minimum, involved personnel should wear surgical masks and sterile gloves to avoid further contaminating the wound, particularly in the early stages of healing.

DEBRIDEMENT

The focus of initial wound care is to reduce the presence of foreign material, bacterial load, and damaged or necrotic tissue. The presence of these substances can provide a focus for infection, prolong the inflammatory phase of healing, and impede wound contraction and epithelialization. If a wound is minimally contaminated and has healthy tissue, it may be closed after cleaning. If the wound has gross contamination, foreign material, severely damaged tissue, or loss of soft tissues, management as an open wound may be required. The wound may be allowed to heal by second intention or may be closed surgically (as primary closure or by use of grafts or flaps) once the wound bed is composed of healthy, uninfected tissue.

Debridement may be selective or nonselective. Selective debridement generally involves the use of endogenous or exogenous enzymes to remove only debris or damaged tissue while leaving healthy tissue intact. In contrast, during nonselective debridement, some healthy tissue is inadvertently removed along with the necrotic tissue and debris. Nonselective debridement involves physical removal of tissue and debris and is also referred to as mechanical debridement (**Table 1**).

NONSELECTIVE DEBRIDEMENT

Wound Irrigation

Mechanical debridement may be used to clean the wound bed, with the most common method being wound irrigation. The purpose of wound irrigation is to mechanically flush away surface bacteria, foreign material, and necrotic debris. Although it is a nonselective type of debridement, it will not damage healthy tissues if appropriate irrigation solutions and pressures are used. There is no strong evidence that cleansing wounds increases healing or reduces infection, but it is almost universally recommended.[1,2]