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Role of Surgical Debridement in Wound Management

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ABSTRACT

A wound is a disturbance of the skin's and soft tissue architecture's normal structure and function. Prior to further wound treatment, wounds with devitalized tissue, contamination, or leftover suture material benefit from debridement. Wound base preparation allows for the orderly healing and regeneration of injured tissue and may improve the performance of specialist wound care products and sophisticated biologic tissue replacements. There are now many approaches for treating individuals with Dupuytren's contracture; each case must be carefully selected to provide the most benefit, limit morbidity, and avoid recurrences.

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INTRODUCTION

A wound is a disturbance of the regular architecture of the skin and soft tissues, which affects their structure and function. While recovery from an acute wound is anticipated to go through the predicted stages of wound healing, a chronic wound is generally described as one that is physiologically compromised. [1]

The wound base should be properly vascularized, free of devitalized tissue, infection-free, and moist to promote good healing through the predicted stages. If wound dressings reduce dead space, regulate exudate, limit bacterial overgrowth, guarantee adequate fluid balance, exhibit cost-efficiency, and are manageable for the patient and/or nursing staff, they may aid in this process. Wounds that are healing gradually as shown by granulation tissue and epithelialization might be covered or closed. Although bacteria are present in every wound, not every wound is infected.[2]

Wound debridement will be reviewed.

WOUND DEBRIDEMENT

Prior to continuing with wound treatment, debridement is beneficial for wounds with diseased tissue, contamination, or leftover suture material. The performance of sophisticated biologic tissue replacements and specialized wound care products may be improved by wound base preparation, which makes it easier to restore and regenerate injured tissue in an orderly fashion. [3]

Surgical wounds that have dehisced may have an infected exudate, intestinal contamination, necrotic muscle, or fascia, whereas acute traumatic wounds may have uneven devitalized borders or foreign material inside the wound. By promoting the creation of aberrant metalloproteases and sapping the area's biologic resources, these substances prevent the body from mending.[4]

The development of biofilm, accumulation of devitalized tissue, diminished angiogenesis, hyperkeratotic tissue, and deposition of exudate are all characteristics of chronic wounds that inhibit an effective cellular response to wound-healing stimuli (ie, bacterial overgrowth on the surface of the wound). To reestablish the ideal environment for wound healing, the majority of wounds frequently need scheduled serial debridement. Enzymatic or biologic (larval) debridement may be beneficial for the small percentage of patients who may not tolerate repeated debridement in order to enhance "antibiotic-free days" while simplifying the course of treatment. The period between successive debridements may also benefit from these procedures. [2]

During debridement, bleeding from the wound's surface is frequent. The likelihood that a wound may bleed depends on the kind of damage and where in the healing process it is. If bleeding occurs after a dressing is removed, it should be halted before beginning debridement because bleeding makes it difficult to determine what tissue has to be removed. At the margin of the incision, bleeding might happen from the healing surfaces or from the deep layers of the skin. Applying little pressure to healed surfaces can stop diffuse bleeding. Debridement can proceed when the bleeding stops. With the use of electrocautery or a silver nitrate stick, bleeding from a subdermal vascular in the skin can be stopped, and the debridement process can proceed. [5]

Routine wound treatment practices should include irrigation with fluid to remove loose debris and reduce bacterial burden.

High-pressure irrigation, such as pulsed lavage, is normally carried out in the operating room using a commercial instrument. Low-pressure irrigation, such as that carried out at 15 pounds per square inch (psi), can be done anywhere using a syringe or bulb. [6]

The majority of wounds can generally be cleaned up with low-pressure irrigation. Pulsed irrigation has been shown to reduce the bacterial burden in chronic wounds in the lower extremities. Even at greater pressure levels, bacteria do not seem to travel with the irrigation fluid into nearby tissues in animal investigations. [7]

Sharp excisional debridement removes devitalized tissue and accumulated debris using a scalpel or other sharp tools (such as scissors or a curette) (biofilm). Debridement of chronic wounds using sharp instruments reduces bacterial burden and promotes wound contraction and epithelialization. When there is any sign of infection, surgical debridement is the most suitable option for eliminating significant amounts of necrotic tissue (cellulitis, sepsis). In order to remove diseased tissue, deal with compromised wound margins, or get deep tissue for culture and pathology, surgical debridement is also indicated in the therapy of chronic nonhealing wounds. When necessary, serial surgical debridement in a clinical environment seems to be linked to a higher chance of healing.[8]

To prevent the emergence of bacterial resistance, antibiotic treatment in patients with current infection should be targeted and based on wound culture and sensitivity. Successful surgical debridement in individuals with persistent critical limb ischemia requires concomitant revascularization. [9]

Applying exogenous enzymatic agents to the wound is enzymatic debridement. Although there are several commercially accessible products, clinical study findings are conflicting and their precise effects are yet unknown. Most topical treatments, including debriding enzymes, do not increase ulcer healing rates. Instead of acting strictly as a debridement agent, collagenase may encourage endothelial cell and keratinocyte migration, encouraging angiogenesis and epithelialization as a result. It continues to be a viable alternative for individuals who need debridement but are not candidates for surgery.[10]

The larvae of the Australian sheep blow fly (Lucilia [Phaenicia] cuprina) or green bottle fly are another technique for wound debridement (Lucilia [Phaenicia] sericata, Medical Maggots). Maggot treatment can be used to treat chronic wounds when surgical debridement is unavailable or impractical, or as a stopgap measure in between debridement operations. In certain cases, maggot therapy may also shorten the course of antibiotic treatment.[11]

Pressure ulcers, chronic venous ulcers, diabetic ulcers, and other acute and chronic lesions have all been treated by maggot therapy. The larvae release proteolytic enzymes that liquefy necrotic tissue, leaving healthy tissue unharmed. Necrotic tissue is then consumed. Maggot treatment may also provide other advantages such as antibacterial activity and the promotion of wound healing, according to basic and clinical studies. However, randomized research have not consistently shown faster wound healing times when compared to conventional wound care (eg, debridement, hydrogel, moist dressings). In terms of price, maggot treatment seems to be at least comparable to hydrogel.[11]

A perimeter dressing and a cover dressing made of mesh (chiffon) are two examples of dressing alterations that help guide larvae inside the wound and stop their movement. Typically, larvae are replaced every 48 to 72 hours.[12]

CONCLUSION

The role of surgical debridement is well established, it offers an acceleration in wound healing, as well as a reduction in the possible complications that these entail, however, aspects such as hemostasis must be taken into account to avoid potentially serious complications.

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