Pitfalls in Wound Management

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KEYWORDS

• Wound care • Burn care • Irrigation • Dressings • Antibiotic prophylaxis

KEY POINTS

- Patient factors of compromised healing must be considered.
- Wound irrigation is a significant factor in the prevention of infection.
- Antibiotics are not commonly indicated in the treatment of acute lacerations.
- Understanding burn categorization and referral requirements is important.

INTRODUCTION

The goals of wound repair are hemostasis, restoration of function, and optimal cosmesis. **Boxes 1** and **2** list the primary factors that can affect acute wound healing. Although providers can only control a small portion of these factors, it is important to understand the role that each plays in the patient's chances of having a desirable outcome.

METHODS TO PREVENT WOUND INFECTION

Risk of infection in wounds increases with prolonged time to closure.[1] However, wounds may be closed with good success later than the commonly held belief of 8 to 12 hours. Wounds closed up to 19 hours after injury have a higher rate of healing than those closed later than the 19-hour mark.[2] Wounds to areas of high vascularity, such as the face and scalp, may be successfully repaired later than those with less vascularity, like the anterior lower leg. Although cosmetic restoration is always a goal of wound closure, areas of high cosmetic importance, such as the face, should be considered for wound repair even if the timing of closure is not ideal.

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Box 1
Risk factors for wound infection or poor healing

- Delayed care
- Heavy contamination
- Retained foreign body
- Diabetes mellitus (DM)
- Obesity
- Peripheral artery disease (PAD)
- Chronic steroid use
- Other immune-suppressed states

All traumatic wounds are considered contaminated. Heavily contaminated wounds are at greater risk of infection than those that are minimally contaminated. Adequate irrigation is the best method of cleaning a contaminated wound and is discussed in further detail later in this article.

Retained foreign bodies not only increase the risk of infection but are a major area of litigation regarding wound care outcomes.[3] Most foreign bodies in wounds presenting to the emergency department are wood, metal, or glass. Most retained foreign bodies can be found with exploration on physical examination, and nearly 20% are identified by radiographs alone.[4] Therefore, radiographs should be considered for any patients with a mechanism of injury or other history suspicious for foreign bodies within the wound (**Fig. 1**). To ensure adequate exploration and visualization, wounds should be anesthetized and good hemostasis achieved before examination, which should be done in good lighting. If the wound is near a joint, exploration should be performed while ranging the extremity to allow identification of tendon or joint capsule involvement.

Several patient-related factors can have a negative impact on wound healing and place patients at higher risk for infection. Patients with DM may have neuropathy, immune system impairment, and decreased peripheral blood flow. Patients with any PAD or venous stasis also have reduced healing capacity, including obese patients, who also have impaired healing caused by decreased vascularity of adipose tissue. Chronic steroid use or other immune-compromised states may lead to higher rates of infection.[5] Patients with these issues should be followed closely and should have a low threshold for specialist referral.

Common methods of promoting rapid healing and preventing wound infection include irrigation, debridement of devitalized tissue, prophylactic antibiotic administration, use of antimicrobial sutures, proper closure with good wound margin apposition, avoidance of wound dead space, and appropriate suture tension.

Box 2
Techniques to improve wound healing and decrease risk of infection

- Irrigation
- Debridement
- Antibiotic prophylaxis
- Wound margin apposition and tension