

VANDERBILT  UNIVERSITY
MEDICAL CENTER

Guideline: Early Excision and Grafting for Full Thickness
Burns >20% TBSA

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Content Experts

Robel Beyene, MD
Rebecca McElyea, ACNP

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I. Purpose

Multiple studies have shown the benefit of Early Excision, variably defined as post-injury day 2 through 7, in patients with severe thermal injuries ($\geq 20\%$ Total Body Surface Area, TBSA). Outcomes affected by early excision and grafting include but are not limited to improved scarring and mobility, decreased rates of infection, shorter hospital length of stay, and improved survival rates. Burned skin results in massive systemic inflammatory response due the release of cytokines and growth factors. This inflammatory response is a large contributor to the fluid shifts that are seen in these patients and their fluid resuscitation requirements. This inflammatory response will continue until the burned skin is excised.

Additionally, devitalized skin is a rich medium for microbial overgrowth leading to infection. All burn wounds are colonized by bacteria and invasive wound sepsis has been greatly ameliorated by early excision and grafting, which removes the devitalized tissue before this colonization becomes infection. Early excision will now be tracked as a quality metric as time in days.

Early excision and grafting have been shown in multiple studies to modulate the systemic inflammatory response, attenuate muscle catabolism, and improve myocardial dysfunction caused by thermal injury. This protocol seeks to standardize our time frames for excision and grafting in our severely burned patients.

Small, level III data has shown fewer in-hospital complications with early excision, including reduced vasoactive use, blood loss, transfusion requirements, length of stay, wound contamination and infection, delayed wound healing, and unplanned readmission. The data on mortality are less reliable and outcomes are not specifically better in the early excision groups. Some data suggests improvements in DVT, PE, VAP, and CAUTI rates with ultra-early excision (within 48 Hours). Similarly, some data support completion of excision within 1 week to decrease risk of bacteremia.

It is important to remember that no high quality, randomized control trial exists to guide early excision and grafting and we rely on good faith interpretation of generally low quality survey, retrospective observational, and expert opinion data.

II. Population

All patients admitted to VUH and VCH with $\geq 20\%$ TBSA burns, including a deep partial thickness or full thickness component.

III. Intervention/Treatment

- a. Every patient should undergo the first burn excision within the 24-96 hours after their burn, assuming there are not contraindications (see exceptions below)
- b. Ideally, patients will reach the diuretic phase of acute burn resuscitation before initial excision, which generally occurs within the first 24 hours of resuscitation
- c. Adult patients must be fully excised ($>95\%$) within 1 week (7 days) of their burn
- d. Pediatric patients should be fully excised ($>95\%$) within 24-96 hours, but

- must be fully excised within 1 week (7 days) of their burn
- e. Patients will return to OR for excision and grafting (autograft vs. allograft vs. biologic matrix) every 24-72 hours until all full thickness burns are excised and grafted with autograft
 - i. Patient physiologic derangements may either limit or accelerate return to the operating room. In such cases, a discussion between the burn surgeon and intensivist will take place and a plan will be made and documented in the medical record.
 - f. In general, each excision should be limited to no more than 20% - 30% TBSA per trip to the OR, to limit blood loss per case
 - g. When clinically indicated, enzymatic debridement should be considered. However, this does not obviate the above timeline as enzymatic debridement does not completely replace the need for all surgical excision
 - i. Please see the standalone enzymatic debridement guideline
 - h. Great care should be taken in choosing what is placed over freshly excised burn wounds at their index operation.
 - i. In general, autograft should be regarded as precious and good stewardship may dictate delaying its use early on.
 - ii. Allograft, dermal substitutes, and negative pressure wound therapy devices should be strongly considered early on, especially when unexcised burn remains on the patient

IV. Exceptions/Contraindications

1. This guideline should not be extrapolated to include management of smaller burns (below 20% TBSA) and may not impart the same degree of metabolic and inflammatory derangement
2. Partial thickness burns may not need early excision in the same timeline, even with a 20% burn. However, in certain populations (elderly, frail, immune compromised, etc.), serious consideration should be given to excising deep partial thickness burns under these guidelines
3. Constricting eschar or compartment syndrome should be treated as a separate entity and should be managed with more urgency that is implied here

V. References

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