## 800 Immediate/Ultra-Early v. Early Burn Excision: A Systematic Review of Surgical Outcomes

Tomer Lagziel, Sophie L. Cemaj, BS, Laura M. Mafla, BS, Alexander K. Karius, BS, Charles S. Hultman, MD, MBA

*Johns Hopkins University School of Medicine / Sackler School of Medicine, New-York Program, Tel-Aviv University, Rockville, Maryland; University of Nebraska Medical Center, Omaha, Nebraska; The Johns Hopkins University School of Medicine, Baltimore, Maryland; The Johns Hopkins University School of Medicine, Baltimore, Maryland; Johns Hopkins University School of Medicine, Baltimore, Maryland*

**Introduction:** This is a systematic review which seeks to establish if immediate/ultra-early excision (immediate: < 24 hours, ultra-early: 24 - 72 hours) and grafting is better or equivalent to early excision and grafting (early: 72 hours - 6 days) in adults with major burns. The concept of early excision and grafting, as opposed to late excision (late: >7 days), was introduced by Cope et al. and later popularized by Janzekovic in the 1970s when she introduced the concept of tangential excision. Delaying excision 24 to 48 hours has previously been thought to allow resuscitation and correction of physiologic derangements to optimize outcomes. However, timing for excision and grafting is subject to debate. The outcomes of interest include mortality, length of stay, complication rates, wound healing time, infection rates, physiologic demand, blood loss, and resting energy expenditure.
**Methods:** In this systematic review, we searched PubMed, Embase, CINAHL, Cochrane, Web of Science, and Scopus for studies that compared outcomes and complications between burn patients with ultra-early and early excisions. From this search, we screened 4235 articles. Through our selection criteria, five articles focusing on timing of burn excision were selected for systematic review.
**Results:** Five studies observing a total of 382 burn patients, published between 1995 and 2016, were included. All five studies are cohort studies, three were prospective studies while two were retrospective chart reviews. Two studies showed decreased length of stay with immediate/ultra-early excision (Still, Keshavarzi) and decreased time to healing with immediate/ultra-early excision (Guo, Lu). One study demonstrated decreased infection and mortality in ultra-early excision (Keshavarzi). One study demonstrated decreased resting energy expenditure in the ultra-early excision group (Gao). One study showed a decrease in blood transfusion in the immediate/ultra-early excision group (Guo). Both the Guo and Gao studies suggest that concerns over excision during the burn shock period may be unfounded provided that the patient is adequately resuscitated.
**Conclusions:** Studies investigating the immediate/ultra-early excision of burns tend to show improved outcomes for adults with major burns. It is difficult to attain conclusive data due to the lack in overlap of reported outcomes in modern studies. More studies are needed which compare outcomes in adults with major burns between immediate/ultra-early excision and early excision.

## Surgical Care, Acute Non-reconstructive 3

## R-234

## 801 Topical hemostatic agents in burn surgery: a systematic review

Andrea Battistini, Sebastian Q. Vrouwe, MD

*University of Chicago, Chicago, Illinois; University of Chicago, Chicago, Illinois*

**Introduction:** Acute burn surgery (tangential excision and grafting) has long been associated with significant intra-operative bleeding over large surface areas, where in adults approximately 200-250 mL of blood loss would be expected per %TBSA excised and grafted using traditional methods. Several techniques were introduced to limit bleeding, including tourniquets, tumescent infiltration, and topical agents. To date, no study has comprehensively investigated the available data regarding topical hemostatic agents in burn surgery.
**Methods:** A systematic review was performed by two independent reviewers using PubMed, Scopus, and Web of Science databases from first available to September 10, 2021. Articles were included if they were published in English and described or evaluated topical hemostatic agents used in acute burn surgery (excision and/or grafting). Animal studies and review articles were excluded. Data was extracted on the topical agent(s) used, their dosage, mode of delivery, hemostasis outcomes (if measured), and complications (if reported).
**Results:** The search identified 1982 non-duplicate citations, of which 134 underwent full text review, and 49 met inclusion criteria. Papers were grouped whether they compared (n=11, 22%), described (n=21, 43%) or secondarily described (n=17, 35%) topical hemostatic agents. Several authors (n=22, 45%) described topical hemostatics as part of a protocol that included other methods of blood conservation (tourniquet, tumescent infiltration, etc). In total, 31 studies incorporated a vasoconstrictor agent (epinephrine, phenylephrine, vasopressin), and 30 studies incorporated a procoagulant agent (thrombin, fibrin). Four studies incorporated other agents (hydrogen peroxide, tranexamic acid and collagen). The most common vasoconstrictor used was epinephrine, with doses ranging from 1:1,000 to 1:1,000,000. The most common procoagulant used was thrombin, with doses ranging from 10 to 1000 IU/mL. Among the comparative studies, outcomes of blood loss were not reported in a consistent manner, therefore meta-analysis could not be performed. The majority of studies (94%) were level of evidence III to V.
**Conclusions:** A multitude of topical hemostatic agents have been reported in the burn literature, with a wide range of dosages and modes of deliveries, as well as protocolization with other blood conservation techniques to limit blood loss during surgery. Determining the optimal topical hemostatic agent is limited by low quality data and challenges with consistent reporting of intra-operative blood loss and other clinically meaningful outcomes.