504  A Novel Hemostatic Agent Improves Split-Thickness Skin Graft Donor Site Healing

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Introduction: Split-thickness skin grafts (STSG) create secondary wounds at donor sites. The optimal donor site dressing is not established. One novel agent, designed as a hemostatic, is made of etherified sodium carboxymethyl cellulose as a water-soluble, biodegradable nanocellulose matrix. When the product contacts blood, it forms a gel that controls bleeding and may provide an optimal milieu for healing. We present a series of ten patients on whom this product was used as part of the donor site dressings.

Methods: Ten patients were admitted to a single verified burn center for burn management between July and September 2018. All underwent tangential burn excision and STSG for their deep partial- or full-thickness burn wounds. The study agent was placed directly on all donor sites. This was wrapped with a petroleum-based occlusive dressing with 3% bismuth tribromophenate and dry gauze dressing. The entire dressing was left in place for seven days postoperatively, after which it was removed for wound inspection.

Results: Nine of ten dressings were taken down at the expected interval, seven days after the index operation. One dressing was taken down earlier due to a concern for bleeding after initiation of enoxaparin for chemical deep vein thrombosis prophylaxis; no active bleeding was found. The remaining wounds had visibly superior healing after the application of the study dressing, versus standard dressings. On two patients, split-thickness skin grafts were taken from bilateral lower extremities, with study agent only used on one extremity. The extremity with the study agent showed improved wound healing versus the side without the study agent. There was evidence of neo-epithelialization on initial study dressing removal, not seen with standard dressings, as shown in figure one and two.

Conclusions: The study agent is an effective option for wound care to improve healing. Our case series suggests decreased healing time of STSG donor sites without increased complications. In the future, we anticipate broader applications to aid in wound care.

Applicability of Research to Practice: There is no consensus for the optimal STSG donor site dressing. Etherified sodium carboxymethyl cellulose accelerates donor site healing.

Figure 1: (A) Intraoperative application of hemostatic agent; (B) Dressing takedown 7 days post intervention

Figure 2: (A) Intraoperative application of hemostatic agent; (B) Dressing takedown 7 days post intervention
Introduction: Hemorrhage control presents unique challenges in burn surgery. Given the tenet of early excision for source control, the ability to limit hemorrhage is critical as excess blood loss can preclude the timely removal of burns and grafting. Traditional techniques of suture ligation and electrocautery are time-consuming with major blood loss still occurring. Burn excision also produces “non-compressible” hemorrhage not amenable to traditional techniques. Topical hemostatic agents have been developed to mitigate these issues. One novel agent uses an etherified sodium carboxymethyl cellulose to make a water-soluble, bioreabsorbable nanocellulose matrix. We present a series of ten patients where hemorrhage was mitigated with this product.

Methods: Ten patients were enrolled who were admitted to a single verified burn center for burn management between July and September 2018. All patients underwent tangential excision and debridement of their deep partial- or full-thickness burns, with immediate post-debridement application of the study topical hemostatic agent. This was left in place for twenty minutes prior to checking hemostasis and securing the split-thickness skin graft.

Results: By previous protocol, hemostasis would be achieved with an epinephrine-soaked collagen and silica based compression dressing followed by suture ligation and electrocautery to control any remaining hemorrhage. In our series, the study agent was placed over the wound bed immediately after debridement, followed by a dry collagen and silica based dressing wrapped in a compressive fashion and left it place for twenty minutes. It was then taken down and hemostasis achieved. In our series, excised areas were 90% hemostatic with small punctate hemorrhages easily controlled with electrocautery; suture ligation was rarely needed. Conventional methods achieved approximately 30% hemostasis; the remainder required a combination of suture ligation and electrocautery for complete hemostasis.

Conclusions: Topical hemostatic agents are useful adjuncts for hemorrhage control. Our case series presents a treatment option in patients undergoing extensive burn debridement with high intraoperative blood loss. We anticipate broader applications for hemorrhage control, thus limiting blood loss and transfusion requirement.

Applicability of Research to Practice: In this case series, etherified sodium carboxymethyl cellulose provided inexpensive, timely, and adequate hemostasis in an operative field where complete hemostasis is essential for skin grafting. This leads to decreased operative times and decreased overall blood loss. Further studies are needed to elucidate other benefits.