

## Novel Topical Hemostatic Agent Aids in the Healing of Burn Wounds

Thomas Q. Xu, MD<sup>1</sup>; Kristina Z. Kramer, MD<sup>2</sup>; Emily Koeck, MD<sup>2</sup>; Faran Bokhari, MD, FACS<sup>2</sup>; and Stathis Poulakidas, MD, FACS<sup>2</sup>

1. Department of Surgery, Rush University Medical Center, Chicago, IL

2. Department of Trauma and Burn, John H. Stroger Jr. Hospital of Cook County, Chicago, IL

### PRACTICE GAP

Currently, the optimal burn wound dressing has not been established. However, there are agreed upon principles of what constitutes a good dressing. It must be able to maintain a moist environment and promote healing. Morbidity from these wounds comes from pain, frequency of dressing changes, duration dressings are required, and convenience of these dressings. We hope in the future to expedite wound healing to minimize patient morbidity and improve cost effectiveness.

### INTRODUCTION

Excision and debridement is one of the mainstays in burn surgery. Though the technique has stayed relatively unchanged, there still remains a debate about the optimal dressings. Different synthetic and biological dressing have been developed over the years yielding mixed results.<sup>1-5</sup> One such newer dressing, BloodSTOP iX<sup>®</sup>, has shown to aid in hemostasis and wound healing.<sup>6-8</sup> We present a case of a burned extremity with hydrosurgery debridement where BloodSTOP iX<sup>®</sup> was used to maintain hemostasis and achieve improved wound healing.

### CASE DESCRIPTION

A 32-year-old male presented with near-circumferential burns to his left forearm secondary to thermal injury from lit gasoline. On exam he was noted to have a combination of superficial and deep partial-thickness burns.

He was initially managed with the standard protocol of daily collagenase and silver sulfadiazine dressing changes for four days. However, his burns continued to progress to mostly deep partial-thickness burns and on hospital day four was taken back to the operating room where he underwent debridement with a hydrosurgery device.



Figure 1: (A) Post debridement, (B) Placement of BloodSTOP, (C) Placement of Mepitel and VAC, (D) Postoperative day 7 dressing takedown

Standard protocol dictates that the wound would be dressed with a soft silicone dressing and placed into a wound VAC. We present a novel approach to maintain hemostasis and achieve improved wound healing. BloodSTOP iX<sup>®</sup> was placed over the entire wound followed by a layer of non-adherent silicone dressing and then the left forearm was placed into a wound VAC. Upon takedown of the entire dressing on postoperative day five, it was noted that his wounds were completely epithelialized and his wound care was transitioned to lotion (Figure 1).

### DISCUSSION

Wound dressings are critical in the management of burns. Different synthetic and biological dressings have been created over the years; however, there does not exist a consensus on the optimal dressing. BloodSTOP iX<sup>®</sup> is a sodium carboxymethyl cellulose that is etherified to make a water-soluble, bioresorbable nanocellulose matrix. Previous studies have demonstrated the efficacy of its hemostatic properties in murine models.<sup>7</sup> Our case demonstrates this agent's ability to improve wound healing without any complications.

### CONCLUSION

BloodSTOP iX<sup>®</sup> is a new topical hemostatic agent composed of a nanocellulose matrix that may aid in wound healing. Our case represents a treatment option that seemed to improve wound healing. In the future, we hope to see it being used for broader applications to aid wound healing.

### REFERENCES

- Demirtas Y et al. Management of split-thickness skin graft donor site: a prospective clinical trial for comparison of five different dressing materials. *Burns*. 2010; 36: 999-1005.
- Higgins L et al. Split-thickness skin graft donor site management: a randomized controlled trial comparing polyurethane with calcium alginate dressings. *Int Wound J*. 2012; 9: 126-31.
- Kaiser D et al. Alginat dressing and polyurethane film versus paraffin gauze in the treatment of split-thickness skin graft donor sites: a randomized controlled pilot study. *Adv Skin Wound Care*. 2013; 26: 67-73.
- Karlsson M et al. Dressing the split-thickness skin graft donor site: a randomized clinical trial. *Adv Skin Wound Care*. 2014; 27: 20-5.
- Kazanavicius M et al. The use of modern dressings in managing split thickness skin graft donor sites: a single-center randomised controlled trial. *J Wound Care*. 2017; 26: 281-91.
- Ferretti L et al. Efficacy of BloodSTOP iX, Surgicel, and Gelfoam in rat models of active bleeding from partial nephrectomy and aortic needle injury. *Urology*. 2012; 80: 1161.e1-1161.e6.
- Li H et al. Comparison of topical hemostatic agents in a swine model of extremity arterial hemorrhage: BloodSTOP iX Battle Matrix vs. QuickClot combat gauze. *Int J Mol Sci*. 2016; 17: 545-57.
- Arnaud F et al. Comparison of 10 hemostatic dressings in a groin puncture model in swine. *J Vasc Surg*. 2009; 50: 632-9.