

Use of Drawtex in Thermal Injuries

Rachel Karlnoski, PhD^{1,2}; C. Wayne Cruse, MD^{1,2}; Kim S. Brown, ARNP²; Collin J. Sprenger, BS³; David J. Smith, MD^{1,2}

¹Division of Plastic Surgery, University of South Florida, Tampa, FL; ²Tampa General Hospital Regional Burn Center, Tampa, FL; ³Florida Gulf-to-Bay Anesthesiology, Tampa, FL

Address correspondence to
David J. Smith, MD
Division of Plastic Surgery/Department of Surgery
University of South Florida
Tampa General Hospital
Tampa, FL 33601
dsmith3@health.usf.edu

After resuscitation and treatment of inhalation injury, the treatment of a victim's thermal injury centers around therapy and closure of the burn wound. There are four types of burn wounds that require closure: a) the superficial, partial-thickness injury that can heal spontaneously by epithelialization; b) the excised, deep burn injury that requires wound bed preparation before closure with a skin graft; c) the interstitial spaces in a meshed split-thickness skin graft (STSG) that close by epidermal migration; and d) the STSG donor site that also heals by

spontaneous epithelialization (**Figure 1**).¹ Each of these wounds has clinical deterrents to ideal healing such as excessive exudate, bacterial bioburden, and deleterious cytokines that are produced by the thermal insult. Control of these deterrents helps move the healing trajectory from impaired toward ideal.

Recently, a new hydroconductive wound dressing, Drawtex, has been introduced and demonstrated to help control wound exudate, decrease the bacterial bioburden in experimental burn wounds, and decrease deleterious

wound cytokines such as matrix metalloproteinase (MMP) 9.² We raised the question of whether this dressing would be useful in treating thermal injuries. To investigate this question, we designed two randomized clinical trials using Drawtex in thermal injuries.

The first trial is a prospective, internally controlled study to compare the absorbent capability of Drawtex hydroconductive dressing with that of the standard gauze burn dressing on partial-thickness burns. Because the standard treatment of these injuries in our burn center consisted of

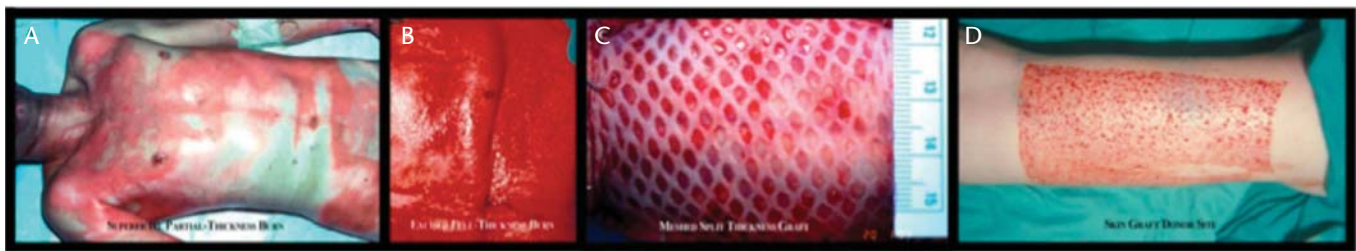


Figure 1. Examples of burn wounds that require closure: a) superficial, partial-thickness injury that can heal spontaneously by epithelialization; b) excised, deep burn injury that requires wound bed preparation before closure with a skin graft; c) interstitial spaces in a meshed, split-thickness skin graft that closes by epidermal migration; and d) split-thickness graft donor site that also heals by spontaneous epithelialization.



Figure 2. Application of standard gauze dressing versus Drawtex on partial-thickness burns (day 1): a) right forearm partial-thickness burn; b) right forearm covered with gauze dressing; c) left forearm partial-thickness burn; d) left forearm covered with Drawtex.

Silvadene Cream and gauze dressings, the two arms of the study are a thin layer of Silvadene covered either with Drawtex or our standard gauze burn dressing. Given that Drawtex can absorb up to 30 times its weight,³ the parameters of measurement in this trial include dressing weight, visual analog scale (pain) scores, healing time, and incidence of infection.

The second trial involves thermal injuries of the extremities requiring excision and grafting. It is an internally controlled trial in which either two separate burns on a single extremity or matched burns on two extremities are chosen. After the two target areas are excised and adequate hemostasis achieved, the two areas are grafted with meshed STSGs. The grafts are spread to the same extent on both wounds. The grafted wounds are dressed as follows:

- Both have the dressing of choice applied directly over the graft.
- One wound has a Drawtex sheet applied, and the other has a standard gauze burn dressing. The wound treated with Drawtex has a Drawtex Wrap applied to anchor the dressing, and the alternate wound has Kling applied. Both sites then have a conforming wrap of choice to complete the dressing.
- Dressings are changed at the discretion of the investigator, but both wounds must be changed at the same time.
- Photographs are obtained at each dressing change. Documentation regarding “take,” mesh closure, and

clinical observations is completed at each dressing change.

An example of a patient who met the criteria for the partial-thickness burn trial was a patient who sustained 22.5% total surface area, flash-flame burns as a result of adding lighter fluid to a bonfire. The patient sustained burns to both upper extremities, the face, and the anterior trunk. The upper extremities were selected for the study (**Figure 2**). The left forearm was dressed with Silvadene and Drawtex, and the right forearm was dressed with Silvadene and our standard burn gauze (**Figure 2B and 2C**). The weight of the drawtex dressings was 87 g at 24 hours (first dressing change) and 163 g at 48 hours (second dressing change). The weight of the gauze dressing was 93 g at 24 hours and 133 g at 48 hours. Both wounds were free of infection, erythema, induration, and pruritis on day 2. VAS pain scores were recorded before during and after the dressing changes on days 1 and 2. For the Drawtex arm, the patient reported scores of 5, 9, and 7 on day 1. For the gauze arm, the patient reported pain scores of 5, 7, and 7 on day 1. On day 2, pain scores were 6, 7, and 6 for the Drawtex arm and 6, 6, and 6 for the gauze arm.

Drawtex appears to control the exudate from the weeping partial-thickness burn wound. This trial is ongoing, and a final report will be provided when enrollment and data collection are complete. Drawtex also should be quite useful as a cover over meshed skin grafts. Its ability to remove exudate, bacteria and deleterious cytokines should aid in ac-

celerating closure of the graft interstices. This trial will commence when the partial-thickness trial is complete.

We have not evaluated Drawtex in the remaining two types of burn wounds. However, the excised deep wound awaiting skin grafting should be an excellent place for a hydroconductive dressing. Removing any bacteria left after the excision and decreasing the inflammatory cytokines attendant with both the original burn and the operative excision procedure make Drawtex a logical choice for a dressing. STSG donor sites can be treated with any number of dressings. For the small donor site, it is difficult to determine significant differences in healing time or quality. However, as the size of the donor site increases in burns greater than 40% total burn surface area, acceleration in healing or, at least, not a delay in healing becomes important. Excessive exudate and maceration can lead to superficial infection and a delay in epithelialization. A hydroconductive dressing such as Drawtex should be beneficial in such a scenario. ■

References

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