



# Post-Operative Wound Care Using Silver-Based Dressing with Autologous Skin Cell Suspension

Anna Stilinovic, PA-C<sup>1</sup>, David G'sell, Jr., PA-C<sup>1</sup>, Desiree Compton, RN, CCRN<sup>1</sup>, Doug Miller, RN, BSN<sup>1</sup>, Amy Lavis, PT, CMLSO<sup>1</sup>, Jeffrey Carter, MD, FACS<sup>1, 2</sup>

1. University Medical Center, Burn Center, New Orleans, Louisiana  
2. Louisiana State University Health Sciences Center, New Orleans, Louisiana

## INTRODUCTION

Postoperative dressing and wound care are essential to optimize graft survival through imbibition, inosculation, and neovascularization. Autologous skin cell suspension (ASCS) using extended-wear dressings (EWD) as a primary or secondary has not been previously described in the literature. The goal of our study was to assess the feasibility of a new dressing protocol for ASCS, aimed at reducing dressing changes without increasing reoperation rates for failure to close or mortality.

Our algorithm for post-operative ASCS dressings uses EWD which combines two layers of fabric creating a moisture transfer mechanism that pulls away and traps excess exudate and fluid without drying the post-operative site. This dressing can be left on for up to 7 days as part of the primary dressing over Telfa™ clear. Secondary dressings include Kerlix™ or 10-ply with burn net or ACE™ wrap which can be changed every 48 hours or, for smaller burns, 7 days.

## METHODS

The study was an IRB-approved, single-center, retrospective review of admissions between April 2018 to August 2019. Patients included in the study were ≥14 years of age with ≥3% TBSA partial-thickness and full-thickness burns undergoing excision and ASCS application. EWD included a controlled-release silver antimicrobial dressing with active fluid management. Data include age, gender, %TBSA, mortality, primary and secondary dressing, dressings changes prior to primary dressing change (DC), and failure to close (FTC) requiring reoperation. Fischer's exact test was used to compare the two populations.



**Image 1. Post-excision of deep-partial thickness burn wound treated with ASCS and Telfa® clear**

## SIGNIFICANCE STATEMENT

- Post-operative wound care optimization is essential to reduce pain, cost, and complications.
- Autologous skin cell suspension offers comparable definitive wound closure to split-thickness autograft but has not been studied with extended wear dressings.
- Our study is the first to demonstrate an extended wear dressing algorithm for autologous skin cell suspension which allows for once a week primary dressing change and outpatient care.

**Image 2. Telfa® clear, EWD**



**Image 3. Secondary Dressing Kerlix™**



**Image 4. Secondary Dressing ACE™ Wrap**



**Image 5. Secondary Removal POD#7.**



**Image 6. Primary Removal POD#7.**



## RESULTS

A total of 53 ASCS cases were performed with 33 patients receiving standard of care (SoC) dressings and 20 patients receiving EWD post-operatively. The median age was 48 (range 14-85) with 26% of the patients being female. The median TBSA was 17% (range 3-72%). One SoC patient required reoperation due to FTC (p-value = 0.5210). No EWD patients required reoperation. One patient expired (SoC) in the study secondary to decompensated cirrhosis. EWD required one median dressing change as opposed to the SoC group which required 3 (p-value=0.0164).

## APPLICATION PROCEDURE

ASCS with or without split-thickness autograft is applied to a hemostatic, properly excised wound bed. Telfa™ clear serves as the primary dressing which is secured with skin adhesive, interrupted sutures, or staples. An extended-wear dressing is applied over the Telfa™ clear with minimal tension and draped to reduce bunching, shearing, or desiccation while optimizing apposition. Overlap is minimized which could lead to compromised wicking and excess moisture. Layered dry gauze and compression dressing serve as the secondary dressing to facilitate wicking. Secondary dressings are changed every 48 hours if damp or soiled. Postoperative day 7 the secondary and primary dressings are removed. If the dressings are adherent they are irrigated followed by gentle tension and if still adherent, left in place and reevaluated the following day. A daily dressing consisting of fine mesh 3% bismuth tribromophenolate in a petrolatum followed by dry gauze, and elastically tubular bandage is applied after daily baths with emollient if needed.

## CONCLUSION

Extended-wear dressings with ASCS reduced the total number of dressing changes and did not result in increased mortality or reoperation in our feasibility trial with partial-thickness and full-thickness burn injuries. Optimizing postoperative care with EWD in patients who received ASCS may serve to reduce dressing change costs, labor, and patient discomfort.

## LESSONS LEARNED

- Optimization requires minimizing overlap of EWD and Telfa™ clear
- A wicking gradient requires maintaining dry secondary gauze dressings
- Extended-wear dressings with ASCS results in reduced dressing changes without increased graft loss or reoperation



**Images 7 & 8. Outpatient Exam POD #14**



## REFERENCES

- Holmes, JH, Molnar, JA, Carter, JE, et al. (2018). A comparative study of the ReCell® device and autologous split-thickness meshed skin graft in the treatment of acute burn injuries.

## DISCLOSURES

- Carter- stockholder PermeaDerm Inc., consultant AVITA Medical and in lieu of any compensation all proceeds have been donated to burn charities to support education, outreach, and survivor programs
- No disclosures by additional authors

## CONTACT

UMCNO Burn Center (504) 702-2876  
[burncenter@lcmchealth.org](mailto:burncenter@lcmchealth.org)