

# Does Fractional Blistergrafting Improve 2nd Degree Burn Wound Healing and Scar Outcome without a Significant Donor Site?

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# Does Fractional Blistergrafting Improve 2<sup>nd</sup> Degree Burn Wound Healing and Scar Outcome without a Significant Donor Site?

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## Introduction

- Split-thickness skin grafting & acellular treatment have complications including overgrafting, hypertrophic scarring and pigmentation changes in burn patients.
- Cellutome™ blister grafts may aid in re-pigmentation, minimized donor site, decreased hypertrophic scarring, and minimized pain.

## Purpose

Determine if:

1. Healing occurs faster than acellular treatment (within 21 days of treatment) in 2<sup>nd</sup> degree burn wounds
2. Pigment changes are decreased using Cellutome™ blister grafts.
3. Donor site is not noticeable with this technique.

## Methods

- Prospective controlled study comparing acellular to cellular technique in 2<sup>nd</sup> degree burn wound healing.
- IRB approval and informed consent obtained.
- Cellutome™ harvester creates small blisters which are cut and adhered to transfer medium which is applied to the treatment site.
- Suprathel® temporary skin substitute used as dressing until healing.
- Donor site covered with silicone tape.
- Follow-up data was obtained up to 1 year +/- 6months post-treatment
- Days until healing, pigmentation, sensation, Vancouver Scar Scale and POSAS recorded.

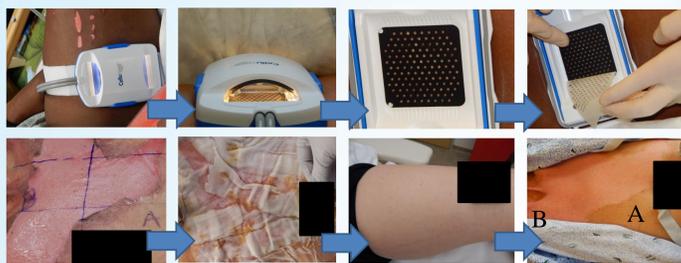


Figure 1

The A site received Cellutome™ blister grafts and the B site received acellular treatment. Notice the small dots of pigmentation on the healed A site. These will continue to regenerate pigmented skin cells as the skin heals to give the A site an appearance closer to that of the surrounding healthy skin.

## Results

All of the patients in this study showed a 100% treatment success rate with no infection, failed grafts, or STSG needed.

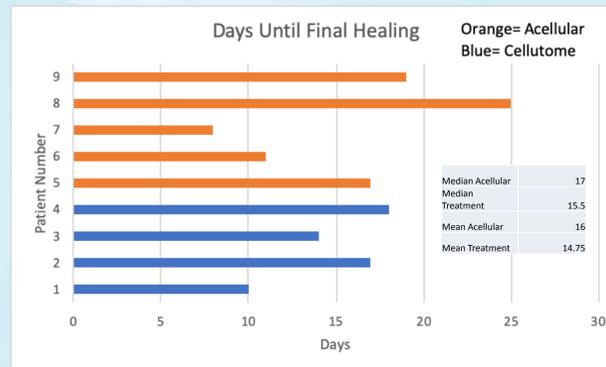


Figure 2

Overall, the Cellutome™ blister graft treatment was faster than acellular treatment.

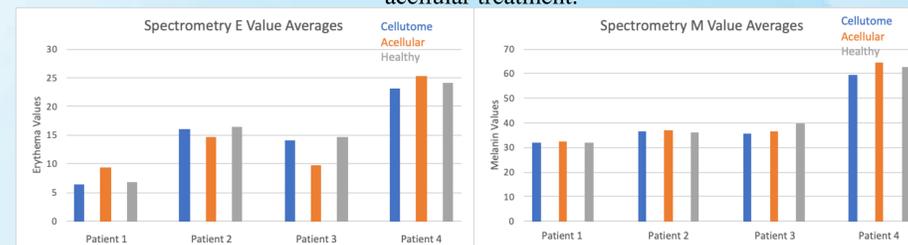


Figure 3

Figure 4

Figure 3 and 4 show the erythema and melanin levels in the skin sites after Cellutome™ blister grafting. The treatment site shows less variation from the healthy site than the acellular site.

	Sum Vancouver Acellular	Sum Vancouver Cellutome
Patient 1	0	0
Patient 3	0	0
Patient 4	2	2
Patient 5	2	2
P-Value	1	1

Figure 5

	Sum POSAS Acellular	Sum POSAS Cellutome
Patient 1	7	7
Patient 3	6	6
Patient 4	11	11
Patient 5	16	15
P-Value	0.03100014	

Figure 7



Figure 9

Spectrometry P Values	Treatment to Healthy P value of E value	Acellular to healthy P value of E value	Treatment to healthy P value of M value	Acellular to healthy P value of M value	Treatment to acellular P value of E value	Treatment to acellular P value of M value
	0.909390143	0.891612179	0.868449035	0.99937299	0.978344712	0.873013001

Figure 6

Semmes-Weinstein P Values for:	treatment to healthy	control to healthy	treatment to control	Difference between treatment and control P values
	0.553061265	0.254654276	0.6350855	0.298406989

Figure 8

1. The Semmes-Weinstein Scale should not have different readings since nerve endings were not damaged. Filaments in the test may have missed nerves on some of the readings due to location.
2. The P-Values do not show statistical significance, but this is due to the small data set. Few patients are willing to return to the office for additional checkups throughout the study. Patients had a faster healing and less pigmented scar with no donor site using Cellutome™ blister grafting.

## Results

- Vancouver Scar Scale (most widely used scar evaluation scale 1-15 but not sensitive enough for this study)
  - Readings at a max of 2/15 with normal vascularity, pliability, and height, and 2 patients showing mixed pigmentation in skin sites.
- Treatment site healed with less complications and pigmentation changes than the acellular site according to observation.
- The Patient Observer Scar Scale (more reliable scars scale 1-10)
  - Readings showed Cellutome™ blister graft patients to have pain and stiffness reaching a maximum of 2/10, itching reaching a maximum of 3/10, scar coloring at a maximum of 5/10, and thickness at a maximum of 4/10.
- P-Value shows the findings to be statistically insignificant, observations showed that the Cellutome™ blister graft site healed better than the acellular site.

## Conclusion

- The Cellutome™ blister grafts met the first endpoint of this study
  - Healing time of 18 days or less (faster than the acellular control site)
- Microscopic donor sites did not bother the patients.
- Treatment site had sensation and appearance comparable to that of healthy skin (second study endpoint)
- Cellutome™ blister grafts should be further explored as:
  - An effective and efficient method of epidermal skin grafting
  - Having a low rate of complication and a high rate of satisfaction
  - An alternative to acellular treatment in 2<sup>nd</sup> degree (partial thickness) burn patients to avoid pigment changes and hypertrophic scarring.

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