

# The Use of a Silver Impregnated Soft Silicone Wound Contact Layer for Partial Thickness Burn Injuries in Pediatric Burn Patients

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## Background:

In 2011, our facility published a retrospective cohort study showing the efficacy of a synthetic skin substitute in 235 pediatric burn patients.<sup>1</sup> Newer technologies such as silver soft-silicone dressings may improve healing rates and patient comfort over the synthetic skin substitute.

## Purpose:

We evaluated a silver soft silicone wound contact layer as compared to the previous retrospective cohort study of a synthetic skin substitute for efficacy in the pediatric burn population.

## Methods:

Following appropriate cleansing and debridement the silver soft silicone wound contact layer was placed on 30 pediatric burn patients who sustained partial thickness burns between October 1, 2015 and September 30, 2016. Results were compared to prior research on the synthetic skin substitute. Data collected included:

- Age
- Total percent body surface area burn (TBSAB)
- Length of stay (LOS)
- Number of outpatient visits
- Days to healing
- Number of patients receiving outpatient care only

To define the days to heal, a member of the pediatric burn team either examined the area directly in the clinic or by email photo; the wound may have been healed prior to the visualization.

## Results: See Table 1

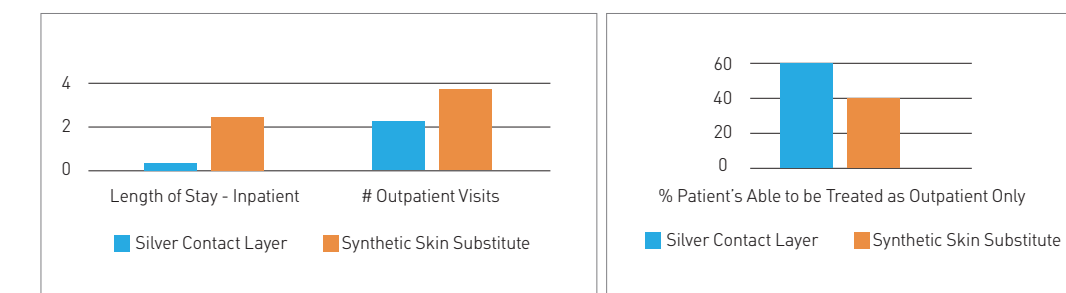
In this evaluation, 30 patients received the silver soft silicone contact layer during a 12-month period as compared to 235 patients who received the synthetic skin substitute. The patient ages and percentage of body surface area burned were similar.

- Days to healing were similar
- The mean inpatient length of stay was reduced by 2.2 days for patients receiving the silver soft silicone contact layer as compared to the synthetic skin substitute
- The silver soft silicone contact layer allowed 16% more patients to be treated exclusively in the outpatient setting
- The number of outpatient visits was reduced by nearly half as compared to the synthetic skin substitute
- No infections occurred with either treatment

**Table 1:** Results: Data Comparison of a Soft Silicone Silver Contact Layer to a Synthetic Skin Substitute

	Silver Soft Silicone Wound Contact Layer	Synthetic Skin Substitute
Number of Patients	30	235
Age (average years)	5.4	5.8
% TBSA Burn Injury is the correct term BSA (Mean)	5.7	6.0
Length of Inpatient Stay (Mean)	0.4	2.6
Number of Outpatient Visits (Mean)	2.1	3.9
Number of Days to Heal (Mean)	9.4	9
Treated in Outpatient only (%)	62%	46%

**Figure 1:** Comparison: Silver Soft Silicone Contact Layer versus Synthetic Skin Substitute



### Patient 1 Grease Burn Treated with Silver Soft Silicone Contact Layer



### Patient 2 Scald Burn Treated with Silver Soft Silicone Contact Layer



## Discussion:

Several attributes of the silver soft silicone contact layer may have contributed to its efficacy and reduced length of stay:

- The synthetic skin substitute had no antimicrobial protection while, in vitro the antimicrobial effect of the silver soft silicone contact layer was rapid and sustained for 8 days
  - Synthetic skin substitute patients were hospitalized for 24-48 hours to observe for infection which may have contributed to a longer length of stay
- The synthetic skin substitute did not adhere well if the wound was not perfectly clean and free of debris; sometimes it would lift off the wound bed
- The silver soft silicone contact layer adhered on wounds of varying depths, even with debris or eschar present, therefore it was able to be used successfully on more patients
- The wound could be cleansed via irrigation through the contact layer and topical medication applied over it
- The synthetic skin substitute was less conformable than the silver soft silicone contact layer; increased conformability enhanced the patient's range of motion to support activities of daily living and physical therapy

## Conclusion:

Results suggest that the silver soft silicone contact layer may either eliminate or reduce the length of hospitalization as well as the number of clinic visits for some patients, potentially lowering the cost of care. Most importantly for the patient, the pain and trauma of managing a partial thickness burn is lessened, and return to function is faster.

## Limitations:

This pilot study examined a small number of patients. Evaluation of the silver soft silicone contact layer is on-going.



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**Practice Pearl:** In the pediatric population, we have found that demonstrating the application and removal of the contact layer on healthy skin prior to use reduces patient anxiety.

## References:

1. Lesher A, Curry R, Evans J. Effectiveness of Biobrane for treatment of partial-thickness burns in children. *J Pediatr. Surg.* 2011;46(9):1759-63.
2. Savas I, Hamberg K. Antimicrobial effect of a new silver-containing wound contact layer against common wound pathogens in vitro. Presented at SAWC spring meeting 2015.