

First Results from Application of an Absorbable Synthetic Membrane to Superficial and Deep Second Degree Burn Wounds

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First Results From Application Of an Absorbable Synthetic Membrane to Superficial and Deep Second Degree Wounds

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Introduction:

The care of second degree burns remains challenging because of pain during daily dressing changes and unpredictability of healing time and scarring. Temporary coverage solutions have been studied in the past (xenograft, allograft, amniotic membrane, Biobrane®, Transcyte®, Mepithel® and others), in an attempt to limit the amount of painful dressings and accelerate healing. Mixed results have been reported with integration into the wound bed and infection being the most common complications. Long term outcome studies with scar assessment are scarce.

The ideal treatment for second degree burns would 1-decrease pain, 2-limit dressing changes, 3-allow assessment of the healing process, 4-prevent infection, 5-accelerate healing, 6-improve long term outcome, 7-save treatment cost.

We have gathered some experience with a newly FDA approved dressing material that seems to fulfil 6 out of these seven requirements.

Methods:

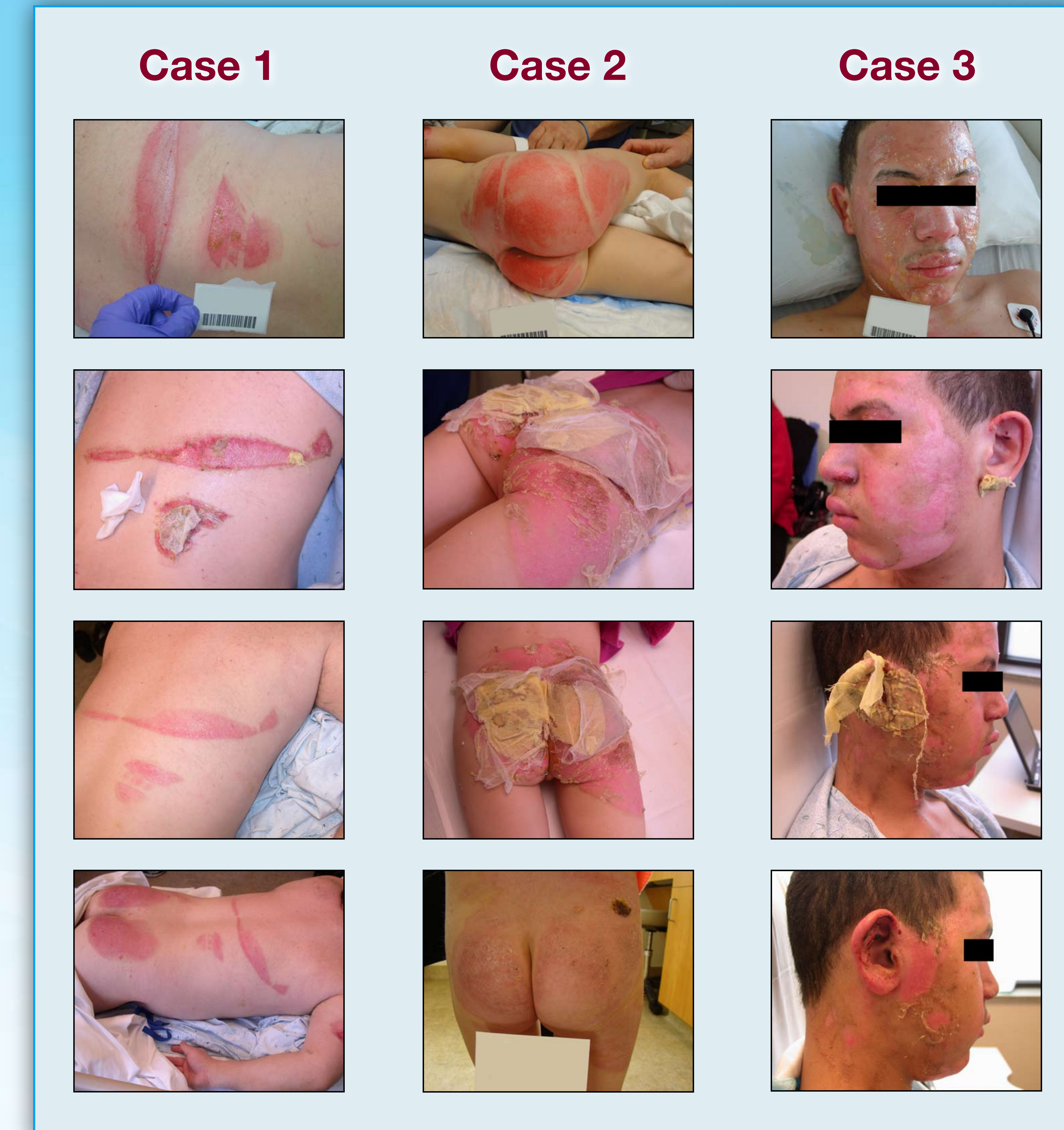
In a 6 months period we treated 17 patients with 2nd degree burns (superficial and deep) with Suprathel®, a porous synthetic copolymer membrane made of DL-lactide. It is biodegradable and creates a wound PH of 4-6 during degradation. In this physiologic skin PH environment most microorganisms do not thrive. Patients were taken to the operating room. The wound bed preparation was achieved by dermabrasion or hydro dissection or thin Weck blade excision to remove all necrotic tissue. Suprathel® was applied after haemostasis, an outer dressing of fatty gauze, bridal veil, absorptive gauze and ace wrap was applied. The outer dressing was removed on postoperative day 1. The wound bed could be followed through the translucent Suprathel® and fatty gauze layers. The outer dressing was then changed every other day and every 3-4 days after drainage had subsided. The dressing separated spontaneously after epithelialization was complete.

Results:

In this series we treated 11 male and 6 female patients. The mean age was 19 years (1-59), mean burn size was 8.5% TBSA (3-21). All wounds in this series healed without skin grafting and without infection. Time to epithelialization was 11.6 days and appeared accelerated compared to similar wounds that were placed in Biobrane® or allograft (some in the same patient). No integration into wound beds was noted. Long term outcome is available on 11 patients and it appears that re-pigmentation of the healed burn occurs accelerated as well. The only complication was severe pruritus in one adolescent patient.

Conclusion:

The application of Suprathel® to 2nd degree wounds offers a new simple option of treatment with potential for better outcomes and less pain. In this small series cost was not calculated, but considering less frequent dressing changes (materials and nursing time in- or outpatient), lessened need for pain medication and lessened infection rate it can be predicted that cost will be at least equivalent to current standard of care.



Positioning in the Treatment of Wounds

superficial	superficial dermal	deep dermal	dermal subcutaneous
1 - 2a°	2a°	2b°	3°

- Alginates
- Hydrofibres
- Hydrogels
- Foam dressing
- Hydrocolloids
- Film dressing
- Cadaver-based scaffolds
- Split-thickness skin grafts
- Mesh-graft transplantations
- Cultured epithelial autografts (CEA)
- Acellular grafts
- Dermal substitutes

SUPRATHEL®

Properties

Composition	Lacto-capromer, main constituent: Polylactic acid
Degradation	4 weeks (hydrolytically)
Plasticity	>200% elongation at break
Permeability to water vapor	40 - 70 ml/m ² (hour approx. 1.000 - 1.700 per day)
pH	5.5 (initial) => 4.0 <i>in vitro</i>



References:

- Uhlir C et al; Suprathel – an innovative, resorbable skin substitute for the treatment of burn victims; Burns.2007 Mar;33(2):221-9
- Schwarze H et al; Suprathel, a new skin substitute in the management of partial thickness burn wounds: results of a clinical study. Ann Plast Surg.2008 Feb;60(2):181-5

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