

Results from Application to an Absorbable Synthetic Membrane to Superficial and Deep Second Degree Wounds.

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

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OBJECTIVES

- Understand different treatment options for second degree burns
- Compare outcomes after different treatments for second degree burns
- Discuss outcome measures for second degree burns
- Evaluate cost of different treatment options for second degree burns

ABSORBABLE SYNTHETIC MEMBRANE

Positioning in the Treatment of Wounds

superficial	superficial dermal	deep dermal	dermal subcutaneous
1 - 2a ^o	2a ^o	2b ^o	3 ^o

- Alginate
- 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

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>

STUDY DESIGN

- Retrospective chart review
- 2nd degree wounds (2A and 2B)
- Patient received wound debridement under sedation/anesthesia and absorbable synthetic lactic acid based membrane was placed (= standard care)
- Study period: 9/1/2013 - 9/30/2014
- IRB approval was obtained

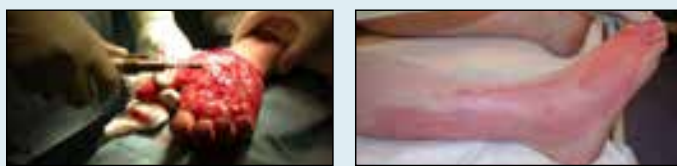
OUTCOME PARAMETERS

- Demographics
- Size of burn
- Time to healing
- Pain (average)
- Infection
- Failure (required removal/grafting)
- Hypertrophic scarring

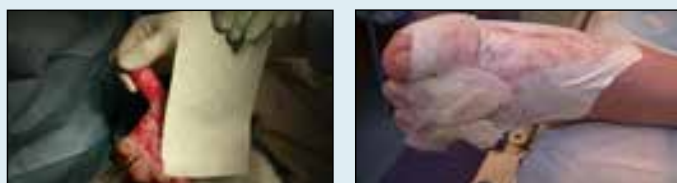
PROCEDURE

- Dermabrasion (in OR) or rough deridement (under sedation) of wound
- Rinse with sterile saline
- Dab dry
- Apply (absorbable lactic acid) membrane
- Cover with bridal veil (Dermanet[®], N-terface[®]...)
- Cover with absorbent gauze
- Cover with Ace[®] bandage or Coban[®] or surgical netting
- Change outer dressing every 1-4 days down to bridal veil
- Remove when healed

Wound Preparation



Application



Outer Dressing



Dressing Change



Removal



Outcome



Fewer Hypertrophic Scars (10.5% vs. 23%)

Normal Dressing Discoloration, NOT Pseudomonas Infection



RESULTS

Demographics

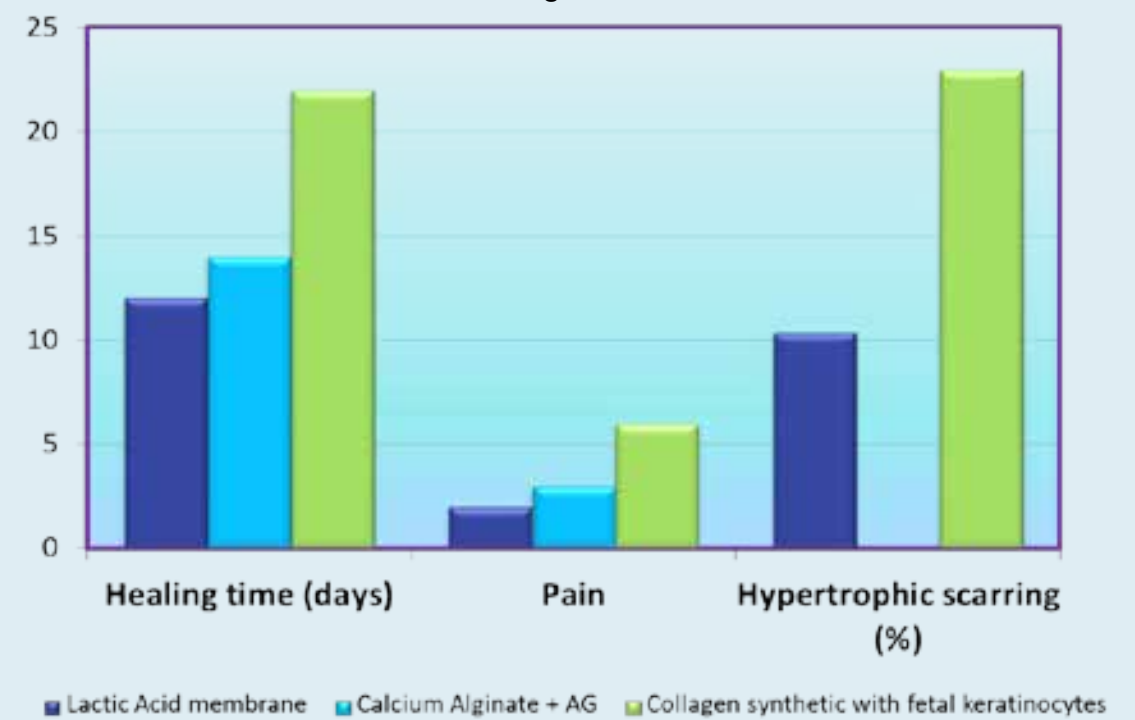
- 85 patients, 238 applications, for burns
- 34 female/51 male
- 39 pediatric
- Average age 20 years (9 weeks to 73 years)
- Average burn size 9.5 %TBSA (1-33)
- Placed in OR/BC 79/6

Results	
Average time to healing	12.05 days
Average pain level throughout	2/10
Area of Infection	3/85 = 3.5%
Area of progression to FT	7/85 = 8.2%
Hypertrophic scarring (27 had no later follow up pictures available, so could be as low as 5%)	6/58 = 10.43%

Comparison to Other Skin Substitutes

Results Retrospective/prospective Comparison Collagen Membrane with Fetal Cells vs. Ointment Treatment for Second Degree Burns (partially previously not published)

Comparison Lactic Acid Membrane, Collagen Synthetic Membrane with Fetal Cells and Calcium Alginate +AG on Donor Sites



CASE STUDY

9 week old with 26% TBSA

Membrane applied 5 hours after burn after dermabrasion

Staph aureus pneumonia

Extubation day 7

Discharge home day 13



Cost Analysis

1 sheet of collagen membrane with fetal cells	approx. 900\$
1 sheet of lactic acid membrane	approx. 300\$
1 sheet calcium alginate + AG 8x12"	28\$
1 tube of collagenase ointment 90 gm	approx. 600\$
1 tube of antibiotic ointment 30 gm	approx. 10\$
Vaseline gauze 1 sheet 3x18"	2,80\$
Collagen Membrane With Cells Cost 3% TBSA	
Sedation Debridement	2500\$
Membrane	900\$
Silver and gauze outer dressing	60\$
Change outer dressing every 3 days x5	300\$
Nursing time average 5 hours	400\$
Healing in 15 days	4100\$

Ointment Dressings 3% TBSA Cost

Sedation Debridement	2500\$
Ointment (3 days per tube)	50\$ /3000\$
Vaseline and gauze outer dressing	20\$
Change outer dressing every day x15	300\$
Nursing time average 5 hours	400\$
Healing in 15 days	3250\$/6200\$
Healing in 15 days (without debridement when using collagenase)	3700\$
Lactic Acid	
Sedation Debridement	2500\$
Membrane	300\$
Gauze outer dressing	20\$
Change outer dressing every 3 days x5	100\$
Nursing time average 1 hours	80\$
Healing in 15 days	3000\$