Complete Wound Closure in Partial Thickness Burns with the Use of Collagen Extracellular Matrix Dressings and Antibacterial Foams

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Introduction

- Patients with < 10% BSA burns can likely be treated in an outpatient setting
- Considerations when choosing a dressing: ease of application, pain control, patient comfort, infection control, and cost
- Current inconclusive data on efficacy of wound dressings combined with topical antimicrobials
- Collagen Extracellular matrix dressings (CECM) have been used in conjunction with gentian violet/methylene blue (GV/MB) polyurethane (PU) antibacterial foams to treat a variety of wounds to help promote complete wound closure and re-epithelialization
- CECM dressings and GV/MB PU antibacterial foam transfers have both been FDA approved for use in second degree burns however there no data on their efficacy for this indication
- Dressing protocol using CECM dressings and GV/MB PU antibacterial foam transfers was implemented to observe its efficacy at wound closure in patients with partial thickness burns

Methods

- Prospective cohort, single site study with a retrospective standard of care comparator analysis run after the completion of the initial study
- 8 to 10 patients from the Lutheran Health Network outpatient wound clinic at St. Joseph Hospital who present with partial thickness burns
- Patients will report to the outpatient wound clinic once weekly (every 6-8 days) for 2 weeks for a total of 2 appointments or until complete wound healing is achieved
- Patients will be properly educated to perform complete wound dressing changes every 3 to 4 days at home

Inclusion Criteria	Exclusion Criteria

• > 18 years of age
• Presents with partial thickness burns as defined by a burn that affects the top two layers of skin
• Able to provide a written informed consent via self or power of attorney
• Able to report to the outpatient wound clinic for weekly follow-up appointments for two weeks or until complete wound closure
• Able to properly change a dressing at home
	• Burns > 5% body surface area
	• Patients with any clinical infection defined as having three out of five of the following criteria:
	  • Severe spontaneous pain between two dressing changes
	  • Perilesional erythema
	  • Local edema
	  • Malodour
	  • Heavy exudation
	• Patients who are pregnant
	• Patients who are imprisoned

- Visit #1 will be the same day of presentation
- Data will be collected via data collection sheets at each visit:

Pertinent demographics	Visual wound description	Pain assessment using the 1-10 scale
Wound measurement	Infection assessment	Pictures will be taken for wound appearance documentation

- After data collection the extracellular matrix collagen dressings and antibacterial foam will be applied with a generic gauze cover dressing to hold it all in place
- Patients will be asked to report via telephone or clinic visit any adverse events including but not limited to signs of serious itching, irritation, redness or swelling associated with the dressing

Objectives

- **Primary**

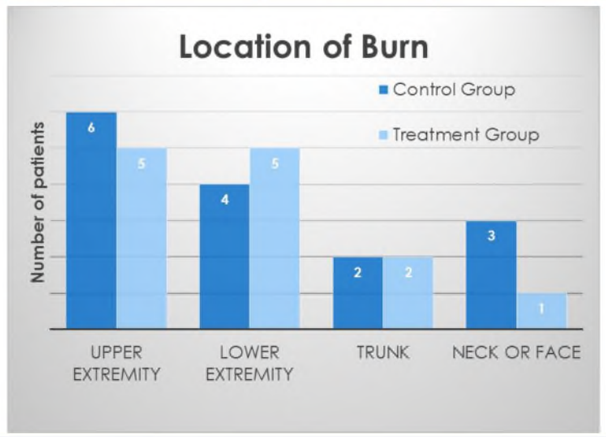
Investigate the time to absolute wound closure with 100% re-epithelialization in patients with partial thickness burns

- **Secondary**

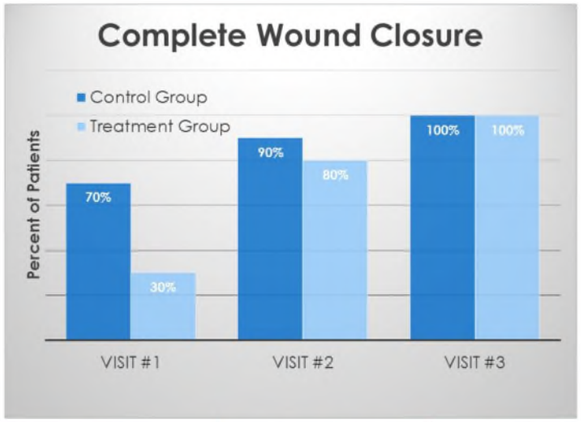
Detect the infection rate of burn wound at each dressing change	Determine the rate of pain assessed at each dressing change
Identify the percentage of patients with absolute wound closure at visit #3 (12-16 days)	Explore the Cost Analysis of standard of care treatment vs. collagen extracellular matrix with antibacterial foam

Results

BASELINE CHARACTERISTICS	Treatment Group n = 10	Control Group n = 10
Sex - Male %	60%	80%
Age (average in years)	38.8	44.2
Ethnicity of patients		
White	3	7
Hispanic or Latino	5	1
Black or African American	1	2
Asian/Pacific Islander	1	0
Duration of burn since injury (% of patients - # Hrs)	30% 0-12 70% ≥ 48	100% ≥ 48
Average BMI	30.3	28
Average BSA % of Burn	2	2.3
Tobacco Use %	10%	30%



Results continued



OUTCOMES	Treatment Group n = 10			Control Group n = 10		
	Visit #1	Visit #2	Visit #3	Visit #1	Visit #2	Visit #3
Infection Rate	0%	0%	0%	0%	0%	0%
Pain Assessment	3.1	1.2	0	1.8	0	0
Absolute wound closure visit #3	100%			100%		
Cost Analysis	**%			**%		

Evaluation

Use of the collagen extracellular matrix exhibited complete closure at visit three matching the wound closure rate of the silver therapy used in the control group. Despite the wound closure rate differences in visit #1 and #2, due to the small sample size there was no statistical difference, Visit 1 (p=0.177) Visit 2 (p=1). Regarding pain intensity for visit 1 and 2 the treatment group had a higher pain score for both but was not significantly different, visit 1 (p=0.339) visit 2 (p=0.193). This again was due to low sample size. Both treatment groups were similar with the exception of the treatment group which noted 30% of the patients presented within 12 hours of the burn injury.

Conclusion

The results of our study suggest that the use of a collagen extracellular matrix dressing may provide an alterative to the use of silver dressings in patients with burns of 5% or less. A larger prospective, randomized is needed

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Disclosure Panel

Authors of this presentation have the following to disclose concerning possible financial or personal relationships with commercial entities that may have a direct or indirect interest in the subject matter of this presentation:

***: Nothing to disclose