Treatment of partial thickness burns: A prospective, randomized controlled trial comparing four routinely used burns dressings in an ambulatory care setting

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Aim

To compare the effectiveness of four dressings for the treatment of adult partial thickness burns, focusing on re-epithelialisation time and cost-effectiveness.

Method

Prospective, randomized controlled trial.

Adult partial thickness burns patients who met the inclusion criteria were randomized to one of 4 intervention groups:

1. Mepilex® Ag;
2. Biobrane®;
3. Acticoat®;
4. Aquacel® Ag

Results

No infections were recorded for the course of the study in any treatment arms.

Healing time

When adjusted for sex, age, smoking status, burn mechanism, TBSA, and first aid adequacy:

- In the Biobrane group, there was a 26% increase in days to re-epithelialisation compared with Mepilex Ag (IRR: 1.26, 95% CI: 1.07–1.48, P<0.01)
- In the Acticoat and Aquacel Ag groups, there was no statistically significant difference in days to re-epithelialisation compared with Mepilex Ag but a trend in favor to Mepilex Ag (IRR: 1.12, 95% CI: 0.9–1.3, P=0,24 and IRR: 1.12, 95% CI: 0.9-1.3, P=0.23 respectively)

Cost-effectiveness

Probabilities that Mepilex Ag was superior (less expensive and more effective) to the other dressings tested:

- 99% for Mepilex Ag vs Biobrane
- 71% for Mepilex Ag vs Acticoat
- 53% for Mepilex Ag vs Aquacel Ag

Mepilex Ag was found to be cost-effective in the treatment of partial thickness burns due to a faster rate of re-epithelialisation and a reduction in the cost of dressings compared to Biobrane, Acticoat and Aquacel Ag.

More about the study

Outcomes measured

Primary outcome

Time to wound healing: days to re-epithelialisation

Secondary outcomes

- Number of outpatient clinic visits
- Pain: assessed during the initial dressing application and each subsequent dressing change using a numeric scale ranging from 0 (no pain) to 10 (extreme pain)
- Nursing experience: assessed by scoring ease of use, ease of application, and ease of removal of dressings. Parameters were measured on the 5-point Likert scale ranging from 1 (very easy) to 5 (very difficult).
- Scar quality: telephone follow-up call at 3 and 6 months after the burn injury (symptoms, subjective outcome parameters)
- Cost-effectiveness of dressings using ICER method:

$$ICER = \frac{(Cost\ Product\ 1\ group) - (Cost\ Product\ 2\ group)}{(Effect\ Product\ 1\ group) - (Effect\ Product\ 2\ group)}$$

Additional results

131 partial thickness burn wounds in 119 patients were randomized:

- Mepilex Ag (n = 35);
- Biobrane (n = 32);
- Acticoat (n = 37);
- Aquacel Ag (n = 27).

Healing time

Dressing	Median days to re-epithelialisation	Interquartile range	Mean (± standard deviation)	*P*
Biobrane	11	8.5 – 13	10.8 ± 2.4	0.06
Mepilex Ag	9	8 – 10	8.9 ± 2.4	
Acticoat	9	8 – 11	9.6 ± 3.3	
Aquacel Ag	9	8 – 12	9.6 ± 3.2	

Cost-effectiveness

Mean consumable cost-saving per patient using Mepilex Ag vs other dressings			
Comparison*	Mean cost saving ($AUD)	95% Confidence Interval	*P*
Mepilex Ag vs Acticoat	136	43 – 228	<0.01
Mepilex Ag vs Aquacel Ag	2.60	-19 – 24	0.81
Mepilex Ag vs Biobrane	148	64 – 233	<0.01

*Adjusted for total body surface area (%) and mechanism of burn injury.