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

Aggarwala S. *et al.* Journal of Burn Care & Research. 2021:30;42(5):934-943

Aims

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, randomised controlled trial

Adult partial thickness burns patients who met the inclusion criteria were randomised 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.

To know 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 randomised:
- 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.