Randomised controlled trial of three burns dressings for partial thickness burns in children

Gee Kee E.L., Kimble R.M., Cuttle L., Khan A., Stockton K.A. Burns 2015, 41: 946-55

Aims

To determine whether one of three dressing regimes would be more effective in the treatment of partial thickness burns in children in terms of:

- healing time,
- pain and distress at dressing changes

Method

Prospective, randomised controlled trial

Children (0-15 years) with clean ≤10% total body surface area (TBSA) partial thickness burns who met the inclusion criteria were randomised to one of three intervention groups:

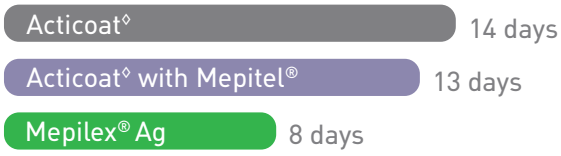
1. Acticoat◊
2. Acticoat◊ with Mepitel®
3. Mepilex® Ag

Results

No infections were detected for the course of the study in any of the three groups.

Healing time

Time to 75% of children healed



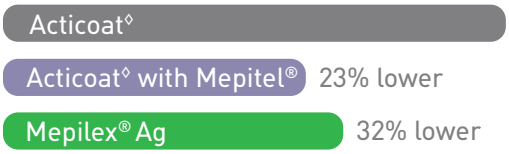
After adjustment for burn depth, patients significantly increased expected days to full re-epithelialisation by:

- 40% with Acticoat◊ ($p<0.01$)
- 33% with Acticoat◊ with Mepitel® ($p<0.01$)

compared to Mepilex® Ag.

Pain at dressing change (FLACC score)

Pain and anxiety at **dressing removal**



Pain and anxiety at **dressing application**

Application time

Cumulative dressing removal and application time on the first dressing change **was significantly faster in the Mepilex® Ag group** compared to Acticoat◊ and Acticoat◊ with Mepitel®.

Mepilex® Ag is an effective silver-containing dressing in terms of accelerated wound re-epithelialisaton time (compared to Acticoat◊ and Acticoat◊ with Mepitel®) and decreased pain during dressing changes (compared to Acticoat◊), for clean, <10% TBSA partial thickness burns in children.

To know more about the study

Outcomes measured

Primary outcome measures

Days to re-epithelialisation – assessed by:

- Clinical judgement,
- Use of Visitrak™ grids,
- Analysis of 3D camera photographs and,
- Blinded review of photographs.

Pain and distress – assessed by:

- Patient's self-report of pain intensity using the Faces Pain Scale-Revised (FPS-R) (if subject was ≥3 years),
- Nurse's observational rating of patient's pain and distress using the face, legs, activity, cry, consolability (FLACC) scale,
- Patient's self-report (if >8 years) or the parent's report of the patient's pain intensity using a Visual Analog Scale-Pain (VAS-P)
- Pulse rate, and,
- Respiratory rate (taken immediately prior to and after dressing changes).

*using 5-point Likert scales

Secondary outcome measures

The following were measured at dressing changes:

- Patient's physical function while wearing the dressing (first dressing change only)*,
- Nurse's view on ease of removal and application of the dressing*,
- Adverse events.

Additional results

- 103 children were randomised into the study:
  - Acticoat◊ (n=33)
  - Acticoat◊ with Mepitel® (n=34)
  - Mepilex® Ag (n=36)
- As per the intention to treat protocol, 96 children were included for analysis
- There was no statistically significant difference between the dressing groups with respect to baseline variables (age, gender, burn depth, wound perfusion units, TBSA, mechanism and location of burn)

Healing time

Raw data	N	Median	IQR
Acticoat◊	28	9.50	7.00 – 14.00
Acticoat◊ with Mepitel®	28	10.00	8.00 – 13.00
Mepilex® Ag	32	7.00	4.00 – 8.00
Adjusted for burn depth	**IRR**	**95% CI**	**p-value**
Acticoat◊ vs Mepilex® Ag	1.40	1.14 – 1.73	<0.01
Acticoat◊ with Mepitel® vs Mepilex® Ag	1.33	1.08 – 1.63	0.01

Key:
N – number of participants,
IQR – inter-quartile range,
IRR – incidence rate ratio,
CI – confidence interval

Pain and distress compared to Acticoat◊

Measure	Groups	After dressing removal	After dressing application
FLACC scores	Mepilex® Ag	32% lower (p=0.01)	37% lower (p=0.04)
	Acticoat◊ with Mepitel®	23% lower (p=0.04)	40% lower (p=<0.01)
VAS-P scores	Mepilex® Ag	25% lower (p=0.04)	30% lower (p=0.06)
	Acticoat◊ with Mepitel®	24% lower (p=0.07)	34% lower (p=0.02)
Pulse rates	Mepilex® Ag	7% lower (p=0.01)	9% lower (p=0.03)
	Acticoat◊ with Mepitel®	8% lower (p<0.01)	7% lower (p=0.02)
FPS-R scores	Modelling was not completed due to large amount of missing data (majority of subjects were too young to use the scale).		
Respiratory rates	No significant difference between the three groups.		

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