A Randomized Controlled Trial of Three Burn Dressings for Partial Thickness Burns in Children


**Synopsis:** Pain with dressing changes is a significant issue for all patients with partial thickness burns but particularly for children. The type of dressing utilized may affect not only the level of pain at dressing change but also the rate of reepithelialisation.

This prospective, randomized controlled trial compared the effects of three silver dressing combinations on small to medium sized acute partial thickness burns in children. Ninety-six children received either (1) Acticoat®; (2) Acticoat® with Mepitel®; or (3) Mepilex® Ag dressings.

**Results**

**Expected Days to Re-epithelialization:**
- Mepilex AG® was 40% lower than Acticoat® and 33% lower than Acticoat® with Mepitel®
- Nurse Observation of Pain (FLACC score)
  - Mepilex® AG was 34% lower than Acticoat® and 32% lower than Acticoat® with Mepitel®
- Patient Reported Score (VAS-P)
  - Mepilex® AG was an average of 38% lower than Acticoat®
  - There was no significant difference between the Mepilex® Ag and the Acticoat® with Mepitel® groups.

**Conclusions:** Mepilex® Ag dressing was the most effective in terms of accelerated wound re-epithelialization and decreasing pain during dressing changes for partial thickness burns in children. This study provides strong evidence to consider the utilization of silicone dressings to manage acute burns in the Pediatric population.

**Additional notable discussions:**
- Silicone dressings cause less epidermal damage by adhering to normal, intact skin and remaining in situ on the surface of a wound, but not adhering to it. The result is less traumatic removal.
- Additionally, a moist wound environment is maintained which promotes healing.
- Currently silver-depositing fabric and foam dressings are the most commonly used treatment to manage the bio-burden of a wound. No infections were detected for the course of the study.
- Authors had two theories regarding the faster rate of re-epithelialization with Mepilex® AG
  - Acticoat® adhered to the wound causing more trauma on removal as evidenced by clinical observation of bleeding and increased pain.
  - Acticoat® has been shown to be cytotoxic to keratinocytes which can delay healing. Mepilex® AG has not.
- Ease of use: the Acticoat® group was rated as significantly more difficult to apply and remove than both the other dressings.
- The results from this study sit well within the existing literature demonstrating that delays in wound re-epithelialization have been correlated to higher levels of pain during burn care.
- Silver sulfadiazine, the historical standard for treatment of partial thickness burns, should be reconsidered as silver fabric dressings have been shown to promote faster re-epithelialization less pain during burn care, and do not require daily changes as Silver Sulfadiazine does.