The Treatment of Partial-Thickness Burns with a Hydroconductive Wound Dressing: Clinical and Mechanistic Effects

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Message:

Edema in partial-thickness burn wounds can decrease tissue perfusion, increase tissue ischemia, and deepen the burn injury. This work reports the results of a clinical trial comparing the effectiveness of a Drawtex® Hydroconductive Dressing to our standard burn dressing (8-ply fluffed gauze) at removing edema fluid from partial-thickness burns and presents the proposed mechanism of action of the hydroconductive dressing.

Methods:

An internally controlled comparison of two wound dressings was performed on 10 patients with non-contiguous partial-thickness burns. One burn was treated with our standard burn dressing and the other with hydroconductive dressing. Dressings were weighed prior to application, removed at 24 and 48 hours, weighed and new pre-weighed dressings applied.

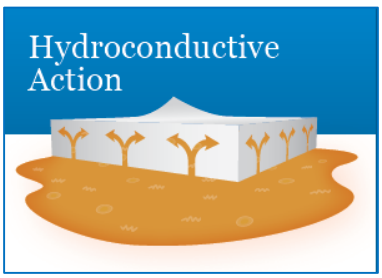
Results:

Averaging the weight gain over the two dressing periods demonstrated that the differences were highly statistically significant as the hydroconductive dressing increased in weight by 71% compared with 44.5% for the gauze dressing.

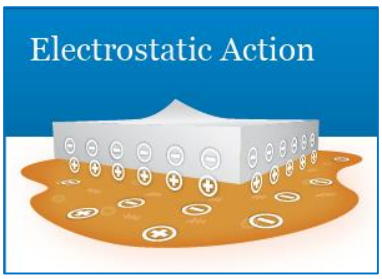
Discussion:

The mechanism of action of the Drawtex Hydroconductive Dressing is a unique combination of three physical actions including capillary action, hydroconductive action, and electrostatic action.

Capillary action caused by the attraction of molecules of the liquid (edema/exudate) to molecules of the solid (Drawtex). The small pores in the dressing act as small capillaries.



Hydroconductive action results from moving from wetter (wound) to drier (Drawtex) even against gravity. Governed by Cary's Law, the fluid can move both vertically and horizontally.



Electrostatic action results in attraction of negatively charged bacteria and cytokines (MMPs) to the positive charge at the surface of Drawtex. The positive charge at the Drawtex surface results from an electric double layer as positive ions from the edema/exudate coat the slightly negatively charged Drawtex.

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