Comparative study of two antimicrobial dressings in infected leg ulcers: a pilot study

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Objective:

The aim of the study was to compare the efficacy of a microorganism-binding (MB) dressing with a silver-containing hydrofiber (SCH) dressing in controlling the bacterial loads of heavily colonized or locally infected chronic venous leg ulcers, before surgical management with homologous skin grafts.

Material and methods:

This was a randomized comparative single centre study that recruited patients presenting with hard-to-heal critically colonised or locally infected leg ulcers, which could be treated with skin grafting. Enrolled patients were at least 18 years old and had leg ulcers of vascular aetiology. A wound duration ≥6 months and ankle brachial index (ABPI) >0.6 were required.

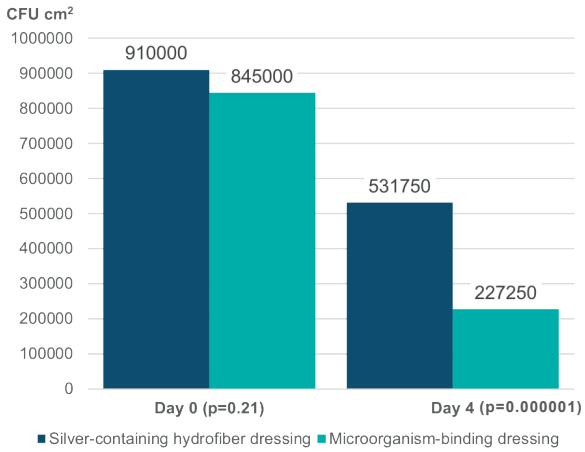
Patients were randomly assigned to treatment with SCH dressings (Aquacel® Ag) or MB dressing (Cutimed® Sorbact®). Dressings were changed daily over a four-day observation period, after which the patients were taken for a skin grafting procedure. Inelastic compression was used on all patients throughout the treatment period before and after the skin grafting. The level of compression was adapted individually depending on the ulcer aetiology and the peripheral vascular conditions. No antibiotics were administered before or during the evaluation period.

Study days	Activities undertaken
0	• Eligibility criteria evaluated • Swab samples from ulcer bed taken for quantification of bacterial load • Randomization • Treatment initiation with daily change of dressings
4	• Treatment evaluation • Swab samples from ulcer bed taken for quantification of bacterial load • Debridement performed if considered necessary • Skin grafting performed

Results:

- Both groups (n=20 SCH, n=20 MB) were similar in gender, age, pathophysiology (both had 15 patients with venous leg ulcers and 5 with arterial leg ulcers), ulcer surface, ulcer duration, treatment-related pain and initial bacterial load. All patients completed the study.
- A significant reduction of the bacterial burden D4 was observed in both groups (41.6% in SCH group and 73.1% in the MB group). The MB group had a significantly higher ($p < 0.0001$) reduction (see Fig 1 below).
- Dressing application and removal was found to be atraumatic and simple for both dressing types. The average ulcer-related pain scores decreased in a similar way in both groups.
- Two patients in the SCH group reported intense burning following the application of the dressing. The burning sensation lasted for a few hours and then disappeared without the need for analgesics.

Fig 1. Comparison of bacterial loads at day 0 and day 4



Conclusion:

The study confirmed that MB and SCH dressings are effective in reducing the bacterial burden in critically colonised or locally infected chronic leg ulcers, without inducing adverse events. The MB dressings were significantly more effective in the bacterial burden reduction.

Summary:

This evaluation confirms that, independently from their mechanisms of action, MB dressings as well as SCH dressings are both effective in reducing bacterial burden in critically colonised or locally infected chronic venous leg ulcers without inducing adverse events.

In this relatively small trial, MB dressings were significantly more effective in reducing bacterial numbers than SCH dressings. However, the size of the population represents a challenge regarding comparative efficacy. A trial including a larger population, a longer follow up and the use of PCR techniques for quantitative bacteriology are required to confirm these results.