MEASUREMENT OF THE ADHESION DISPOSITION OF ALUMINIUM-COATED DRESSINGS* *IN VITRO*

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Introduction

Wound dressings that adhere to the wound surface can disrupt the wound bed and destroy newly formed, healthy tissue on removal, resulting in a disturbed, rough surface. This often happens with simple gauze pad. An aluminium coating of wound dressings can prevent their adherence to the wound surface which otherwise would disrupt the wound bed and destroy newly formed, healthy tissue on removal. Hence, we have evaluated the adhesion disposition of aluminium-coated dressings *in vitro*.

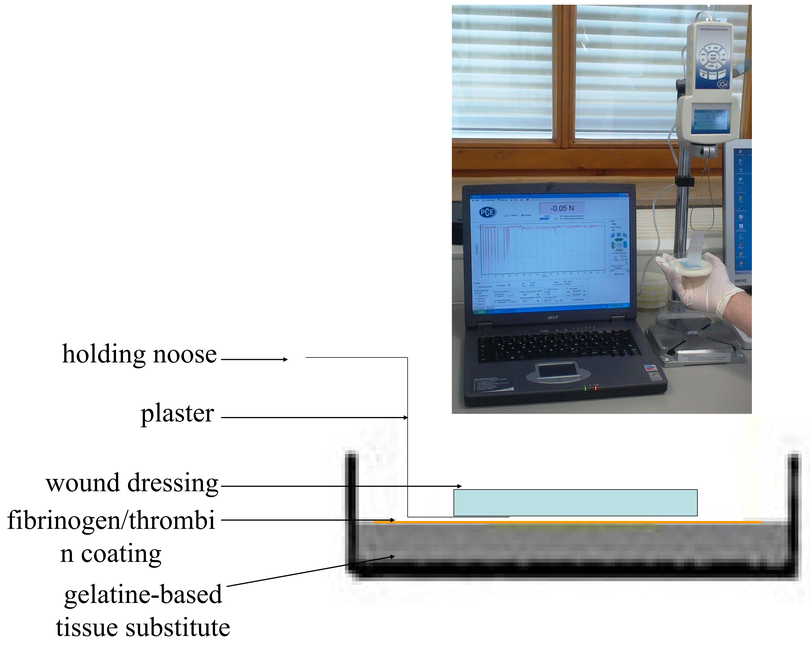

Figure 1: Schematic representation of the experimental set-up to determine the adhesion disposition of wound dressings *in vitro*.

Material & Methods

Different aluminium-coated dressings* were tested. For measurement of the adhesion disposition, a gelatine-based tissue substitute with fibrinogen/thrombin layer was prepared. Dressing samples were cut corresponding to 3x4cm and fixed to a plaster with holding noose for the force gauge. Only the dressing area posing the padding zone was employed for testing. Cotton gauze was treated in the same manner and used as positive control. Evaluation of the adhesion disposition was done by measurement of the force necessary to remove the dressing from the tissue substitute.

*MC - Metalline® compress, MTC - Metalline® trachea compress, and MS - Metalline® sheet (Lohmann&Rauscher); AC - aluderm® compress (W.Söhngen); NC - NOBALINE® compress (Nobamed Paul Danz)

Results

Significantly lower removal forces were needed to detach the dressing samples* from the tissue substitute compared to the positive control cotton gauze (figure 2). The following order of removal forces for the different dressings was found: cotton gauze (0.72N) >> NC (0.19N) > AC (0.12N) > MC (0.11N) > MTC (0.07N) > MS (0.03N). In accordance, the adhesion disposition determined for the aluminium-coated dressings* was significantly lower than that of cotton gauze pads (figure 3).

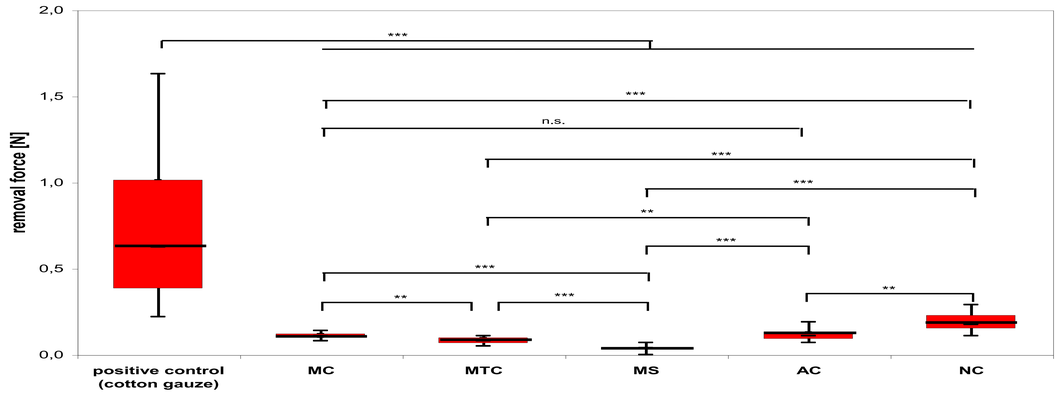

Figure 2: Determination of the force necessary to remove the dressings from the tissue substitute. Results shown as mean ± SE (n = 12).

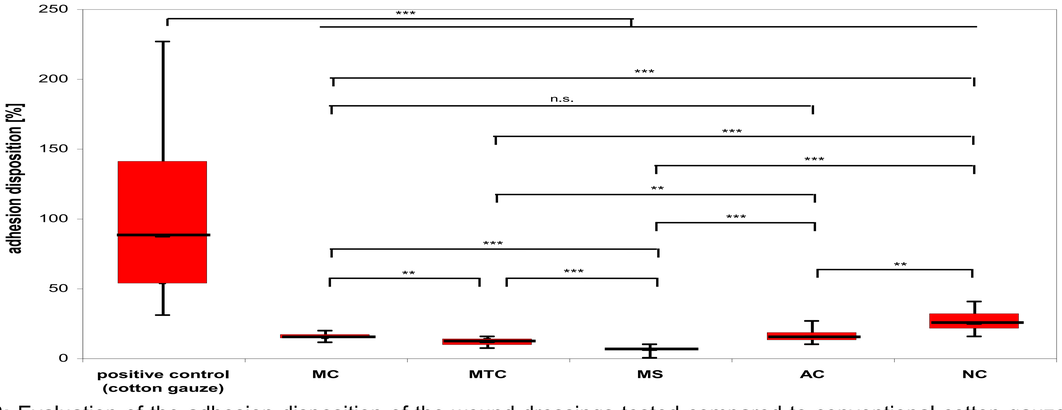

Figure 3: Evaluation of the adhesion disposition of the wound dressings tested compared to conventional cotton gauze. Results shown as mean ± SE (n = 12).

Conclusion

The adhesion disposition of dressings with an aluminium coating could be quantified and evaluated using a special tissue substitute. It could be shown that the aluminium-coated dressings* tested demonstrated a significantly lower adhesion than simple cotton gauze pads.

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