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SIMILAR BIOLOGICAL EFFECTS OF GREEN AND BLACK POLYURETHANE FOAM IN NEGATIVE PRESSURE WOUND THERAPY: GREEN FOAM FACILITATES MONITORING OF WOUND STATUS, BLEEDING AND EXUDATE

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Aim: Green polyurethane foam has been developed for NPWT to have similar biological effects as black polyurethane foam but allow easier monitoring of the wound status. The study aimed to compare green foam, black foam and gauze under NPWT with regard to biological effects on the wound and appearance during treatment.

Methods: Wounds on the backs of sixteen pigs underwent NPWT using gauze, green or black foam. The wounds were imaged and the biological effects were examined with regard to pressure transduction, blood flow, wound contraction, microdeformation and granulation tissue formation.

Results: Wound exudate and bleeding can easily be monitored when using gauze and green foam, while this is concealed by black foam (Figure). The biological effects of black and green foam are similar. Gauze offers slightly less wound contraction and hypoperfusion which may relate to the differences in granulation tissue formation. There is no ingrowth into gauze and less force is needed for its removal.

Conclusions: Green and black foam have similar biological effects in the wound bed. The wound status, i.e. bleeding and exudate, can more easily be monitored with green foam than black foam. There are differences in the wound bed tissue morphology treated by NPWT using foam and gauze which is in accordance with clinical observations that granulation tissue under foam is thick but fragile while under foam it is thinner but dense.

