Wound edge microvascular blood flow: effects of Negative Pressure Wound Therapy using gauze or polyurethane foam.

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The aim of this study was to examine the effects of negative pressure wound therapy (NPWT) on wound edge microvascular blood flow, comparing different wound fillers. Wounds were created on the backs of 7 pigs. NPWT was applied, using either foam or gauze, at -50, -75, -100, -125, -150, or -175 mm Hg. Microvascular blood flow was measured in muscle tissue, subcutaneous tissue, and in the wound bed, at 0.5, 1, and 2.5 cm from the wound edge, using laser Doppler velocimetry. Similar patterns of blood flow response were observed when using foam or gauze. At 2.5 cm from the wound edge there was an increase in microvascular blood flow, while blood flow was decreased closer (0.5 cm) to the wound edge. The blood flow effects were similar at the different levels of negative pressure in muscle tissue, subcutaneous tissue, and in the wound bed. Altered microvascular blood flow to the wound edge may be one of the mechanisms by which NPWT facilitates healing.

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