

Increase of Angiogenesis in chronic wounds after application of native collagen

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Introduction:

Several dressings try to optimize the wound environment. It is known, that collagen may act as a certain lattice and may stimulate inflammatory cells, bind proteases and enhance angiogenesis. Suprasorb C is a native collagen with a porous structure, made from extremely pure, non-cross linked bovine collagen. An increase in blood supply in the granulation tissue is the result of increased angiogenesis. We investigated whether microcirculation in the granulation tissue of chronic wounds increases after local treatment with Suprasorb C.

The O2C measurement

Assessment of cutaneous microcirculation and tissue perfusion is still a diagnostic challenge. Recently, we were able to show that healing wounds have significantly increased tissue perfusion parameters compared with non-healing wounds using a new device (O2C) combining laser Doppler fluxmetry and measurement of venous tissue oxygen saturation¹.

Methods

Patients with chronic non-healing wounds were treated in a interdisciplinary wound care center according to a comprehensive wound care protocol. 20 consecutive patients treated with Suprasorb C were included into the study. The O2C probe (LEA-Medizintechnik, Giessen, Germany) was used to assess relative blood flow (flow), flow velocity (velo), as well as relative hemoglobin concentration (rHb) directly at the wound site in 2 and 6 mm wound depth (median, Min-Max). Measurements were performed in weekly intervals for 8 weeks.

Patient population:

Median age was 71 (50-80) years and median wound size 11.5 (1-66) cm. There were 12 patients with venous leg ulcers and 8 patients with ischemic wounds.

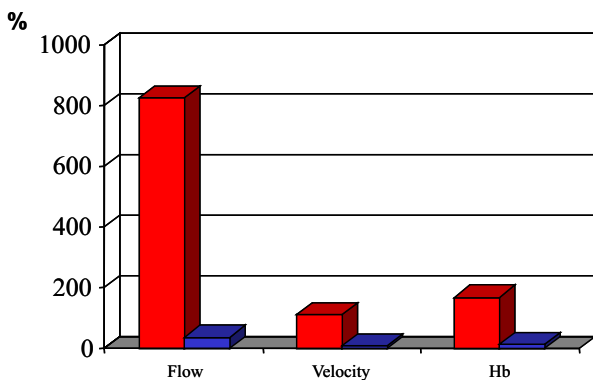


Fig. 3: Percentage increase in flow, velocity and hemoglobin concentration in all wounds within 8 weeks of treatment with Suprasorb® C in 2 mm and 6 mm

Discussion:

The O2C method provides new informations on wound perfusion. Treatment with Suprasorb C increased flow, velo and Hb in 2mm but not in 6 mm tissue depth. In addition, the impact of Suprasorb C on flow and Hb was greater in venous compared with ischemic ulcers.

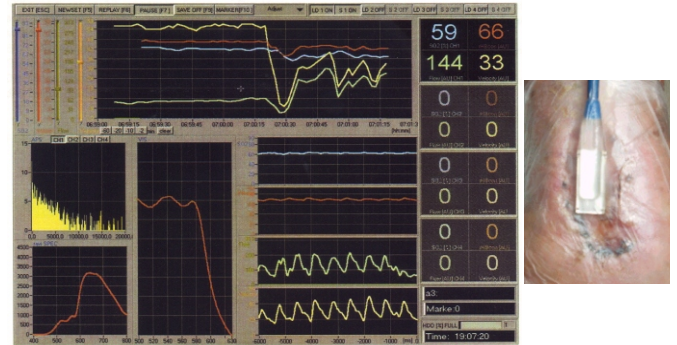


Fig. 1: O2C measurement, a new method for measuring wound perfusion, monitor and probe



Fig. 2: Suprasorb® C for the treatment of chronic wounds, LomatuellH for secondary dressing

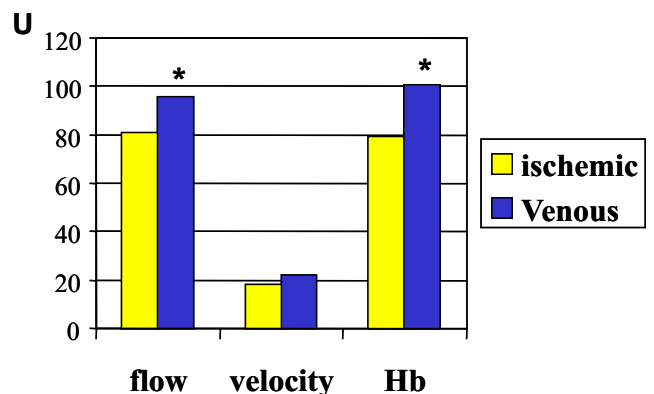


Fig. 4: Different flow, velocity and Hb in venous versus ischemic wounds in 2 mm (*=p<0.05)

¹Beckert S, Witte MB, Königsrainer A, Coerper S. The impact of the micro-lightguide O2C for the quantification of tissue ischemia in diabetic foot ulcers. Diabetes Care 27: 2863-2867, 2004.