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INELASTIC COMPRESSION NARROWS/OCCLUDES THE VEINS IN A TOLERABLE WAY DEMONSTRATED BY DUPLEX AND MAGNETIC RESONANCE IMAGING (MRI)

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Introduction: In patients with severe chronic venous insufficiency (CVI) venous reflux in superficial and deep veins may be reduced by external compression. In the upright position this can only be achieved using compression material with high pressure.

Aim: To investigate the reduction of the diameter of leg veins and of venous reflux in different body positions under the influence of elastic* and inelastic** compression material applied with different pressures.

Methods: Duplex ultrasound and MRI was used to measure venous diameter in a total of 22 patients with severe CVI.

Results: 1) A low resting pressure (15-20 mm Hg) is sufficient to narrow superficial and deep veins in the supine position. 2) In the standing position inelastic multilayer compression systems*** with a pressure of 83 mmHg, corresponding to a pressure of 51 mmHg in the supine position led to a nearly total occlusion of deep veins in the lower leg. 3) Reduction of venous reflux depends on the applied pressure in the upright position. 4) After six hours a significant reduction of oedema was demonstrated by MRI with inelastic bandage material**.

For the experiments elastic* and inelastic** material was intentionally applied with high stretch in order to obtain a very high standing pressure. However, such high pressure is tolerated only with short stretch material but not with elastic bandages. The main reason is that elastic material will keep the high pressure also during rest while inelastic material shows an immediate pressure reduction.

Conclusion: A hemodynamically effective narrowing of leg veins in the upright position that will be well tolerated by the patients also during rest can only be achieved by inelastic compression.

* *Perfekta*®
** Rosidal® K
*** Rosidal sys, Lohmann&Rauscher