

PICO[®] Single Use Negative Pressure Wound Therapy System (sNPWT) increased blood flow in perforator vessels in human volunteers

Use of PICO sNPWT before surgery may help increase the success of microsurgical procedures



Study overview

- A single-centre study to evaluate of the effects of PICO sNPWT on blood flow in cutaneous perforator arteries in 10 volunteers (7 males, 3 females; mean age, 29.7 years; mean BMI, 22.8 kg/m²)
- One participant was the control and the other nine (study group) underwent negative pressure at -80mmHg for seven days
- For each study group, two preumbilical perforator vessels from the deep inferior epigastric artery were selected, one on each side of the abdomen (using eco-colour Doppler)
 - PICO sNPWT was applied to skin overlying the muscle fascia emergence of one of the two vessels (selected at random) for seven consecutive days; the other vessel was used as the control
- Flowmetry was performed 10 times from each side on the abdomen at the emergence site of each perforator vessel; the four greatest values were analysed



Key results

- Mean flow velocity increased from 19.870 to 28.618 cm/sec (8.748 cm/sec) with use of PICO sNPWT and from 28.635 to 31.370 cm/sec (2.735 cm/sec) for controls (Figure)
 - Use of PICO sNPWT significantly increased mean flow in perforator vessels by 8.765 cm/sec compared with controls ($p < 0.0001$)
- An increase in relative flowmetry of 2.74 cm/sec occurred with both perforator vessels after application of PICO sNPWT to just one perforator vessel ($p < 0.0001$)
- Estimates of interaction showed that mean flow value increased significantly by 6.0125 cm/sec after use of PICO sNPWT compared with controls ($p < 0.0001$)

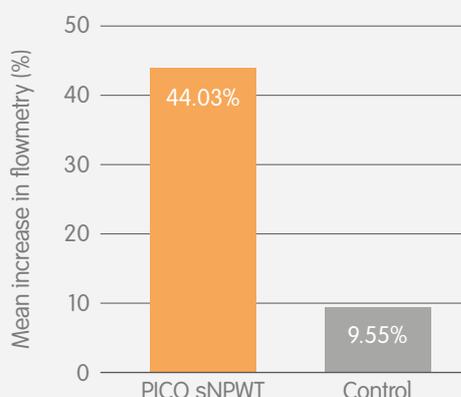


Figure. Percentage increase in mean flowmetry values for PICO sNPWT and controls at the end of the study

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Evidence in focus (continued)



Conclusion

In this preliminary study, PICO[®] sNPWT significantly increased flowmetry in perforator vessels compared with control, which could improve the success of microsurgical procedures, such as the creation of flaps for breast reconstruction.



Study citation

*Innocenti M, Santini M, Dreassi E, et al. Effects of cutaneous negative pressure application on perforator artery flow in healthy volunteers: a preliminary study. *J Reconstr Microsurg*. 2018 Aug 15. [Epub ahead of print]

Available at: [Journal of Reconstructive Microsurgery](#)

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