Shock wave therapy to improve wound healing after vein harvesting for CABG

Author:
Julia Dumfarth, Daniel Zimpfer, Johannes Holfeld, Florian Sihorsch, Wolfgang Schaden*, Margit Voegele Kadletz, Ernst Wolner, Michael Grimm

Institutions:
Dept. Of Cardiothoracic Surgery, Medical University Vienna * Trauma Centre Meidling

Device and producing company:
DermaGold (Tissue Regeneration Technologies, LLC, Woodstock, USA manufactured by MTS Europe GmbH, Konstanz, Germany)

Introduction:
Wound healing disorders after vein harvesting for CABG are an evident clinical problem. Extracorporeal shock wave therapy (SWT) has been shown to improve wound healing in patients with diabetic and vascular ulcers. It remains uncertain if prophylactic application of SWT can improve wound healing after vein harvesting.

Methods:
In order to study the effect of prophylactic SWT we performed a prospective randomized trial. Eighty consecutive patients undergoing isolated CABG were randomized to either prophylactic SWT (n=40) or no treatment as control (n=40). SWT was applied after wound closure at the end of the operation under sterile conditions. A total of 25 impulses (0.1mJ/mm²; 5Hz) were applied per centimeter wound length. Wound healing was evaluated using the ASEPSIS Score on postoperative days 3-7. Patient demographics, operative data and postoperative adverse events were monitored.

Results:
Both groups were comparable with regard to patient characteristics, operative data and postoperative adverse events. Wound length (SWT: 41±13 vs. control: 37±11) was comparable between the two groups (p=0.110). The asepsis score showed improved wound healing in the SWT group (SWT: 5.1 ± 5.6 vs. control: 9.7 ± 8.1, p=0.009). We observed no difference in use of antibiotics or in hospital stay. No adverse events were observed in the treatment group.

Conclusion:
As shown in this prospective randomized study, prophylactic application of low energy extracorporeal shock wave therapy improves wound healing after vein harvesting for CABG.