

Extracorporeal Shock Wave May Enhance Skin Flap Survival in an Animal Model.

Authors:

Meirer R, Kamelger FS, Huemer GM, Wanner S, Piza-Katzer H.

Institution:

Department of Plastic and Reconstructive Surgery, University Hospital of Innsbruck, Leopold-Franzens University, Anichstrasse 35, A-6020 Innsbruck, Austria.

Several methods have been used in an attempt to increase blood supply and tissue perfusion in ischemic tissues. The authors investigated the effect of extracorporeal shock wave (ESW) treatment on compromised skin flaps. For this purpose, the epigastric skin flap model in rats, based solely on the right inferior epigastric vessels was used.

Twenty male Sprague-Dawley rats were divided into two groups (ESW-group, Control group) of 10 rats each. The ESW-group was administered 2500 impulses at 0.15 mJ/mm² immediately after surgery, whereas, the control group received no treatment. Flap viability was evaluated on day 7 after the operation. Standardised digital pictures of the flaps were taken and transferred to the computer, and necrotic zones relative to total flap surface area were measured and expressed as percentages.

Overall, there was a significant reduction in the surface area of the necrotic zones of the flaps in the ESW group compared to the control group (ESW group: 2.2±1.9% versus control: 17.4±4.4% ($p < 0.01$)).

In this study, the authors demonstrated that treatment with ESW enhanced epigastric skin flap survival, as confirmed by the significant reduction of necrotic flap zones. ESW treatment seems to represent a feasible and cost effective method to improve blood supply in ischemic tissue.