

Accelerated wound recovery in the treatment of burns using defocused shockwave therapy (ESWT)

Author:

Richard Thiele (1), Christian Ottomann (2), Bernd Hartmann (2)

Institution:

- 1) IZS Berlin (Internationales Stoßwellenzentrum)
- 2) Unfallkrankenhaus Berlin

Device and producing company:

Dermagold of TRT (Tissue Regeneration Technologies, Konstanz)

Introduction:

Musculoskeletal shockwave therapy increases blood flow in tissues and results in neoangiogenesis. In a study carried out on animals, enhanced tissue regeneration was observed in skin grafts. The aim of the planned clinical study is to demonstrate reduced recovery time and/or enhanced wound healing, specifically superficial and deep thermal lesions, as well as autogenous skin donor sites.

Methods:

This will be a single-site, prospective, randomized and non-binding clinical study. Musculoskeletal shockwave therapy is to be administered within the first 24 hours posttrauma as part of the first aid care to be followed by a standardized dressing regime as a part of the burn treatment. The patients are to be divided into three groups according to the degree of the burns, i.e. OP planning. Group A (superficial second degree burns or scald wound surfaces) - beginning January 1, 2007, 50 patients who meet the entry criteria and are not placed in Group B or Group C are to be selected. The patients, afflicted with second degree thermal lesions (burns and scalds), do not require transplants on the areas to be investigated and are expected to have a scar-free recovery within 14 days. Re-epithelization is to be attained through conventional treatment. Twenty-five patients from the group are randomly selected for ESWT treatment.

Group B (deep second degree burns or scald wound surfaces) - beginning January 1, 2007, 50 patients who meet the entry criteria and are not placed in Group A or Group C are to be selected. The patients are afflicted with second degree thermal lesions. Recovery under conventional therapy is expected to take more than two weeks and a conventional method of treatment is to be administered. Afterwards, depending on the size of the remaining defect it will be determined whether a surgical procedure is necessary. The total recovery time will be assessed. The application of ESWT is to be given to 25 randomly chosen patients. Group C (autogenous skin donor sites) - beginning January 1, 2007, 50 patients who meet the entry criteria and are not placed in Group A or Group B are to be selected. Due to the necessity of a skin graft, autogenous skin will be removed from this group of patients. The autogenous skin tissue will be removed by machine using a strength of 0.2mm to 0.3 mm. ESWT is to be administered afterwards. Recovery to complete re-epithelization (primary aim) will be determined visually in the course of dressing changes and photographed. The application of ESWT is to be given to 25 randomly chosen patients. The study is projected to last for one year. The use of a diffused shockwave head is to be administered tangentially on the burn wounds. Shockwaves with an energy level of 0.1-0.14 mJ/m² is to be administered in the study. All participating patients, i.e. patients given ESWT as well as those of the control group (Groups 1 to 3) will receive identical dressings made of perforated silicon film together with a hydrogel (Mepitel together with Lavaseptgel or Octenidigel), Suprathel dressing or Aquacell film bandage.

Results:

Expected findings: A significantly shortened period for the re-epithelization of the thermal lesions (Group A), autogenous skin donor sites are removed for grafting (Group C), and enhanced recovery of the deep dermal lesions (Group B) with a reduction of necessary surgical surfaces is expected in those receiving musculoskeletal shockwave therapy.