

PACE (PULSED ACOUSTIC CELLULAR EXPRESSION) -TECHNOLOGY: A NEW APPROACH TO TREATING ULCERS IN DIABETIC PATIENTS

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Background

Extracorporeal shock wave technology (ESWT) is an emerging treatment tool for a variety of medical conditions reaching from the treatment of kidney stones to musculoskeletal conditions. For musculo-skeletal indications, the mechanism of action is often attributed to increased vascularization, growth factor expression and long term neoangiogenesis. These mechanisms of action also are associated with wound healing.



Figure 1. Biological mechanism of PACE

Objectives

PACE technology, based on ESWT, has been developed to treat chronic and acute wounds. Therefore PACE technology has been applied to a variety of diabetic ulcers.

Materials & Methods

In 13 single case observation studies we provide additional evidence for the long-term safety and efficacy of PACE by treating 13 diabetic subjects with ulcers on the foot and lower leg. Subjects received 4 PACE (in 3 cases 6 PACE) treatments using the standard setting E2 of the PACE device every 3±1 days. Patients received standard of care treatment (in one case additional VAC treatment in advance of PACE) until wound closure was observed.

Results

12 patients have been included. Mean duration of the diabetic foot ulcers before treatment has to be estimated for a period longer than 3 months. PACE applications have been used in ulcers which didn't respond to other treatments. The accelerated rate in wound healing achieved with PACE treatments, even with difficult wounds which did not respond to other treatments, was remarkable.

Pre treatment (1)



- 86 year old male
- Neuro-ischemic ulcer Achilles tendon (1)

Post treatment (2)



- > 6 months
- 4 PACE treatments (2)
- Almost full closure after 3 months

Pre treatment (3)



- 50 year old male
- No healing after hallux amputation (3)
- Hallux amputation followed by osteomyelitis with risk for further amputation

Post treatment (4)



- 4 PACE treatments after debridement (4)
- Closure after 6 weeks

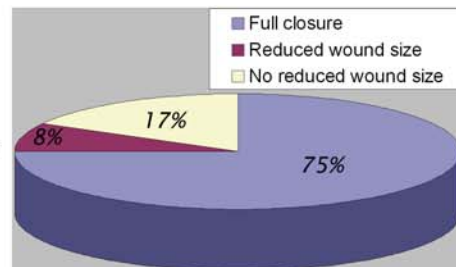


Figure 2. Pulsed Acoustic Cellular Expression Technology in 12 patients with a diabetic foot ulcer

Conclusion

Based on these results, PACE is likely to become a key component in modern wound management of chronic diabetic ulcers. Further clinical studies are mandatory.