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Objectives

Clinical studies showed an improvement of erectile function after low-intensity shockwave treatment (Li-ESWT) (1).

Regarding Peyronie's disease data are more inconsistent, yet selected patients seem to benefit from Li ESWT (2).

Still there is little data on patient satisfaction after Li ESWT in a private practice.

We wanted to know, is the improvement of sexual function sufficient for patients to be satisfied with this new therapy even when for example they have to pay for it.

Method

20 patients with erectile dysfunction (ED) and 10 patients with Peyronie's disease (PD) were treated with Li ESWT in our practice.

Standard protocol included 12 sessions with 5000 shockwave impulses ($0,16\text{mJ}/\text{mm}^2$) in linear tissue coverage technique (fig.1 Piezowave2, Wolf/Elvation) in ED. In PD patients 2500 impulses were applied with linear coverage along complete corpora cavernosa, 2500 impulses were applied plaque intensified with point-focused shockwaves (fig.2) up to $0,702\text{mJ}/\text{mm}^2$ when tolerated by the patient. Both groups were treated additionally with Tadalafil 5mg daily dose.

After 3-6 month a follow-up appointment was made.



Figure 1:
Linear coverage
shock-wave technique
($0,16\text{mJ}/\text{mm}^2$)



Figure 2:
Point focused
shock-wave (up
to $0,702\text{mJ}/\text{mm}^2$)

Patients who did not show up were contacted by telephone.

Five simple questions were asked, only dealing with patient satisfaction (fig. 3):

- Improvement of complaints
- Sexual intercourse possible
- Intercourse with PDE-5-I possible/ better
- Overall content
- Would you recommend ESWT to others?

Answers were possible in 4 categories:

- Positive
- Mostly positive
- Mostly negative
- Negative

Treatment costs were mostly not covered by patients health insurance but by patients themselves.

Results

19 patients (mean age 62 years, range 35 to 83y) in the ED group (mean IIEF 12) and 9 patients with PD (mean age 60y, range 38 to 72y) were followed up. 2 patients were lost to follow-up.

11 ED patients (58%) reported improvement (PD: 7/ 78%).

13 ED patients (63%) could perform sexual intercourse (PD: 8/ 89%).

14 ED patients (74%) improved sexual performance using PDE-5-I (PD: 5/ 55%)

Overall content with the treatment were 13 ED patients (68%) and 8 PD patients (89%).

14 ED patients (74%) and 8 PD patients (89%) would recommend Li ESWT to other patients or friends

In ED subgroup of PDE-5-I pre-treatment non-responder 8/11 (73%) could perform sexual intercourse after treatment. 7 patients (64%) were subjectively content with this result.

In ED subgroup of men under 65y 6/8 (75%) patients were overall content, >65y 7/11 (64%) showed overall satisfaction with the result of ESWT.

Only 4 patients in the ED group had a mild to moderate ED (IIEF >17), 3/4 (75%) showed an improvement that led to satisfaction with the ESWT result. 10/15 (67%) patients with IIEF <17 were subjectively content with the result of therapy.

Conclusion

Despite the many limitations of this small survey (e.g. unselected and small group of patients, variations of standard protocol and follow-up intervals due to patients will) it is safe to say, Li ESWT leads to high patient satisfaction and improvement of complaints in ED and PD, not only in clinical studies but also in a private practice.

While ED patients subjective satisfaction seem to match the clinical results of objective studies (1) in our small group PD patients did surprisingly well. New clinical studies with modified protocols should be reconsidered.

Li ESWT seems highly beneficial in PDE-5-I non responder patients, giving them back the ability to perform sexual intercourse (3).

Also patient satisfaction is still high, when the treatment is not covered by their health insurance but the costs seem to be affordable for the patient.

Still: it seems mandatory to find better criteria for future patient selection to increase the number of satisfied patients.

Questionnaire Patient Satisfaction

	positive	mostly positive	mostly negative	negative
Subjective Improvement				
"My complaints have improved"				
Sexual intercourse is possible				
Subjective Satisfaction				
"I am satisfied with the result of therapy"				
Recommendation				
"I would recommend this therapy to other patients/ friends"				

Figure 3:
Questionnaire
Patient Satisfaction

References

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EFFECT OF ESWT (EXTRA CORPOREAL SHOCKWAVE THERAPY) FOR CHRONIC STAGNATE WOUNDS

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ABSTRACT

Aims: This study is to investigate the effect of ESWT for chronic stagnating wound. **Method:** A qualitative comparative study between before ESWT and after ESWT. The inclusion criteria are non-infected wounds which have failed to heal with the standard dressing procedure for more than 8 weeks. The exclusion criteria will be infected wounds with slough, exudates, and foul smelling odours. Standard assessment (TIME concept) was done prior to the ESWT treatment and the assessments were done weekly. This is a pilot study, with the selection of 5 patients that fit into the criteria. The patients were treated with ESWT as an adjunctive treatment with standard dressings. ESWT Therapy settings depend on the patients' wound size and depth. **Results:** All the 5 patients showed a significant improvement, in terms of reduction in size of the wound as well as increase in granulation and epithelialization. **Conclusion:** ESWT is effective as an adjunct therapy in helping the chronic stagnant wound to heal.

INTRODUCTION

In principle, ESWT is a strong, targeted, mechanical stimulus which promotes biological self-healing processes. In other words, wound healing is the result of a number of complex shockwave effect. With the help of ESWT, neovascularization takes place and the release of growth factors were induced for cell granulation. Moreover, ESWT stimulates fibroblast proliferation, mesenchymal stem cell migration and induces local blood flow to the wound for recovery. ESWT is well tolerated by patients and treatment is uncomplicated.

METHODOLOGY

A pilot study with a total for 5 patients with chronic stagnant superficial wounds were selected for the studies. The wound is firstly being assessed according to the TIME concept. The wounds are non-infected, with no biofilms, no odor and the wound has not been healing for the past 8 weeks. All these patients received the ESWT integrated with standard wound care management. All 5 patients' data were taken pre ESWT including size of the wound and the wound bed condition. The gel pad size used is 5mm with a frequency of 5Hz and intensity set at 6 where linear therapy source was given through Piezowave 2. Prior to the procedure, ultrasound gel is to be applied directly on the wound bed and subsequently covered with a thin transparent film. With the help of the ultrasound gel on the gel pad, shockwaves are applied slowly and evenly along the wound and the edge of wound. To achieve optimal coupling for the transmission of shockwave energy to the focal zone, it is ensured that there is no presence of air pockets on the surface of the targeted tissue same as ultrasound examinations. The gel pad will then be placed on patient for shockwaves application. Therapy source is moved slowly and evenly along the wound and the edge of the wound during application. After completing the desired amount of shockwaves, the wounds are then cleansed with Superoxidised Solutions. De-sloughing and debridement were performed by authorized healthcare professionals to make a best healing environment for the wound. The patient is scheduled weekly for the subsequent therapy to optimize wound healing.

TABLE 1

Patient	No. of RX / Therapy	Size of Wound	
		Before	After
1	3	4.0 cm x 4.0 cm	Complete Closure
2	3	3.5 cm x 3.0 cm	3.0 cm x 2.0 cm
3	3	4.5 cm x 7.8 cm	3.0 cm x 5.5 cm
4	1	5.0 cm x 1.5 cm	4.0 cm x 1.0 cm
5	1	5.0 cm x 3.0 cm	5.0 cm x 3.0 cm (granulation noted)

ESWT has been effective in speeding up the healing process for chronic uninfected wounds. Wound bed starts to have granulation and the epithelialization of the edges of wound makes the wound size smaller after a few cycles of therapy. There is no presence of odour and biofilms or any signs of infection.

CONCLUSION

In this pilot study, ESWT is used as an adjunctive therapy for chronic non-infected wounds. There was improvement in the healing or epithelialization of the wounds. Patients didn't experience any pain with the therapy. Therefore, this is a good modality to use as an adjunctive therapy and a more extensive study should be carried out to get a better and larger sample size to give more significant results.

CASE STUDY 1



Case 1 is a 21 year old gentleman with a non healing clean wound post operation for skin warts at the right lateral aspect of the leg. The measurement prior ESWT for the wound is 4cm x 4cm x 0.1cm.

CASE STUDY 2



Case 2 is a 42 year old male with a history of clean but non-healing leg ulcer on the right medial aspect of the leg. The measurement is 3.5cm x 3cm x 0.1cm.

CASE STUDY 3



Case 3 is a 34 year old Malay male with a clean but non-healing wound post MVA situated at the dorsum of the right foot. The measurement is 4.5cm x 7.8cm x 0.1cm.

CASE STUDY 4



Case 4 is a 58 year old male with a non-healing leg ulcer at the right posterior tibia with the measurement of 5cm x 1.5cm x 1.5cm.

CASE STUDY 5



Case 5 is a 55 year old man with a clean but non-healing diabetic foot ulcer post right toe amputation. The measurement is 5cm x 3cm x 0.2cm.

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