

Introduction

Extracorporeal Shockwave Therapy (ESWT) is a well-accepted treatment alternative, world wide, for the treatment of chronic and recalcitrant tendonopathies and plantar fasciitis. Early and mid-term study results indicate success with a variety of orthopedic disorders, including plantar fasciitis. While several short-term studies support ESWT for the treatment of plantar fasciitis^{1,2}, there are only a few mid-term studies that have evaluated the benefit of ESWT on function and pain five years post-treatment. These studies demonstrate favorable results including improved function and pain.^{3,4}

Objective

To determine the long term benefit (9 years) and safety of ESWT on patient reported measures of function, pain, patient satisfaction, and level of improvement and time necessary to resume regular activities. Safety measures evaluated whether there was any history of long-term weakness, lateral column pain, or plantar fascial rupture that could be attributed to the ESWT intervention.

Methods

Study Design

The number of patients with plantar fasciitis treated with ESWT in 2001-2002 was identified using retrospective chart review (N=197).

Data Collection

A 10-item paper pencil retrospective survey was mailed to each patient and was used to document level of function, pain, patient satisfaction, level of improvement, time necessary to resume regular activities, and complications.

Statistical Analysis

Descriptive statistics were used to examine the distribution for all key variables. For categorical variables (i.e., level of satisfaction, level of function, and etc.), frequency counts were calculated. For continuous variables (i.e., level of improvement, level of pain), measures of central tendency and dispersion were calculated. Additional analyses included cross tabulation and correlations of key variables to further understand the data. SAS version 9.1 was used for all analyses.

Results

Of the 197 patients identified for inclusion in the study, 75 patients returned the survey (38.1%).

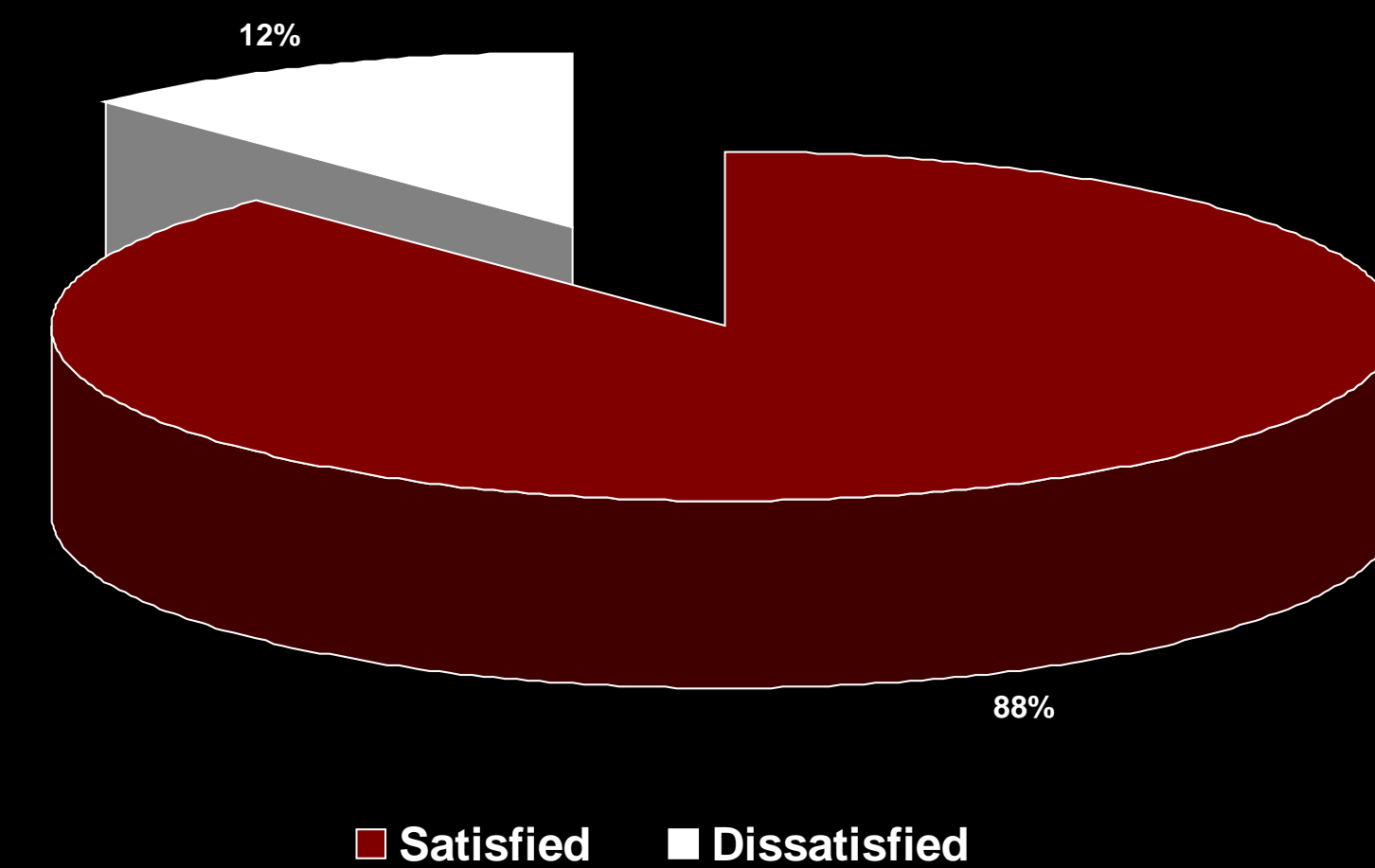
SATISFACTION

- 65 patients (87.84%) reported moderate to high satisfaction with ESWT.
 - Of those patients, 58 reported high satisfaction. For those patients, the percentage of improvement in heel pain was 96.4% (SD=6.16) with an average pain rating of 0.77 (SD=1.10) after the procedure.

ACTIVITY

- Of the 63 patients (87.50%) able to return to regular activities after ESWT, the amount of time was 3.44 weeks and average pain rating after the procedure was 1.21.

POST-ESWT PATIENT SATISFACTION (%)



PAIN

- There was a significant negative correlation between percentage of improvement in heel pain and average pain rating after the procedure ($r=-0.801$, $p<0.001$).

- 18 patients (24.3%) were able to discontinue comfort maintenance (i.e., stretching, icing and etc..) after ESWT. For those patients, percentage of improvement in heel pain was 95.8% (SD=7.72) with an average pain rating of 0.67 (SD=1.19) after the procedure. For the remaining 56 patients who continued maintenance, the percentage of improvement in heel pain was 79.7% (SD=32.60) with an average pain rating of 2.07 (SD=2.77).

FUNCTION

- Of the 66 patients (91.67%) who reported better functioning after ESWT, the percentage of improvement in heel pain was 91.09% (SD=17.38)

COMPLICATIONS

- There were no long-term complications such as continued lateral column pain, neuropraxia, nerve injury, or plantar fascial rupture reported.

Table 1. Descriptive Statistics

Domain	Outcome	N=74 Patients
Satisfaction	Level of satisfaction with ESWT n (%)	65 (87.84)
Pain	Average percent improvement in heel pain (0-100%; Mean ± SD)	83.61 ± 29.40
	Average heel pain rating following ESWT (0-10; Mean ± SD)	1.73 ± 2.55
Function	Level of functioning following ESWT n (%)	66 (91.67)
Activity	Ability to return to regular activities n (%)	63 (87.50)
	Average time (weeks) necessary to return to regular activities (Mean ± SD)	4.50 ± 12.74

Conclusions

ESWT has been shown to be highly effective in treating numerous musculoskeletal conditions, including chronic plantar fasciitis, in patients as early as three months following treatment. To date, there have been no studies evaluating these patients beyond five years.

We have evaluated a limited number of patients, retrospectively, who were an average of nine-years post-ESWT treatment of plantar fasciitis. Our early results have continued to be beneficial and satisfying to the great majority of patients responding to our request for evaluation.

This leads us to a conclusion that ESWT is equivalent to open surgery for the treatment of chronic plantar fasciitis, and that the results of this treatment appears to be void of some of the complications such as chronic lateral column pain and neuropraxia that are seen with surgical intervention.

In short and long-term studies, the clinical benefit of ESWT for plantar fasciitis across the dimensions of pain, function, patient satisfaction and activity has been consistently positive.

The results of this study combined with the results that have been reported in the world literature over the past five years are significant and greater in number than similar studies evaluating surgery for plantar fasciitis. The results seem to be equivalent, with faster recovery and no complications from ESWT.

It is our opinion that ESWT can no longer be considered as an investigational treatment and should be made compensable by insurance to the public at large.

We are aware of the limitation of this study because of the limited number of responses (75, 38.1%) drawn from our index number of (197)

References

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