

Treatment of chronic tendinitis non responsive to conservative treatments by extracorporeal shock waves using the Orthospec system

Bloch Jean-Gérard, Diebolt Vincent, Kahnmacher Catherine, Kieffer Dominique, Martin Jean-Claude, Meyer Raoul, Niederberger Philippe, Offner Clélie

Centre Enthèse, 5 Boulevard du Président Edwards 67000 Strasbourg, France.
 e-mail: dr.jgbloch@wanadoo.fr

Summary : We have completed a preliminary open study of 85 patients presenting chronic tendinitis not responsive to any classical medical treatments. They were treated between September 2000 and May 2001 with extracorporeal shock waves provided by the Orthospec system. They were reviewed in the months following treatment (min = 3, average = 8, max = 13). The average age of the patients was 52 years (min=15, max=81). The localisations were as follows : 36 shoulders, 17 plantar fascia, 14 epicondyles, 8 Achille's tendons, 6 épitrochlea, 4 trochanters. The average duration of symptoms was 25 months (min=1month, max= 240 months). The average number of sessions was 2.7 (min=1, max=8). Evaluation 1 month after the last session for all localisations showed 56% excellent results, 22 % good results, 6 % poor results and 16 % total failures.

Introduction : There is an increasing interest extracorporeal shock wave therapy for musculoskeletal pathologies in general and especially in chronic tendinopathies whether calcific or not. The physics involving shock waves is well known and their safety in medical treatments is well documented because of their use for over 15 years to treat about 90 % of kidney stones. About 10 years ago the first treatments for tendinitis were performed in Germany for calcific tendinopathies of the shoulder. They used lithotripters designed for urology with the prime objective to clear the calcification. The encouraging results lead these pioneers to modify the ergonomometry of the systems so that they could be more conveniently used for tendinopathies but they did not modify the shock wave characteristics and kept the focal volume of the energy small. This is required for breaking a kidney stone, but is not well suited for treating a large zone in a tendon. Results were problematic for non calcific tendinopathies until new systems delivering therapeutic levels of energy focussed in a much larger volumes were developed.

Materials and Methods : The study was conducted in the Enthèse Centre in Strasbourg where 8 Rheumatologists work. It is equipped with an Orthospec, an hydroelectric spark-gap extracorporeal shock wave system manufactured by Medispec. The therapeutic zone of 5 Mpa isopressure is encompassed in a curve 46mm diameter X 134 mm depth. The isobar at 50% of maximum -6dB pressure is within a diameter of 26 mm at 96 mm depth. The energy flux density at -6dB ranges from 0.07mJ/mm² to 0.32mJ/mm². The effective energy is contained within a volume of 35 mm diameter and 110 mm depth. No X-ray or ultrasound imaging was used. Local anaesthesia was not needed. Between September 2000 and May 2001, 85 patients presenting with chronic tendinitis and not responsive all other classical medical treatments were given shock wave therapy. The sessions for each patient were always provided by the same doctor. The sessions were given at 15 day intervals following a defined protocol for each location with from 1200 to 2500 shocks per session.

Results : The 85 patients included 47 women and 38 men. The average age was 52 years (min=15, max=81). The locations were as follows: 36 shoulders without calcification, 17 plantar fasciitis, 14 epicondylitis, 8 Achille's tendons, 5 épitrochlea 4 trochanters. The symptoms had lasted an average of 25 months (min=1month, max= 240 months). The short term results were evaluated 1 month after the last session. Long term reevaluation was carried out on average 8 months after the last shock wave session (min = 3 months, max = 13 months).

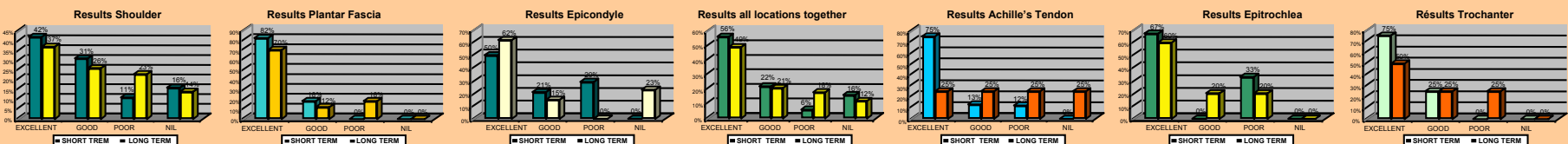
Discussion : There are three ways to produce shock waves : hydroelectric or spark gap, electromagnetic and piezoelectric. There are important differences in the characteristics of the shock waves produced by the three different technologies. These characteristics are pressure produced, the energy delivered, the volume of the therapeutic energy provided and the depth. These differences importantly determine whether X-ray or ultrasound visualisation is needed for treatment and whether anaesthesia is required. It is with hydroelectric spark gap systems that higher energy focussed in a large volume is found. Among these is the Orthospec which we used for this study. It is this particularly large volume characteristic which facilitates treatment without imaging and anaesthesia that makes the Orthospec the system of choice.

SHORT TERM RESULTS

TOPOGRAPHIE	EXCELLENT	GOOD	POOR	NUL
ALL LOCATIONS	56%	22%	6%	16%
SHOULDER	42%	31%	11%	16%
PLANTAR FASCIA	82%	18%	0%	0%
EPICONDYLE	50%	21%	29%	0%
ACHILLE'S TENDON	75%	13%	12%	0%
EPITROCHLEA	67%	0%	33%	0%
TROCHANTER	75%	25%	0%	0%

LONG TERM RESULTS

TOPOGRAPHY	EXCELLENT	GOOD	POOR	NUL	LOST TO F/U
ALL LOCALITIES	49%	21%	18%	12%	3
SHOULDER	37%	26%	23%	14%	1
PLANTAR FASCIA	70%	12%	18%	0%	0
EPICONDYLE	62%	15%	0%	23%	1
ACHILLE'S TENDON	25%	25%	25%	25%	0
EPITROCHLEA	60%	20%	20%	0%	1
TROCHANTER	50%	25%	25%	0%	0



Conclusion : The outcome of this preliminary study shows encouraging results for this new technique. A multi-centre double blind study randomised against placebo, for plantar fasciitis, has been started in France. This should provide more solid data.