



Association for Equine Sports Medicine

Dedicated to the advancement of scientific knowledge and care of the athletic horse

Radial Shock Wave Therapy® for the Treatment of Insertion Desmopathies

Mark S. Revenaugh, DVM; Brendan W. Furlong, MVB, MRCVS
Furlong & Associates, PO Box 16, Homestead Road, Oldwick, NJ 08858,
phone (908) 439-2821, fax (908) 439-2691, email: revenaugh@aol.com

Introduction

In human medicine, extracorporeal shock wave lithotripsy has been used for stone management in the bladder, kidney and ureter for 15 years.¹

Recently, Radial Shock Wave Therapy (RSWT) has been introduced to human orthopedics for the successful treatment of insertion tendinopathies such as radial epicondylitis (“tennis elbow”) and plantar fasciitis (with or without heel spur).² A long term study with more than 200 patients showed an overall treatment success of up to 83% for the tennis elbow patients and 81% for the heel spur patients at a 12 month-follow up.³

In the veterinary field, the application of radial shockwaves is in its infancy. The first long-term treatment results with this non-invasive therapy for the treatment of proximal suspensory desmopathies were presented by Dr. K. J. Boening at the AAEP 2000 meeting.⁴

The success of conservatively treated chronic insertion desmopathies in the front and in the hind limb are often poor with high recurrence rates. Traditional treatments include systemic and local application of antiphlogistica, corticosteroids, counterirritants, and surgical intervention combined with prolonged periods of rest. These methods have been well documented.⁵

Between December 1999 and February 2001, 45 horses with chronic insertion desmopathies were treated with Radial Shock Wave Therapy in order to gain experience with this new therapy and to further evaluate this new treatment method. In addition to treatment with radial ESWT, a focused ESWT has been used for PSD in approximately 30 horses. Although this study involves response to treatment with the radial shock wave therapy system only, a brief discussion of informal results comparing these two modalities will be included.

Materials and Methods

Horses were selected with the diagnosis of a chronic proximal suspensory desmitis (PSD) exclusively. The horses must have had clinical symptoms for at least three months and at least one failed conservative treatment approach prior to RSWT – in order to minimize the likelihood of spontaneous healing. All horses underwent a lameness examination (using the AAEP index). The majority of the horses underwent diagnostic ultrasonography, scintigraphy or both.



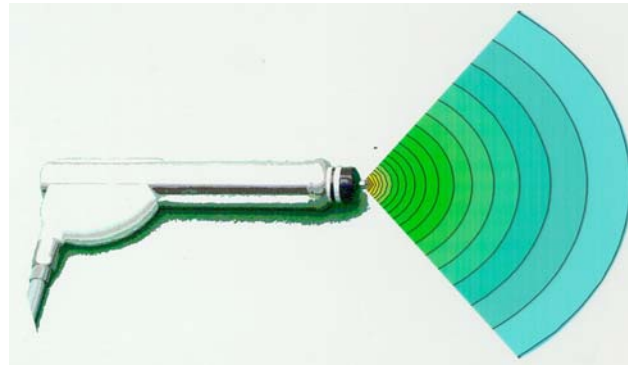
Association for Equine Sports Medicine

Dedicated to the advancement of scientific knowledge and care of the athletic horse

In this study, we used the Swiss DolorClast® Vet system (EMS Corp. USA, Dallas, TX, www.ems-medicalamerica.com) consisting of a control unit, a handpiece with two different applicators (6mm and 15mm) and a medical air compressor. The compressor creates a pneumatic energy that is used to accelerate a projectile inside the handpiece. When the projectile strikes the applicator, a shock wave is created that is distributed radially (spherically) from the tip of the applicator to the pain zone.



Swiss DolorClast® Vet System



Radial distribution of the shock wave

In up to 3 sessions, 2,000 impulses per treatment were applied using the 6mm applicator, a pressure of 36 psi and a frequency of up to 10 Hz with a light pressure on the handpiece (the first narrow ring on the force indicator was covered by the distal screw cap).

The patient received a light sedation with Domosedan prior to Radial Shock Wave Therapy. Each treatment was performed with the horse standing.

The treatment area was clipped and shaved and prepared with EMS coupling gel to obtain maximum skin contact and to minimize the loss of shock wave energy at the interface applicator tip/skin.

The affected leg was lifted and the superficial and deep flexor tendon was pushed laterally or medially in order to be as close as possible to the origin of the suspensory ligament. 1,000 shockwaves were applied from each side.



Association for Equine Sports Medicine

Dedicated to the advancement of scientific knowledge and care of the athletic horse



PSD treatment – lateral access

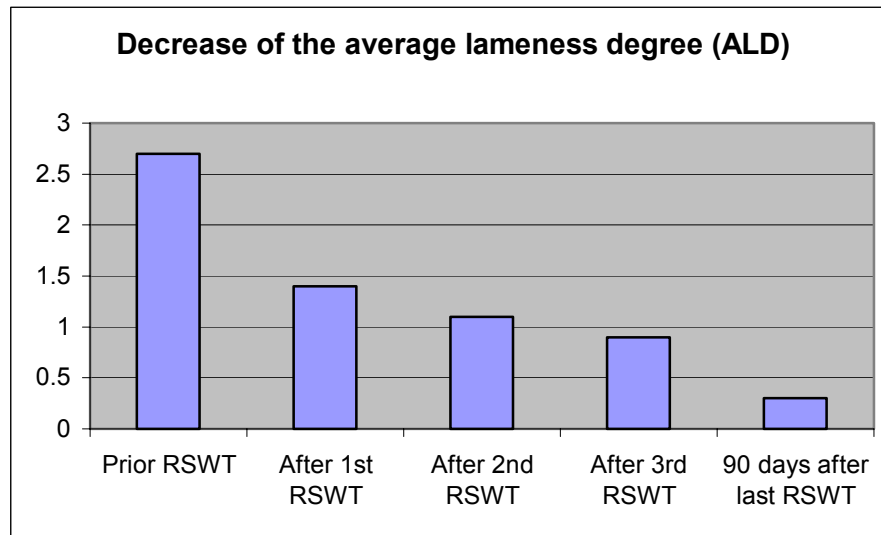


PSD treatment – medial access

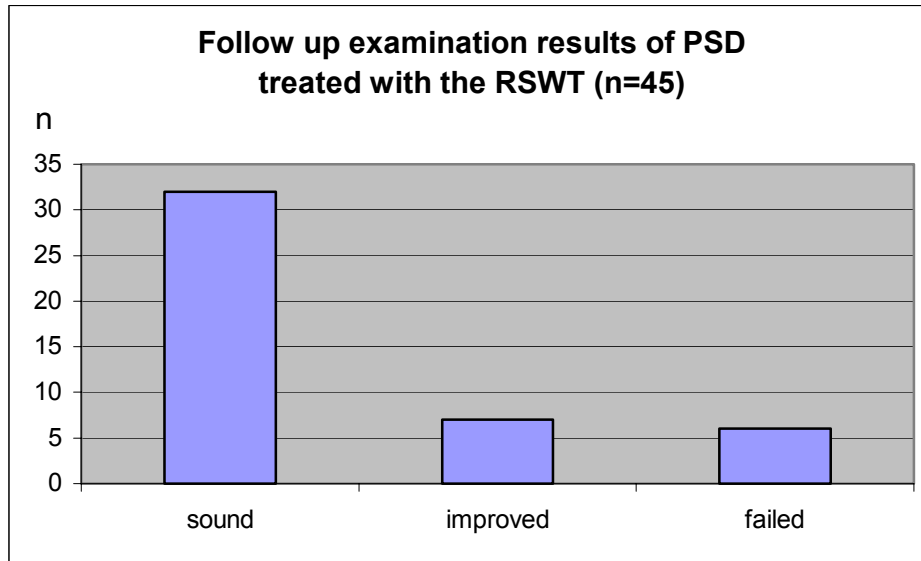
Follow up examination was obtained 90 days after the last session. The level of exercise was determined by the degree of severity of the original injury.

Results

A total of 45 horses with chronic PSD were treated with RSWT. Prior to the first treatment, patients showed lameness in various degrees (average lameness degree (ALD): 2.7). Immediately after the first treatment 29 horses had a distinct reduction of lameness (ALD: 1.4). This demonstrates the strong, immediate pain reducing effect of radial shockwaves.



At the time of the follow-up evaluation, 32 horses were free of lameness (ALD: 0.3) and 7 horses had a distinct pain reduction. Six horses showed no pain reduction at all. All sound horses were put back to full work, 6 horses had a reduced training program, 5 horses have not started to work yet, two horses were turned out by the owner.



In 27 of the 45 horses receiving sonography examination we found ultrasonographic changes at the origin of the suspensory ligament (diffuse hypoechoic areas, related to fluid accumulation and ruptured fibers).

Conclusion

Radial Shock Wave Therapy offers a successful treatment of lameness of chronic high suspensory desmitis. In this study, the over all success rate was 32/45 horses (71%); 39 of 45 treated horses showed a reduction of pain (86%).

The Swiss DolorClast Vet is a mobile shock wave system that enables an excellent non-invasive therapy for proximal suspensory desmopathies. Immediate pain reduction led to early return to a convalescent training program; long-term effects of radial shockwaves enable to heal chronic PSD.

Further clinical studies are needed to investigate the effectiveness of Radial Shock Wave Therapy for the treatment of other orthopedic conditions in the horse.

References and Footnotes

¹ Siebert W., Buch M. *Extracorporeal Shock Waves in Orthopedics*. In: Springer Verlag, Berlin, Heidelberg, Germany, 1998.

² Straub T., Penninger E., Froelich T., Lohrer H., Scholl J., Diesch R., Haupt G. *Prospective, Multicentric and Placebo-Controlled Study on Shockwave Treatment of Tennis Elbow and Plantar Fasciitis* International Journal of Sports Medicine, vol. 20, 1999 S105/106.

³ Lohrer H., Schoell J., Arentz S., Froelich T., Straub Th., Penninger E., Diesch R., Haupt G. *Effectiveness of radial shockwave Therapy (RSWT) on tennis elbow and plantar fasciitis*. Proceedings of the Annual Symposium of the Canadian Academy of Sports Medicine (CASM), Calgary, Alberta, Canada, July 4-7, 2001.

⁴ Boening K.J., Loeffeld S., Weitkamp K., Matuschek S. *Radial Extracorporeal Shock Wave Therapy for Chronic Insertion Desmopathy of the Proximal Suspensory Ligament*. Proceedings of the Annual Meeting of the American Association of Equine Practitioners (AAEP), San Antonio, Texas, USA, vol. 36, pp. 203-207, 2000.

⁵ Dyson S. *Suspensory apparatus*. In: Ratanen NW., McKinnon AO. *Equine Diagnostic Ultrasonography*. Baltimore: Williams & Wilkins, Baltimore, pp. 447-473, 1991.