

EVOLVING CLINICAL APPLICATIONS OF SHOCK WAVE (ESWT) FOR CANINE PATIENTS



Evidence based solutions for pain associated with osteoarthritis (OA) and Lumbosacral (LS) disease and healing of chronic tendon/ligament injuries and wounds/lick granulomas



VersaTron[®]
4 Paws

Extracorporeal Shock Wave Technology (ESWT) is a treatment that has long been used in equine and human medicine. The technology is becoming increasingly popular with small animal clinicians and clients who are attracted to the technology's track record of safety and efficacy, the lower cost and non-invasive nature of the treatment as compared to more aggressive treatment modalities such as stem cell implantation or traditional surgical repair, and finally the potential for reducing the use of pharmacological options. There is a large body of peer-reviewed publications demonstrating the positive benefits of the high-energy, focused, electrohydraulic form of the technology utilized by VersaTron 4 Paws and numerous canine-specific studies are currently underway. **VersaTron 4 Paws ESWT has shown great promise for the following indications:**

Shoulder Instability:

Shoulder instability is quickly becoming a prominent and effective use for ESWT. Surgeons have found the technology to be a less invasive option than traditional surgical stabilization. To date, typical treatment protocols for shoulder instability have included a steroid injection, NSAID therapy and rest. ESWT provides a noninvasive alternative which has shown very promising early results. ESWT decreases inflammation, improves healing and has also been shown to disintegrate tendon calcifications. **A prospective clinical study evaluating the efficacy of ESWT for the treatment of shoulder instability is currently being conducted by Michael Kowaleski, DVM, DACVS and DECVS and Robert McCarthy, DVM, DACVS at TUFTS Cummings School of Veterinary Medicine.**

VersaTron 4 Paws ESWT is being used for the treatment of biceps tenosynovitis, and/or shoulder instability which typically includes medial glenohumeral ligament laxity/rupture and subscapularis tendon tear. The diagnosis is made on the basis of chronic lameness related to the shoulder that is refractory to rest and treatment with NSAIDs, shoulder pain on exam, radiographs, biceps tendon (near the shoulder) ultrasound, and shoulder arthroscopy. Patients are treated 3 times at 2-3 week intervals with 750 pulses at Energy level E4 with the R05 (5mm) trode. According to Dr. Kowaleski, "early clinical results seem very promising".



Post surgical tendinitis and ligament inflammation:

Post TPLO patellar ligament desmitis is another area where orthopedic surgeons are finding the VersaTron 4 Paws ESWT to be effective and helpful in improving surgical outcomes. There are over 150 published peer reviewed studies showing safety and efficacy of ESWT in tendon and ligament healing in veterinary and human medicine. Prospective clinical studies have shown that ESWT not only speeds healing, but also improves quality of healing. ESWT improves collagen alignment and tensile strength of the tendon, which can help to prevent future recurrences. **A prospective clinical trial is currently being conducted by Alan Cross, DVM, DACVS at Georgia Veterinary Specialists using ESWT for the treatment of patellar ligament desmitis following TPLO.** The protocol for this indication is 600 pulses at Energy level E6 using the R05 trode at 4 and 6 weeks post-surgery.

Chronic wounds / Lick Granulomas:

Chronic wounds may not be a highly prevalent problem, but they can certainly be a challenge. When debridement alone does not work, ESWT can be an effective tool to add to the protocol. **Pam Nichols DVM, CCRP, of K-9 Rehab Center, West Bountiful, Utah reports excellent results when using ESWT for infected wounds and lick granulomas.** Dr. Nichols recently used ESWT to treat a chronic lick granuloma of approximately 2 years duration for

which steroids and DSMO had been unsuccessful. With two treatments of 500 pulses, E2, at two weeks apart, the lesion resolved completely. At four months post-treatment there has been no further licking or irritation of the lesion observed and the hair had completely re-grown.

In another case, ESWT was used to treat a severe wound/osteomyelitis case. Following two treatments of ESWT at levels E3-E5, 500-750 pulses, the infection was eradicated, the wound was healing well, and the limb was saved.

ESWT is often a first-line therapy for treatment of difficult chronic wounds in human and equine patients. ESWT has shown to be particularly beneficial in the treatment of challenging, persistent, equine distal limb wounds. A prospective study at Iowa State University demonstrated significant improvement in distal limb wound healing with ESWT. ESWT use in canine patients continues to grow due to its antibacterial effects and promotion of proper wound healing with reduced scarring.



Elbow Osteoarthritis (OA):

While ESWT can be beneficial in relieving the symptoms and possibly slowing the disease progression in a variety of joints, it is particularly helpful for elbow OA due to the unmet need for an effective treatment option for this problem. Peer-reviewed studies have shown ESWT to decrease pain associated with OA and moderate cellular proteins associated with joint disease. A preliminary study at the University of Tennessee demonstrated significant improvement in the range of motion and weight bearing as measured by force plate for ESWT-treated elbow and hip OA patients vs. placebo. **A randomized prospective study at the University of Tennessee by Darryl Millis, DVM, MS, DACVS, CCRP and Marti Drum, DVM, PhD, CCRP evaluated ESWT for the treatment of elbow end-stage OA in 15 patients.** Patients treated with ESWT (600 pulses, Energy level E3, 2 treatments at 2 weeks apart) showed a significant improvement in peak vertical force vs. the sham group.

Lumbosacral disease:

For dogs with lumbosacral disease who are not surgical candidates, conservative treatment currently involves steroids or NSAIDs to relieve pain. ESWT provides an additional non-invasive option for these patients. Surgeons report using ESWT as a low-cost alternative to surgery or stem cell treatment for this indication as it relieves pain and inflammation and often improves quality of life. **A retrospective survey study is currently being conducted at Surgical Group For Animals, in Torrance, CA by Edward Leeds, DVM, DACVS and Young Joo Kim, DVM DACVS.** Of the 23 owners surveyed, all reported that their dogs were more comfortable following ESWT and showed less reluctance to sit or lie down or to get up from one of these positions. Three out of four of the owners surveyed reported that they observed ESWT to be more effective for their pet than other treatment modalities and over 90% would use ESWT again if needed. Typically only 1-2 treatments are needed for this indication. Dogs are treated with 500-1000 shocks with the R20 trode at Energy level E5-E6.



The potential indications for which ESWT can be employed are extensive and clinical studies continue to demonstrate the safety and efficacy of the technology. In addition to the clinical support, **practitioners have also reported to be extremely satisfied with the technology not only due to the results it provides, but the ease of use, the non-invasive nature and its ability to be used with other modalities without limiting additional treatment options,** should they become necessary.

The following data is from a retrospective survey which provided information from users in the university, referral, and private practice settings about their experiences and success with ESWT for dogs. Users reported safely using ESWT in conjunction with other modalities including pharmacologic agents and rehabilitation modalities. Practitioners also reported the successful use of ESWT to replace or reduce treatment modalities such as NSAIDs, IA steroids, polysulfated glycosaminoglycan, surgery, stem cell therapy and other energy related rehab modalities (laser, acupuncture, ultrasound, ice, etc.)

Key advantages of the technology reported include efficacy, lack of side-effects, non-invasive nature and potential to replace NSAIDs or avoid surgery. Most patients are treated 1-3 times, 2-3 weeks apart with 500-1000 shocks. Short-acting sedation is recommended and well tolerated. Total treatment time, including site preparation and sedation, is about 10 minutes.

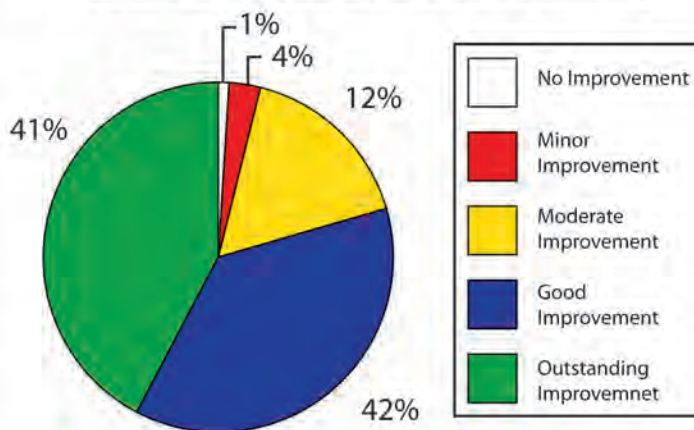
Overall, the current users reported a very high rate of satisfaction with the device.

- Practitioners ranked their **satisfaction on average as a 4.75/5.**
- Of the **over 200 total treatments** reported on, over **80% of the patients experienced either Good or Outstanding Improvement.**

References available upon request.

Pulse Veterinary Technologies, LLC
 2300 Lakeview Parkway, Suite 700
 Alpharetta, GA 30009
 Corporate: (678) 987-5100
 Toll Free: (800) 245-4417
 Fax: (678) 987-5101
 www.PulseVet.com

Veterinarian User Satisfaction Summary



Conditions Treated:

- Osteoarthritis: Hip, Elbow, Stifle, Hock, Shoulder
- Biceps Tendinitis
- Achilles Tendinitis
- Calcaneal Tendon Tear
- Patellar Desmitis
- Back
- Chronic Wounds / Lick Granulomas
- Elbow septic arthritis
- Non-union and Delayed Union fractures
- Hip Dysplasia
- FCP
- Shoulder Instability
- Additional uses for consideration: TPLO healing, bursitis, arthrodesis, edemas

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