
Extracorporeal Shock Wave Therapy (ESWT)



Jeff Blea, DVM
Von Bluecher, Blea, Hunkin, Inc.
Equine Medicine and Surgery
Sierra Madre, CA

History

- Shock waves used in human medicine as early as 1980s:
 - Break down tissue
 - Kidney stones
 - Promote healing in bone and soft tissue such as
 - Delayed bone healing
 - Stress fractures
 - Plantar fasciitis (heel spur)
 - Tennis elbow
 - Rotator cuff/ Achilles' tendon injuries

Mechanism of action for healing

Mechanical energy from shock waves



release of growth factors



- Stimulation of blood flow
- Increased bone production



ESWT in Horses

- Dorsal metacarpal disease (bucked shins)
- Osteoarthritis
- Navicular disease
- Third carpal bone disease
- Suspensory desmitis
- Tendinitis
- Curb
- Sore back musculature



ESWT in Horses



Bucked shins

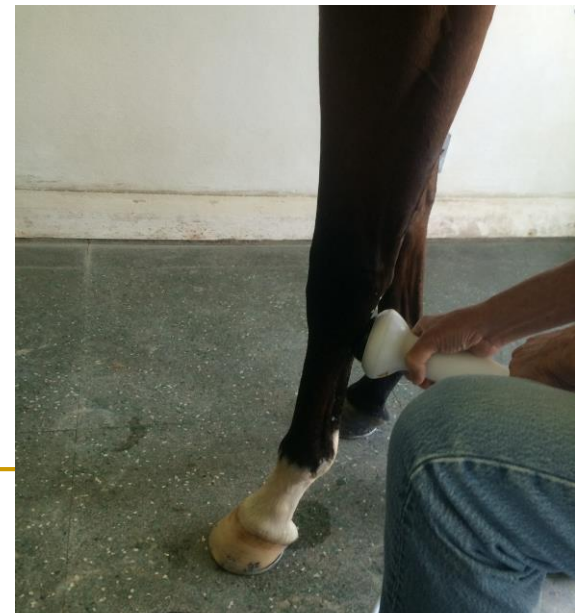
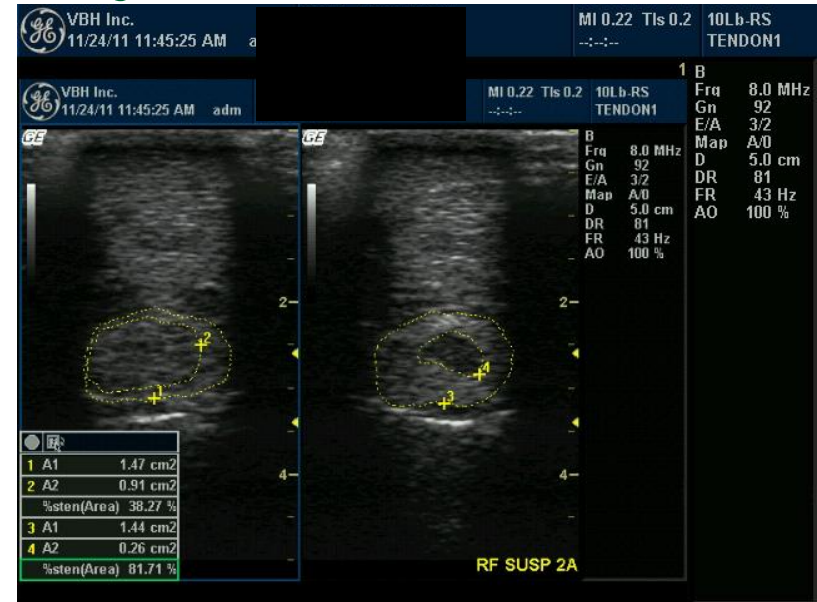


Bucked shins

- A recent study of five racehorses with severe disease, including four with stress fractures, treated with ESWT, tiludronate, and a regimen of controlled exercise
 - All returned to race without recurrence of disease
 - Average 109 days to first start
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Proximal suspensory desmitis

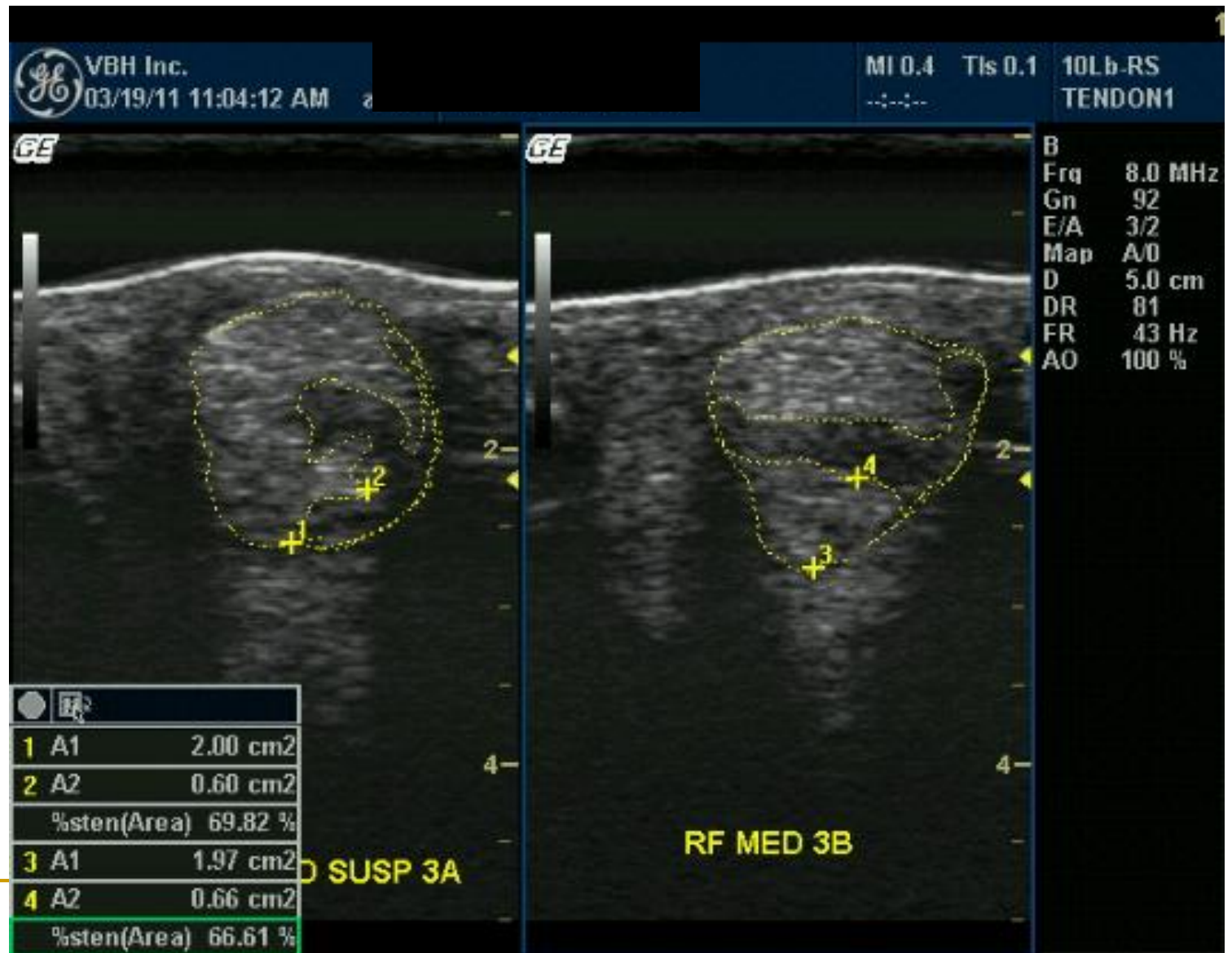
- Chronic cases can be difficult to treat and recurrence is common
- Studies have shown shock wave therapy to improve long term prognosis



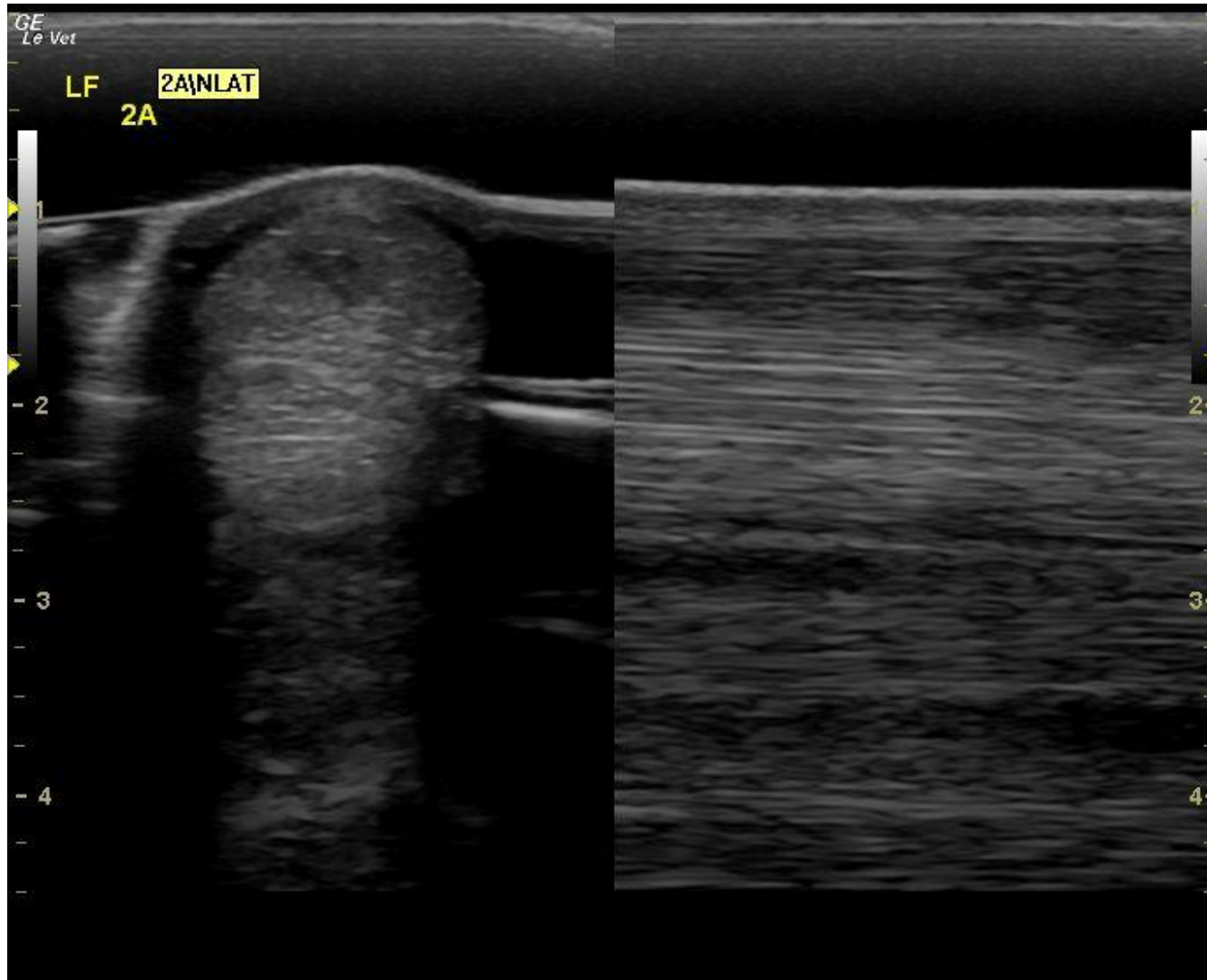
Protocols in our practice: rehabilitation following acute injury

- Bucked shins/ tendon/ suspensory lesion:
 - Shock wave (2000 shocks) under standing sedation
 - Hand-walk for one day, then jog two weeks
 - Repeat this cycle twice
 - If horse responding well, begin galloping
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Suspensory desmitis



Superficial digital flexor tendinitis



Deep digital flexor tendinitis



Protocols in our practice: therapy for chronic problems

- 3rd carpal bone disease
 - Bone spavin (osteoarthritis in the hock)
 - Curb
 - Sore back musculature
 - Protocol:
 - Shock wave (2000 shocks) under standing sedation
 - Walk a few days, then jog a few days
 - No fast works for 10 days (horse goes on vet's list)
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Future applications

- Wounds: a controlled study showed wounds on distal limbs of horses treated with ESWT healed with less inflammation and proud flesh (excessive granulation tissue) than controls
 - Burns: a recent case study suggests ESWT may improve the outcome of burn cases
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Third carpal bone disease

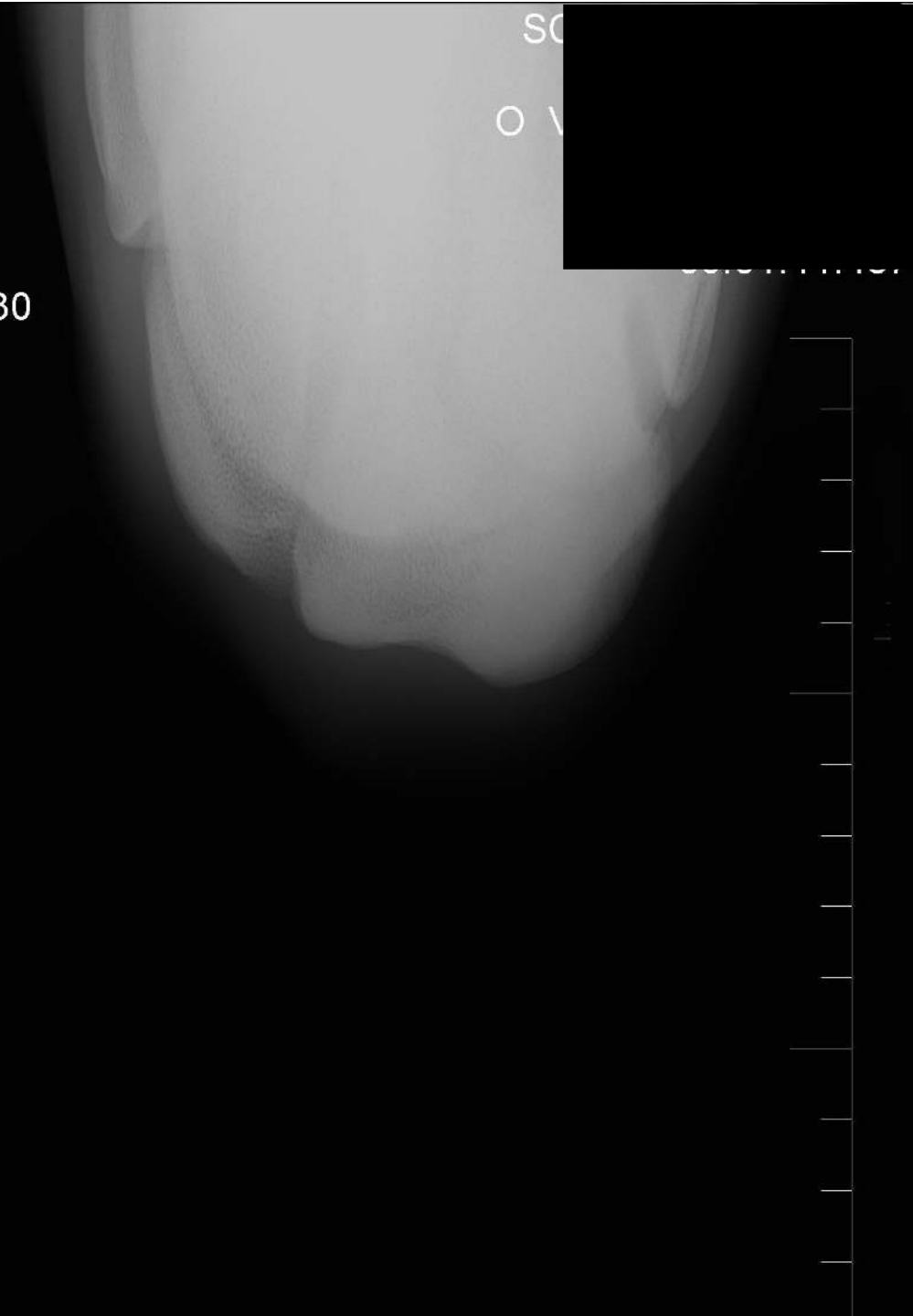
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References

1. Haupt G. Use of extracorporeal shock waves in the treatment of pseudoarthrosis, tendinopathy and other orthopedic diseases. *J Urol* 1997;158:4.
2. Gollwitzer, H. et al. Radial extracorporeal shockwave therapy (rESWT) induces new bone formation *in vivo*: results of animal study in rabbits. *Ultrasound Med Biol* 2013; 39:126-33.
3. Wang, CJ et al. Shock wave therapy induces neovascularization at the tendon-bone junction: A Study in Rabbits. *J Orthop Res* 2003; 21: 984-9.
4. Palmer, S. Treatment of dorsal metacarpal disease in the thoroughbred racehorse with radial extracorporeal shock wave therapy, in *Proceedings*. Am Assoc Equine Pract 2002; 318 -21.
5. Carpenter, R. How to treat dorsal metacarpal disease with regional tiludronate and extra corporeal shock wave therapies in thoroughbred racehorses, in *Proceedings*. Am Assoc Equine Pract 2012; 546-49.
6. Lischer, CJ, et al. Treatment of chronic proximal suspensory desmitis in horses using focused electrohydraulic shockwave therapy. *Schweiz Arch Tierheilkd*. 2006 Oct; 148(10):561-8.
7. Crowe, OM et al. Treatment of chronic or recurrent proximal suspensory desmitis using radial pressure wave therapy in the horse. *Equine Vet J* 2004; 36 (4) :313 – 6.
8. Boening, KJ et al. Radial extra corporeal shock wave therapy for chronic insertion desmopathy of the proximal suspensory ligament, in *Proceedings*. Am Assoc Equine Pract 2000; 203-7.
9. McClure, SR et al. Evaluation of analgesia resulting from extra corporeal shock wave therapy and radial pressure wave therapy in the limbs of horses and sheep. *American Journal of Veterinary Research*, 2005, Vol 66. No 10, Pages 1702-1708.
10. Morgan, DD et al. Effects of extra corporeal shock wave therapy on wounds of the distal portion of the limbs in horses. *Journal of the American Veterinary Medical Association* 234.9 (2009): 1154-61.
11. Johnson, JE, McClure, SR, Liskey, CC. Shockwave therapy for treatment of a burn injury in a horse. *Equine Veterinary Education* 2010; 67-72.

Acknowledgements

