

A SPECIAL ADVERTISING SECTION

Case Study: Laser Therapy Helps Avert Amputation

Injury was caused by a tissue strangulation rope injury to the right rear leg.

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For The Education Series

Patient: Max, 19-month-old male intact great Dane

Problem and History

Patient presented to a local emergency clinic for a strangulation injury of the right rear limb. The dog had been tied outside with a cotton rope and left unattended for over 24 hours. When the owners returned home, the rope was wrapped around the leg several times and the limb distal to the stifle was swollen many times its normal size.

At presentation to the emergency clinic, the distal right rear limb was severely swollen, sanguineous fluid was oozing from the dermis between the toes and metatarsal pads, and sloughing had started on parts of the skin and foot pads. Areas of necrotic skin were also present where the rope had been.

Other than a BCS of 3/9, the remainder of his physical examination was unremarkable. Radiographs were unremarkable except for severe soft tissue swelling. The two attending veterinarians agreed that skin grafting would likely be needed and that it was possible that Max's leg would need to be amputated because of the severity of the injuries. Because of financial constraints, the owners relinquished Max to a technician at the clinic.

Max was hospitalized for 24 hours and treated for infection as well as ischemia and reperfusion injuries to the rear limb. He also tested positive for *D. immitis* infection (Idexx 3-Way SNAP). Specific treatments included pain management (morphine, Rimadyl), intravenous

antibiotics (Cefazolin, Metronidazole, Baytril), famotidine, IV fluids (LRS with KCl), and wound cleaning every eight hours.

Twenty-four hours later, the swelling was still severe and all of the paw pad surfaces had sloughed. Sanguineous fluid continued to ooze from the skin and wounds. The patient was eating and drinking, was afebrile, and bearing minimal weight on the limb. Conscious proprioception and withdrawal were intact.

The patient was discharged on oral carprofen 100mg PO q12h x7d, tramadol 250mg PO q8h prn, Clavamox 625mg PO q12h x 7d, metronidazole 500mg PO q12h x7d, famotidine 20mg PO q12h x10d and a probiotic (Animal Essentials: Plant Enzymes and Probiotics, ¼ tsp in food q12h x10d).

The foster owner was instructed to soak the foot in dilute betadine solution for 10 minutes, pat dry, then very gently "milk" the limb three times daily. Laser therapy was recommended to aid in wound healing and re-evaluation for surgery was recommended, depending on response to therapy.

Physical Examination

Max was evaluated three days after the initial injury for treatment with the therapy laser to speed healing and reduce edema, inflammation and pain. Physical examination findings were similar to those found at the emergency clinic.

The surfaces of the sloughed pads continued to ooze a sanguineous fluid, as did the skin in multiple places distal to the stifle. The limb was estimated to be three to four times its normal size compared to the contralateral (left) limb.

Diagnosis

A diagnosis of strangulation of the right rear limb distal to the stifle with secondary ischemic and reperfusion injuries was made.

Recommendations for Treatment

Treatment as prescribed by the emergency clinic with the Companion Class IV Laser Therapy unit every two to three days was recommended until healed.

Laser Treatments and Protocols

Max's limb from the stifle down was treated aggressively with the following protocol on Days 3 and 6 after the injury: 10W, CW for 15 minutes, then 5W, CW for an additional 15 minutes. Total Joules (TJ)=11095 per treatment with an estimated minimum dose of 7 J/cm². On Day 6, the rope burns were also treated through two cycles of the contaminated wound setting.

Because the total surface area decreased significantly once the swelling resolved, the following protocols were used on Day 9: 10W, CW for 10 minutes and 5W, CW for 10 minutes (TJ=7400); and Days 11 and 14 after the injury: 10W, CW, for 12 minutes (TJ=7200 per treatment) with an estimated minimum dose of 5 J/cm². The wounds from the rope were also treated through two cycles of the contaminated wound setting.

Wound Balm for Animals (Buck Mountain Botanicals) was applied to all wounds immediately before cold laser treatments with the anticipation that laser therapy would help integrate the balm into the wounds.

Follow-up assessment

Within 24 hours of the first laser treatment (Day 4 post-injury), the swelling in Max's limb had decreased by approximately 50 percent.

By Day 7 post-injury and after two laser treatments, the sanguineous discharge had resolved and the swelling was 90 percent resolved.

By Day 10 post-injury, and after three laser treatments in eight days, the pad surfaces had regrown and the limb swelling was completely resolved. The rope burns were healed and no additional sloughing of tissue ever occurred. Max lost three toenails, one each on Days 10, 14 and 15.

Class IV laser therapy was discontinued after six treatments as the wounds had completely healed, the swelling was gone and Max was using the limb normally.

Three months after the injury, Max continues to do well. Occasionally he toe-touches the right rear limb when standing but ambulates normally. The hair that grew where the rope burns had been and his toenails are white, but no other evidence of injury is visible.

As the treating veterinarian, I think this is a remarkable result for a pet for whom amputation was recommended as a last solution. ●

Dr. Rosado practices at Flagler Integrative Veterinary Care in Palm Coast, Fla. She submitted her unsolicited case study to the manufacturer of the laser therapy unit.

This Education Series story was underwritten by Companion Laser Therapy of Newark, Del.

▼ DAY 1



▼ DAY 9



▼ POST RECOVERY

