Association between antimicrobial photodynamic therapy and photobiomodulation in the healing process of skin wounds in dog (*Canis lupus familiaris*).

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Introduction: Wounds are common in Veterinary Medicine and they can be of different forms and origins. The healing process is complex and can be influenced by local and systemic factors, interfering with the different stages of healing. Treatment depends on the type of wound to restore the injured tissue. Laser therapy can be used alone or associated with other therapies and the effects on tissue damage are analgesia, inflammation modulation, angiogenesis and tissue regeneration. Antimicrobial photodynamic therapy (aPDT) consists of the use of light, photosensitizer and oxygen, which generate reactive oxygen species and singlet oxygen, causing the microorganism to die

Objective: The aim of this study was to report the clinical alterations and their resolution in a female dog with a traumatic, contaminated wound treated with laser phototherapy as an alternative therapy method.

Methods: Female Border Collie, 3 years old, weighing 18 kg, suffered trauma with skin laceration on the left thoracic limb. The edges were sutured, but there was dehiscence of the stitches within 24 hours. Second-intensity healing was recommended. Zinc oxide ointment (Alantol®) was administered daily, and antibiotic and anti-inflammatory for 5 days, cefadroxil (Cefa Sid®) and Meloxicam (Meloxivet®), respectively, were administered. On physical examination, a wound with a swollen and reddish border, an ulcerated area with devitalized tissue, serous exudate and 8.8 cm^2 of injured area. It was decided to associate photobiomodulation. The laser irradiation dosimetric parameters were calculated according to the injured area and the sessions were three times a week.

Results: Due to the high degree of contamination of the wound, aPDT was performed in the first session, red laser (λ = 660 nm), energy of 9J/point, pre-irradiation time of five minutes and 0.01% methylene blue. After 48 hours of the 1st session, the lesion showed a reduction in edema and erythema, granulation tissue in the wound bed, absence of exudate and a reduction of 3.8 cm^2 in the injured area. The second session was with red laser (RL) and infrared (λ = 808nm) (IRL), with the energy used being 0.5 J/point and 1 J/point, respectively. The 3rd session was introduced aPDT, because the patient had contaminated and injured the granulation tissue and at the edge of the lesion. The next four sessions were with RL in the open area, energy of and IRL in the edge, with an interval between sessions of 48 hours. He observed a reduction in the open area, with the wound edge shifting to the center. On the 14th day, the healing process was almost entirely completed, with a crust area of 0.4 cm^2.

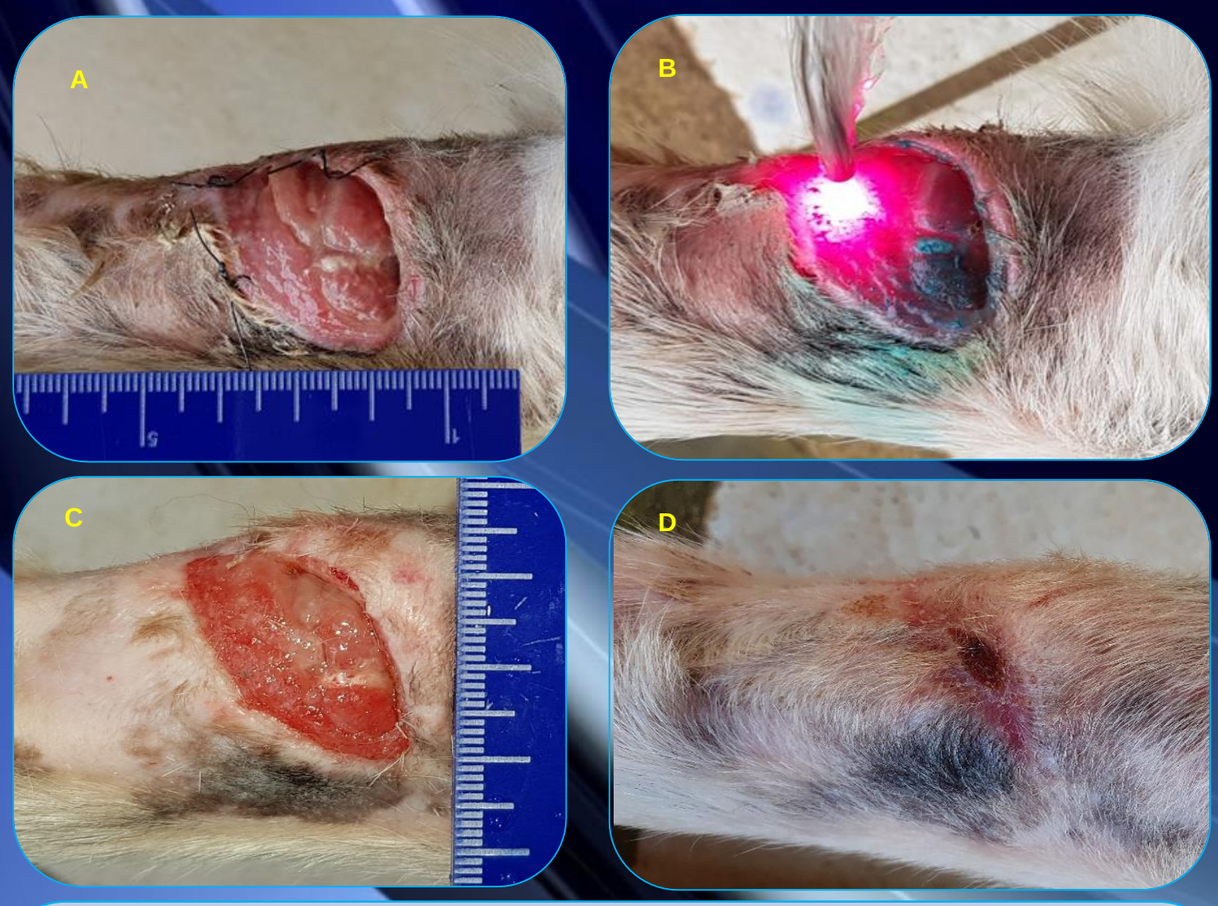

Figure 1. Contaminated wound with suture dehiscence. A: Devitalized wound, with swollen edges and serous exudate. B: Irradiation with red laser (λ = 660 nm) on the lesioned region. C: day ten, wound with reduction of the lesioned area and cellular migration from the edge of the wound, in the fifth session of phototherapy. D: day fourteen, complete tissue repair, showing a scar with clear edges and advanced morphofunctional reestablishment of the involved tissue, in the seventh phototherapy session.

Conclusion: Low-intensity laser therapy was effective in resolving the skin wound, modulating inflammation and accelerating tissue repair, in addition to corroborating the conventional therapy used initially, enhancing its effect.

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