CO₂ Laser Beneficial in Oncologic Surgery

By Barbara R. Gores, DVM, Diplomate ACVS
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Cancer is one of the most common causes for mortality in companion animals, affecting one in two pets over the age of 10. Surgery is still the most effective modality for the treatment of cancer because it can often provide an immediate cure or palliation of pain, with minimal and temporary side effects.

Laser techniques in oncologic surgery have become effective alternatives to radical tumor resection and to palliative tumor treatment methods. CO₂ and Nd:YAG laser excision has been shown to provide almost a 50 percent improvement in the control of local disease in vivo compared with scalpel resection in rodent mammary gland tumors and human oral mucosal lesions.

Lasers provide light with the necessary wavelength at the intensity sufficient for photodynamic therapy (PDT) for treating cancerous and non-cancerous lesions. The carbon dioxide (CO₂) surgical laser operates at a wavelength that is highly absorbed by water, therefore making it the most versatile and commonly used surgical laser available in veterinary medicine today.

Despite the incredible development and advances that lasers have undergone in human surgical and therapeutic applications, lasers in veterinary practice have long been regarded as “surgical toys,” given their expense and cumbersome size that previously made them impractical for use in private practice.

In the past two decades, technologic breakthroughs have resulted in compact, portable and reliable lasers that are economically feasible for both the general and specialty veterinary hospital. Laser use in clinical veterinary practice has become a beneficial tool for improved patient care and wider therapeutic options.

The human literature has demonstrated these beneficial effects in lab animal studies and human clinical trials. These studies support the use of laser energy for the enhancement of quality of life and control of disease in the veterinary patient, and provide a foundation for the commonly accepted laser surgical techniques and procedures that are continuously being implemented and refined in thousands of private veterinary practices around the world. Our pets can finally benefit from the very technology for which many research animals were utilized to perfect these laser surgical procedures in people.

Development of the light and flexible CO₂ laser hollow wave guide fiber technology in the early to mid-1990s, along with re-usable metal focused hand pieces that allow the surgeon to vary between large tissue ablation and precisely focused excision, has made this laser a highly beneficial tool in the veterinary practice.

Laser techniques in oncologic surgery have become effective alternatives to radical tumor resection and to palliative tumor treatment methods. Treatment will vary with the tumor type, extent of disease, prognosis and the owner’s wishes. Thus, the surgical objective may vary from curative to palliative therapy.

I have used a CO₂ laser in my surgical practice for the past 16 years. The accompanying photos are a few case examples of the benefits of the CO₂ laser in veterinary oncologic surgery.

Hemangiopericytoma

Grade 2 Soft Tissue Sarcoma

Soft Tissue Sarcomas

These can vary from low (hemangiopericytomas) to high grade and typically are slow to metastasize but have a high local recurrence rate due to the diffi-
Oral Neoplasia

The oral cavity is the fourth most common location for neoplasia in small animals. Many times, tumors are very large by the time they are discovered and diagnosed. Often, curative excision is not possible. The CO2 laser is an exceptional tool for palliative cytoreduction of these large oral tumors allowing tumor ablation, superior hemostasis and immediate comfort and return of function for the pet.

Barbara R. Gores, DVM, Dipl. ACVS, is a small-animal board certified surgeon in Tucson, Ariz., where she is the founding co-owner of the Veterinary Specialty Center of Tucson. She was the first laser-licensed veterinarian in the state. Before that she taught at the University of Minnesota College of Veterinary Medicine, Tufts University School of Veterinary Medicine and Angell Memorial Animal Medical Center, where she completed her small animal internship and surgical residency. Dr. Gores currently uses both the CO2 and diode wavelengths in her practice.


This Education Series story was underwritten by Aesculight LLC of Woodinville, Wash., manufacturer of the only American-made CO2 laser.