Using CO₂ lasers in small animal practice

By Christopher Winkler, DVM, Dipl. ABLS
For The Education Center

I implemented carbon dioxide laser surgery into my practice in 2010 and have never regretted the decision. I find laser surgery to have many advantages over scalpel surgery, not the least of which is greater control of bleeding, resulting in a clearer surgical field and a faster operation. Sealed lymphatics and nerve endings also result in less inflammation and pain, and a quicker recovery for the patient, with less scarring.

I’ve owned and used CO₂ surgical lasers with articulated arms and hand pieces with fixed focal length, and the newer flexible hollow waveguide laser systems with adjustable spot size hand pieces. Although articulated arms deliver a more consistent output from console to hand piece, the hollow waveguide lasers compensate with greater power output combined with a lighter and more flexible delivery system. I have found the hollow waveguide lasers’ pen-like adjustable hand pieces to be much more comfortable to hold over longer periods without hand strain. They also allow the surgeon to get closer to the tissue for greater precision than the articulated arm’s fixed hand piece, especially in difficult narrow areas such as the ear canals and throat.

Moreover, the newer laser system, with its adjustable hand pieces, offers the surgeon greater control over selection of fluence—the laser energy delivered to an area of tissue—during a surgery. These factors, plus the laser’s greater power output, make the Aesculight an area of tissue for greater precision over scalpel surgery, not the least of which is greater control of bleeding, resulting in a clearer surgical field and a faster operation. Sealed lymphatics and nerve endings also result in less inflammation and pain, and a quicker recovery for the patient, with less scarring.

I’ve owned and used CO₂ surgical lasers with articulated arms and hand pieces with fixed focal length, and the newer flexible hollow waveguide laser systems with adjustable spot size hand pieces. Although articulated arms deliver a more consistent output from console to hand piece, the hollow waveguide lasers compensate with greater power output combined with a lighter and more flexible delivery system. I have found the hollow waveguide lasers’ pen-like adjustable hand pieces to be much more comfortable to hold over longer periods without hand strain. They also allow the surgeon to get closer to the tissue for greater precision than the articulated arm’s fixed hand piece, especially in difficult narrow areas such as the ear canals and throat.

Moreover, the newer laser system, with its adjustable hand pieces, offers the surgeon greater control over selection of fluence—the laser energy delivered to an area of tissue—during a surgery. These factors, plus the laser’s greater power output, make the Aesculight a superior choice for surgical procedures. The newer laser system, with its adjustable hand pieces, offers the surgeon greater control over selection of fluence—the laser energy delivered to an area of tissue—during a surgery. These factors, plus the laser’s greater power output, make the Aesculight an area of tissue for greater precision over scalpel surgery, not the least of which is greater control of bleeding, resulting in a clearer surgical field and a faster operation.

The CO₂ surgical laser has allowed us to perform simple wart, skin tag and small mass removals on an outpatient basis under a local anesthetic, typically within the space of a single office visit and with little or no suturing. This alone has greatly increased our repertoire of services for canine and feline patients, while improving revenue without affecting our daily case schedule. I also have successfully performed procedures with greater confidence in the desired outcome and with less adverse effects than I would have considered with conventional instruments, such as liver biopsy, cherry eye “pocket technique,” radical mastectomy, digit and tail amputations, and a variety of tumor removals, including those from the urinary bladder. I would highly recommend careful consideration of the benefits of a CO₂ surgical laser in your practice.

The following clinical cases are all examples of using CO₂ laser surgery here at our practice.

CASE 1
A 4-year-old male pit bull terrier presented with a single benign epulis over the upper left canine.

1A. Epulis with the planned incision marked with laser. Note the moistened towel protecting the endotracheal tube.
1B. Epulis immediately following removal with CO₂ laser (set at 8 watts SuperPulse), no hemostatic, no sutures required.
1C. Patient one week after epulis excision.

CASE 2
An 11-year-old spayed female shih tzu presented with a malignant peripheral nerve sheath tumor on the right ventral flank.

2A. Pre-operative view of the mass.
2B. Laser incision (set to continuous wave SuperPulse at 15 watts) prior to closure. A single SQ vessel required ligation at top. Note clean skin edges without bleeding or char.
2C. Fourteen days post-op, staples removed.
2D. Twenty-one days post-op.

CASE 3
A 12-year-old female miniature pinscher presented for hemangiopericytoma on the distal second digit of the left forepaw.

3A. Pre-operative view of the mass. The laser was set for 15 watts continuous wave to perform digit amputation.
3B. Seventeen days post-op, sutures removed.
3C. Twenty-four days post-op; pet walking normally.
3D. Six months post-op. Note hair covering the surgical site.

CASE 4
A 3-year-old female pit bull mix presented with an aural hematoma on the left pinna of two weeks’ duration.

4A. Five 7 mm circular incisions were made with a CO₂ laser at 15 watts SuperPulse through the skin of the medial pinna in a pyramidal fashion to drain the hematoma and remove fibrin and clots. Note sutures placed full thickness through the skin and cartilage between the incisions to eliminate dead space.
4B. Seven days post-op. A therapy laser (980nm, 10W, 5 minutes in scanning technique) was utilized at seven- and 14-day rechecks.
4C. Fourteen days post-op.
4D. Twenty-one days post-op, sutures removed.
CASE 5
A 10-month-old male Catahoula mix presented for an 8 cm cutaneous laceration across the medial right thigh sustained on a yard stake the night before. The size and location of the laceration made bandaging for delayed closure difficult. The CO2 laser was utilized instead, at continuous wave SuperPulse 12 watts, to debride the wound edges prior to closure with a drain. The owner requested neutering the pet during the laceration repair procedure.

CASE 6
A 13-year-old neutered male bichon frise with a 1.5-cm sebaceous epithelioma just beneath the left ear.

Dr. Winkler graduated from the Ross University School of Veterinary Medicine in 2001 and is the owner of Suffolk Veterinary Group Animal Wellness and Laser Surgery Center in Selden, N.Y. He uses both CO2 and diode laser wavelengths in his practice, often combining them when possible. He is a diplomate of the American Board of Laser Surgery and a member of the American Society for Laser Medicine and Surgery. He appeared as an instructor on CO2 laser surgery at the 2015 American Veterinary Medical Association convention.

This Education Center article was underwritten by Aesculight of Woodinville, Wash., the manufacturer of the only American-made CO2 laser.