CO₂ laser surgery—a rewarding endeavor

By David Bradley, DVM, FASLMS
For The Education Center

Over 14 years ago I attended an all-day seminar on the use of CO₂ surgical lasers in veterinary practice. I went in very skeptically. I left exuberant! The wide range of applications, the ease of use and the versatility and durability of the laser filled me with enthusiasm.

As a busy practitioner in a mixed-animal practice, I already faced time constraints that limited what additional services I could offer. I enjoyed surgery and at that time it was not uncommon to be routinely performing 15 to 20 procedures a week.

I perceived the laser to be a tool that would improve the value of the procedures I was already doing because of the inherent benefits that my Aesculight CO₂ laser delivered for my practice, my patients and my clients.

**Patient, Client Benefits**

The patient benefits because the laser reduces about 80 percent of nuisance bleeding by sealing vessels up to 1 mm in diameter. Larger vessels—anything with a name!—still need to be ligated.

The laser is used in non-contact mode so there is less crushing or tearing of tissue and therefore inflammation is decreased. It may also reduce “seeding” of tumors. By sealing the nerve endings as it cuts without trauma, post-operative pain is diminished and healing and recovery are enhanced. The thermal effects also reduce bacterial contamination.

The client benefits because recovery is usually shorter and post-op complications are lessened. Patients can often go home sooner, may need fewer rechecks and fewer bandage changes. They return to their normal activity levels more quickly.

This saves the client money and allows the pet to resume its role as an active member of the family again.

**Professional Benefits**

Benefits to me and my practice, however, were the most exciting.

My laser helped me expand my surgical repertoire. The clear, dry surgical field gave me more confidence in complicated procedures such as oral surgery, perianal surgery, total ear canal ablation and large mass removals.

The precision allowed more control in delicate procedures, such as distichiasis, corneal ulcers, thyroid tumors, etc. Its unique interaction with tissue helped convert some major procedures to more minor ones, such as eyelid tumors, soft palate resection, stenotic nares, everted saccules and entropion corrections.

The laser also gave me an additional option for some common intractable conditions, such as stoma­titis, acral lick granulomas, tumors, aural conditions, and so on. But mainly it gave me a way to add value to what I was already doing every day, for example, spays, neuters, lumps, and bumps.

Therefore I could charge a laser fee for the enhanced benefits and generate more revenue on the procedures I perform every day.

**Benefits to the Practice**

I did perform more surgery because I expanded my skills and expertise on new procedures. But I also found patients seeking us out for the benefits of laser surgery and we were booking more routine procedures as well.

In addition, I found myself doing more “locals” on small lumps and bumps that clients would often point out during routine health appointments. Rather than delaying these for a later date, we were able to inject them with a local anesthetic, provide a quick surgical prep, laser off the offending growth, and send the pet right home with the client. This was efficient; clients were very pleased and impressed.

All these things generated a measurable revenue stream. We consistently and almost immediately generated an additional $2,000 a month to our bottom line. The chart at right allows the veterinarian, using her/his own data, to estimate the potential return on investment (ROI), if the Aesculight laser is used in the practice.

**Why the Laser**

The laser is a very effective tool for general surgery because it produces a wavelength of energy that is absorbed by the soft tissue; absorption coefficient at 10.600 nm is over a thousand times greater than at diode laser wavelengths (800-1,100 nm). See chart below.

High absorption in water means that, with proper technique, the laser produces the most efficient photothermal ablation of water-rich soft tissue with extreme precision and minimal collateral thermal effects (sub 100 micrometer). This is what accounts for the unlimited versatility intra-operatively and improved recovery post-operatively.

**Return on Investment**

<table>
<thead>
<tr>
<th>Number of surgeries per week</th>
<th>A</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compliance rate (national average exceeds 70%)</td>
<td>B</td>
<td>70%</td>
</tr>
<tr>
<td>Number of surgeries/week</td>
<td>C = A * B</td>
<td>7</td>
</tr>
<tr>
<td>Additional charge for laser surgery</td>
<td>D</td>
<td>$100</td>
</tr>
<tr>
<td>Additional income/week</td>
<td>E = C * D</td>
<td>$200</td>
</tr>
<tr>
<td>Additional income from &quot;lumps and bumps&quot;/ week</td>
<td>F</td>
<td>$5 * $100 = $250</td>
</tr>
<tr>
<td>Total additional income/ week</td>
<td>G = E + F</td>
<td>$250</td>
</tr>
<tr>
<td>Total additional income / month</td>
<td>H = G * 4.3</td>
<td>$1,200</td>
</tr>
<tr>
<td>Monthly lease (approx., AE-2010, 5 yr term)</td>
<td>I =</td>
<td>$745</td>
</tr>
<tr>
<td>Net additional income / month</td>
<td>J = H - I</td>
<td>$550</td>
</tr>
<tr>
<td>Net additional income/ year</td>
<td>K = J * 12</td>
<td>$6,600</td>
</tr>
<tr>
<td>Five-year net income</td>
<td>L = K * 5</td>
<td>$33,000</td>
</tr>
</tbody>
</table>

For your convenience, this exercise will help you determine if and how a surgical laser can benefit your practice financially:

\[(\text{Total additional income/month} \times \frac{1}{\text{month}}) \times \frac{1}{\text{year}} \times \frac{1}{\text{years}} = \% \text{ROI}\]

Example ROI = Total additional income per month $3,330 / $745 monthly lease = 447% ROI

*Wall Street considers 7-10% a good return on investment

**Benefits for Practitioners**

Could laser surgery be just what the doctor ordered to rejuvenate your enthusiasm? Are you looking for a new marketing niche? Do you need something to differentiate your practice from your neighbors’? Would you like a new revenue stream to boost the bottom line? The following questions will help you decide.

Do you like surgery? The CO₂ laser is just another tool. It will not improve your surgical skills. But in the right hands, it can enhance your surgical armamentarium.

**Most Efficient Ablation**

Absorption spectra for soft tissue main chromophores: hemoglobin (Hb), oxyhemoglobin (HbO₂), and water (H₂O)

![Absorption spectra](chart)

**Figure 1: Aesculight CO₂ laser ROI calculator**
Are you doing at least six to eight surgeries per week? (Or would you like to be?)

Surveys have shown that when offered as part of the surgical options, laser surgery is accepted over 70 percent of the time by clients for their pets. With an additional fee of just $50 in an average practice, you would conservatively generate at least $1,000/month in added surgical revenue—even without any new procedures or clients seeking the laser as an option.

The current cost of a new laser would be $500-$750 per month based on a standard five-year financing option. The laser should not just pay for itself; it should be a new profit center and new marketing niche for your practice.

Has the number of elective surgeries performed in your practice decreased?

Many low-cost spay/neuter clinics are providing the same level of high-quality surgery at a lower price due to subsidized financial backing. These facilities are often clean and modern and no longer hold the stigma they once did for many clients. Laser surgery can be a highly recognized addition to differentiate your practice from them.

Are you already so busy that adding another service would task your schedule or your energy levels?

The CO₂ laser can add value to many of the procedures that are already part of your day. Adding an additional charge for the benefits of less pain, less bleeding, and a quicker recovery is well accepted.

Are you looking for something to rejuvenate your interest and love of veterinary medicine?

Laser surgery has a very short learning curve. It is safe and effective and versatile enough to be used for every surgery that walks in the door. And it is fun!

**Equipment Decisions**

If you answered “Yes,” the next step is to find the best CO₂ surgical laser for your practice. The equipment and the company should have a history of reliability and innovation. Ease of use is paramount, including durability and versatility of the delivery system and hand pieces. Adjustability to accommodate the wide variety of surgical procedures that we perform is paramount.

Clean-up and sterility issues should be seamless and easy for staff to implement and perform. Adding a laser to your surgical armamentarium has a very short learning curve. However, make sure the level of support and education/training included with your laser is comprehensive and delivered by experienced personnel. Ongoing support should also be readily available. With the proper equipment and training, you would never have to pick up a scalpel again.

**Summary**

The final chapter to my story has been the most rewarding. The Aesculight CO₂ laser became the most-used piece of equipment in my practice. It imparts an immediate perception of expertise and it helps depict our practice as progressive, and it serves as a symbol of our commitment to providing the highest level of service.

Naturally, my enthusiasm for CO₂ laser surgery translated into a desire to spread the word. I left private practice and started doing laser surgery and consulting exclusively. I consult on both the human and veterinary side, and over the years I have had the opportunity to work with many companies and products.

Additionally, I have worked with dozens of specialists and have trained, lectured, and consulted with thousands of veterinary colleagues and human physicians.

Six years ago, the American Society of Laser Medicine and Surgery sent me a letter and certificate indicating I had reached fellow status. Someday, I may have to get a real job again, so I still do some laser surgery for local practices.

My goal, though, would be to spend the rest of my career promoting and educating my colleagues about the clinical and economic benefits of adding a CO₂ laser. I truly enjoy helping practices become successful laser surgery facilities.

David Bradley, DVM, FASLMS, has practiced for over 25 years in mixed, small animal, equine, and exotic medicine with a special interest in surgery. Dr. Bradley began using lasers in private practice in 1999. He has consulted with dozens of laser specialists and hundreds of veterinary and human physicians. Dr. Bradley has lectured nationally and internationally on veterinary laser use.

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