CO₂ laser surgical approach to the ventral abdominal incision

By Paul Sessa, DVM
For The Education Center

Introduction
As mentioned in the article “Benefits of CO₂ Laser Onychectomy” in the April issue, the Aesculight CO₂ laser is my surgical tool of choice (Figure 1). If asked, I would estimate that 98 percent of our general surgeries are now performed with this laser and the new adjustable spot size tipless Aesculight laser handpiece.

This article covers the most common use for our laser, the ventral abdominal incision, which is probably the most frequent surgery in every general practice.

Applications
Over the last 10 years, our practice has adopted the laser as the exclusive soft tissue surgical instrument for all of our spays and neuters. We routinely use our CO₂ laser for ovariohysterectomies, c-sections, cystotomies, cryptorchid neuters and exploratory surgeries, including pyometras, GI foreign bodies and so on.

For most approaches to the abdomen, the midline abdominal incision is used. The ability to enter the abdomen and maintain a dry surgical field is a distinct advantage that the laser offers over conventional scalpel surgery.

Techniques and Challenges
Laser surgery presents the novice laser surgeon with certain challenges, which in my own experience are easy to overcome with time and practice.

The technique that is most difficult for the new laser user to master is the art of distracting the incised tissues without touching them with the laser tip. This is a fairly common early frustration but usually is easily mastered and will become second nature for most laser surgeons.

The bloodless skin incision facilitates visualization of the linea. Even in very obese patients the midline of the subcutaneous fat is visualized and incised all the way to the linea (Figure 2).

Another helpful technique is to use the laser instead of scissors to minimally reflect the subcutaneous fat from the linea alba (Figure 3). This also helps keep the incision field dry, minimizing postsurgical bruising and pain for our patients, which pet owners appreciate.

The linea alba in some patients can be a challenge to identify even for experienced surgeons. Paramedian incisions can cause some significant bleeding and make abdominal evaluation at closing a concern for some new surgeons.

Being off the midline with the CO₂ laser, however, is not a concern.

The hemostasis afforded by the laser allows the surgeon to quickly get back to the midline, or, if desired, continue the paramedian incision and maintain better visualization and hemostasis. Figure 4 demonstrates a paramedian incision during a routine ovariohysterectomy with the bloodless surgical field.

It is important to use a backstop instrument to limit the
depth during linea incisions, such as the thumb forceps or other instrument of the surgeon’s choice (Figure 5).

### Incision Length

The routine spay incision can be as small or large as the surgeon prefers. The healing process is side-to-side so the length of incision is a matter of personal preference. I prefer greater visualization over small incisions as we are not in the high-volume spay and neuter business (see Figure 6 featuring laser laparotomy during a routine ovariohysterectomy and Figure 7 showing a large incision during a feline pyometra surgery).

The ability to get a clear view of the structures is paramount.

### Other Applications

The cryptorchid dog neuter is my personal favorite laser use. The incision is made along the prepuce and the laser allows for precise dissection with the ability to avoid the various large vessels that occur in this area. The midline of the male can be identified and, though it is not as prominent as in most spays, it is easily incised and bleeding is minimized tremendously by the laser coagulation of the target tissues during the incision. For example, Figures 8 and 9 demonstrate virtually bloodless canine and feline cryptorchid neuters, respectively, and Figure 10 shows the uterine body severed with the CO₂ laser. Bladder surgery is another of my favorite laser applications. The standard approach to the abdomen and the incision of the bladder in our practice are done exclusively with our CO₂ laser (Figures 11-13). The most bleeding will occur during the suturing of the bladder wall (Figure 12).

### Conclusion

In ventral abdomen surgery, the CO₂ laser offers numerous advantages over the conventional steel blade. Mainly, it is the precision of the cut and the ability to seal blood vessels along the incision. Laser surgery also ensures a better aesthetic result, less post-surgical bruising, and reduced swelling and pain for the patients, which is highly appreciated by pet owners.

---

Dr. Paul Sessa earned his DVM from the University of California, Davis, in 1984. He practiced medicine in Escalon before joining the Veterinary Emergency Clinic in Modesto, Calif., in 1985. In 1990 he transferred to the Associated Veterinary Emergency Services Clinic in Stockton, Calif., while developing his Animal Home Health Mobile Care practice. Dr. Sessa now practices at Salida Veterinary Hospital in Salida, Colo.

---

*A Cut Above the Rest*  
**Aesculight.com**  
CO₂ Laser Surgery

- Spay  
- Neuter  
- Eyelid tumor removal  
- Perineal Adenoma  
- Stenotic Nares  
- Omyectomy  
- Stomatitis  
- Apocrine Tumor  
- Uvuloplasty

**Affordable and Fast, Easy to Learn Laser Scalpel with Superior Outcomes, Excellent ROI and in Demand by Pet Owners**

For laser surgery demo please call toll free 1-866-589-2722 or visit [www.aesculight.com](http://www.aesculight.com)