CO₂ lasers hit the mark in small places, even ferrets

By Pamela Donkey, DVM
For The Education Center

Man y of us know that as ferrets age they often develop a smorgasbord of problems, which frequently require surgical intervention. Considering the diminutive stature of the ferret, exploratory surgery can be extremely challenging. It can require specialized equipment to aid in navigating the tiny anatomic terrain and to make the task less daunting overall.

Often smaller instruments are beneficial when working in these tighter spaces to perform intricate procedures. Using a CO₂ laser is advantageous when incising and dissecting tissue in general, but especially when working in confined spaces. Neoplastic lesions often have increased vascularity which can complicate dissection and impair the ability to visualize surrounding anatomy.

Being able to incise and cauterize simultaneously with a CO₂ laser is invaluable. In this article we will discuss a case involving a ferret with numerous neoplastic problems. I have been using a CO₂ laser since 2000, and I use primarily tipless adjustable handpieces so that I can choose the focal spot size of the beam and adjust it seamlessly if needed while in surgery.

**Case Report**

Sprite is a 7-year-old male neutered ferret who presented for chronic urine leakage, weakness and a ravenous appetite. On presentation it was noted that he had alopecia over his pelvic region and over his shoulder blades (Figure 1). The rest of his coat was sparse, dry and flaky. He dribbled urine constantly and had some mild urine smell around his prepuce.

In addition, he had an extensively distorted bladder (Figure 2), which never emptied but instead just reformed. Ultrasound revealed both a very enlarged bladder and an enlarged prostate.

The owner consented to exploratory surgery which revealed numerous abnormalities. During the intra-operative evaluation of the left adrenal gland it was found to be significantly enlarged (Figures 3 and 4). It was approximately 50 to 75 percent larger than normal. After delicate dissection, the gland was ligated using Rica Surgical Hemoclips (small) and removed (Figure 5).

Again you will notice a modicum of blood present during this procedure (Figure 7). The laser allowed clean dissection with a minimal amount of tissue trauma and handling, which is crucial in dealing with any neoplastic procedures.

The evaluation of the right adrenal revealed an enlarged gland that dorsally encircled the caudal vena cava (Figure 6). You can see the adrenal gland near the tip of the curved hemostat. Positioned just over the adrenal and slightly to the left is the caudal vena cava, and draped over the vena cava is a liver lobe.

Accessing the right adrenal gland is always a formidable task even under the best circumstances, but this was one of the most exacting cases I have dealt with. Debulking, rather than removal of the right adrenal gland was my goal because the adrenal was abutting the caudal vena cava.

Extremely careful dissection was performed using the laser at 5 to 10 watts of power with the tipless adjustable handpiece set at 0.25mm spot size. The gland was ligated using Rica Surgical Hemoclips (small) and removed.

**Conclusions**

Ferret adrenal tumors usually produce either estrogen or testosterone. In this case it was testosterone, causing the prostate enlargement and subsequent inability for Sprite to empty his bladder. Once the tumors were removed or debulked, the prostate size was dramatically reduced and his urine dribbling resolved. He is able to empty his bladder normally again.

In this day and age many of our patients are considered to be family members by their owners. Many clients are willing and able to pursue any reasonable option to help advance the quality and quantity of life for their loved ones.

Procedures never considered 10 to 15 years ago are performed routinely now due both to the scientific progress being made and to the elevation of status and veneration that pets have experienced in recent years.

I have found consistently over the years that laser surgery patients have a shorter recuperation period and considerably less pain compared to past results using a scalpel blade. I feel that our mission as veterinarians is to find ways to ease the suffering and augment the quality of life for our patients. I believe that the surgical laser is a valuable tool in helping us achieve our goal.

Surgical CO₂ lasers make our occupation as surgeons easier while producing results that are more precise. Frequently owners stand at a crossroad deliberating the best course of treatment for their beloved pet when a critical condition arises. They may be faced with the choice of surgical intervention or euthanasia. Undoubtedly they hope for a new lease on life for their pets so that they can enjoy more play time and many more precious moments together.

By honing our skills as doctors as well as surrounding ourselves with quality equipment and tools, we will be better prepared to help extend the lives of our patients while improving the quality of those lives.

Dr. Pamela Donkey graduated from Louisiana State University in 1995 and has worked exclusively in small animal and exotic animal medicine with a special interest in soft tissue surgery. She started her house call practice in 2000, and accepts surgical referral cases from all over the surrounding areas. Dr. Donkey has been using Aesculight Flexible Waveguide CO₂ Lasers since 2005.
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Considering the diminutive stature of the ferret, exploratory surgery can be extremely challenging. It can require specialized equipment to aid in navigating the tiny anatomic terrain and to make the task less daunting overall.

Often smaller instruments are beneficial when working in these tighter spaces to perform intricate surgery. The use of a CO₂ laser is advantageous when incising and dissecting tissue in general, but especially when working in confined spaces. Neoplastic lesions often have increased vascularity which can complicate dissection and impair the ability to visualize surrounding anatomy.

Being able to incise and cauterize simultaneously with a CO₂ laser is invaluable. In this article we will discuss a case involving a ferret with numerous neoplastic lesions that were surgically managed using the laser. We have been using a CO₂ laser since 2000, and have since dispensed with scalpel blades and excisively use our laser for every surgical procedure. Our practice uses an Aesculight Flexible Waveguide Surgical CO₂ Laser Model AE-2010, and I use primarily tipless adjustable handpieces so that I can choose the local spot size of the beam and adjust it seamlessly if needed while in surgery.

Case Report

Sprite is a 7-year-old male neutered ferret that presented for chronic urine leakage, weakness, and a voracious appetite. On presentation it was noted that he had alopecia over his pelvic region and over his shoulder blades (Figure 1). The rest of his coat was sparse, dry and flaky. He dribbled urine constantly and had some mild urine scald around his prepuce.

In addition, he had an extremely distended bladder (Figure 2), which never emptied but instead just continued to balloon. Ultrasound revealed both a very enlarged bladder and an enlarged prostate.

The owner consented to exploratory surgery which revealed numerous abnormalities. During the intraoperative evaluation of the left adrenal gland it was found to be significantly enlarged (Figures 3 and 4). It was approximately 50 to 75 percent larger than normal. After delicate dissection, the gland was ligated using Surgical Hemoclip (small) and removed (Figure 5). Part a side note, before we used CO₂ lasers, this process proved to be more difficult and bloodier using a scalpel and blunt dissection. As you can see in Figures 3 and 4, there is virtually no blood in the surgical field. The laser was used at 8 to 10 watts of power with the tipless adjustable handpiece set at 0.25mm spot size. All of the tiny vessels in the surgical field were cauterized during the removal of the neoplastic mass.

Again you will notice a modicum of blood present during this procedure (Figure 7). The laser allowed clean dissection with a minimal amount of tissue trauma and handling, which is crucial in dealing with any neoplastic procedures.

The evaluation of the right adrenal revealed an enlarged gland that dorsally encircled the caudal vena cava (Figure 6). You can see the adrenal gland near the tip of the curved hemostat. Positioned just over the adrenal and slightly to the left is the caudal vena cava and draped over the vena cava is a love lobe.

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Surgical CO₂ lasers make our occupation as surgeons easier while producing results that are more precise. Patients are grateful and stand at our side assisting us through the best course of treatment for their beloved pet when a critical condition arises. They may be forced by the choice of surgical intervention vs. euthanasia. Undoubtedly they hope for a new lease on life for their pets so that they can enjoy more play time and many more precious moments together.

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