From scalpel to CO2 laser surgery: Perspective of a veterinary surgeon in Germany

By Anja Glázková, PhD
For The Education Center

Jakub Kaczmarek, DVM, is a resident of the European College of Veterinary Surgeons (ECVS) at Germany-based AniCura, a referral clinic where the CO2 laser is used as the main surgical modality. He has extensive experience with laser surgery and performs laser procedures on a daily basis (mainly perineal, oncologic, and dental). In this interview, Dr. Kaczmarek talks about his professional journey from the moment he first picked up the laser, to the time he taught laser surgery to his fellow surgeons across Europe and the U.S. through numerous presentations and wet labs.

Q: How did you learn about laser surgery?
A: My first contact with the laser was during the Southern Veterinary Conference (SEVC) Congress in Barcelona in 2014. I had an opportunity to talk to one European surgeon across Europe and the U.S. through numerous presentations and wet labs.

Q: How difficult was it for you to learn to use the CO2 laser? What are your preferred settings?
A: As with any surgical tool, a laser scalpel—which is essentially what a CO2 laser is—has its own learning curve. It’s not nearly as long as with vitable-plateau- leveling ostotomy (VPL0) or arthroscopy, but it needs to be considered. Before starting a surgery, it is critical to learn the anatomy, the proper technique, and the pathomechanism behind the disease. Before starting the laser in your practice, it is critical to learn and understand laser physics and the basics of laser-tissue interaction. Being a good laser surgeon requires combining these two elements.

Q: What clinical benefits does the CO2 laser provide?
A: As with any surgical laser, CO2 laser surgery provides several benefits, and see how different procedures are performed. It caught my attention and piqued my interest on the spot.

Q: Which particular surgical procedures would you much prefer doing with a laser, rather than a scalpel?
A: As a result of minimal bleeding, all perineal procedures (e.g., hemostasis tumor, anal sac cystectomy, rectal polyps, and utero-sacral adhesion) become much more pleasant, faster, and consequently, easier.

Q: Do you ever leave your laser surgical site untended? If possible, it is very helpful to shadow a laser surgeon at his/her clinic and observe them working. As a result of minimal bleeding, all perineal procedures (e.g., hemostasis tumor, anal sac cystectomy, rectal polyps, and utero-sacral adhesion) become much more pleasant, faster, and consequently, easier.

Q: What type of injury do you see for perineal injuries? What are your preferred settings?
A: Before using a laser, you need to be familiar with tissue tension, the surgeon’s hand speed, and patient’s body condition. For perineal or oral procedures, I don’t go above 12 watts, as a result of minimal bleeding, all perineal procedures (e.g., hemostasis tumor, anal sac cystectomy, rectal polyps, and utero-sacral adhesion) become much more pleasant, faster, and consequently, easier.

Q: What can you do to maximize the efficiency of your laser surgeries?
A: After graduating with a degree in veterinary medicine in Wrocław (Poland) in 2013, Jakub Kaczmarek, DVM, began a two-year surgical internship at the referral clinic in Berlin, Germany. He is currently a resident of the European College of Veterinary Surgeons (ECVS) at a referral clinic in Munich, Germany.

This Education Center article was underwritten by AniCura of Buhl, Wash., manufacturer of the only American-made CO2 laser, the Aesculight of Bothell, Wash., and the Aesculight of Lübeck, Germany.

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Packaged surgical removal of a soft tissue sarcoma—interventional pattern. CO2 laser diode-surgical homatlas settings: 54 watts, 0.4-mm spot size, continuous SuperPulse mode.

Immediately after the surgical removal of a soft tissue sarcoma, the wound was left for the second 30-minute healing. Surgery was performed entirely with a CO2 laser.

Feline patient in dorsal recumbency prepared for surgery to remove the naso-ocular mass. Stays sutures are placed in order to provide tension.

With these cases, I usually change the spot size or the tip-to-tissue distance in order to obtain the desired effect. I utilize the SuperPulse mode daily, and the continuous mode (CW) only when performing oral surgeries.

For me, the most important motivators were the clinical benefits, and see how different procedures are performed. It caught my attention and piqued my interest on the spot.

In my opinion, pain reduction in my patients is a huge benefit. I can see it very clearly in patients with persistent problems (chronical and sis infections, tumors, etc.). These patients are very often already in pain and tramamated from their initial examination. Noticeable reduction of pain and increase in postoperative comfort are noted by our patients a few days after the laser procedures. In this case, it is not only beneficial for patients, but also for the owners who are pleased to see their pet recovering so quickly and so well.

Q: Could you go over the clinical benefits of your surgical laser that you have personally observed?
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Intraoperative picture. CO2 laser provided excellent hemostasis. Feline patient in dorsal recumbency prepared for surgery to remove the naso-ocular mass. Stays sutures are placed in order to provide tension.

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Q: When did you incorporate the Aesculight laser into your practice and what motivated you to do so?
A: I started using the laser more than three years ago. For me, the most important motivations were the clinical benefits, such as less bleeding and swelling, reduced post-op pain, less risk of infection (due to the noncontact nature of the laser), and shorter surgical time. I was very encouraged by current research regarding laser surgery and how beneficial it is. Eventually, many pet owners also became interested in getting surgery done with the laser.

Q: How did you learn about laser surgery?
A: My first contact with the laser was during the Spanish-European Veterinary Conference (SEVEC) Congress in Barcelona in 2014. I had an opportunity to talk to one of Aesculight Lasers’ representatives and learn about its numerous benefits, and see how different procedures are performed with it. So I caught my attention and picked my interest on the spot.

Q: How did you learn about CO₂ laser surgery and how did you learn it?
A: As with any surgical tool, a laser—which is essentially what a CO₂ laser is—has its own learning curve. It isn’t nearly as long as with a tileblade-ablation system (TPS) or arthroscopy, but it needs to be considered. Before starting a surgery, it is critical to learn the anatomy, the proper technique, and the fundamentals behind the disease. Before starting to learn the laser in your practice, it is critical to learn and understand laser physics and the basics of laser-tissue interaction. Being a good laser surgeon requires combining two these elements.

Q: What mistakes can a novice CO₂ laser surgeon easily make? What would you recommend to prevent these errors?
A: I don’t have a preferred setting because every surgery is different, not only surgical conditions, but also patient conditions. For example, I utilize the SuperPulse mode daily, and the continuous wave (CW) only when performing oral surgeries. A very handy feature is the ability to set the laser to the SuperPulse mode and send pulses at a specific frequency (e.g., 15, 15, or 40 Hz). This laser provides very good control in areas where proximity to anatomical structures require high precision.

Q: Which particular surgical procedures would you much prefer doing with a laser, rather than a scalpel?
A: As a result of minimal bleeding, all perineal procedures (e.g., hernia repair, uterine myoma, polypectomy, and so on) become much more pleasant, faster, and, consequently, easier.

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- Keep calm and love the laser beam!
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Q: In your opinion, what laser features are most useful and why?
A: I think every laser feature is unique, and all of them combined make the laser a great surgical tool. Freedom to cut, coagulate, and ablate using the same single instrument is very helpful and creates new ways of treating many conditions, not only surgical.

Q: Could you go over the clinical benefits of your surgical laser that you have personally observed?
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Q: Is there anything else you would like to share with new laser surgeons?
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