Cervical mucocele is corrected using a CO₂ laser

By Noel Berger DVM, MS, DABLS

Cervical mucoceles are easily identified on a soft, electronic, nonpalpable swelling of the ventral neck. Tumors and abscesses may appear similar but generally are either firm or painful. Fine needle aspiration generally produces copious viscous fluid that is clear, straw colored, hazy, or colored bloody. Occasionally three cervical mucoceles may expand and migrate to the ventral midline, making it difficult to determine whether the problem involves the left or right-sided glands.

Examining a sedated pet on its back (Figure 1) often allows the mucocele to migrate to the affected side. This condition is almost exclusively seen in dogs and very rarely in cats. There is no age or sex predisposition, and there is an easy surgical approach in dogs, and there is an easy surgical approach in dogs.

The swelling is made ventral to the ear canal and avoids the cranial nerves, the lingual nerve, and the ventral and caudal to the ramus. A full thickness incision is made over the bulging site without damaging vital structures. The precision of the CO₂ laser assures me that adjacent tissues are broken down connective tissue. The precision of the CO₂ laser while I observe the surgical field for vital structures. The precision of the CO₂ laser for use as a cutting and dissecting tool for surgery in a delicate area.

With the anesthetized patient in lateral recumbency, the mandibular gland is located at the junction of the major vessels of the neck (Figure 2), ventral to the ear and caudal to the ramus. A full thickness single-pass skin incision is made using 0.25 mm diameter spot size, 10 W SuperPulse, 50 Hz pulse rate, 20 msec pulse duration. This creates a skin incision that does not bleed, is not painful, and clearly exposes the surgical site without damaging vital structures before the dissection. A similar incision is also made through the platysma musculature (Figure 3).

The mandibular gland is now easily identified, and with gentle flossing traction, the supporting connective tissue can be broken down using the CO₂ laser in continuous wave (CW) mode (Figure 4). I use an adjustable focal diameter handpiece and change the power exposure to 0.4 mm diameter spot size, 40 Hz CW. This allows me to slowly and meticulously deliver the laser while I observe the surgical field for vital structures. The precision of the CO₂ laser used in this manner is quite remarkable since the energy is almost completely absorbed within 0.3 mm tissue depth. This physical property assures me that adjacent tissues are protected from unnecessary damage.

Once the mandibular gland and the chain of sublingual salivary glands have been removed, the surgical area is flushed with several sterile saline flushes, a few sialoliths were found (Figure 7). There was no bleeding during this procedure—the use of a CO₂ laser helped me visualize vital structures so the procedure could be completed rapidly.

Marsupialization was then performed by cutting the rim of oral mucosa and connective tissue of the mucocele (Figure 8). I used a synthetic braided absorbable 3-0 suture because it is soft and comfortable for my patient. Over the course of a few weeks the mucocele sac will granulate in and not return on that side. The patient will still produce saliva but the mucocele will no longer exist. Any remaining suture material will be broken down using the CO₂ laser, and the patient will look normal again and the mouth will be healed (Figure 9). I enjoy using a CO₂ laser in this procedure because it is precise, it provides pain relief, and less bleeding occurs so I can see better and finish the procedure faster.

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REFERENCES


5. The All-New Smaller Ergonomic TIPLESS Handpieces: TIPLESS Adjustable. 0.25 / 0.4 / 0.8 mm

6. The OLD Handpiece

7. TIPLESS 0.25 mm – angled

8. TIPLESS 0.25 mm

9. TIPLESS 0.4 mm

10. TIPLESS 0.8 mm

11. TIPLESS 1.4 mm

12. White Activation Adapter

13. Smoke Evacuation Adapter

14. TIPLESS with Backstop & Handle

15. This Education Center article was underwritten by Aesculight of Bothell, Wash., the manufacturer of the only American-made CO₂ laser.
Cervical mucocele is corrected using a CO2 laser

By Noel Berger DVM, MS, DACVIL For The Education Center

Cervical mucoceles are easily identified as a soft, fluctuant, nonpainful swelling of the ventral neck. Tumors and abscesses may appear similar but generally are either firm or painful. Fine needle aspiration generally produces opaque viscous fluid that is clear, straw colored, honey colored, or occasionally bloody. Over time cervical mucoceles may expand and migrate to the ventral midline, making it difficult to determine whether the problem involves the left or right-sided glands. Examining a sealed pet on its back (Figure 1) often allows the mucocele to migrate to the affected side.

This condition is almost exclusively seen in dogs and very rarely in cats. There is no breed predilection, and there are an increased incidence in predispose, German shepherds, dachshunds, and Australian silken terriers. The inciting cause of a salivary mucocele is usually not definitively identified. Trauma from a choke chain, bites to the neck, chewing on foreign objects, and sudden hyperextension of the neck are suspected causes. There can cause stretching or tearing of the salivary gland or the duct that drains saliva from the gland to the mouth. Saliva accumulates on the skin and incites a marked inflammatory response. The body attempts to contain the leaking saliva by creating a layer of connective tissue around the salivary gland. Clinically, the removal of the mandibular and sublingual glands on the side of the mucocele is the normal surgical treatment. The glands are removed together because the duct of the mandibular gland travels through the sublingual gland and removal of one gland would unnecessarily traumatize the other. The mandibular gland is closely associated with the maxillary and lingual nerve roots that join to form the jugular vein. Removal of the salivary glands require careful dissection to avoid damage to the lingual nerve and ventral branches of nerves exiting C2.

I choose to use a CO2 laser for this procedure because it is so precise when careful dissection is required in the area of vital anatomical structures. The technique of removing the salivary glands and marsupializing the cervical mucocele has been described previously, and I adapted a CO2 laser for use in a cutting and dissecting tool for surgery in a delicate area. With the anesthetized patient in lateral recumbency, the mandibular salivary gland is located at the junction of the masseter and sublingual glands on the side of the mucocele is the normal surgical treatment. The mucocele contents need to be drained and the cavity inspected and the supporting connective tissue can be broken down using the CO2 laser in continuous wave (CW) mode (Figure 4). If I use an adjustable focal diameter handpiece and change the power exposure to 0.4 mm diameter spot size, 4 W CW. This allows me to slowly and meticulously deliver the energy to the area I observe. The energy is almost completely absorbed within 0.3 mm tissue depth. This physical property assures me that adjacent tissues are protected from unnecessary damage.

Once the mandibular gland is dissected out by retracting the gland under gentle tension and using CO2 laser energy to break down connective tissue, the cervical mucocele sac is marsupialized by suturing the oral mucosa to the connective tissue of the mucocele. CO2 laser helped me visualize vital structures from other glands in the mouth (parotid, pharyngeal, zygomatic salivary glands). The cervical mucocele is a cosmetic problem for dogs, and there is an easy surgical solution to provide a normal appearance. In just a few short weeks after the surgery the patient will look normal again and the mouth will be healed (Figure 9). I enjoy using a CO2 laser in this procedure because it is precise, it provides pain relief, and less bleeding occurs so I can see better and finish the procedure faster.

The cervical mucocele is marsupialized by suturing the oral mucosa to the connective tissue of the mucocele sac and left to heal by second intention granulation. The cervical mucocele tuft is cut to 409 (Figure 6). The mucocele contents were expressed and after several sterile saline flushes, a few suture material were found (Figure 7). There was no bleeding during this procedure—the use of a CO2 laser helped me visualize vital structures in the procedure could be completed rapidly. Marsupialization was then performed by suturing the rim of oral mucosa to connective tissue of the mucocele (Figure 8). I used a synthetic braided absorbable 3-0 suture because it is soft and comfortable for my patient. Over the course of a few weeks the mucocele sac will granulate in and not return on that side. The patient will still produce saliva and granulation will cease. Any remaining suture material will be broken down using the CO2 laser and left to heal by second intention granulation. The patient will still produce saliva and saliva will be healed (Figure 9). I enjoy using a CO2 laser in this procedure because it is precise, it provides pain relief, and less bleeding occurs so I can see better and finish the procedure faster.

This case and others like it may be discussed at the 2nd annual meeting of the American Laser Study Club (ALSC) of Veterinary Medicine at Quail Hollow Animal Hospital, Wesley Chapel, Fla.

REFERENCES

For more information about dental mucoceles and other cases, check out Dr. Berger’s articles online at www.vetcalpe.com.

Noel Berger DVM, MS, DACVIL, is a graduate of Cornell University (1988, 1993) for both his DVM and MS in clinical sciences. He has been a certified diplomate of the American Board of Laser Surgery in veterinary surgery since 2000, and he has written a textbook on the subject. He has lectured nationally on laser physics and clinical applications for small animal veterinarians and has written for the Association for training and certification at Quest Animal Hospital, Wesley Chapel, Fla.

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