How to use CO₂ laser to perform gingivectomy and remove epulis

By William E. Schultz, DVM
For The Education Center

Gingival hyperplasia is a common problem in older dogs. It can, however, affect younger ones too. This process causes thickening of the gingival mucosa and results in deep mucosal pocketing (Figures 1 and 2). In the case described in this study, in addition to gingival hyperplasia, the dog had an epulis present at the buccal aspect of tooth 404 (Figure 3).

The epulis was fibrous, and the CO₂ laser was sufficient to ensure complete removal. Ossifying epulis, however, may require both laser and rongeurs for removal. Gingival masses should be sent for histopathology.

Laser removal of gingival hyperplasia and epulis causes little to no hemorrhage and very little postoperative pain. 1 Electrosurgery and steel may be used but may cause extensive thermal damage and consequently lead to significant post-operative pain. Steel does not allow for hemorrhage control.

Patient: The procedures were performed on a large mixed-breed canine that weighed 63 pounds and was 9 years, 5 months old.

Client education: The procedure is always discussed prior to surgery. Before and after pictures are taken and provided to the client when the case is released later in the day. The pet’s name, owner’s name, date and name of the clinic are also placed on the pictures.

Anesthesia and surgery preparation: Pre-anesthetic pain medication and maintenance on gas anesthesia were utilized for this surgery. Morphine or Buprenorphine were used at the onset of the procedure. When a surgical laser is used in close proximity to an endotracheal tube, inadvertent laser strike of the endotracheal tube could result in thermal injury or even serious injury to the patient. Therefore, caution must be taken and the endotracheal tube must be protected with saline-soaked gauze. This was necessary in our case, but in mild cases, only the tissue responsible for the pocket may need removal. Mandibular hyperplastic gingiva was gradually ablated in a similar fashion.

The perio probe was utilized during the procedure to determine if enough tissue had been removed (Figure 6). When the pocket had been eliminated, the laser was used to remove the thickened buccal mucosa (Figure 7). This was necessary in our case, but in mild cases, only the tissue responsible for the pocket may need removal.

Maxillary hyperplastic gingiva was gradually ablated in a similar fashion (Figure 8).

Epulis removal: The periosteal elevator was inserted the full length of the epulis, allowing for rapid CO₂ laser removal of the mass. After the suction of the epulis, the specimen was sent to the lab for histopathological examination. The remaining connective tissue was ablated (Figures 11-12). Smaller epulis may be ablated completely if histopathology is not necessary.

The char was removed from the surgical site using diluted chlorhexidine on a gauze pad (Figure 13). The teeth were then scaled to remove tartar present in the pocketed areas. Polishing with prophylaxis paste completed the procedure.

Post-operative Care: The dog was sent home on antibiotics, NSAIDS and pain medications for the week following the procedure. Typically we use Clindamycin, metronidazole and tramadol at the appropriate dose per kg body weight. Chlorhexidine oral rinse is also used for the first week to 10 days following the procedure. The pet is on a soft food diet the night of the surgery and most will be on regular diet by Day 2 post-op.

Follow-up Exam: Ten days after the surgery, the dog came for a follow-up examination, showing excellent healing (Figure 14).

Conclusion: Laser gingivectomy is a necessary procedure when pocketing is present. The surgery involves highly vascular tissue and can result in bleeding and post-operative swelling, pain and inflammation. The use of our CO₂ laser made the surgery bloodless and the recovery uneventful.

References:

Dr. Will Schultz graduated from Michigan State University College of Veterinary Medicine in 1973. went into private practice and opened his companion animal practice in the fall of 1974. Dr. Schultz is the recipient of the 2014 Dr. John Strauss Award for Excellence in Practice from the Society for Theriogenology. Dr. Schultz is using a 40-watt flexible waveguide CO₂ laser with constant and RapidPulse modes.

This Education Center story was underwritten by Aesculight of Woodinville, Wash., the manufacturer of the only American-made CO₂ laser.
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The epulis was fibromatous, and the CO₂ laser was sufficient to ensure complete removal. Osaifying epulis, however, may require both laser and resection for removal. Gingival margins should be sent for histopathology. Laser removal of gingival hyperplasia and epulis causes little to no hemorrhage and very little postoperative pain. Electrocutting and surgery may be used but may cause extensive thermal damage and consequently lead to significant postoperative pain. Steel does not allow for hemorrhage control. For this reason, the CO₂ laser is used.

Patient: The procedures were performed on a large mixed-breed canine that weighed 63 pounds and was 9 years, 5 months old.

Client education: The procedure is always discussed prior to surgery. Before and after pictures are taken and provided to the client when the case is released later in the day. The pet’s name, owner’s name, date and name of the clinic are also placed on the pictures.

Anesthesia and surgery preparation: Pro-anesthetic pain medications and maintenance on gas anesthesia were utilized for this surgery. Morphine or Buprenorphine were used at the onset of the procedure.

Equipment: The laser used in this case was an endotracheal tube, inadvertent laser strike of the patient, and most will be on regular diet by Day 2 post-op.

Post-operative Care:

It was used to follow the laser beam around the tooth during tissue removal. A small spatula may be used for this purpose as well.

Anesthesia and surgery preparation:

Pre-anesthetic pain medications and maintenance on gas anesthesia were utilized for this surgery. Morphine or Buprenorphine were used at the onset of the procedure.

Equipment: The laser used in this case was the flexible fiberoptic laser set at 10-20 watts of continuous wave (CW) and the 40-watt flexible waveguide CO₂ laser with constant and SuperPulse modes.

Power output: 50-20 watts

Laser mode: Continuous wave (CW)

Procedure: For this case, we used our flexible fibre CO₂ laser set at 10-20 watts of continuous wave with a 0.8 mm beam diameter. Either a fixed spot or an adjustable tipless handpiece are available for the procedure.

The wattage depends on the toughness of the hyperplastic tissue. Sealing the teeth before starting the procedure is helpful if the tartar is thick. A perio probe is used to determine pocket depths before starting the procedure.

Gingivectomy: Before laser ablation, a small periosteal elevator was placed between the tooth and the gingiva to prevent damage to the enamel (Figure 5). It was used to follow the laser beam around the tooth during tissue removal. A small spatula may be used for this purpose as well. The perio probe was utilized during the procedure to determine if enough tissue had been removed (Figure 6). When the pocket had been eliminated, the laser was used to remove the thickened buccal mucosa (Figure 7).

This was necessary in our case, but in mild cases, only the tissue responsible for the pocket may need removal. Mucosal hyperplastic gingiva was gradually ablated in a similar fashion (Figure 8).

Epulis removal: The periosteal elevator was inserted full the length of the epulis, allowing for rapid CO₂ laser removal of the mass. After the erosion of the epulis, the specimen was sent to the lab for histopathological examination.

The remaining connective tissue was ablated (Figure 11). This was necessary in our case, but in mild cases, only the tissue responsible for the pocket may need removal. Mucosal hyperplastic gingiva was gradually ablated in a similar fashion (Figure 8).

REFERENCES…


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