

A special advertising section

CO₂ laser-assisted management of feline stomatitis after extractions

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Laser ablation can provide long-term caudal stomatitis cure.

Stomatitis is an inflammation of the mucous lining of any of the structures in the mouth; in clinical use the term should be reserved to describe widespread oral inflammation (beyond gingivitis and periodontitis) that may also extend into submucosal tissues (e.g., marked caudal mucositis extending into submucosal tissues may be termed caudal stomatitis).

Feline caudal stomatitis represents a growing and frustrating problem in veterinary oral care. The etiology of stomatitis is still unknown, although a multifactorial hyper-immune response to plaque is felt to be involved. This has led to many therapeutic approaches with varying success.

Surgical laser ablation has provided long-term control of the inflammation in a number of our adult feline patients with persistent caudal stomatitis despite extractions.

CASE 1: Initial findings

Signalment: Colby, 3-year-old neutered male domestic shorthair

Presenting complaint: Painful mouth, drops food while eating, hasn't groomed recently

Medications: Repositol steroid therapy in the past

without long-term control of symptoms and subsequent weight gain

Oral examination findings: Inflamed buccal, gingival and alveolar mucosa, permanent dentition is present

Diagnosis: Feline stomatitis based on clinical appearance

Treatment plan: Surgical extraction of all teeth followed by three monthly laser ablation sessions of his oral mucosa using the Aesculight CO₂ laser set at 2 watts in continuous mode using a wide ceramic tip

Outcome: Recovery following extractions was uneventful. Laser ablation of inflamed areas was done three times following initial visit (**Figures 1a and 1b**). Twelve weeks after extracting the teeth, the inflamed alveolar mucosa was minimal. Patient has been comfortable with no recurrence of stomatitis lesions for one year (**Figure 1c**).

CASE 2: Initial findings

Signalment: Toasty, 17-month-old domestic shorthair; FIV/FeLV negative

Presenting complaint: Bleeding and swollen gingiva, inappetence

Medications: None at initial presentation although a repositol steroid injection and antimicrobials had been administered five and three months prior to presentation

Oral examination findings: Inflamed buccal, gingival and alveolar mucosa, complicated fractured right

mandibular incisor (401) (**Figure 2a**).

Diagnosis: Feline stomatitis and fractured incisor based on clinical appearance and radiographs

Treatment plan: Surgical extraction of all buccal teeth and right mandibular first incisor followed by immediate laser ablation of caudal stomatitis inflammation using the CO₂ laser set at 2 watts in continuous mode using a wide ceramic tip (**Figure 2b**).

Outcome: Recovery following extractions was uneventful. Laser ablation of oral mucosa using the CO₂ laser set at 2 watts in continuous mode using a wide ceramic tip was repeated four weeks following oral surgery and initial laser treatment. A third ablation was performed eight weeks after the initial visit using the CO₂ laser's 0.8 mm ceramic tip to ablate exact areas of residual inflammation. Patient has been comfortable with no recurrence of stomatitis lesions for five months. **Figure 2c** presents four-month post-op view of the patient.

CASE 3: Initial findings

Signalment: Cookie, 3-year-old spayed female domestic shorthair; FIV positive

Presenting complaint: Inappetence, halitosis and advanced periodontal disease

Medications: None at initial presentation

Oral examination findings: Inflamed buccal, gingival and alveolar mucosa, tooth resorption affecting multiple premolars and molars

Diagnosis: Advanced periodontal disease, stomatitis, and tooth resorption (TR3 and TR4) affecting 207, 208, 307, 308, 309, 407, 408 and 409 based on clinical probing and intraoral radiographs

Treatment plan: Surgical extraction of all remaining teeth—see **Figure 3a**.

Outcome: Recovery following extractions was uneventful. Surgical ablation of oral mucosa using a non-SuperPulse setting at 6 watts in continuous mode using a 0.8 mm ceramic tip was performed eight and 12 weeks following oral surgery (**Figures 3b and 3c**). Patient has been comfortable with no recurrence of stomatitis lesions for five years (**Figure 3d**).

Discussion

Feline stomatitis treatment goals include reducing the inflammatory response to dental plaque. Constant administration of anti-inflammatory and steroid medication has not been shown to be curative or indicated and may result in patient harm.

Extraction of all teeth caudal to the canines or, in other cases where the canines or incisors are not clinically normal, extraction of all the teeth results in improvement of 80 percent of treated cats; 60 percent of these cats are cured and do not require additional therapy, while 20 percent may still show signs of oral inflammation, but do not appear to have oral pain.

The remaining 20 percent that did not respond after extracting all of the teeth require additional care.

This additional care may include interferon therapy. Although it is frequently used in Europe, the product



FIGURE 1A: Four weeks after extracting all teeth, the sites have healed; oral inflammation treated with the Aesculight CO₂ laser.



FIGURE 2A: Bleeding and redness of the buccal mucosa on presentation.



FIGURE 3A: Eight weeks after initial presentation and oral surgery.



FIGURE 1B: Eight weeks after extractions, laser ablation of the inflamed areas.



FIGURE 2B: Immediately after first laser ablation treatment, excessive char removed



FIGURE 3B: After first laser ablation.



FIGURE 1C: Twelve weeks after presentation, inflammation is minimal and patient is comfortable.



FIGURE 2C: Four months after presentation and three laser treatments, oral mucosa is healthy and patient is comfortable.



FIGURE 3C: Oral mucosa 12 weeks after initial visit, four weeks after first laser ablation.



FIGURE 3D: Five years after oral surgery and laser treatment, patient is comfortable and oral mucosa is healthy.

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

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FIGURE 4: Stomatitis treatment with CO₂ laser.

the extractions sites, providing optimal healing.

Areas affected by oropharyngeal inflammation in the most caudal regions of the mouth do not have teeth. Logistically, cutting or scraping the tissue is difficult, resulting in trauma of adjacent tissue, along with incomplete removal or resection of the inflamed mucosa. A carbon dioxide laser allows the practitioner to moderately ablate inflamed areas without touching them with the laser's tip. Aesculight's flexible fiber CO₂ laser handpiece can be held like a pen, focusing the laser's energy on the exact areas requiring treatment—see **Figure 4**.

The CO₂ laser emits a coherent, collimated, monochromatic beam of invisible light—wavelength 10.6 μm with a lot of energy focused on a small spot. This beam is rapidly absorbed by the water present in tissues with little scatter—average ablated zones of 100-300 microns at the edges of treated tissues are typical. The energy absorbed by the treated tissues causes water evaporation and cell lysis. Nerve endings are vaporized; blood and lymphatic vessels sealed. By using a variety of laser tips and adjusting the energy settings, a CO₂ laser can be used to provide enough energy to ablate or remove

inflamed oral tissues throughout the mouth and promote healing by second intention and fibrosis.

Many patients seen in our practice and also those feline stomatitis patients described in the veterinary dental literature require more than full-mouth extractions. These cats need relief that long-term systemic antibiotics and steroids cannot provide. Laser ablation helps remove the inflamed mucosa, reduces pain and stimulates healing within the mouth in one treatment session. Tissue regeneration and fibrosis is stimulated and healthy mucosa can develop, replacing the inflamed tissues.

Short anesthetic episodes are required to ablate inflamed regions in the mouth. Using the CO₂ laser in these refractory cases can lead to long-term control and most often resolution of the inflammation. We treat every four weeks for a maximum of three months until the noticeable inflammation in the caudal areas of their mouths has diminished. This is usually achieved after two or three treatments. Monthly monitoring through oral health examinations confirms resolution. In cases that do not fully resolve, all teeth are extracted followed by monthly laser ablation. ●

is not widely available in the U.S. and its efficacy has not been proven. As it must be administered orally, patient acceptance can be limited in moderate to severe cases due to oral discomfort.

Removal of the inflamed tissues and preventing recurrence are surgical goals. Great care should be taken after extracting the teeth to preserve healthy mucosa and tension-free mucosal flaps sutured in place over

RECOMMENDED READING...

Berger N, Eeg P. Veterinary Laser Surgery: A Practical Guide. Introduction to Clinical Applications of CO₂ Laser Energy in Veterinary Medicine and Surgical Services 10:139-149, 2006.

Bellows J. Feline Dentistry: Oral Assessment, Treatment, and Preventative Care. Treatment of Oropharyngeal Inflammation 11:242-269, 2010.

Lewis JR, Tsugawa AJ, Reiter AM. Use of CO₂ Laser as an adjunctive treatment for caudal stomatitis in a cat. J Vet Dent 24:240-249, 2007.

Dr. Bellows was certified by the Board of Veterinary Practitioners (canine and feline) in 1986 and by the College of Veterinary Dentistry in 1990. Currently he is president of the American Veterinary Dental College (2013-14).

Elizabeth McMorran earned her veterinary degree at the Ludwig Maximilians University of Munich and is completing the residency requirements for the American Veterinary Dental College. Together with her mentor, Dr. Bellows, she practices medicine at All Pets Dental in Weston, Fla.

* Source: "A Compendium: CO₂ Surgical Laser Case Studies". © Copyright 2006-2012 Aesculight LLC.

0.4 mm focal spot size
setting*: Perianal Adenoma, Perianal Urethrostomy (feline), Vaginal Fold Excision, Ventriculocholecystomy – Ventral Approach, Declaw Amputation, Vaginal Tumor, Stenotic Nares (feline), Dock Tail Removal, Neuter (canine), Neuter (feline), Vaginal Tumor, Stenotic Nares (feline), Ovariohysterectomy, Abscess Incision and Drainage, Digital Fibroma Excision, Incisional Biopsy (Achilles Tendon Mass), Interdigital Cornified Growth, Stifle Imbrication, Persistent Right Aortic Arch, Thyroidectomy, Hemangioma, Mammary Lumpectomy, Mastectomy, Tail Amputation Sebaceous Hyperplasia, Distichia, Indolent Ulcer, Granulation Tissue Under Tongue, Lingual Plasmacytoma, Sublingual Sialocele, Tissue Sculpting, Tongue Growth, Anterior Cruciate Ligament, Anterior Cruciate Ligament Sever DJD, Hemilaminectomy and many more...

0.8 mm focal spot size
setting*: Anal Sac Excision-Open, Perianal Adenoma, Vaginal Tumor, Aurial Hematoma, Ear Canal Polyp, Abscess Incision and Drainage, Acral Lick Granuloma, Toenail Lasing, Entropion Correction, Indolent Ulcer, Gingivectomy, Buccal Mucosal Hyperplasia, Granulation Tissue Under Tongue, Tissue Sculpting, Oral Fibrosarcoma, Mucosal Hyperplasia, Hemilaminectomy, Tongue Growth, Lingual Stifle Imbrication and many more...

1.4 mm focal spot size
size setting*: Buccal Mucosal Hyperplasia, Acanthomatous Epulis, Acral Lick Granuloma, Squamous Cell Carcinoma, External Ear Canal Growth, Histiocytoma - Canine, Toenail Lasing, Melanocytic Nevus (Benign Melanoma), Nasal Hyperkeratosis, Lingual Mucosal Hyperplasia, Perianal Adenoma, Keratectomy, Oral Fibrosarcoma, Entropion Correction, Indolent Ulcer, and many more...

0.25 mm focal spot size
size setting*: Anal Sac Excision-closed, Meibomium Gland Tumor, Lateral Ear Resection, Laryngotomy and Laryngeal Chordectomy, Nasal Hyperkeratosis, Stenotic Nares (canine), Stenotic Nares (feline), Declaw Feline, Thyroidectomy, Eyelid Melanoma, Preputial Stricture, Perineal Urethrostomy (feline), Enterotomy, Feline Squamous Cell Carcinoma, Histiocytoma (lip), Squamous Cell Carcinoma (Third Eyelid), Entropion, Conjunctival Tuck, Gingivectomy, and many more...

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