Using CO2 laser on acral lick granulomas

By Ray Arza, DVM
For The Education Center

Acral lick granulomas—also known as acral lick dermatitis, acral pruritic furunculosis and lick granulomas—t is a self-induced dermatological condition that develops as a result of excessive and prolonged licking of one or more areas. 1, 2 With time, this intense increasing licking leads to skin inflammation and can form a plaque or nodule with the lesion surface typically is thick, alipher, erythematous and often tender or ulcerated. Swelling, bruising, hyperpigmentation, scarring and crust can be present. Acral lick granulomas is typically a single unilateral lesion, although two or more lesions occasionally have been noted. Most commonly, lick granulomas involve the anterior aspect of the carpal-metacarpal or tar-

sal-metatarsal areas. Other sites include the face, tail base, stifle and tibia. 3 Although any dog can develop acral lick granulomas, most commonly the lesions occur in older male, large-breed dogs such as Labrador retrievers, golden retrievers, German shepherds, German shorthair pointers, Saint Bernards, Great Danes and pit bulls. 4 Acral lick granulomas can be caused by numerous etiological factors, either organic or psychogenic. Organic factors include food allergy, atopic dermatitis, fungal or bacterial infections, endo-

bodites, ectoparasites, painless lumps and abscesses, local trauma and hormonal imbalance. Psychogenic psychoneurotic causes are long-standing anxiety, boredom, stress, attention-seeking or sit-

ectropic behavior. Difficult endоЛia includes neoplasia, neoplastic, func-

tional or pressure point granulomas, desmoides and calcinosis circumscripta. 5, 6 Successful diagnosis and therapy of acral lick granulomas depend on the accurate identification of the underlying causes. Because the acral lick granulomas can be caused by a wide variety of factors, a complete di-

agnostic evaluation of the patient is recommended. The clinician should consider the following tests: lab blood values, T4, TSH, allergy testing, deep skin scrapes, biopsy, bacterial and fungal culture/serology of the affected area, radiographs and neurologist investigations. 7, 8 The treatment strategy involves treating the lesion along with the underlying etiological factors and the infection. Once support therapy is established, the acral lick granuloma lesion may resolve on its own. However, if the lesion is very large and ulcerated, and the veterinarian desires to expedite healing, surgical ablation with CO2 laser is indicated. In case of conventional surgical excision, skin reconstruction usually is required via direct apposi-

tion, flap or skin grafts. Surgical excision often results in disfigurement or the development of a new lick granuloma. CO2 laser surgery allows for ablation of all or most of the affected tissue down to a more normal layer of der-

nus, facilitating a much faster resolution.

Patient

A canine patient was presented for surgical ablation of a severe acral lick granuloma covering the anterior aspect of the left carpus. The client had been ailing with this for about five years, and the lesion was very large, alipher, firm, erythematous, irregularly shaped and non-ulcerated. X-rays did not reflect any articular changes and a biopsy was not performed.

Anesthesia

Appropriate preanesthetic induction followed by general anesthesia was used.

Recommended Laser Equipment, Settings

Aesculight flexible hol-

low waveguide CO2 laser with 0.4 mm and 3 mm foci-

cal spot sizes. A CO2 laser with a 3 mm focal spot size and a CO2 laser with a 0.4 mm focal spot size is used to vaporize most of the granulation tissue, ensuring not to remove the entire thickness (Figure 2). Note that wattage may be increased for thicker, more fibrous tissues.

Ablation/evaporata-

tion. Initially vaporize the remaining excess tissue at 20 to 30 watts CW (depending on the thickness of the remaining tissue) (Figure 3) to establish a bloodless field and remove down to the level of normal dermis.

Technique

The affected area is clipped and aseptically prepared for surgery. It is usually unnecessary to debride the lesion. In the case shown in Figures 1 to 4, however, the lesion was very large, and it was much quicker to first debride (Figure 3) and then to vaporize the remainder of the granulomatous tissue. Typically, the technique involves vaporizing tissue layer by layer in a tracking laser mo-

tion over the entire surface of the lesion. It is imperative to frequently wipe away char or carbonized tissue with saline-soaked sponges. Using on help to ensure the optimal delivery of laser energy to the target tissue. After each pass, the depth of ablation is evaluated in relation to the adjoining healthy dermis. The watt-

age selected depends on the surgeon’s preference and the thickness of the granulomatous tissue to remove. I normally set wattages very high at first (20 to 40 watts, CW, 3 mm spot size), and then progressively decrease it when getting close to completion. The surgeon might use numerous microshadows (Figure 3) throughout the granulation tissue, but as one gets close to normal tissue, these should disappear (Fig-

ure 4). When this is the case, there should be no appreciable thickened tissue upon digital palpation, but there should be dermis covering the subcutaneous tissues. There should be no appreciable ablation, and the tissue should have a more normal appearance (Figure 4).

Note

This procedure is relatively simple but can take time-consuming if the lesion is large and the granula-

tion tissue is thick. The most crucial part of the proc-

Surgical laser treatment results in uncomplicated healing and aesthetic clinical outcome. It is important to remember that acral lick granulomas are caused by sev-

eral underlying etiological factors, such as behavioral issues, infections, metabolic disease and osteoarthritis. The patient should be monitored for these factors in order to ensure the appropriate support therapy and to avoid possible recurrences of acral lick granuloma.

REFERENCES


re. He acquired laser therapy expertise in 2005, and along other practices, has served LineDure, LLC, a mobile veterinary medical director. Dr. Arza is the co-author of both volumes of Class IV Laser Therapy Treatment of Common Conditions and contributor to the veterinary laser protocols programmed in LineDure’s veterinary lasers.

The Education Center article was underwritten by Aesculight of Woodinville, Wash., the manufacturer of the only American-made CO2 laser.
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Acral lick granulomas—also known as acral lick dermatitis, acral pruritic furunculosis and lick granulomas—to a self-induced dermatological condition that develops as a result of excessive and prolonged licking of one or more areas. 1, 2

With time, this intense increased licking leads to skin inflammation and can form a plaque or nodule with a raised border. The lesion surface typically is thick, sallow, erythematous and often swollen or ulcerated. Draining sinuses, hyperpigmentation, scaling and crusts, alopecic, erythematous and often eroded or ulcerated.

Inflammation and can form a plaque or nodule with neoplasia; bacterial, fungal, viral and genetic diseases, local trauma material infections, foreign bodies, and anxiety, boredom, stress, or attention-seeking or stress.

Possible psychogenic. Organic factors in seborrhea dermatitis, atopic dermatitis, lichen planus, psoriasis, and lichen striatus.

The clinician should consider the following tests: lab blood values, T4, TSH, allergy testing, deep skin scrapes, biopsies, bacterial and fungal culture/sensitivity of the affected area, radiographs and neurological investigations. 1, 3, 5

The treatment strategy involves treating the lesion along with the underlying etiological factors and the infection.

Once support therapy is established, the acral lick granuloma lesion may resolve on its own. However, if the lesion is very large and ulcerated, and the veterinarian desires to expedite healing, surgical ablation with CO2 laser is indicated. In case of conventional surgical excision, the bulk of the acral-metacarpal or tarso-metatarsal area, radiographs and neurological investigations. 1, 3, 5

Anesthesia

Appropriate preanesthetic induction followed by general anesthesia was used.

Recommended Laser Equipment, Settings

Aesculight flexible holmium waveguide CO2 laser with 0.4 mm focal spot size and 3 mm laser spot size.

Ablation/vaporization: 10 to 15 watts (Figure 2) CW, 3 mm spot size, and then progressively decrease it when getting close to completion.

The surgeon might see numerous microabscesses (Figure 4) throughout the granulation tissue, but as one gets close to normal tissue, these should disappear (Figure 6).

After each pass, the depth of ablation is evaluated. Ablation/vaporization with 0.4 mm focal spot size and 3 mm laser spot size. There should be no appreciable thickened tissue upon digital palpation, but there should be dermis covering the subcutaneous tissues. There should be no appreciable bleeding, and the tissue should have a more normal appearance (Figure 4).

Note

This procedure is relatively simple but can be quite time-consuming if the lesion is large and the granulation tissue is thick. The most crucial part of the procedure involves getting a feel for how deep to go or when to stop removing tissue. It is critical not to go beyond the normal dermal margin, or bleeding and delayed healing will occur.

Post-Operative Care

A thick layer of CollaSeal and then a Telfa pad and bandages are applied. The bandage is changed at least once a week until the surgical site is completely healed. The dog should wear an Elizabethan collar until the lesion heals. The patient is rechecked at each bandage change until complete resolution. Typically, the clinical outcome of CO2 laser treatment is fairly cosmetic and has some hair regrowth (Figure 6).

Conclusion

A CO2 laser gives the surgeon precise control over the amount of tissue to be removed without extensive thermal damage to the surrounding tissues. There is virtually no bleeding intraoperatively, and laser energy effectively kills bacteria at the surgical site, thus reducing the risk of infection.

Surgical laser treatment results in uncomplicated healing and aesthetic clinical outcome. It is important to remember that acral lick granulomas are caused by a wide variety of factors, such as behavioral causes, infections, infections, metabolic diseases and osteosarcoma.

The patient should be monitored for these factors in addition to the appropriate support therapy and to avoid possible recurrences of acral lick granulomas.

REFERENCES


Figure 1. Preoperative view of acral lick granuloma.

Figure 2. Most of the excess tissue is debulked with a CO2 laser.

Figure 3. Weeks after surgery.

Figure 4. Postoperative view of the surgical site.

Figure 5. Three weeks after surgery.

Figure 6. Three weeks after surgery.

Figure 7. Microscopic appearance of excised acral lick granuloma.