Recurrent interdigital draining tracts treated with CO₂ laser ablation

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For The Education Center

Introduction

Interdigital pododermatitis in dogs has many causes1-4, one of which is follicular cysts that repeatedly rupture and cause draining hemorrhagic tracts in the interdigital spaces of dogs.

The clinical lesions include erythema, edema, nodules, hemorrhagic bulla (Figure 1), hemorrhagic draining tracts (Figure 2), ulcers and scarring (Figure 3), most commonly in the lateral interdigital space between digits IV and V. Treatment includes eliminating specific etiologic agents when present; soaking the paws in antiseptic solutions; long term antibiotics; and surgical debridement.

When follicular cysts are present, surgical removal of the tracts is important in order to achieve resolution of the problem. The CO₂ laser surgery is the most appropriate surgical modality because of its ability to provide excellent accuracy and repeatability, excellent intra-operative hemostasis and reduced post-operative complications.

The state-of-the-art CO₂ laser from Aesculight is used at our clinic routinely for these types of soft tissue surgeries. Aesculight laser features flexible fiber waveguide beam delivery with scalpel-like handpieces for gentle beam delivery and optimal safety and precision.

Interdigital Pododermatitis Diagnosis

Interdigital follicular cysts are a special subset of canine recurrent interdigital dermatitis lesions that have been shown to manifest by the presence (Figures 4-6) of comedones, alopecia, hyperkeratosis and callus formation on the ventral interdigital spaces on the opposite side of the dorsal draining tract. Most often these lesions occur in the lateral interdigital spaces of the front paws.

Above this area of comedones are multiple cysts which repeatedly rupture and cause a pyogranulomatous fistulous tract that migrates to the dorsal interdigital skin between the digits in the interdigital paw webs (Figure 7).

The dorsal lesions are the most clinically obvious and consist of hemorrhagic bulla (Figure 1), hemorrhagic draining lesions (Figures 2, 8) and scarring from repeated ruptures (Figure 3). These dorsal lesions are often misinterpreted to be the primary lesion. Failure to recognize the ventral pathology leads to a failure in therapy and a continuation of repeated episodes of draining lesions.

Frequently these lesions are thought to be a foreign body reaction and the dorsal lesions often undergo surgical probing, lancing and debridement, which results in further scarring. Meanwhile the dog is maintained on long-term antibiotics, corticosteroids and other anti-inflammatory drugs with no response.

A classic scenario is that the dog has recurrent draining lesions in the same interdigital space. Since such cysts originate from hair follicles, the removal of the haired structures in the affected area is important in order to prevent new cysts in this area.

When the dog has interdigital hemorrhagic bulla and draining lesions that occur randomly in various interdigital spaces, then the presence of follicular cysts is not very likely (Figure 9). In these cases other underlying causes need to be considered. Typically dogs who have follicular cysts as the underlying cause will fail to respond to appropriate antibiotic therapy until all the other underlying causes of these lesions have been eliminated.

If there is a suspicion of follicular cysts the clinician can take biopsy samples from the ventral lesional skin to confirm the presence of follicular cysts (Figures 10, 11).

CO₂ Laser Treatment

Surgical removal of the follicular cysts and the keratinaceous foreign body material inside these cysts is the only way to get complete resolution of this disease.

The CO₂ laser allows the veterinarian to remove the cysts without causing unnecessary damage to the surrounding normal structures. The laser surgical procedure involves using a wide (“paintbrush”) laser ablation tip as seen in Figure 12.

The procedure begins with the laser set to continuous wave (CW) mode at 15 to 30 watts. In the beginning there is a lot of keratin in the thick callus or hyperkeratosis (Figure 4, 5, 6) and the higher watt setting is needed. Once the deeper layers are reached, the watt setting is lowered to allow slower tissue ablation and visualization of important normal structures such as large arteries and veins and the adjacent normal tissue.

The follicular cysts are filled with a keratinaceous material which is lower in water content than the surrounding normal tissue so these cysts are easily visualized. Also with digital pressure applied this keratinaceous material can be expressed from the cysts, making their visualization easier (Figure 13).

The CO₂ laser does not penetrate very deep so the veterinarian is able to remove very thin layers of tissue with each pass and this results in a very precise removal of the diseased tissue and allows the sparing of the normal tissue.

When all the cysts are removed as the surgical procedure moves toward the dorsal surface, one or two pyogranulomatous tracts will become visible (Figure 14). These tracts communicate out onto the dorsal surface. It is not necessary to remove skin from the dorsal lesion other than just opening the tracts.

When all the diseased cystic and pyogranulomatous material is removed the wound is left open to heal by second intention (Figure 15).

Treatment Outcome

The usual healing period is four to six weeks, during which the paw will need to be wrapped with a protective bandage.

In a study done by the
author in his clinic, follicular cysts in 28 dogs were re-
moved by laser ablation. Sixty-three percent had complete 
resolution with no further recurrences, 34 percent needed 
a second laser ablation procedure and 3 percent needed 
three or more procedures to get complete resolution.

Even when repeated surgical procedures were needed, the dogs were better between the proce-
dures. They were not on continual antibiotic or corti-
steroids and had long periods with normal paws be-
 tween procedures.

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