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CRYOSURGERY OF THE ADRENAL GLAND IN THE FERRET

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Adrenal Disease, consisting of adrenal gland tumors and adrenal gland hyperplasia, is a chronic, debilitating disease and one of the most common clinical conditions in the domestic ferret. Abnormal adrenal glands produce an excess of androgens and estrogens, which cause significant changes in the ferret's skin, hair, reproductive organs, and emotional well-being. The treatment of choice for ferrets with adrenal disease is surgical removal of the affected adrenal gland. Surgical removal of the right adrenal gland can be challenging due to its close proximity to the caudal vena cava. The diseased right adrenal gland frequently extends under the vena cava, which makes removal of the gland a meticulous, technically difficult procedure.

Human physicians have used Cryosurgery for decades to remove dermal masses, and more recently, to treat tumors of the liver, prostate, kidney, uterus, and adrenal gland. This technique involves the freezing of tissue with liquid nitrogen, and the subsequent necrosis and replacement of cells with scar tissue. Cryosurgery is an old technique, which has regained popularity. However, instead of spraying the liquid nitrogen directly onto the diseased tissue, new equipment circulates the liquid nitrogen up to the tip, cooling it, and then expels the nitrogen outside of the surgical field. The new Cryosurgery equipment is relatively inexpensive.

Cryosurgery has great benefits over traditional adrenalectomy, particularly when the right adrenal gland is involved. Compared to adrenalectomy with the use of surgical steel, Cryosurgery provides significantly less intra-operative bleeding, a shorter surgical time, and a dramatically faster recovery time. In addition, there is a greater probability of completely ablating the entire right adrenal gland, making recurrence of adrenal disease less likely. Technically, Cryosurgery of the right adrenal gland is an easy procedure.

The right adrenal gland is normally under the caudate lobe of the liver, with adhesions to the caudal vena cava. The veterinarian freezes the adrenal gland with the Cryogun, a type of Cryosurgery unit, until the "ice ball" engulfs the entire adrenal gland. Fortunately, large blood vessels seem to be very resistant to the effects of freezing; in dogs, major blood vessels have minimal to no long-term effects from Cryosurgery.

Guidelines for Cryosurgery:

Follow the manufacturer's recommendations for each Cryosurgery unit.

1. The arm and the tip of the Cryogun must only touch the intended adrenal gland and should not contact any other viscera or tissue.
2. Use a special adrenal probe tip, a 1.5mm tip, or a 2mm tip.
3. Insert the tip 2-4mm into the tumor for the most effective freeze.

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7. Depress the trigger of the Cryogun; the tip becomes very cold. At this point, the tip will attach to the tissue, which is normal.
8. After the "ice ball" visibly covers the entire gland, release the trigger. The tip will remain attached to the tissue for an additional 15-60 seconds. To avoid tearing the adrenal gland, the surgeon should wait until the tip releases the gland on its own, and should not force it apart.
9. Allow the adrenal gland to thaw completely before freezing again. This is one freeze/thaw cycle.
10. For adrenal glands less than 1cm, two or three freeze/thaw cycles are usually sufficient. Adrenal glands between 1cm and 2cm require three or four freeze/thaw cycles.
11. Adrenal glands larger than 2cm may be too large to freeze completely without causing damage to associated tissues.

Cryosurgery is a new technique for the surgical treatment of ferret adrenal disease; additional studies are necessary to determine the efficacy of this procedure.

About the Authors:

Dr. Charles A. Weiss has published numerous articles on ferret-related topics, some in peer reviewed veterinary journals. He works full-time in a private practice where ferrets make up approximately 55% of the caseload. Dr. Weiss regularly lectures about ferrets at veterinary conferences and he consults with veterinarians on a daily basis. Currently, he performs an average of fifteen adrenal surgeries per week.

You can visit his webpage at <http://www.ferretdoctor.com/>

Dr. Anne K. G. Bazilwich practices in Vermont where she enjoys treating companion and exotic mammals. She frequently lectures about ferrets and other topics at veterinary and community venues, often joined by one of her ferrets. Dr. Bazilwich handles most media-related public relations for the Vermont Veterinary Medical Association (VVMA); she has appeared on numerous television and radio shows, and many newspapers have published her written works.

You can visit her webpage at <http://www.pawsandlaws.net/>

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