



Insulinoma

Associated Terms:

Beta Cell Tumor, Pancreatic Islet Cell Tumor, Pancreatic Adenoma, Islet Cell Tumor, Insulin-Secreting Tumor



The term "ACVS Diplomate" refers to a veterinarian who has been board certified in veterinary surgery. Only veterinarians who have successfully completed the certification requirements of the ACVS are Diplomates of the American College of Veterinary Surgeons and have earned the right to be called specialists in veterinary surgery.

Your ACVS board-certified veterinary surgeon completed a three-year residency program, met specific training and caseload requirements, performed research and had research published. This process was supervised by ACVS Diplomates, ensuring consistency in training and adherence to high standards. After completing the residency program, the individual passed a rigorous examination. Only then did your veterinary surgeon earn the title of ACVS Diplomate.

Overview:

Insulinoma is a term used to describe an insulin-secreting mass. Insulinomas are functional tumors of the beta cells of the pancreas. A functional tumor is one that produces a hormone, in this case insulin.

Signs and Symptoms:

Unregulated production of insulin leads to low blood glucose (sugar). Low blood glucose causes mostly neurologic signs:

- seizures
- collapse
- generalized weakness
- dull mentation

Diagnostics:

Diagnosing and managing pets with low blood sugar can be an intensive task requiring 24-hour care. Your primary care veterinarian may consider referral to a specialty hospital with an ACVS board-certified veterinary surgeon as well as a veterinary internist where advanced diagnostics, intensive care, and advanced surgery can all occur.

Insulinoma is ultimately **only diagnosed with a biopsy taken at surgery**. Tests that would support performing surgery in your pet are:

- paired low blood glucose with simultaneously high blood insulin
- decreased blood fructosamine
- ultrasound or CT (cat scan) finding of a pancreatic mass

Treatment:

Treatment of pets with insulinoma involves a combination of both medical and surgical approaches.

Medical

Medical therapy involves raising or stabilizing blood glucose through diet and drugs.

- **Diet:** Nutritional therapy is instrumental and your veterinarian will probably prescribe a high fiber diet that will allow sugars to be slowly absorbed. Feeding small meals frequently also helps stabilize blood glucose to avoid spikes and troughs.
- **Steroids:** These potent drugs have many effects, which include stimulating the liver to produce more sugar.
- **Streptozocin:** This antibiotic selectively destroys β -cells of the pancreas and/or at metastatic sites.
- **Diazoxide:** This medication decreases the secretion of insulin, stimulates liver sugar production, and decreases cell use of sugar.
- **Octreotide:** This medication inhibits insulin synthesis and secretion.

Surgical

Surgery is essential to definitively diagnose, stage, and treat pets with insulinoma.

- The goal of surgery is to remove as much disease as possible by removing insulin-secreting masses. Typically, this involves removal of part of the pancreas. In many pets, this will cause the glucose to be normal for some period of time.
- Your veterinary surgeon will also assess every abdominal structure for evidence of spread (metastasis). If other masses are observed, they will also be removed or biopsied depending on their size, number, and location.

Aftercare and Outcome:

Expect your pet to be **hospitalized after surgery for 1 to 3 days**. The most important part of post-surgical care is allowing them to rest. There will also be medications to administer for pain relief and some veterinary surgeons prescribe antibiotics. Making sure that your pet is eating and comfortable will be your primary post-operative responsibilities.

Sometimes when an insulin secreting mass is removed, the blood glucose becomes very high because the body has down-regulated insulin production, and re-starting production takes time. Additionally, when the pancreas is manipulated, it can become inflamed, causing pancreatitis. **Pancreatitis causes pets to vomit, not want to eat, and have abdominal pain.** In some cases, the blood glucose remains

low, indicating that there is residual microscopic disease. If your pet has had low blood glucose for a long-time, permanent nerve damage may have occurred leaving them with an uncoordinated gait or weakness.

Because of the relative rarity of this disease, there is not a significant body of literature detailing how we might expect pets with this disease to do. As one would anticipate, **pets with a single mass that is removed surgically have the best prognosis**, surviving 1½ to a little over two years. Up to 80% of patients have a single mass. **Pets with metastatic disease at the time of diagnosis do not do as well**, surviving 7 to 9 months with a combination of surgery and medical therapy.

This Animal Health Topic was written by and reviewed by Diplomates of the American College of Veterinary Surgeons. Any opinions stated in this article are not necessarily the official position of the American College of Veterinary Surgeons.

The American College of Veterinary Surgeons recommends contacting an ACVS board-certified veterinary surgeon or your general veterinarian for more information about this topic.

To find an ACVS Diplomate, visit www.acvs.org/find-a-surgeon.

Small Animal Health Topic Feedback Form

For questions about your animal's specific condition, please contact an [ACVS board-certified surgeon in your area](#).

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