

# Brief Notes on Canine Anaesthesia and Opioid-Free Analgesia

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## Abstract

A 4.5-year-old dog was put under anaesthesia for a partial pancreatectomy to remove an insulinoma, a pancreatic tumour that secretes insulin and causes hypoglycemia. Dexmedetomidine (2 g/kg) and maropitant (1 mg/kg) were administered intravenously as premedicators to the patient. Alfaxalone (0.5 mg/kg) and diazepam (0.2 mg/kg) were administered intravenously as premedicators to the patient. Alfaxalone (0.5 mg/kg) and diazepam (0.2 mg/kg) were administered intravenously as premedicators to the patient. Ketamine, fentanyl, and methadone were administered intravenously as additional intraoperative analgesics. Lactated Ringer's solution was given, and the amount of extra glucose was changed according to glycemia. Although the patient had slight hyperglycemia after surgery, they were comfortable and didn't need any analgesics for the 48-hour hospital stay. In this example, an insulinoma was successfully treated with a dexmedetomidine constant-rate infusion and an opioid-free multimodal analgesia.

**Background:** A functioning insulin-secreting tumour that is malignant and develops from pancreatic cells results in hypoglycemia. It is the most frequent endocrine pancreatic tumour seen in dogs, although being uncommon. The animals typically exhibit neurological symptoms, which might include paralysis, convulsions, coma, or even death. These clinical symptoms are due to an increase in insulin antagonist counterregulatory hormones and neuronal glucose deprivation (neuroglycopenia). Clinical symptoms, laboratory tests, including concurrent hyperinsulinemia and hypoglycemia, and imaging are used to make the diagnosis. However, histology, which needs surgical management following a medical diagnosis, is the gold standard for the diagnosis. A patient who needs to have an insulinoma surgically removed. The likelihood of rebound hyperglycemia following



during hospitalisation was temporary or persistent. However, histology supported the insulinoma diagnosis.

### Discussion

This case report details the anaesthetic management of a dog undergoing a partial pancreatectomy for the removal of an insulinoma while using a dexmedetomidine CRI to maintain blood sugar levels and a multimodal analgesic approach, including locoregional anaesthesia, in an effort to achieve opioid-free analgesia. As a preliminary observation, it should be highlighted that maintaining normoglycaemia in insulinoma patients is difficult due to the possibility of postoperative rebound hyperglycemia and insulin-related hypoglycemia. To raise insulin resistance, stabilise blood sugar levels, reduce peripheral glucose uptake, promote hepatic gluconeogenesis and glycogenolysis, and impede insulin secretion, corticosteroids were started as a medical treatment before the surgery and again the night before. In patients with insulinomas, preoperative fasting is not suggested. Actually, if they fast, approximately half of human insulinoma patients get hypoglycemia within a day. To prevent hypoglycemia and give the stomach time to empty, the current patient was given a light lunch four hours before to the procedure. Maropitant was given as an anti-emetic to prevent emesis from a stomach that may not have been entirely emptied. It's interesting to note that this NK-1 antagonist compound also exhibits MAC-sparing properties, which might help maintain anaesthetic stability. The molecule has been described as having additional anti-inflammatory and analgesic activities, however these are debatable. Last but not least, during the two-day hospital stay, hyperglycemia was continuously observed during the postoperative period when blood glucose was routinely checked. Hyperglycemia after surgery may manifest as pancreatic healthy cell atrophy. Up to 19% of dogs having an insulinoma surgically removed develop postoperative diabetes mellitus. Transient hyperglycemia, on the other hand, is more frequent and has a favorable prognosis (9 days). Sadly, in our case, we are unable to identify whether the hyperglycemia was brief (9 days) or persistent (>9 days). On the other hand, chronic postoperative hypoglycemia can also happen and is cause for concern because it might be a sign of a primary tumour that has not been removed or of metastatic tissue.

### Conclusion

We described the effective anaesthesia care given to a dog undergoing a partial pancreatectomy for the removal of an insulinoma. In this situation, the combination of PIVA with a dexmedetomidine CRI offered a number of benefits and may be suggested for patients with insulinomas undergoing anaesthesia or sedation. In addition, the

patient experienced great postoperative comfort because to an opioid-sparing analgesic strategy with multimodal analgesia that included a TAP block.

### Author Contributions

Both authors contributed significantly. Clara Conde Ruiz and Morgane Gavet prepared and oversaw the case's anaesthesia. The document was written by Morgane Gavet. The last draught of the work was examined and authorised by Clara Conde Ruiz.

### Conflict of Interest

There aren't any conflicting interests, as reported by the scientists.

### Ethics Statement

A university teaching hospital with rigorous standards for ethical behaviour oversaw the management of this case.

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