Improve Veterinary Education

Gastrointestinal Tumours in Small Animal Surgery: Principles of Diagnosis, Surgical Decision-Making and Prognosis

Introduction and Learning Objectives

This lecture addresses gastrointestinal tumours in small animals, with learning objectives that encompass recognition of epidemiology, biological behaviour, and tumour type based on anatomical location. Gastrointestinal tumours are associated with relatively specific clinical signs, and these clinical presentations directly influence diagnostic planning, decision-making, and the selection of appropriate therapeutic strategies. Particular emphasis is placed on determining whether surgical intervention, including resection and anastomosis, is indicated, taking into account tumour location, size, the difficulty of defining gross margins, and the inherent risks of reconstruction and postoperative complications. These considerations are especially critical for anatomically challenging sites such as the oesophagus.

When tumour excision is incomplete, or when the tumour type is known to be responsive to chemotherapy, adjuvant treatment should be discussed with the client in advance. This includes consideration of costs, anticipated survival outcomes, and prognosis. Prognostic factors play a central role in deciding which cases are appropriate for aggressive intervention and which are not. As consistently emphasised in surgical oncology, thorough client counselling and education are essential, as decision-making should be a collaborative process involving the veterinary team and the owner, particularly when planning perioperative care.

Anatomical Distribution of Gastrointestinal Tumours

Gastrointestinal tumours may be non-visible or non-palpable and can arise in multiple locations, including the oesophagus, stomach, small intestine, caecum, colon, and rectum. Rectal tumours are addressed separately and are not discussed in detail here. Tumours of the spleen and liver, while sometimes associated with gastrointestinal disease, are not covered in this lecture. The anatomical location of a tumour has profound implications for clinical signs, diagnostic accessibility, surgical feasibility, and prognosis.

Oesophageal Tumours: Behaviour, Diagnosis and Management

Oesophageal masses are fortunately rare but are typically malignant and highly debilitating. Common tumour types include squamous cell carcinoma,

leiomyosarcoma, and fibrosarcoma, which may be primary or represent extension from adjacent structures. These tumours are characteristically aggressive, often resulting in severe luminal attenuation, as demonstrated on contrast studies such as barium swallows. In advanced cases, the tumour may involve nearly the entire length of the oesophagus, leading to profound regurgitation, vomiting, dysphagia, and marked weight loss.

Benign oesophageal tumours, such as plasmacytomas and leiomyomas, are uncommon. In certain geographic regions, particularly parts of the southern United States, pythiosis may involve the oesophagus following ingestion of contaminated swamp water. In these cases, endoscopic examination reveals a nodular, cobblestone appearance of the mucosa, with extensive transmural involvement and extension into the mediastinum.

Clinical signs associated with oesophageal tumours include regurgitation, dysphagia, and severe weight loss. Some masses may be palpable externally, particularly in the cervical or submandibular region, although this is not always the case. Endoscopy is a cornerstone of diagnosis, allowing direct visualisation and collection of multiple biopsies using forceps. Although the tissue samples are small, they are often diagnostic, particularly for mucosal tumours such as squamous cell carcinoma. Endoscopy also allows assessment of biopsy sites for haemorrhage and enables cauterisation when necessary. Submucosal tumours, such as leiomyosarcomas, are less amenable to endoscopic biopsy and generally require full-thickness surgical biopsies.

Staging is essential and typically includes thoracic radiography or computed tomography. Surgical treatment of oesophageal tumours is technically demanding, with difficult access and significant tension at anastomotic sites, particularly when lesions extend across thoracic and extrathoracic regions. Techniques to reduce tension include mobilisation of surrounding tissues and, in selected cases, the use of end-to-end anastomotic stapling devices passed orally or through an oesophagotomy. Omental patching is strongly recommended and requires mobilisation of omentum from the abdomen to the thoracic cavity.

Innovative tissue replacement techniques exist but are not widely available. Common postoperative complications include dehiscence and, more frequently, stricture formation due to the intense inflammatory response of the oesophagus. Feeding tubes are often required to bypass the surgical site, and ongoing peristalsis contributes to stricture development. Management of strictures may involve medical therapy, bougienage, balloon dilation, and, in some cases, corticosteroid administration. Overall outcomes for oesophageal tumours are poor, with a guarded prognosis unless the tumour is benign.

Gastric Tumours: Diagnosis, Surgical Options and Prognosis

Gastric tumours are more common than oesophageal tumours but remain relatively rare. The majority are malignant, with adenocarcinoma being the most frequently encountered tumour in dogs. Leiomyosarcomas and lymphosarcomas are also seen, particularly in cats, along with gastric mast cell tumours. Gastric adenocarcinomas commonly metastasise to regional lymph nodes, liver, and lungs. Rarely, metastasis to the testes has been reported, highlighting the importance of castration in intact male dogs.

Clinical signs include vomiting, difficulty eating, weight loss, and occasionally gastrointestinal bleeding following tumour rupture. Diagnosis is achieved through abdominal ultrasound or computed tomography, supplemented by gastroscopy for direct visualisation and biopsy. Histopathological confirmation is essential and may be obtained via endoscopic biopsy or intraoperative full-thickness sampling.

Computed tomography is invaluable for assessing tumour extent, location, and resectability, particularly in relation to the pylorus, prepyloric region, gastric body, and antrum. Surgical management remains the mainstay of treatment and may involve partial gastrectomy. Depending on tumour location, reconstructive procedures such as Billroth I or Billroth II may be required. These procedures demand advanced surgical expertise, meticulous hand suturing or stapling, leak testing, and omental patching. Intraoperative endoscopy can assist in assessing luminal integrity and suture placement.

Cats frequently require adjuvant chemotherapy due to the high prevalence of gastric lymphosarcoma, most commonly of B-cell origin. The COP protocol is commonly used. Multicentric lymphoma carries a particularly poor prognosis, with median survival times of less than four months.

Small Intestinal Tumours: Clinical Presentation and Surgical Management

Small intestinal tumours increase in incidence with age and include adenocarcinomas, gastrointestinal stromal tumours, lymphosarcomas in cats, and soft tissue sarcomas with poorly defined margins. Tumour location often dictates clinical signs, which may include vomiting due to obstruction, but more commonly manifest as chronic small intestinal diarrhoea, weight loss, and reduced appetite. In cats, single abdominal masses may be palpable. Tumour rupture can result in severe septic peritonitis, and increased peristalsis and adhesions may predispose to intussusception.

Diagnosis is based on palpation, abdominal ultrasound, and ultrasound-guided fine needle aspiration, particularly useful for feline lymphosarcoma. Surgical options include resection and anastomosis for focal disease or full-thickness biopsies for diffuse disease. When biopsying, a small full-thickness punch biopsy, typically five to seven millimetres in diameter, is sufficient. The biopsy is taken from the serosa through to the mucosa, excised with Metzenbaum scissors, and closed transversely to reduce the risk of stricture formation. Closure may be performed using interrupted or continuous absorbable sutures, with leak testing performed to confirm integrity.

Adjuvant chemotherapy is recommended for feline intestinal lymphomas. Large cell lymphomas are treated with CHOP protocols and carry a poorer prognosis, with median survival of five to seven months, whereas small cell lymphomas treated with chlorambucil and prednisolone have median survival times of approximately twenty-two to twenty-five months. Leiomyosarcomas generally have a favourable prognosis, with a high proportion of patients remaining tumour-free at two years.

Caecal and Colonic Tumours: Challenges and Outcomes

Caecal tumours are rare but present significant surgical challenges due to their location and the thin wall of the caecum, which predisposes to rupture and septic peritonitis. Tumour types include sarcomas and gastrointestinal stromal tumours. Some caecal tumours may induce erythropoietin production, leading to secondary erythrocytosis. Surgical management typically involves resection of the ileocaecal junction to achieve adequate margins and mobility, followed by anastomosis of the ileum to the colon, often using stapling techniques.

Colonic tumours include adenocarcinomas and lymphomas, particularly in cats. Clinical signs reflect large bowel disease, including diarrhoea, tenesmus, weight loss, and haematochezia, which is more pronounced with rectal involvement. Abdominal ultrasound is useful for evaluating tumour extent and mesenteric lymph node involvement, with ultrasound-guided aspirates aiding diagnosis. Although there is a theoretical risk of transcutaneous tumour seeding, this is uncommon when procedures are performed carefully.

Colonoscopy allows identification of single or multiple nodular masses and facilitates biopsy. Computed tomography with intravenous contrast provides excellent assessment of tumour extent, invasion, and lymph node involvement. Surgical management requires wide margins, often achieved through resection and end-to-end anastomosis using stapling equipment, sometimes via a transrectal or enterotomy approach. Omental patching is recommended, and double-layer

closures are preferred, particularly in larger dogs, to reduce the risk of leakage and sepsis.

Faecal incontinence is rare following colonic surgery. Chronic diarrhoea is more commonly observed due to reduced colonic length. Prognosis in dogs ranges from six to twenty-two months. In cats, prognosis is poorer, as approximately eighty percent have metastases at the time of surgery. Median survival times range from sixty-eight to one hundred and thirty-eight days, with subtotal colectomy offering slightly improved outcomes compared to mass excision alone. Given the high metastatic rate, thorough staging and frank discussion with owners are essential, as surgery may offer limited benefit. Adjuvant chemotherapy may prolong survival in selected cases, following consultation with a medical oncologist.

Summary and Surgical Considerations

Management of gastrointestinal tumours requires careful assessment of tumour type and location, as oesophageal, caecal, and colonic tumours present significant surgical challenges and high morbidity. Risks include dehiscence, leakage, mediastinitis, pleuritis, septic peritonitis, and stricture formation, particularly in high-tension areas such as the oesophagus and pelvic colon. Extensive surgical approaches, including pelvic osteotomy, may be required for distal lesions, increasing morbidity. Adjuvant chemotherapy should be considered where appropriate, although its benefit is variable and not universally proven.