Case Report Rapport de cas

Subtotal colectomy by rectal pull-through for treatment of idiopathic megacolon in 2 cats

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Abstract — Surgical management of idiopathic megacolon is described in 2 cats by a rectal pull-through with subtotal colectomy performed outside of the abdomen. This newly described technique facilitates access to the rectum for suturing an anastamosis without the need for pubic osteotomy and with minimal risk of abdominal contamination.

Résumé — Colectomie subtotale par opération de Swenson-Bill pour le traitement d'un mégacôlon idiopathique chez 2 chats. La gestion chirurgicale du mégacôlon idiopathique est décrite chez 2 chats par une opération de Swenson-Bill avec une colectomie subtotale réalisée à l'extérieur de l'abdomen. Cette technique nouvellement décrite facilite l'accès au rectum pour la suture d'une anastomose sans devoir réaliser une ostéotomie pubienne et avec un risque minime de contamination abdominale.

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Megacolon is defined as dilation of the colon which may occur as a congenital disease, an acquired condition due to neurological damage or mechanical obstruction of the colon, or frequently as an idiopathic condition in middle-aged to older cats (1).

Medical management is aimed at increasing dietary fiber, fecal softening, lubrication, and promoting colonic motility (2). Subtotal colectomy is indicated with chronic constipation refractory to medical therapy or with obstructive disease (2–4). Bowel adaptation occurs following subtotal colectomy, with surgically treated cats producing feces at slightly increased frequency but with no significant difference in fecal volume or water content compared with normal cats (4,5). Hence surgically treated cats are reported to have an excellent prognosis, although patients in which the ileocolic junction is removed may produce softer stools in the long-term (6).

A rectal pull-through technique has been described for excision of distal rectal lesions in dogs and cats, allowing surgical access without need for pubic osteotomy or extensive dissection of the perineum (7). The aim of this report is to detail use of the rectal pull-through technique for access to the entire colon for subtotal colectomy. Advantages of this technique include its speed, simplicity, ease of access for suturing an appositional anastamosis, and reduced risk of abdominal contamination.

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Case descriptions

Case 1

A 12-year-old, neutered male, Siamese cat was presented with a 9-month history of severe recurrent constipation, treated by increased dietary fiber intake, colonic stimulants, and fecal softeners (liquid paraffin; Vetway, York, UK: lactulose; Sandoz, Bordon, Hants, UK.) Despite medical management, bouts of obstipation continued requiring anesthesia for soapy water enemas. Previous chronic pancreatitis (diagnosed by elevated feline pancreatic lipase immunoreactivity) was managed with a low-fat diet.

On physical examination the cat was bright, although dehydrated, with impacted feces palpable along the length of the distended colon. Rectal examination revealed no obstruction or narrowing of the pelvic canal. At exploratory celiotomy, a generally dilated and atonic colon was mobilized, a rectal pull-through maneuver was performed to the level of the ileocolic junction and subtotal colectomy was performed with colocolic anastamosis.

The cat passed loose, formed stools by 4 d after surgery and then normal stools before the time of suture removal, with no subsequent constipation over the subsequent 6 mo.

Case 2

A 7-year-old, neutered male, British short-haired cat was presented, having vomited daily for the previous 3 wk, with ravenous appetite, weight loss, and obstipation. On physical examination the cat was dehydrated and a caudal abdominal mass (7 cm × 4 cm × 3 cm) was palpated. Radiographs demonstrated megacolon with solid fecal impaction, without pelvic narrowing. Following enemas and medical management with a high fiber diet, colonic stimulants, and fecal softeners (liquid paraffin; Vetway; lactulose; Sandoz), there was an immediate recurrence of the obstipation.

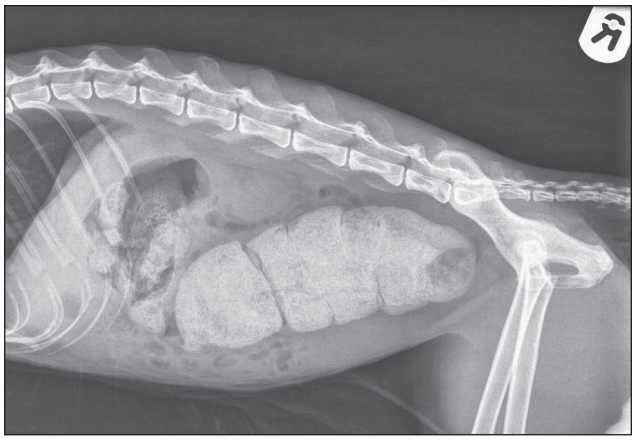

Figure 1. Pre-operative radiograph demonstrating megacolon.

Exploratory celiotomy revealed a dilated, atonic colon and cecum with a gross thickening of the wall of the distal descending colon. The colon was mobilized and a rectal pull-through maneuver was completed just beyond the ileocolic junction and a subtotal colectomy was performed with ileocolic anastamosis.

The cat had diarrhea for 7 d after surgery and subsequently passed slightly soft but formed stools over the next 6 mo. Histopathology of the resected bowel revealed moderate colitis with reactive lymphoid tissue and focal ulceration of the mucosa.

Surgical management

Pre-operative treatment. Following admission, food was withheld for 48 h. Soapy water enemas were used to remove fecal material 24 h prior to surgical investigation. Intravenous fluids were administered during hospitalization and metronidazole (Metronidazole; Marco Pharma, Roseburg, Oregon, USA), 10 mg/kg body weight (BW), intravenously (IV) q12h and amoxicillin/clavulanate (Augmentin; GlaxoSmithKline UK, Uxbridge, Middlesex, UK), 20 mg/kg BW, 3 times daily were administered during the immediate 24-h presurgical period.

Surgery. After premedication with acepromazine (ACP; Novartis, Frimly, Camberly, UK), 20 μg/kg BW, and buprenorphine (Buprecare; Animalcare, Dunnington, York, UK), 20 μg/kg BW intramuscularly (IM), anesthesia was induced with propofol (Rapinovet; Intervet-Schering-Plough, Milton Keynes, UK) and maintained on oxygen and isoflurane (Isoflo; Abbott, Maidenhead, UK) following intubation.

Patients were prepared aseptically in dorsal recumbency and a ventral midline celiotomy was performed from umbilicus to pubis allowing assessment of the gastrointestinal tract. The colon and cecum were inspected and mobilized from mesenteric attachments by sharp dissection with ligation of the left, middle +/− right branches of the colic artery and vein and vasa recta from the caudal mesenteric vessels to the region to be resected, taking care to preserve the cranial and caudal rectal vessels.

Allis tissue forceps were passed per rectum with one hand then designated as "dirty" using a separate operation kit and clamped to the colonic wall mid-way along the portion to be resected. The ileocolic junction was drawn gently into the pelvic canal (case 1) or beyond the anus (case 2) to allow resection of the affected colon guided by the "sterile" hand within the abdomen. This procedure intussuscepted the bowel to be resected. The abdominal incision was closed with towel clamps and covered with a sterile drape. Subtotal colectomy was performed beyond the anus outside the abdomen. The intussuscepted bowel wall was progressively divided (mucosa to serosal on the external loop of bowel, serosal to mucosa on the inner loop) with layers of bowel wall being sutured together with 4-0 polydiaxanone (PDS*II; Ethicon, Johnson & Johnson Intl, St. Stevens-Woluwe, Belgium) in a simple interrupted appositional pattern progressively working around the lumen (7). Luminal disparity was managed by circumferential suturing making use of the elastic nature of the bowel wall, without the need for spatulation or partial closure of the larger lumen, facilitated by the concentric orientation of the lumina. This orientation aided visualization of the layering of the bowel wall for ease of suture placement. Two simple interrupted stay sutures were placed in the anastomosed segments at the 3 and 9 o'clock positions to prevent retraction of the intestine into the abdomen as transection of the bowel progressed.

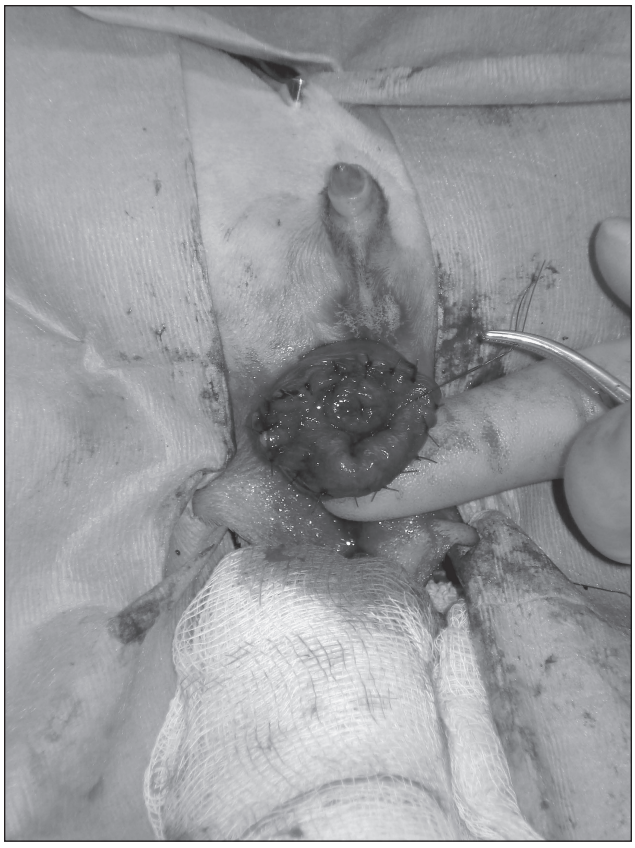

Figure 2. Intra-operative photograph showing the anastamosis beyond the anus.

On completion of the anastamosis, the stay sutures were removed, the contaminated kit disposed of, and gloves replaced. The anastamosis was withdrawn into the abdomen by gentle traction on the ileum and inspected to ensure that the anastomosis was no longer intussuscepted and that the suture line was adequate. The mesentery was closed, the abdominal cavity was lavaged with warm 0.9% saline, and the anastamosis was covered with omentum before routine celiotomy closure.

Post-operative treatment. Patients were hospitalized on intravenous fluids and buprenorphine (Buprecare; Animalcare) for 24 h after surgery with metronidazole (Metronidazole; Marco Pharma) and amoxicillin/clavulanate (Augmentin; GlaxoSmithKline UK) continued for 5 d. Food was offered immediately after surgery and fecal softeners and colonic motility drugs were discontinued. Initially the cats were fed a bland diet for 5 d, but subsequently both patients were managed on a standard complete cat food.

Discussion

Conservative management of recurrent obstipation is frequently frustrating, time consuming, and expensive. Several surgical techniques have been described for management of megacolon in cats; however, subtotal colectomy is regarded as the surgical treatment of choice (1–6,8–10). An abdominal approach for resection is universally described with or without pubic osteotomy to improve access to the rectum, although this may not be greatly beneficial (2). A rectal pull-through technique has been described for excision of distal rectal lesions, allowing access without the need for pubic osteotomy or extensive dissection of the perineum (7). This report describes an abdominal approach to assess the extent of bowel for resection, release mesenteric attachments and ligate vascular supply to that portion of bowel planned for resection. An extensive rectal pull-through was then used to perform the subtotal colectomy outside the abdomen. These cases demonstrate mobilization and removal of the entire length of the large bowel to include the cecum if desired, sparing 1.5 cm of distal rectum to conserve fecal continence (7). In a long-term retrospective study, resection of the ileocolic junction resulted in no significant difference in recurrence in constipation, but was associated with cats producing significantly looser stools (6). Removal of the valve may result in small intestinal bacterial overgrowth, deconjugation of bile salts, and steatorrhea (11).

Preoperative intestinal preparation with multiple enemas is regarded as ineffective and unnecessary to evacuate the large bowel with a conventional abdominal approach (9), but is necessary with this technique to allow intususseption of the bowel. In both cases detailed in this report soapy water enemas were performed 24 h prior to surgery. Both patients had been medically treated with fecal softeners prior to repeat presentation. Enemas to completely evacuate the colon were time consuming due to the degree of fecal impaction, but were readily achievable in these cases. In the author's experience soapy water enemas are an effective means of manual evacuation of the colon both as a conservative treatment for constipation and in pre-operative preparation, as described in these 2 cases. Inability to adequately evacuate the colon prior to surgery may prove to be a potential limitation of the use of this surgical technique should soapy water enemas be ineffective or impractical.

Previous reports detail an end-to-side anastamosis (1,5), spatulation of the proximal bowel (4,9), or partial closure of the proximal rectal stump (3) to deal with luminal disparity. These methods are not possible with this approach. Instead a simple appositional closure was used (8,10). Suturing in this pattern with a large luminal disparity was facilitated by the concentric orientation of the lumina to be anastamosed.

Other potential advantages of this technique include; speed, simplicity, and low risk of abdominal contamination, facilitating access to the operative site without the need for pubic osteotomy or special surgical equipment. Intraoperative technical difficulties in removal of the distal colon have been reported due to narrow pelvic canals in small cats and those with pelvic fracture malunion (3). This may result in inadequate resection or leakage from the anastamosis with a conventional abdominal approach. A 20% recurrence rate of constipation requiring further surgery was quoted in 1 text (6). These 2 reported cases did not have pelvic narrowing, but further evaluation of this technique may demonstrate an advantage in such cases.

This report details 2 cases with a follow-up time of 6 mo; with time this technique may prove to be valuable. A controlled prospective study comparing the merits of this technique with the standard abdominal approach and treatment with a longer period of follow-up will be needed. Initial assessment of the technique is, however, encouraging.

Subtotal colectomy is the surgical treatment of choice for feline idiopathic megacolon. The rectal pull-through technique described is a swift, simple modification of the previously reported technique, facilitating surgical access to the distal rectum for suturing an anastamosis without need for pubic osteotomy and minimizing the risk of abdominal contamination. The entire colon including ileocolic valve may be excised with this technique. Further work is required to critically compare this technique with a standard abdominal approach.

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