There are many recognised causes of constipation in the cat and the management of the condition depends on the clinician’s ability to recognise the appropriate aetiology in each case. Most surgery therapies for constipation in the cat are related to the management of idiopathic megacolon, although causes such as pelvic outlet obstruction, complications of neutering surgery, perineal herniation, and malunion pelvic fractures may also require surgical intervention. Currently, the surgical management of megacolon consists of subtotal colectomy with the recommendation that the ileocolic junction be preserved. The procedure, in general, is associated with few life-threatening complications although the majority of individuals will experience a transient period of loose stool formation in the immediate post-operative period. In the majority of cases, the long-term outcome following subtotal colectomy is considered excellent.

In man, constipation is the term used to describe the symptom of unsatisfactory defaecation (Devroede 1993). In the dog and cat, it has been more clearly defined as absent, infrequent, or difficult defaecation associated with the retention of faeces within the colon and rectum (Jones 2000). There are a number of other conditions that may be present in the animal with constipation and an understanding of their meaning is required before the condition of constipation can be discussed further.

Briefly, obstipation is a condition of prolonged and intractable constipation resulting in severe impaction throughout the rectum and colon. Obstipated animals are unable to eliminate the impacted faecal material. Dyschezia describes difficult or painful evacuation of faeces from the rectum and is commonly associated with lesions in or near the anal region. Lastly, alimentary tenesmus is a clinical sign characterising an animal that strains to defaecate. A more complete description of these conditions can be found in the review by Jones (2000).

Any event that slows transit or obstructs colonic flow can eventually lead to constipation. There are many recognised causes of constipation (Washabau & Hasler 1997, Yam 1997, Jones 2000) and management of animals with the condition depends on the clinician’s ability to recognise and understand the aetiology in each case.

The condition of megacolon may also be seen in some individuals with constipation and should be considered a disorder characterised by recurrent constipation and/or obstipation associated with dilatation and hypomotility of the colon. Megacolon is a descriptive term only, and its use imparts no information regarding specific aetiology or pathophysiology. The diameter of the normal colon varies with the amount of faeces within it and the evacuation habits of the animal. Radiographically, in the lateral projection, the normal colon should be approximately the same length as the length of the body of the second lumbar vertebra (Lee & Leowijuk 1982). Enlargement of the diameter of the colon beyond 1.5 times the length of the body of the seventh lumbar vertebra is indicative of chronic large bowel dysfunction and megacolon (O’Brien 1978).

The aetiology of megacolon may be considered congenital or acquired. Congenital megacolon is well described in man (Hirschsprung’s disease). It occurs in neonates and is characterised by aganglionosis of a segment of colon, resulting in the persistent contraction of smooth muscle...
Table 1. Treatments and complications reported in cats with megacolon that were managed surgically

<table>
<thead>
<tr>
<th>Reference</th>
<th>No. of Cases</th>
<th>Surgical Treatment</th>
<th>Anastomosis (no. of cases)</th>
<th>Closure Technique</th>
<th>Complications (no. of cases or per cent of cases)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bruce 1959</td>
<td>nd</td>
<td>Partial colectomy, coloplasty</td>
<td>Enterocolostomy</td>
<td>nd</td>
<td>Diarrhoea</td>
</tr>
<tr>
<td>Yoder et al 1968</td>
<td>1</td>
<td>Partial colectomy</td>
<td>Colocolostomy</td>
<td>nd, two-layer closure</td>
<td>Vomiting</td>
</tr>
<tr>
<td>Fellenbaum 1978</td>
<td>2</td>
<td>Partial colectomy</td>
<td>Ileocolostomy</td>
<td>Side-to-side, two layers</td>
<td>Recurrent constipation, 2nd colectomy required (1), postop hypothermia</td>
</tr>
<tr>
<td>Leighton &amp; Grain 1978</td>
<td>1</td>
<td>Coloplasty, partial colectomy</td>
<td>Colocolostomy</td>
<td>End-to-end, one layer</td>
<td>Loss of appetite following colectomy</td>
</tr>
<tr>
<td>Webb 1985</td>
<td>3</td>
<td>Partial colectomy</td>
<td>Colocolostomy</td>
<td>End-to-end, one layer</td>
<td>Depression for 36 h postop (1)</td>
</tr>
<tr>
<td>Bright et al 1986</td>
<td>4</td>
<td>Subtotal colectomy</td>
<td>Ileocolostomy (2), colocolostomy (2)</td>
<td>End-to-side, two layers</td>
<td>Anorexia for 36–48 h postop (4), initial tenesmus (4), semi-formed stools (3)</td>
</tr>
<tr>
<td>Rosin et al 1988</td>
<td>38</td>
<td>Subtotal colectomy</td>
<td>Enterocolostomy</td>
<td>End-to-end, one or two layers</td>
<td>Stricture (1), incisional abscess (1), initial tenesmus (majority of cases), semi-formed stools into long term(13%), severe diarrhoea (3%), constipation (8%)</td>
</tr>
<tr>
<td>Bertoy et al 1989</td>
<td>8</td>
<td>Subtotal (described as total) colectomy</td>
<td>Ileocolostomy (described as ileorectal anastomosis)</td>
<td>End-to-end, two layers</td>
<td>Diarrhoea for 3–5 d postop (8), intermittent haematochezia (5), faecal incontinence (1), loose semi-solid unformed stools (5)</td>
</tr>
</tbody>
</table>
Table 1. Continued

<table>
<thead>
<tr>
<th>Reference</th>
<th>No. of Cases</th>
<th>Surgical Treatment</th>
<th>Anastomosis (no. of cases)</th>
<th>Closure Technique</th>
<th>Complications (no. of cases or per cent of cases)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gregory et al 1990</td>
<td>4</td>
<td>Subtotal colectomy</td>
<td>Colocolostomy (3), ileocolostomy (1)</td>
<td>End-to-end (colocolostomy), end-to-side (ileocolostomy), all one layer</td>
<td>None</td>
</tr>
<tr>
<td>Matthiesen et al 1991</td>
<td>11</td>
<td>Subtotal colectomy</td>
<td>Jejunocolostomy</td>
<td>End-to-end, one or two layers</td>
<td>Diarrhoea or semi-formed stools in initial postop period (11), dehiscence of anastomosis (1), long term watery diarrhoea (1), recurrent constipation (2), recurrent constipation leading to euthanasia (1)</td>
</tr>
<tr>
<td>Schrader 1992</td>
<td>1</td>
<td>Subtotal colectomy</td>
<td>nd</td>
<td>nd</td>
<td>None</td>
</tr>
<tr>
<td>de Haan et al 1992</td>
<td>8</td>
<td>Subtotal colectomy</td>
<td>Ileocolostomy (7), colocolostomy (1)</td>
<td>End-to-end, one layer (ileocolostomy (6), colocolostomy), end-to-side, two layer (ileocolostomy (1))</td>
<td>Increased defaecatory frequency and soft stools in immediate postop period (8), temporary faecal incontinence (2), watery diarrhoea (2), recurrent constipation, 2nd colectomy required (1)</td>
</tr>
<tr>
<td>Kudisch &amp; Pavletic 1993</td>
<td>15</td>
<td>Subtotal colectomy</td>
<td>Colocolostomy</td>
<td>End-to-end, trans-caecal stapled anastomosis, one layer</td>
<td>Severe bleeding (2), diarrhoea and tenesmus in immediate postop period (15), no long term complications</td>
</tr>
<tr>
<td>Sweet et al 1994</td>
<td>22</td>
<td>Subtotal colectomy</td>
<td>Enterocolostomy (8), colocolostomy (14)</td>
<td>End-to-end, one layer</td>
<td>Lethargy, anorexia, weight loss (16), watery diarrhoea or soft unformed stools (17), recurrent constipation (9), faecal incontinence (10)</td>
</tr>
</tbody>
</table>

d=days; h=hour; nd=no details; postop=postoperative.
within the affected segment and the subsequent dilatation of the colon proximal to the constricted, affected site. This condition has been suggested to occur in cats (Rosin et al 1988), although its true existence in this species has never been documented. Acquired megacolon is most commonly either idiopathic in nature or represents a secondary condition caused by constipation or a pelvic canal deformity. Pelvic canal deformity or stenosis may be associated with nutritional osteodystrophia fibrosa (Palmer 1968), but more commonly results from a displaced malunion pelvic fracture (Rosin 1993). Washabau & Stalis (1996) concluded that idiopathic megacolon was characterised by a generalised dysfunction of colonic smooth muscle and that the disorder involved a physiological disturbance in the activation of the colonic smooth muscle myofilaments. Washabau & Hasler (1997), in their review of 120 cases, warned that the true incidence and prognosis for constipation in the cat remains unknown. They stated that the published work has been skewed toward the obstipated or megacolonic cat. They concluded that the findings and outcomes in these cases may bear no resemblance to those found in the constipated cat. The findings of their study suggested that most cases of obstipation and megacolon are observed in middle-aged, male cats of domestic shorthair, domestic longhair or Siamese breeding. Of the published cases of obstipation/megacolon that they reviewed, 62% were accounted for by idiopathic megacolon, 23% demonstrated pelvic canal stenosis, 6% demonstrated nerve injuries, 5% demonstrated Manx sacral spinal cord deformity. A small number of cases were accounted for by complications of colopexy (1%) and colonic neoplasia (1%). Colonic aganglionosis was suspected, but not proved, in 2% of the cases. Although it remains true that megacolon may be associated with other disease processes such as active colonic inflammation, dysautonomia and metabolic disorders including hypokalaemia and hypothyroidism, Washabau & Hasler (1997) went on to conclude that while an extensive list of differential diagnoses should be considered in each affected individual, the majority of cases are idiopathic, orthopaedic or neurologic in origin.

Most surgical therapies for constipation in the cat are related to the management of megacolon. However, there are a number of underlying causes for constipation that may be considered to have a surgical therapy. The surgical management options may be reviewed as follows.

### Surgical therapy for idiopathic megacolon

In the majority of cats with idiopathic megacolon, medical treatment using laxatives, enemas and dietary management, offers only temporary relief of clinical signs. More recently, drug therapy with prokinetic agents such as cisapride have been utilised to stimulate the contraction of colonic smooth muscle (Hasler & Washabau 1997). It is now widely accepted that colectomy should be considered in cats with the condition that are refractory to medical therapy. Several different surgical techniques for the management of the condition have been described and these include coloplasty (Bruce 1959, Leighton & Grain 1978), a partial colectomy (Yoder et al 1968, Fellenbaum 1978, Leighton & Grain 1978, Webb 1985) or the more complete or subtotal colectomy (Bright et al 1986, Rosin et al 1988, Gregory et al 1990, Matthiesen et al 1991, de Haan et al 1992, Sweet et al 1994). The reported surgical techniques are summarised in Table 1.

### Coloplasty

Bruce (1959) described a technique for the reduction of the diameter of the affected bowel by the resection of a longitudinal elliptical section of colon wall. This technique has not found long term acceptance and this is probably due to its failure to resolve the clinical signs associated with the megacolon (Leighton & Grain 1978). Although the procedure may produce a narrower colonic segment, it does not alter or improve the smooth muscle function within the remaining wall of the colon. Therefore, the technique provides little or no long-term improvement in colonic function.

### Partial colectomy

The technique of partial colectomy involves the removal of the segment of colon that demonstrates dilatation and atony at the time of surgical exploration. Any colon that is considered of normal shape and dimension is not resected, but is left in situ. The technique has been most commonly described in early veterinary literature relating to the management of megacolon (Yoder et al 1968, Leighton & Grain 1978, Webb...
Most authorities would now agree that differentiating diseased colon from normal colon is not possible at the time of surgery. In fact, it is likely that none of the colon remains unaffected in individuals with megacolon. It is, therefore, considered unwise to preserve a significant length of apparently unaffected colon at the time of colectomy.

Fellenbaum (1978) described two cases in which a partial colectomy was performed. In fact, in both these cases, the procedure involved the resection of the ileocolic orifice, the caecum and the majority of the colon. Intestinal repair was achieved by performing a side-to-side anastomosis between the ileum and the remaining descending colon. Therefore, to allow the anastomosis to be safely performed, a portion of affected atonic colon was retained. Recurrence of clinical signs was observed in one cat and this resulted in a second colectomy procedure being required. Although the cause for the recurrence of constipation/obstipation was not clear, it remains likely that it was associated with the preservation of the dilatated and atonic distal colonic segment.

**Subtotal colectomy**

The technique of subtotal colectomy describes the removal of the majority of the colon whether it is grossly diseased or not. In essence, two techniques have been described and the main difference between the two is whether the resection procedure includes the removal of the ileocolic sphincter or not. The ileocolic sphincter functions to allow small intestinal contents to enter the colon whilst preventing the reflex of colonic contents into the ileum (Strombeck 1996). Debate persists as to the benefits of the preservation versus excision of the ileocolic junction during the colectomy procedure. The removal of the sphincter is considered by some authorities to allow the reflux of colonic micro-organisms into the small intestine with the subsequent development of small intestinal bacterial overgrowth and possible steatorrhea (Bright 1986, Holt & Johnston 1991, Sweet et al 1994). The rationale for preservation of the ileocolic junction is that it minimises the development of post-operative diarrhoea; the rationale for excision is that it minimises recurrence of segmental megacolon and associated constipation (Washabau & Hasler 1997). Recent reports suggest that preservation of the ileocolic junction does not result in greater recurrences of constipation, but that excision of the ileocolic junction is associated with increased incidence and severity of diarrhoea (Bright 1991, Sweet et al 1994). These studies suggest that, if at all possible, the ileocolic junction containing the ileocolic sphincter should be preserved during colectomy. The issue of the resection or preservation of the ileocolic junction remains controversial. Its resolution will require the publication of further studies describing the long-term follow-up of individuals undergoing one or other of these procedures.

Regardless of the type of subtotal colectomy performed, the bowel continuity must be restored following the colonic resection. A number of techniques have been described and these include an end-to-end, end-to-side and side-to-side colocolostomy or enterocolostomy. The reported methods of bowel restoration are summarised in Table 1. Most authorities would recommend the use a monofilament suture of small diameter (1.5 to 2.0 metric) with a swaged on needle. The suture material should either be non-absorbable and should possess a long suture strength half-life. Each suture should be placed 3 to 5 mm apart obtaining 5 mm bites of tissue. Care should be taken to ensure that each suture passes through all four (mucosa, submucosa, muscularis and serosa) intestinal layers, although the main suture holding layer is considered to be the submucosal layer (Pavletic & Berg 1996).

The anastomosis may either be achieved as a one- or a two-layer closure. There is no reported advantage to any of the closure techniques although single layer closure using a monofilament suture material is the preferred method in the majority of recent surgical reports (de Haan et al 1992, Sweet et al 1994). There is no significant advantage between the use of a simple interrupted or a simple continuous suture pattern (Pavletic & Berg 1996).

When a luminal disparity exists between to two bowel segments to be anastomosed, most authorities recommend that the larger lumen is sutured closed until its remaining lumen approximates the size of the lumen to which it is to be anastomosed (Bright 1990), although there are reports of spatulating the lumen of the smaller structure to achieve luminal approximation (Sweet et al 1994). There does not appear to be any evidence to suggest an advantage to either of these techniques, but all authorities agree that regardless of the anastomotic technique employed, it is crucial that there is
minimal tension applied at the site of anastomosis (Pavletic & Berg 1996). The short mesentery carrying the blood supply to the ileoceccolic region makes inappropriate tension a greater likelihood when performing a subtotal colectomy with preservation of the ileocolic junction. In such instances, the proposed colocolostomy procedure should be converted into a tension free enterocolostomy by the resection of the ileocolic junction. Preservation of the caudal mesenteric artery and vein during the resection of the distal colonic segment is considered important as this will maximise the blood supply to the remaining colon/rectum distal to the anastomosis (Washabau & Holt 1999). Interestingly, the majority of surgical reports describing subtotal colectomy suggest sacrificing these vessels to achieve the resection of the descending colonic segment to the level of the cranial pelvic brim. There is little evidence that the loss of the caudal mesenteric blood supply significantly compromises the vascularity of the remaining caudal colonic segment and rectum.

Surgical stapling techniques have been described for performing the end-to-end colocolostomy following subtotal colectomy in the cat (Kudisch & Pavletic 1993, Kudisch 1994). An end-to-end anastomosis stapling instrument is used to perform a colocolostomy following the resection of the diseased colon. The caecum is frequently dilated and flaccid in cats with idiopathic megacolon facilitating the introduction of a 21 mm or 25 mm end-to-end anastomosis instrument by a transcaecal approach. Once the colocolostomy has been performed, the caecal access site may be closed with a linear or thoracoabdominal stapler. In man, when performing a colocolostomy, the access for the end-to-end stapling device would commonly be via the anus. In the cat, especially in individuals with a narrow pelvic canal following a malunion pelvic fracture, it is not possible to pass even the smaller 21 mm stapling device via the transanal approach. It is concluded that the transcaecal approach is the simplest and safest route for the introduction of a stapling device in the cat (Kudisch & Pavletic 1993, Kudisch 1994). It is also possible to use a linear cutting endoscopic stapler (GIA) to create a stapled side-to-side anastomosis. The narrow diameter of this instrument is ideally suited to its use in the gastrointestinal tract of the cat and the formation of a side-to-side anastomosis is highly advantageous when joining loops of bowel with a significant luminal disparity. Advantages of stapled colocolostomoses are reported in include the formation of a mechanically stronger anastomosis, a reduced surgical time with less potential for intraoperative contamination (Kudisch 1994). Probably the greatest disadvantage of using stapling equipment in the surgical management of megacolon is the high cost of the stapling equipment.

Removal of the majority of the colon will have obvious metabolic effects on the animal. In the normal individual, the role of the colon is to absorb water along an osmotic gradient created by the active absorption of sodium. Bicarbonate ions are secreted in exchange for chloride ions, and potassium is lost from the extracellular fluid, and in mucus and cells shed into the colon. The distal colon stores the dehydrated faecal material (Bertoy 1993). The enteric function in cats after subtotal colectomy has been reported in two investigations (Bertoy et al 1989, Gregory et al 1990). Bertoy et al (1989) studied the histologic changes within the intestinal wall following subtotal colectomy in eight healthy adult cats. Their findings revealed that there were significant increases in villus height, enterocyte height and enterocyte density in all cats following the procedure. Gregory et al (1990) compared the enteric function of four cats that had undergone subtotal colectomy for idiopathic megacolon with that of four normal cats. They concluded that, in general, enteric function in the operated cats was similar to that of the control cats. Bowel movements occurred slightly more frequently with no significant differences in faecal volume or water content. In the operated cats, serum cobalamin concentrations and faecal water sodium concentrations were higher and faecal potassium concentrations were lower in comparison with unoperated cats. The results of the study demonstrated no significant clinical or subclinical evidence of abnormal bowel function in cats after subtotal colectomy.

Complications associated with subtotal colectomy
Operative complications following subtotal colectomy are considered uncommon (Rosin 1993). Reported complications are, in general, related to the colonic anastomosis procedure.

Peritoneal contamination during the colectomy
Anaerobic and aerobic bacterial counts are higher within the colon than in other parts of the
gastrointestinal tract (Pavletic & Berg 1996). The most prevalent colonic organisms are anaerobic gram-negative organisms such as Bacteroides and Clostridium spp. Aerobic organisms such as Proteus, Pseudomonas and Streptococcus spp. are also present (Aronsohn 1993). Therefore, any intraoperative spillage of colonic contents is likely to result in a localised or generalised peritonitis. Other than good aseptic surgical technique, most authorities would recommend the use of perioperative antibiotics. Recommended agents include drugs that can be administered intravenously and those that are active against the most prevalent colonic organisms. Commonly used drugs include second generation cephalosporins such as cefuroxime or cefoxitin and the synthetic nitroimidazole, metronidazole. In general, the use of preoperative enemas is discouraged because these will tend to liquefy the colonic contents making intraoperative spillage of colonic contents more likely.

**Dehiscence of the intestinal anastomosis**

Incisional dehiscence is considered an important potential complication of colonic surgery in small animals (Pavletic & Berg 1996). In fact, dehiscence of the intestinal anastomosis is a rarely reported complication in cats undergoing a subtotal colectomy (Rosin 1993). In the majority of cases in which dehiscence occurs, the cause of the breakdown is considered to be a result of technical errors, such as inaccurate suture placement or tension across the bowel anastomosis. The frequency of leakage at the anastomosis site is considered similar when intestinal stapling techniques are compared to conventional suturing techniques (Kudisch 1994).

**Other reported complications of the subtotal colectomy**

Other reported complications of the subtotal colectomy include lethargy, depression, anorexia, weight loss, vomiting, diarrhoea or the production of soft unformed stools, increased faecal frequency, tenesmus, haematochezia, faecal incontinence, intra-rectal bleeding and recurrent constipation. These complications are summarised in Table 1. The most commonly reported peri-operative complication observed in cats undergoing a subtotal colectomy was that diarrhoea or loose stools immediately after surgery. In the majority of individuals, stool consistency improves without further treatment so that within one to six weeks of the surgery a soft, a formed stool is developed. In the long term, the most commonly reported complication is recurrent constipation. Rosin (1993) suggests that in the majority of these individuals, however, the constipation can be treated by dietary management, stool softeners and the occasional manual removal of faeces until a satisfactory medical regime for the management of the constipation is developed. In some instances, when medical management cannot alleviate the recurrence of constipation, a second surgical procedure may be indicated to remove any remaining colonic segment (Bright 1990). It might be expected that recurrent constipation would be a more common complication in individuals in which the ileocolic junction was retained at the time of colectomy. In these individuals, the retained colonic segment is likely to be larger than in those individuals in which the junction was resected and an enterocolostomy was performed. In fact, Sweet et al (1994) showed that there was no significant difference in the rate of recurrent constipation between these the two surgical procedures of colocolostomy and enterocolostomy.

Complications associated with the use of surgical staplers in the gastrointestinal tract have been reported to include bleeding, problems in tissue approximation, leakage of luminal contents at the site of anastomosis and instrument failure (Chasssin et al 1984). In a series of 15 cats in which subtotal colectomy was performed with the aid of surgical staplers for the management of idiopathic megacolon, there were no apparent long-term complications (Kudisch & Pavletic 1993) although in the immediate postoperative period two cats required blood transfusion for the management of haemorrhage associated with the stapled anastomosis.

**Surgical management of megacolon secondary to outlet obstruction**

The commonest cause of outlet obstruction causing secondary megacolon in the cat is pelvic fracture malunion (Bertoy 1993). Other causes of outlet obstruction include colonic or rectoanal tumours (de Haan et al 1992) and strictures, extrapelvic extraluminal stricture formation following neutering surgery (Furneaux et al 1973, Muir et al 1991, Smith & Davies 1996, Coolman et al 1999, Demetriou & Welsh 2000), and intrapelvic extraluminal tumours or masses.
Improper rectal wall support following perineal herniation may also result in rectal obstruction with subsequent development of megacolon. Other more unusual causes of outlet obstruction include intestinal foreign bodies, improper diet, and anal, rectal or colonic atresia (van den Broek et al 1988, Bertoy 1993, Matthiesen & Marretta 1993, Bredal et al 1994). Outlet obstruction will initially result in the development of a hypertrophic megacolon (Washabau & Holt 1999). Hypertrophic megacolon is often reversible with the early removal of the colonic outflow obstruction. Left untreated, the obstruction will result in progression of the condition to an irreversible dilatated megacolon. In general, therefore, prompt treatment of outlet obstruction will involve the removal of the underlying cause of the obstruction. Mass excision, protectomy, or segmental colectomy can be performed to excise obstructive mass lesions or strictures (Bertoy 1993). Foreign bodies should be removed and dietary changes made where applicable. Anal or rectal atresia can be managed with anoplasty or rectal pull-through procedures (Matthiesen & Marretta 1993). A major complication in cases that have already developed dilatated megacolon is the continued dysfunction of the colon following the removal of the outlet obstruction. In such instances, continued problems with constipation/obstipation may be managed medically. In cases that are unresponsive to medical management, a subtotal colectomy should be considered.

Surgical therapy for constipation/obstipation following ovariohysterectomy or castration

There are a number of reports describing the development of constipation or obstipation following routine ovariohysterectomy or castration in the cat (Furneaux et al 1973, Muir et al 1991, Smith & Davies 1996, Coolman et al 1999, Demetriou & Welsh 2000). In each case, an extrapelvic extraluminal stricture of the colon was found just cranial to the pelvic brim. In all instances, the removal of the obstruction resulted in the resolution of clinical signs without the necessity to perform a subsequent subtotal colectomy.

In the four previously reported female cats, the clinical signs were apparent within 10 weeks of their ovariohysterectomy. The cause of the stricture was found to be either a collar of residual uterine horn tissue that had formed adhesions with the mesocolon or a ring of non-adherent fibrous tissue, the origin of which was unclear. Resection of the offending tissues and fibrous adhesions resulted in the long-term resolution of obstructive clinical signs in all cases (Muir et al 1991, Smith & Davies 1996, Coolman et al 1999). In an attempt to prevent this problem, it was concluded that during the ovariohysterectomy procedure the uterus should be amputated at, or as close to, the cervix as possible (Muir et al 1991, Smith & Davies 1996).

In the male cat described by Demetriou & Welsh (2000), an open castration had been performed. Clinical signs of constipation and faecal tenesmus were seen eight weeks after this castration procedure. The cause of the stricture was found to be a non-adherent fibrous ring that was encircling the distal descending colon. The origin of the fibrous band was unclear, but it was considered possible that retraction of the spermatic cord following an open castration may, especially if the procedure was performed without adequate sepsis, result in the formation of a fibrous ring around the descending colon. Again, removal of the offending tissue resulted in the long term resolution of clinical signs.

Surgical therapy for constipation associated with perineal herniation

Perineal herniation is a poorly reported condition in the cat, but as seen with the disease in the dog, the condition may induce faecal impaction, constipation and obstipation (Welches et al 1992). Obstipated individuals may develop a secondary dilatated megacolon. Surgical repair of the hernia or hernias will alleviate the constipation in the majority of individuals. Cats with any degree of faecal colonic impaction should have the impacted faeces removed prior to, or at the time of, hernia repair. In individuals in which faecal impaction recurs, a careful assessment of the repairs and/or assessment of a previously unaffected side should be performed to rule out the presence of further hernia development. If it is concluded that no further perineal herniation is present, but the animal is suffering from megacolon, a subtotal colectomy may be considered. Further straining associated with the faecal impaction/megacolon is likely to result in herniorrhaphy breakdown. Therefore, the early
removal of the diseased colon is to be recommended. In fact, Washabau & Holt (1999) suggest that in individuals suffering from both perineal herniation and a secondary dilated megacolon, the removal of the megacolon alone may relieve the clinical signs making concurrent perineal hernia repair unnecessary.

Surgical therapy for secondary hypertrophic megacolon associated with a malunion pelvic fracture

A malunion pelvic fracture in the cat will often result in the narrowing of the pelvic canal leading to the development of extraluminal obstruction to the distal descending colon. As previously stated, an outlet obstruction such as this will initially result in the development of hypertrophic megacolon. This form of megacolon is often reversible with the early removal of the outflow obstruction. Left untreated, the obstruction will result in progression of the condition to an irreversible dilated megacolon.

Pelvic osteotomy without colectomy has been recommended for cats with pelvic fracture malunion and hypertrophic megacolon of less than six months duration (Schrader 1992, McKee & Wong 1994, Washabau & Holt 2000). Although in many instances, the early treatment of such cases with pelvic osteotomy will result in the relief of the clinical signs of constipation/obstipation, some authorities prefer to perform a colectomy because of the technical difficulty of performing an adequate osteotomy in many individuals (Matthiesen et al 1991).

Surgical treatment is generally directed at widening the pelvic canal to relieve rectal impingement by removing the impinging bone (ostectomy) (Schrader 1992), by redirecting the impinging bone (corrective osteotomy) (Ferguson 1996), or by separating and distracting the symphysis (symphyseal distraction-osteotomy) (Shrader 1992, McKee & Wong 1994).

Performing a subtotal colectomy is recommended in cats with pelvic fractures if the colonic hypertrophy and clinical signs have persisted for longer than six months (Matthiesen et al 1991, Schrader 1992, McKee & Wong 1994, Washabau & Holt 2000). Hypertrophy is considered to be superseded by neuromuscular degeneration and pathologic dilatation in these cases. Pelvic osteotomy alone will not provide relief from obstipation in such cases, whereas, performing a colectomy without pelvic osteotomy will alleviate the clinical signs in the majority of affected individuals (Matthiesen et al 1991).

Conclusions

There are many recognised causes of constipation in the cat and the management of the condition depends on the clinician’s ability to recognise the appropriate aetiology in each case. Most surgery therapies for constipation in the cat are related to the management of idiopathic megacolon, although there are a number of other causes that also require a surgical intervention. Currently, the surgical management of megacolon consists of subtotal colectomy with the recommendation that the ileocolic junction be preserved. The procedure, in general, is associated with few life-threatening complications although the majority of individuals will experience a transient period of loose stool formation in the immediate postoperative period.

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