

Recurrent Megacolon and Fecaloma in a Cat

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ABSTRACT

Background: Megacolon is characterized by dilation and hypomotility of the large intestine which results in fecal retention, being common a chronic cause of constipation in cats, and usually idiopathic. The affected shows progressive and recurrent signs of constipation throughout months to years. The initial treatment is clinical with laxatives, enemas, prokinetic medications and dietary adjustments. However, in cases of unsuccessful results of medical therapy, surgical intervention is necessary. The objective of this report is to describe the management of a male Persian cat with chronic constipation, obstipation and recurrent megacolon treated by clinical and surgical means.

Case: A 1.2-year-old male Persian cat, weighing 4.35 kg, presented over 8 years, several episodes of constipation and megacolon confirmed by clinical, laboratory, simples and/or contrast radiographic and ultrasound exam. Despite the initial success of the clinical treatment, it recurred after 4 months and clinical exam and new radiographs indicated recurrence and the patient was treated with mineral oil and suppositories. After 12 months, the patient presented fecal retention, rectal protrusion and tenesmus, when clinical and alimentary adjustments were performed. After new crisis, the cat was hospitalized and underwent to several clinical procedures with no success, being referred to colotomy, and 30 days after, subtotal colectomy. During 2.5 years, the patient received clinical attention in another veterinary center. After this, a serious constipation recurred and colotomy was performed. Two years later, the patient suffered with frequent constipation and was submitted to total colectomy, after failure of clinical treatments. Despite surgery, the cat developed acute renal failure and died after the procedure.

Discussion: Megacolon that is characterized by increase in the diameter of the large intestine and hypomotility, is not a specific disease, but a condition with many causes such as neurological, endocrine, behavioral or congenital. Between others, the idiopathic is the most common, as observed in this patient. In this case, the diagnosis was achieved through history, laboratory and imaging exams, including radiographs which showed the colon distended and replete of feces, a typical find of patients with megacolon. The contrast radiography ruled out anatomical malformations, but did not provide a conclusive diagnosis regarding the etiology. The clinical treatment included a combination of pasty diet, mineral oil, suppositories, enemas and medications, in addition to fluid therapy, as complementary treatment. Although there was temporary improvement with lactulose and psyllium, which facilitate the intestinal transit, the alimentary management was not efficient at long term. It is recognized that over time the patients develop generalized colonic smooth muscle dysfunction, as identified in this patient by ultrasound, which indicates colonic inertia and need for surgical intervention. The subtotal colectomy was performed after several attempts at medical and surgical approaches over more than 2 years. Studies indicate that preserving ileocolic junction can minimize the recurrence of constipation, opposite to excision which can increase diarrhea in the long term. Usually, the post-surgery survival is long, with good quality of life, as long as an adequate diet maintenance, which was a challenge in this patient, since it refused the high-fiber diet. The medical treatment of constipation should be applied but may be unfeasible or ineffective, as observed several times in this case. This case illustrates the severity of idiopathic megacolon in cats and reinforces the need to consider early surgical intervention when the condition is not responsive to diet and medical therapy, to improving the patient quality of life and avoid complications which can cause increased morbidity and contribute to patient mortality.

Keywords: constipation, colotomy, subtotal colectomy, total colectomy.

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INTRODUCTION

Megacolon is a partial or generalized dilation of the intestine associated with hypomotility and fecal retention, usually is idiopathic, and cause of chronic constipation in cats. The alteration can be primary or secondary [5]. Primary is related to the degradation or absence of ganglion cells of the myenteric Auerbach plexus (parasympathetic system), which causes loss or reduction of peristalsis. Secondary results from mechanical obstructions of the lumen such as colonic or extraluminal neoplasms and pelvic fractures, among others [6,16].

The affected animal shows progressive and recurrent signs of constipation along months to years, anorexia, dehydration, lethargy, vomiting, hardened feces, weight loss and tenesmus [1,9,11].

The diagnosis is based on the long-term constipation, distended colon during the abdominal palpation and simple abdominal radiographs, which present a distended colon with feces and the enlargement of the diameter is greater than 1.5 times normal [8]. The distension is calculated by the ratio between maximum diameter of the colon and length of the body of the fifth or seventh lumbar vertebra [1,14].

The treatment initially is conservative with laxatives, enema, prokinetic and diet modification. However, since the results after therapy are often unsatisfactory, surgical intervention is the indication [16]. Thus, depending on the evolution of the condition, colotomy, subtotal colectomy or even total colectomy may be indicated [8,10].

In this way, the objective of this report is to describe the case of a feline with recurrent megacolon, to ponder the clinical and surgical treatment, as well as the need for invasive surgical interventions.

CASE

A 1.2-year-old male Persian cat, weighing 4.350 kg, was presented with normal diet and water intake, but absence of feces for 3 days. The owner reported administration of mineral oil and successful result, but relapse after few days. The physical exam revealed no abdominal pain, heart rate of 200 bpm, tachypnea and rectal temperature of 38.8°C. Mineral oil¹ [4 mL/SID/15 days] was prescribed, and general improvement and normal defecation were observed after 10 days.

Four months later, the patient developed new constipation. A ventrodorsal and lateral abdominal radiograph was performed, suggesting megacolon and fecaloma, with no other bone alterations; mineral oil [4 mL/SID/15 days] and glycerin suppository [SID/3 days] were prescribed and recovery observed.

After 12 months the patient had rectal protrusion and tenesmus. On physical examination it was alert, panting, with abdominal pain and distension. An enema with warm 0.9% NaCl and 12% glycerin was performed and the colon cleansed. The total blood count presented small alteration, and barium enema demonstrated colonic and rectal distension, thinning of the colon and rectum, and no noteworthy changes such as inflammation, intestine rupture or neoformations.

After 30 days, the patient presented new constipation episode and enema done. After 14 days, the tutor relates no feces in the latest 7 days, dyschezia and frequent vomiting. Ranitidine hydrochloride² [2 mg/kg/BID/PO], mineral oil [2.2 mL/BID/PO], infant glycerin suppository [1 unit/DID/rectal] and a pasty diet were prescribed. Two days later, the patient was admitted and received metoclopramide hydrochloride² [0.25 mg/kg/BID/SC] and sodium Ringer's lactate fluid therapy [5 mL/kg/h/IV] for 24 h. Although the patient had defecated, constipation recurred after 7 days; the patient was undergoing to dissociative anesthesia and epidural block and intestinal cleaning. Sulfadiazine³ and trimethoprim³ [15 mg/kg/BID/8 days] were prescribed.

After 12 months there was a recurrence, unresponsive to clinical treatment, and the patient was referred for colostomy after antibiotic therapy with cephalothin⁴ [30 mg/kg/IV] and metronidazole² [20 mg/kg/IV]. Through retro umbilical access, a longitudinal antimesenteric incision was done in the colon, the fecaloma removed. The abdominal wall was closed with simple isolated suture and the subcutaneous continuous pattern, both with polyglactin, followed by intradermal suture with nylon. After discharge, tramadol hydrochloride¹ [4 mg/kg/PO], meloxicam⁵ [0.1 mg/kg/PO], dipyrone² [25 mg/kg/PO/BID] and a pasty diet, progressively changed to solid were prescribed. After 4 days, the patient was eating and defecating normally, but on the 6th day after had constipation; an ultrasound exam revealed hard stools and an enlarged colon, being continued the medication and pasty diet.

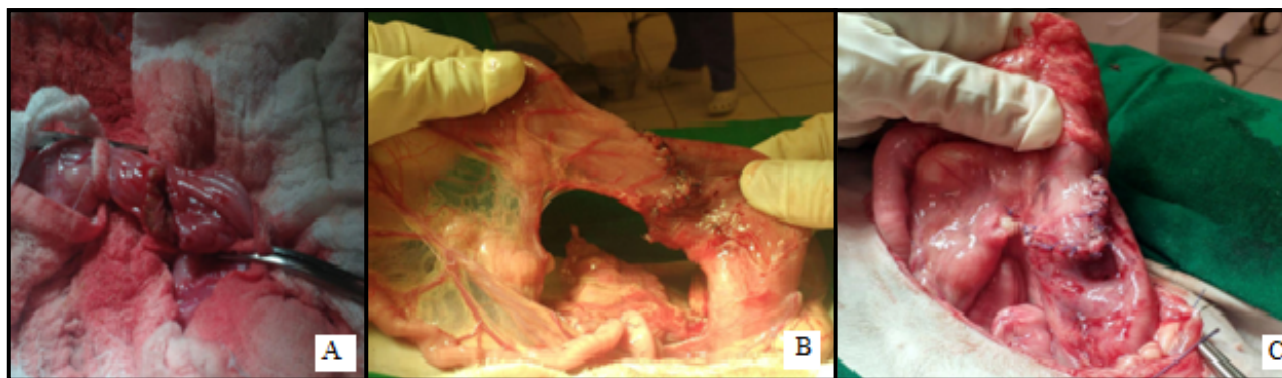


Figure 1. A 4-year-old male Persian cat with recurrent megacolon undergoing subtotal colectomy. A- The form of excision of the intestinal ends in the cranial extremity at a 90° angle and the caudal at oblique shape. B- Appearance after end-to-end anastomosis. C- Appearance after suturing of the mesentery.

After 30 days, considering the unsuccessful treatment with metronidazole² [20 mg/kg/BID], lactulose⁶ [1 mL/TID], psyllium⁷ [15 mL/day] and tegaserod⁸ [0.15 mg/kg/BID], the patient was referred for subtotal colectomy. After retroumbilical access, the ascending branch of the caudal mesenteric artery and the left colic artery were obliterated, followed by section of the descending colon, with the proximal segment at an oblique angle and the distal segment at a right angle (Figure 1). Abdominal closure was performed as previously described. A liquid diet was prescribed for 5 days, progressively replaced to solid at 10 days, meloxicam⁵ [0.5 mg/SID/2 days], dipyrone² [25 mg/kg/TID/5 days] and topical chlorhexidine. After 15 days sutures were removed and the patient was eating and defecating.

Two years and 6 months later the patient not defecated during 4 days, presented anorexia, adipsia, depression, abdominal pain, and body condition score 4 (1-9); it was admitted to fluid therapy and medicated with metronidazole⁵ [25 mg/kg/IV], sulfadimethoxine and ormetoprim⁹ [40 mg/kg/IM]. After stabilization,

through colotomy by retro umbilical access, the intestinal viability was assessed, a longitudinal incision made and the fecaloma removed. After washing the intestinal mucosa with Ringer's lactate via a catheter up to the anus and verifying the removal of the contents, a suture of Cushing was performed with 3-0 polypropylene followed by a same pattern with 3-0 polyglactin. The abdominal closure was performed as previously described. A liquid diet was prescribed for 7 days followed by soft, meloxicam⁵ [0.1 mg/kg/SID/PO/2 days], dipyrone² [20 mg/kg/TID/PO/3 days], and antibiotics for 21 days. After 10 days, the patient presented normorexia, normoquesia and the skin sutures were removed.

After 2 years the patient was reevaluated and the owner reported frequent episodes of constipation along the period, when it was treated by another veterinarian with laxatives, psyllium, glycerin and ineffective enemas. At the time, it had not defecated or eaten for 1 week, was 6% dehydrated and had abdominal distention (Figure 2A). Ultrasonography demonstrated marked distension of the ascending colon, compatible with

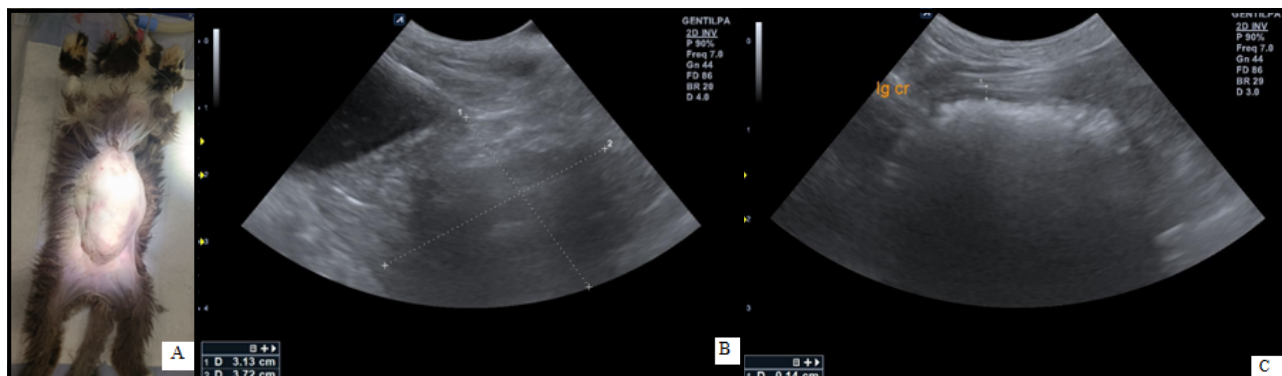


Figure 2. A 4-year-old male Persian cat with recurrent megacolon. A- Abdominal distension due to fecal impaction in the colon. B- Ultrasound image with constipation and severe distension of the colon, compatible with megacolon. C- Ultrasound image showing thinning of the colon wall.

fecaloma and megacolon (Figure 2B) and thinning of the colonic wall (Figure 2C). An enema was performed with no success and fluid therapy with Ringer lactate and antibiotic⁵ [cephalothin⁴ 30 mg/kg/BID/IV] and metronidazole [20 mg/kg/BID/IV] were started. Blood samples were accessed and revealed borderline creatinine (1.8 mg/dL), small changes in alkaline phosphatase and urea. After stabilization, the patient was referred for total colectomy through retro umbilical approach.

The megacolon with fecaloma was exteriorized, the antimesenteric border incised and the large fecaloma (240 g) removed (Figure 3A). After identifying the intestinal ends without distension and with signs of contraction, repair sutures were applied (Figure 3B) and the affected colonic tissue sectioned, preserving the ileocolic junction. The patient had cardiorespiratory arrest, was quickly reanimated and the surgery continued. After reducing the lumen of the caudal segment in the rectum direction with a simple continuous pattern and polyglactin 910, an end-to-end anastomosis was performed with a simple isolated suture and the same thread (Figure 3C). The intestine was washed and the abdominal cavity closed with 4-0 nylon and simple continuous pattern, followed by subcutaneous and skin closure described before.

The patient was extubated and monitored after surgery. Six h after, the creatinine increased (2.26 mg/dL). The patient was referred with recommendations for maintenance of fluid therapy, monitoring of urine output and creatinine. Methadone¹⁰ [0.2 mg/TID/4 days], dipyrone² [15 mg/kg/TID/4 days], cephalixin and metronidazole⁵ (10 days), feline probiotic [1 g/TID/14 days] and chlorhexidine local spray were prescribed. However, 48 h after surgery creatinine reached 6.1 mg/dL, the patient progressed

to anuria unresponsive to drug treatment and death happened after 36 h.

DISCUSSION

It is described the case of a cat with chronic constipation initially treated clinically. It is recognized that the duration of clinical signs of idiopathic megacolon for a period longer than 6 months was associated with irreversible functional alterations in the colon [1], as observed in this patient.

The megacolon term describes the increase in the diameter of the large intestine associated with hypomotility, and it does not correspond to a specific disease [1,5,9]. The evaluation of the colonic diameter is subjective, usually based on radiographic images, as performed in this patient. The condition is more common in cats and between the causes are the neurological, endocrine, behavioral, congenital or due to pelvic obstruction. Although, the idiopathic is the most frequent, as identified in this case [8].

To the diagnosis of this patient, the history of difficulty in defecation based in anamnesis was identified, and imaging tests, complete blood count and biochemical profile requested. The changes in the blood count, low hematocrit and increased total plasma proteins were described associated to hydro electrolytic imbalances due to anorexia and adipsia [2]. However, in this case, the patient presented mostly normal values, and clinical treatment was successfully instituted.

The radiographic obtained suggested megacolon, reinforcing that when this examination demonstrates the colon impacted and distended by feces, with an enlargement of the diameter of the organ by more than 1.5 times the length of the body of the 7th lumbar vertebra, the alteration is suggestive [8]. This



Figure 3. A 4-year-old male Persian cat with recurrent megacolon underwent to subtotal colectomy. A- Fecal material removed from the dilated ascending colon (240 g). B- Suspension of the intestinal edges after sectioning the region of the distended intestine without peristalsis. C- Final appearance of the end-to-end anastomosis.

description is in line with the observed in this patient. Additionally, the authors report that this image present great importance in ruling out obstructions or pelvic fractures, as realized in this case. To this patient, the contrast radiography was performed after removing the intestinal feces to evaluate the colonic lumen and seek the etiology of the fecaloma [12,16]. Although, it was not conclusive in the case.

The clinical treatment of constipation included a pasty diet, mineral oil, glycerin suppository, intestinal enema, ranitidine hydrochloride, metoclopramide and fluid therapy, the latter being indicated to correct hydro-electrolytic and acid-base imbalances [8]. Enemas [4], fecal emollients or digital evacuation [8] were frequently used with or without anesthesia, depending on the different clinical conditions. Antibiotics was indicated due to possible damage to the intestinal mucosa, in addition to laxatives, prokinetics and a high-fiber diet [8]. In this patient, lactulose and psyllium were indicated associated to the diet; it facilitates the intestinal transit and promoted positive effects temporarily. However, the risk of forced oral administration of mineral oil in cats should be highlighted, which may be associated with exogenous lipoid pneumonia due to aspiration or inhalation of mineral, vegetable or animal oil. The composition of mineral oil, unlike aqueous substances, does not produce a cough reflex when in contact with the mucous membrane of the airways, and as a result it easily reaches the lungs [13]. In the patient of this report, no complications due to the ingestion of mineral oil were observed.

The ranitidine hydrochloride was suspended in the year of 2020 because it contains N-nitrosamines (NDMA), molecules with carcinogenic potential [7]. Evidence suggests that these can be formed from the degradation of ranitidine with increasing levels throughout life [7]. It should be noted that the therapeutic use of this substance in this case was carried out prior to the recommendation, and therefore, it should be replaced.

The surgical opening of the intestine is defined as enterotomy and this surgery receives a special nomenclature according to the incised intestinal portion, as in this report, the colotomy [8]. This procedure is indicated for the removal of foreign bodies, fecalomas and intestinal biopsies and in this case, it was not sufficient for cure, only alleviating the clinical conditions.

The cats with idiopathic megacolon have generalized smooth muscle dysfunction that affects

intestinal motility. Due to prolonged retention of feces, irreversible damage to intestinal fibers and nerves can occur [8]. In this patient, the smooth muscle dysfunction of the descending colon was detected by ultrasound exam, when areas of lack of movement and thinning of the colon wall were identified. In this way, as the colonic inertia is treated by colectomy [8], it was performed.

A study that evaluated 30 cats with megacolon observed that patients with more than 6 months of clinical signs or unsatisfactory medical treatment, the subtotal colectomy is required [1]. It reinforces the approach of this patient, underwent to subtotal colectomy after 8 recurrences initially treated by means of manage, clinical surgery as colotomy in a period over 2 years and 6 months; when the techniques were no longer responsive, the enterectomy was performed, as indicated.

Since it is suggested that the entire colon is affected in megacolon, any colonic portion remaining after subtotal colectomy may be dilated and cause recurrence of clinical signs and therapeutic failure [15], as observed in this case after the partial colectomy. Some complication of this procedure includes leakage, dehiscence, peritonitis, ischemic necrosis, stenosis and abscess formation [8], not observed in this cat. In some animals, diarrhea persists, and in others, constipation recurs [5], as in this patient, which correspond to around 32% of the patient [5]. The survival time is considered long and the quality of life is good to excellent [5], a fact observed in this patient. Additionally, although a high-fiber diet was recommended as adjuvant treatment, the owner reported difficulties, as the patient refused to eat it.

On the other hand, reports suggest that preservation of the ileocolic junction in the subtotal colectomy does not result in increased recurrences of constipation. However, the excision of this junction is associated with increased incidence and severity of diarrhea [15], especially in long term [5], not evaluated in this case due the patient dead. Few complications are reported after this procedure, probably due to histological evidence of ileal adaptation, which reflects an increase in water absorption [3].

This case illustrates the severity of idiopathic megacolon in cats and reinforces the need to consider more aggressive surgical interventions such as subtotal colectomy as soon as clinical treatment is no longer

effective, in order to minimize complications and improve the patient's quality of life.

Clinical treatment for chronic constipation is possible but may be ineffective. Subtotal colectomy in cats with recurrent megacolon helps in treatment, but relapses may occur if an adequate diet is not provided, in which case total colectomy is indicated.

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