



Does Colonic Benign Tumors Causes Colon Obstruction? Case Series and Literature Review

Toufic Saber MD; Saleem Abdel Backi MD; Murielle El Feghaly MD; Jennifer Jdeidany; Said Farhat MD; Alexander Malek MD; Mansour el Khoury MD*

Department of General Surgery, Saint George Hospital University Medical Center in Association with the University of Balamand, Beirut-Lebanon

***Corresponding author:** Dr. Mansour el Khoury MD, Department of General Surgery, Saint George Hospital University Medical Center in Association with the University of Balamand, Beirut-Lebanon. Email: drkhourymansour@hotmail.com

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Abstract

Sub-mucosal lipomas of the colon, as first described by Bauer in 1757 are fatty tumors, rarely greater than 2 cm in size and hence rarely symptomatic. The vast majority of these tumors are subjected to be found incidentally during a colonoscopy, computed tomography (CT) scan, surgery, or autopsy and are most often located in the ascending colon near the cecum. Referred to second most common benign tumour of the colon, sub-mucosal colonic lipomas are often difficult to diagnose because of their asymptomatic nature or the intermittent, non-specific nature of patients' symptoms. In this domain, development of symptoms manifesting as abdominal pain, hemorrhage, diarrhea, or constipation are most commonly encountered with lipomas of size greater than 2 cm. Furthermore, obstruction secondary to colonic intra-luminal narrowing or intussusception is mostly reserved for larger lipomas, most commonly those growing more than 4 cm in size, and hence requiring surgical or endoscopic resection.

However, as such lesions are more often being exposed nowadays owing to the enhanced utilization of colonoscopy and CT, and the fact that complications can prevail, both rises the need of settling well established guidelines advising the management of such polyps, on the road of preventing consequent complications.

In this article, and in trial of us addressing this rare entity, shedding the light on its importance, and further elaborating on its significant consideration in working up bowel obstructive pathologies, we present a literature review of colonic sub-mucosal lipomas, along with our experience in obstructive colonic lipomas, in a retrospective case series constituted of 4 characteristically and demographically studied patients, along with the management after being admitted to our tertiary care center for obstructive symptoms.

Introduction

Bowel obstruction is a commonly encountered condition affecting both small and large bowels [1]. Large bowel is subject to obstruction in only 20% of all cases of bowel obstruction. Large bowel obstruction (LBO) presents typically as crampy abdominal pain, most often diffuse in nature, severe abdominal distention, nausea, vomiting, dehydration, constipation and obstipation [2,3,4]. It can be of acute onset suggesting an acute obstruction or be associated with recent changes in stool caliber, chronic constipation or weight loss suggesting an indolent process of the obstruction.

The etiologies of bowel obstruction are variable, age dependent, and require thorough history taking and

physical exam to narrow the differential [5]. Neoplasms most commonly cause colonic obstruction; all neoplasms, whether benign and malignant, can cause obstruction of the colon by gradually increasing in size and therefore narrowing the lumen [5,6]. Statistically, large bowel obstruction is most commonly instigated by a malignant condition, mostly a colorectal malignancy (accounting for 50-60% of cases) or a gynecological malignancy, and is referred to as malignant large-bowel obstruction or MLBO [2,7,8]. Another common cause of obstruction of the large bowels is acute diverticulitis. Indeed, acute diverticulitis and colorectal malignancies together account for 90% of cases of LBO [2]. Other rare etiologies reported in the literature to cause LBO include ovarian teratomas endometriosis, ovarian cystadenomas, bladder distention or benign prostate hyperplasia, appendiceal mucocele, among others [9,10,11,12,13,14]. Also, intraluminal

lipomas have been reported in less than 1% of all causes of LBO [5]. Sub-mucosal lipomas of the colon, as first described by Bauer in 1757 are fatty tumors, rarely greater than 2 cm in size and hence rarely symptomatic [14,15].

We present in this article four cases of large bowel obstruction found to be caused by intraluminal lipomas. All four cases presented to the emergency department of a tertiary hospital center over the period of 3 years and all were managed surgically.

Cases presentation

We present therefore four cases of large bowel obstruction that presented to the emergency department of our private tertiary care center. The identified etiology of the cases was sub-mucosal lipomas. These cases presented over a period of 3 years, during which a total of 25 cases of obstructive colon were presented to the same hospital center. Various etiologies causing the large bowel obstruction had been identified and included malignancies (colorectal malignancies mainly, intra and extraluminal), diverticular disease resulting in severe adhesions and obstruction, benign lipomas, etc. All cases of colonic obstruction were managed surgically. To note, the total number of colectomies performed at our center over the same period was 324 cases.

Our patients included three males and one female. The average age of our patients was 68.25 years. At least one comorbidity including one of diabetes mellitus, hypertension or dyslipidemia was identified in our patients. All patients were hemodynamically stable on presentation with anorexia, abdominal distention and unintentional weight loss (average of 5.4kg over a period of one month) as symptoms common for all four cases. Other symptoms reported included abdominal pain, nausea and vomiting. It is interesting to note that all patients presented

with moderate leukocytosis and WBC ranging between 12000 and 16000 with a mildly elevated CRP ranging between 4 and 8 mg/L.

CT-scan with intravenous contrast was used to diagnose all 4 cases. Two of the cases were located in the right colon causing proximal and small bowel dilation. The dilation of the proximal part of the colon was 9 and 10cm in the two cases. On the other hand, lesions located in the left side of the colon were located at the level of the descending colon causing proximal dilation of 7 and 8 cm. In both cases, distal bowel collapse was noted (Figure 1a and 1b).

A decision for surgical management was made. This decision was based on the fact that all 4 cases refused conservative management and because the dilation of the bowel was putting the patients at high risk for perforation. Two cases were managed laparoscopically and the remaining two were managed by open technique. No intraoperative complications were faced in all cases. Laceration of the cecum was noted in both cases of right colonic obstruction. We noted and under-estimate of bowel dilation on radiology when the lesion was located to the left. This fact can be attribute to the progressive dilation that continues to happen between the presentation and the surgery. All patients did not require a second surgical intervention due to primary anastomosis of bowel without any diverting colostomy or ileostomy. For the anastomosis, we adopted a latero-lateral approach in order to overcome any mechanical discrepancy of the bowel, an approach we opted for in all 4 cases. The final pathologies of all 4 cases were colonic sub-mucosal lipoma with no sign of malignancies. No post-operative complications were observed. Resumption of feeding and discharge was done on POD2 and POD6 for those who underwent laparoscopic intervention respectively. Resumption of feeding and discharge was done on POD3 and POD7 for those who underwent open approach respectively. The demographics of our patients are summarized in table 1.

CASE	1	2	3	4
Demographics	44 years old Male	79 years old Male	63 years old Male	87 years old Female
Presentation	Anorexia, Severe abdominal distension, colicky pain, nausea and vomiting	Anorexia, obstipation, mild abdominal distension and crampy abdominal pain	Anorexia, severe abdominal distension with nausea and vomiting	Anorexia, obstipation, mild to severe abdominal distension
Comorbidities	Hypertension	Hypertension and Diabetes	Hypertension, diabetes and dyslipidemia	Atrial fibrillation and hypertension
Weight loss	5kg	6.5 kg	6	4
Location	Right colon	Descending colon	Descending colon	Right colon
Surgical management	Laparoscopic resection with latero-lateral ileo-colic anastomosis	Open resection with latero-lateral colo-colic anastomosis	Laparoscopic resection with latero-lateral colo-colic anastomosis	Open resection with latero-lateral ileo-colic anastomosis
Day of resumption of diet	2	3	2	3
Day of Discharge	6	7	6	7

Final pathology	Pedunculated mass of 4x3.5x4cm at 8cm from the cecum. Sub-mucosal lipoma with no sign of malignancy	Mass of 6x4.3x4.3cm in the descending colon. Sub-mucosal lipoma with no sign of malignancy	Mass of 4x3.5x3.6cm in the descending colon. Sub-mucosal lipoma with no sign of malignancy	Mass of 5.5x4.3x4.3cm at 5cm from the cecum. Sub-mucosal lipoma with no sign of malignancy
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Figure 1: A. CT-scan without IV contrast showing right colonic lipoma (pointed by the arrow). B. CT-scan of left sided colonic lipoma (pointed by the arrow).

Discussion

Large bowel obstruction is an emergency, which requires immediate diagnosis and management to prevent further complications and morbidities [3,4]. Miller et al. found that neoplastic lesions are the most common cause of large bowel obstruction with a doubled prevalence when compared to all the other benign causes [1]. However, even though malignant lesions continue to be the most frequent cause of obstructive colon, studies have shown an increase in the frequency of benign lesion findings in an obstruction [1]. This increase in frequency is also seen in the Lebanese population. Indeed, sub-mucosal lipomas were found to be the cause of 4 out of 25 cases of obstructive colon that presented to the emergency at our tertiary center in Beirut, with a percentage of 16.4%. To note, those were the only benign lesions to be managed out of the 25 cases; the remaining 21 cases were malignant. To note, this frequency is probably an overestimation of the true frequency in our country due to the higher socioeconomic status of our patients allowing them better access to our private health care system [3]. Moreover, during the last 3 years a total of 324 colonic surgeries were performed at our center. They included obstructive and non-obstructive cases of which only the previously mentioned 4 cases were diagnosed with colonic lipoma making the frequency of intraluminal lipoma encountered in our practice in the last 3 years at 1.2%, which is a bit higher than the one reported in the literature (less than 1%) [1,5].

Symptoms caused by partial or complete large bowel obstruction range from decreased bowel movements with positive flatus to complete obstipation. Patients often present with crampy abdominal pain and distention, nausea, vomiting [3]. Also, a more indolent course has been noted for benign obstructive lesions associated with chronic symptoms of abdominal bloating, distension, weight loss and change in stool caliber when the lesion is

located in the left side of the colon [3,5]. All 4 cases reported unintentional weight loss with an average of 5.4 kilograms during the last month attributed to anorexia. We also noted a possible difference in presentation according to the site of obstruction. Indeed, patients with obstruction of the right, ascending colon complained of severe abdominal distention with colicky pain, nausea and vomiting. On the other hand, left descending colonic obstruction resulted in obstipation, mild abdominal distention and crampy abdominal pain.

Diverticular disease, inflammatory bowel diseases, schwannomas, teratoma, endometrioma, cystadenoma and colonic lipoma among others can present or be classified as benign obstructive lesions of the colon [12,13]. While intussusception constitutes a common cause for intermittent obstructive symptoms in the pediatric population, its incidence in adults constitutes less than 1% of this population [8,9]. In fact, intussusception raises the suspicion of the presence of a lesion as a lead point, whether benign or malignant [15]. The most common benign non-epithelial tumors of the large intestine are lipomas, with a peak incidence occurring during the 50th and 60th decades [1,5]. Indeed, a study of a large series of autopsies showed an incidence rate of 0.3-0.5% of these adipose neoplasms, located mostly in the sub-mucosal plane followed by the sub-serosal plane [2,3]. These adipose neoplasms are most commonly found in the right colon and cecum [6,16]. Lipomas rarely cause obstruction and their symptoms are chronic, indolent and can be either constant or intermittent [6]. Symptoms are only found in 6% of patients [16]. Also, most colonic lipomas are diagnosed incidentally either on imagery or on routine colonoscopy [2]. Even though our sample comprises and small population size thus does not have statistical power, it is interesting to note that contrary to the literature, the age group mostly affected in our cases ranged between 70's and 80's. Moreover, the location of the tumors was equally

distributed between left and right side of the colon. Finally, the same pathological features were shared between our sample and the one described in the literature.

Large bowel obstruction is characterized on imaging by distention of the colon proximal to the obstruction and collapse distal to it [5,6]. The colon is considered dilated if its diameter surpasses 6cm while the diameter should exceed 9cm for the cecum to be considered dilated, with a high risk of perforation with a diameter between 12 and 15cm [2]. The best imaging modality to diagnose LBO is CT scan with contrast as it is able not only to diagnose and localize the obstruction but also helps in identifying the cause of this obstruction and whether it is partial or complete [6,16]. It can also identify possible complications such as ischemia or perforation [6]. Supine and standing plain radiographs can also be helpful in the diagnosis and the follow up of LBO [2]. In all our cases, CT scan with intravenous contrast was used for diagnosis and helped identify the location of the obstruction as well as rule out complications like perforation.

Although rare, colonic lipomas and other benign conditions should not be excluded from the differential diagnosis when diagnosing a patient with intermittent or constant obstructive symptoms, especially when the workup and imaging are not conclusive for malignancy [10]. Endoscopy plays an important role in this evaluation of colonic obstruction especially if the etiology is related to volvulus, or low laying rectal tumor where it can also play a therapeutic role [17]. It harbors a risk factor for perforation; the risk remains low (less than 1%). Thus, it is outweighed by its high ability to provide a proper diagnosis before any further interventions can be planned, especially since further steps in management could include a surgical intervention [17]. For instance, Colonoscopy could show a sub-mucosal mass covered by normal mucosa in the case of a colonic lipoma [2]. In our cases, we opted to go for surgery directly without doing a colonoscopy. This decision was taken due to absence of malignant features on CT, severe proximal dilation, obstructive nature of the lesions and the patient preference not to perform colonoscopy due to the anticipated risk of perforation.

Treatment of large bowel obstruction largely depends on the presentation and cause of the obstruction [3]. Indeed, management of all cases of LBO has to start with resuscitation of the patient, correction of any electrolyte

imbalances, stopping of parenteral nutrition and the use of antibiotics to cover gram negative bacteria and anaerobes [3-5]. The use of a nasogastric tube for decompression, which is the first line in management of small bowel obstruction, is debatable in the case of LBO [3,5]. In the case of evidence of incompetent ileocecal valve and small bowel dilation accompanied with vomiting, the use of a nasogastric tube is considered necessary to decompress the bowels and relieve the symptoms [3]. On the other hand, a competent ileocecal valve would prevent the dilation of the small bowels thus decompression through a nasogastric tube would not be possible or helpful.

The surgical approach remains the most preferable treatment available for obstructive benign lesions [2]. The type of the surgical intervention depends on the size, type and location of the benign lesion [1]. Suspicion or evidence of bowel ischemia, closed loop obstruction, perforation or volvulus are considered surgical emergencies. Indeed, emergent laparotomy would be required for resection of the obstructed/perforated bowel segment with re-anastomosis of the bowels. All cases in our study were surgically treated. Laparoscopic resection was used in one case of a right-sided lesion and another on the left side both with a relatively small size (less than 4cm). Open resection was adopted in the remaining two cases. Open approach was adopted due to relatively large size of the lesion (more than 4cm). In all cases, small bowel dilation was more prominent when the lesion was located on the right side signaling an incompetent ileocecal valve. In all cases we manage to re-anastomosis the bowel using a latero-lateral approach. This approach helps in overcoming the problem caused by proximal colonic or ileal dilation, thus minimizing tension on the anastomosis and overcoming the diameter discrepancy of the lumen of colon or the small bowel [2].

Finally, LBO is a condition with high morbidity and mortality [1,5]. It usually affects friable patients. Benign etiologies can be the cause of the obstruction [5,6]. Patient affected by this condition should be managed in the most systematic and effective way in order to prevent any adverse event and optimize their outcome. Thus, and based on our experience and an extensive review of the available literature, we would suggest the following algorithm as a way and road map in the management of any obstructive colon presented to the emergency department (Figure 2).

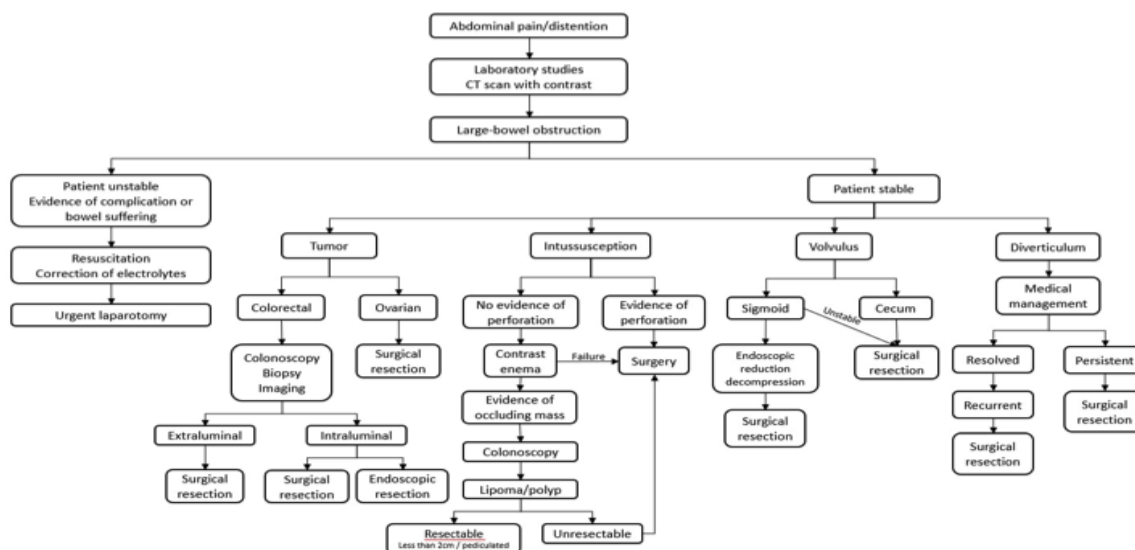


Figure 2: Algorithm for management of LBO

Conclusion

To conclude, this study lay the foundation for a large study on the lebanese population in order to truly estimate the percentage of benign conditions causing large bowel obstruction. In addition, a future retrospective study which would cover a more remote area and peripheral hospitals would offer a great addition to the literature and would be more representative of the lebanese population since it would cover different socioeconomic classes of patients. Finally, this case series offers a good way to manage cases of LBO once they present to the emergency department thus reducing mortality and morbidity of these conditions.

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