

# CLINICAL CASE REPORT

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## Colonic intussusception caused by colonic lipoma: a case report

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**Key words:** colonic lipoma; intussusception.

**Summary.** Intussusception is a pediatric condition that rarely presents in adults. Colonic lipomas 4 cm and more in diameter can cause colonic intussusception leading to emergency operation. Surgical resection of the involved segment must be the procedure of choice. We report a case of colonic intussusception caused by colonic lipoma in an adult. The patient underwent operation, and histopathological examination of the specimen confirmed the diagnosis of colonic submucosal lipoma.

### Introduction

Lipoma of the large intestine is a rare, fatty benign tumor, with a reported incidence ranging between 0.2% and 4.4% (1). Lipomas of the large intestine represent the third most common benign tumors after hyperplastic and adenomatous polyps (2). The most common site of lipomas in the large intestine is the right hemicolon. They arise from the submucosa in approximately 90% of cases, but occasionally extend into the muscularis propria; up to 10% are subserosal (3). The size of lipomas described in the literature ranges from 2 mm to 30 cm. The majority of patients are between 40 and 70 years of age. Colonic lipomas are more common in women than men (4–6). Multiple lipomas are noted in 10–20% of cases, particularly when a lipoma is found in the cecum (5, 7).

Most colonic lipomas are asymptomatic and need no treatment. Only 25% of patients with colonic lipoma develop symptoms, including bowel obstruction and intussusception (8). Lipomas larger than 4 cm are considered giant and produce symptoms in 75% of cases (9, 10). In this report case, we present a case of a giant colonic lipoma causing ascending–transverse–colonic intussusception and leading to right hemicolectomy.

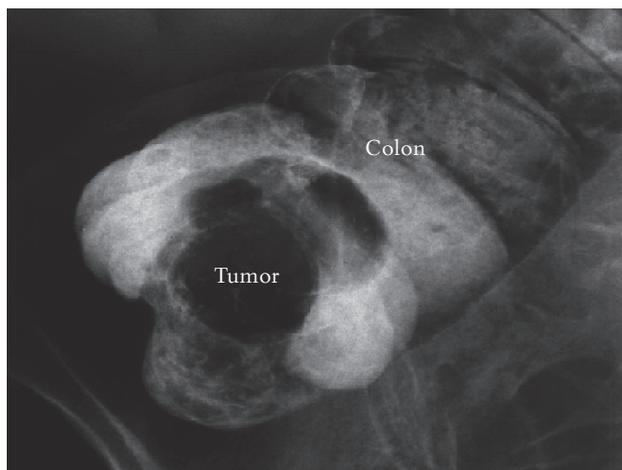
Forty-six cases of colonic intussusception secondary to colonic lipomas have been reported in the English-language literature over the past 45 years. Nine case reports were excluded because lipomas were not described in detail and had poor information about it. Thirty-seven case reports are being analyzed in this paper.

### Case report

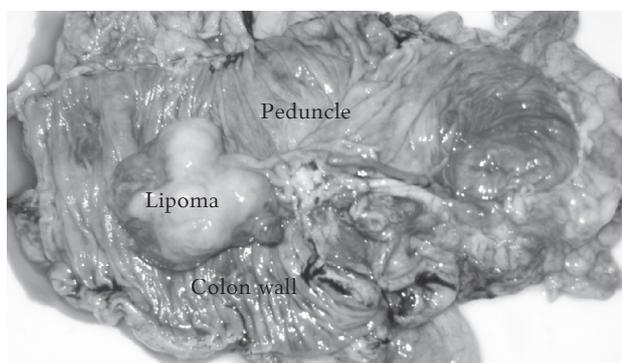
A 53-year-old Lithuanian woman presented to a coloproctologist complaining about intermittent, crampy abdominal pain lasting for about 6 months. There was no history of appetite or weight loss. The findings of physical examination and all routine laboratory tests were within normal limits. Colonoscopy revealed a mobile, very rigid tumor with a smooth surface, 5×5×7 cm in size taking 2/3 of colon ascendens diameter, mucosa with no lesions, most like as lipoma or leiomyoma. The surgical procedure was planned electively, but the patient was admitted to the Department of Surgery because of crampy abdominal pain. Double-contrast barium enema examination revealed a colo-colonic intussusception in the middle part of the transverse colon, which went up to the hepatic flexure during the examination. Intussuscepted tumor 5×5 cm in size was seen in the bowel lumen (Fig. 1). Abdominal ultrasound before the operation also showed the tumor in the lumen of the bowel near to the hepatic flexure. The patient underwent operation; elongated mass in the ascending colon, which had telescoped into the transverse colon causing colo-colonic intussusception about 18 cm long, was found. Right hemicolectomy was performed. The resected specimen was a yellowish, oval, and broader-based homogeneous tumor, 5×5×7 cm in size, rising from the submucosal layer of the colonic wall (Fig. 2). Microscopic examination of the specimen showed that the ascending colon tumor was composed of mature fat cells, focal ulceration, and necrosis of the overlying colonic mucosa, consistent with the submucosal lipoma.

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**Fig. 1.** Intussuscepted colonic lipoma  
A double-contrast barium revealed a colo-colonic intussusception with tumor in the bowel lumen.



**Fig. 2.** Resected segment of the colon  
Resected specimen showing fatty submucosal lesion with peduncle 5×5×7 cm in size.

## Discussion

**Incidence of colonic lipomas.** Lipomas occur throughout the intestinal tract, from the hypopharynx to the rectum, with the highest incidence in the colon, where lipoma is the commonest benign neoplasm after adenomata. The incidence of lipomas relative to all polypoid lesions of the large intestine is reported to range from 0.035% to 4.4% (7). Lipomas in the intestinal tract are still relatively rare, however, being present in only 0.2% of a large autopsy series of 60 000 cases reported in 1955 (11).

**Colonic intussusception in adults.** Intussusception is much more common in children than adults. However, unlike children where most cases are idiopathic, intussusception in adults has an identifiable etiology in 90% of cases, with tumors being the most common lead points. About 57% of colonic lesions are benign and 43–63% are malignant (12, 13). The lipoma is the most common benign tumor of the colon, which causes colonic intussusception in adults (14), but very rare.

**Sex and age.** The median age of the analyzed patients with intussuscepted colonic lipoma was 48 years (range from 36 to 82 years with a mean of  $50 \pm 10.3$  years). There were 15 males and 22 females.

**Clinical presentation of colonic lipoma before intussusception.** In general, colonic lipomas are silent. Most of these tumors are usually detected either by chance during the investigation of symptoms apparently deriving from the large bowel (colonoscopy or laparotomy) or are found in a large-bowel specimen removed for some other reason. Only 25% of patients with colonic lipoma develop symptoms. Symptomatic colonic lipomas, although unusual, continue to present difficulties in the preoperative differential diagnosis between malignant and benign colonic neoplasm (4, 5). Malignant colonic neoplasms and colonic lipomas present in similar age groups and may have similar symptoms. Size of the lipoma is a predictor of symptomatology. Lipomas larger than 4 cm are considered giant and produce symptoms in 75% of cases (9, 10). We found that abdominal pain was the main symptom reported by all patients with colonic lipoma before intussusception. Abdominal pain ranged from mild intermittent colicky abdominal pain to severe abdominal cramping followed by spontaneous improvement. Colonic lipoma in the part of patients presented with recurrent episodes of diarrhea or constipation, nausea, and vomiting. Blood in the stools was noticed in 8 patients (Table 1). After intussusception, symptoms are specific to intussusception but not to lipoma. Duration of the symptoms before intussusception ranges from 1 day to 7 years. Lipomas larger than 2 cm in the greatest diameter can cause bowel obstruction without intussusception.

**Location of lipoma in the colon.** As for its location, the most typical site for colonic lipoma is the right hemicolon (29; 79%), of these in the cecum 19%, ascending colon (38%), transvers colon (22%). Around 13% of lipomas locate in the descending colon and 8% in the sigmoid colon.

**Length of the intussuscepted segment.** Length of the intussuscepted segment of the colon is sum-

**Table 1.** Clinical presentation of the colonic lipoma before intussusception (N=37)

Symptoms (Ref. 2, 5, 7–9, 17, 31–54)	Number of patients, N (%)
Abdominal pain	37 (100)
Episodes of diarrhea	12 (32)
Hematochezia, rectal bleeding	8 (22)
Constipation	5 (13)
Nausea	5 (13)
Vomiting	4 (11)
Palpable mass	4 (11)
Mass protruding through the anus	3 (8)
Tenesmus	1 (3)

Table 2. Length of the intussuscepted colonic segment (N=37)

Intussuscepted segment (Ref. 2, 5, 7–9, 17, 31–54)	Number of patients N (%)
Cecum-ascendens	4 (11)
Cecum-sigma	1 (2.6)
Cecum-transversum	2 (5.4)
Ascendens-ascendens	10 (27)
Ascendens-transversum	4 (11)
Transversum-transversum	8 (21.6)
Descendens-descendens	2 (5.4)
Descendens-sigma	3 (8)
Sigma-rectum	2 (5.4)
Sigma-descendens	1 (2.6)

marized in Table 2. Most of the colonic intussusceptions limit within the one segment of the colon: ascendens, transversum, descendens (overall 54%). Interesting, one case report described retrograde intussusception, when the sigmoid colon intussuscepted in the descending colon.

**Preoperative diagnostic.** Recent reports in the literature have suggested that abdominal CT scanning is the preferred noninvasive radiologic modality for diagnosing intussusception from colonic lipomas (5, 7). CT characteristics of lipoma include a spherical or ovoid shape; smooth, sharply demarcated margins with thin fibrous septa; and homogeneous fatty density with CT values between –40 and –120 Hounsfield units (13). If prominent fibrous septa and nodularity are evident, the most imperative differential diagnosis is a well-differentiated liposarcoma, despite a few reports of gastrointestinal liposarcomas in the literature (15, 16). Overall, CT is an excellent method to diagnose giant colonic lipomas (17). The ultrasonic features of this benign tumor are rather characteristic. Magnetic resonance imaging has been recently used successfully, but further evaluation is still necessary (18).

Colonoscopy may allow direct visualization of the submucosal lipoma, which appears as a mass covered by normal mucosa, and some of endoscopic features have been described including “tenting sign” (grasping the overlying mucosa), “cushion sign” (flattening and restoration of the shape of lipoma), and the “naked fat sign” (extrusion of fat after biopsy of the colonic mucosa) (3, 6, 7, 19). Colonoscopic biopsy is usually performed to confirm the nature of the tumor. However, inadequate tissue samples often indicate nonspecific colitis because of adjacent mucosal inflammation produced by the lipoma (20).

Barium-enema studies are not diagnostic for lipoma, but for intussusception is a good means (7). Despite recent diagnostic innovations, it has been reported that the total preoperative diagnostic accuracy is only about 62%.

Table 3. Treatment options of the intussusception caused by colonic lipoma (N=37)

Treatment options (Ref. 2, 5, 7–9, 17, 31–54)	Number of patients N (%)
Right hemicolectomy	17 (46)
Right hemicolectomy laparoscopically, reanastomosis extracorporeally	2 (5.4)
Segmental resection	10 (27)
Left hemicolectomy	2 (5.4)
Left hemicolectomy with Hartman procedure	2 (5.4)
Subtotal colectomy	2 (5.4)
Endoscopic resection of the mass	2 (5.4)

**Treatment options.** Many therapeutic interventions have been tried for the treatment of colonic lipoma, which vary from hemicolectomy to segmental resection and local excision, according to the correct preoperative diagnosis and intraoperative findings (Table 3). The presence of intussusception leads to an emergency operation. In such situation, we recommend two treatment options:

1) Colonic lipoma was diagnosed before intussusception. Then we recommend resection procedure. Segmental resection is an adequate treatment. The half of intussusception occur within one anatomical segment of the colon (54%) (Table 2). Other half of patients must undergo more or less extensive resection of the colon depending on the location of the tumor and length of the intussuscepted segment. This finding can help surgeons optimize surgical treatment for intussusception.

Although colonic lipoma is a benign tumor, intraoperative frozen sections are required to ensure negative surgical margins, which can guide the choice of surgical approach. Patients with malignant disease may undergo major surgery, including resection of the involved segment and regional lymph nodes, while patients with colonic lipoma may undergo simple resection. Overall, intraoperative pathology is the most important examination for doubtful cases of colonic lipoma, which can also assist in guiding the exact diagnosis and treatment planning (21). The minilaparotomy approach for removal of a large colonic lipoma diagnosed before operation has been described to have many advantages over conventional laparotomy (22).

2) Lipoma before intussusception was not diagnosed and intraoperative frozen section cannot be performed. In most cases, the histological diagnosis is arrived at only after excision of the tumor. We recommend performing a more or less extensive resection of the colon depending on the location of the tumor. Two-thirds of colonic intussusceptions had resulted from primary adenocarcinoma (13); therefore, not diagnosed lipoma before operation must be interpreted as for cancer.

As far as our patient was concerned, right hemicolectomy would have been performed instead of local resection, if we had not taken a frozen section intraoperatively and ascendens-transversum intussusception was not restored.

Because lipomas show no malignant degeneration, small ones (less than 2 cm) may not need additional treatment if the biopsy unequivocally shows lipoma. These asymptomatic lesions can be observed.

**Endoscopic removal.** Some studies have demonstrated that removal of lipomas  $\geq 2$  cm in diameter is associated with a greater risk of perforation (15, 23). On the contrary, some authors have reported that large pedunculated and large sessile lesions can be removed without perforation (24, 25) used endoclipping or endoloop ligation (26). However, based on our case and the published literature, we think that surgical removal should be the preferred choice for the intussuscepted colonic lipoma. It is therefore recommended that tumors larger than 2 cm be resected surgically (27).

**Laparoscopic removal.** The latest published data referring to the comparison of laparoscopic versus open colorectal resection for cancer (28, 29) indicate that laparoscopic resection of colonic lipomas should become the gold standard method for removal of lipomas greater than 2 cm in diameter, even in cases where the malignancy of the tumor could not be excluded preoperatively. Laparoscopic-assisted resection of a giant sigmoid lipoma under colonoscopic guidance has been reported as a safe method (30).

**Size of lipomas and intussusception.** The size of lipomas, which caused intussusception, ranged from 4 to 16.0 cm in greatest diameter, with an average of 7.0 cm. None of the analyzed patients with intussuscepted colonic lipoma had lipoma less than 4 cm in size. The size of lipoma is an essential factor leading to colonic intussusception. In our opinion, when colonic lipoma is diagnosed 4 cm and more in the greatest diameter, the patient must be operated before intussusception occurs.

## Storosios žarnos invaginacija, sukelta storosios žarnos lipomos: klinikinis atvejis

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**Raktažodžiai:** storosios žarnos lipoma, invaginacija.

**Santrauka.** Žarnų invaginacija dažniau pasitaiko vaikams. Suaugusiems ši patologija nustatoma retai. 4 cm ir didesnio diametro storosios žarnos lipomos gali sukelti storosios žarnos invaginaciją, todėl ligonis turi būti skubiai operuojamas, atliekant į invaginatą įtraukto storosios žarnos segmento rezekciją. Mes pateikiame suaugusio žmogaus storosios žarnos invaginacijos, sukeltos storosios žarnos lipomos, klinikinį atvejį. Ligonis buvo operuotas, o histopatologinis operacinės medžiagos tyrimas patvirtino pogleivio storosios žarnos lipomos diagnozę.

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