



# Large Bowel Lipoma, a Point of Start of Bowel Intussusception. Case Report

Lipoma de intestino grueso, punto de inicio de invaginación intestinal. Presentación de un caso

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## Palabras clave (DeCS)

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## Summary

Lipomas are the second cause of benign neoplasms of the colon. They are usually asymptomatic, but can manifest as cases of ulcers that have hemorrhages or iron deficiency anemia. They can also manifest as bowel obstruction through intussusception. This last condition is rare in adults, representing 1% of the causes of bowel obstruction in this group. Of the cases that occur, at least 90% are secondary to a condition that serves as the head of the intussusception or starting point. We present the case of a 64-year-old man with abdominal pain, in whom imaging studies established the diagnosis of ileocolic intussusception in relation to a possible colonic lipoma. He underwent surgery where a hemicolectomy and ileo-transverse anastomosis were performed. The histopathological study confirmed the finding of a colonic lipoma as the starting point of the intussusception.

## Resumen

Los lipomas constituyen la segunda causa de neoplasias benignas del colon, suelen ser asintomáticos, pero pueden manifestarse con úlceras que llevan a hemorragias o anemia ferropénica; también pueden manifestarse como obstrucción intestinal a través de una invaginación intestinal. Esta última condición rara en adultos, representa el 1% de las causas de obstrucción intestinal en este grupo de edad; al menos el 90% son secundarios a una condición que sirve como cabeza de invaginación o punto de partida. Se presenta el caso de un hombre de 64 años de edad con dolor abdominal, en quien los estudios de imagen establecieron el diagnóstico de invaginación ileocólica ocasionada por un lipoma colónico. Se le practicó una hemicolectomía y anastomosis ileotransversa. El estudio histopatológico confirmó el hallazgo de un lipoma colónico como punto de inicio de una invaginación.

## Introduction

Intussusception represents 1% of the causes of intestinal obstruction in adults. At least 90% of the cases are secondary to a condition that serves as the head of intussusception, such as carcinomas, polyps, Meckel's diverticula, colonic diverticula and benign neoplasms, which are usually evident at the time of surgery (1).

Colon lipomas are the second cause of benign neoplasms of the colon (2). The cases of invagination caused by these have been related to their size, usually greater than 2 cm. Its most frequent locations are the cecum and the ascending colon. In most cases, radiologists can easily make the correct diagnosis of intussusception by observing the typical image of the intestine inside the intestine on abdominal computed tomography (CT), but it is important to differentiate the starting point of the intussusception to determine the appropriate treatment. There is a

case of a lipoma located in the cecum as a cause of ileocolic invagination.

## Clinical case

This is a 64-year-old male patient, with no significant personal or family history, who consults for a clinical picture of approximately 20 days of evolution characterized by colic-type pain located in the epigastrium, which radiates towards the mesogastrium and flanks. In addition, non-quantified weight loss, emesis, and changes in the intestinal pattern, given by soft stools (diarrhea). In an outpatient evaluation for the same symptomatology, a total abdominal ultrasound was performed in which thickening of the intestinal wall in the left hemicolon was identified. At the time of his admission, the abdomen was not distended, peristalsis was positive, soft, depressible, painful muscle defense on general palpation without signs of peritoneal irritation, no masses or organomegaly were palpated; the patient was considered to

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have abdominal pain of etiology to be clarified, management with intravenous fluids was initiated, blood biochemistry and simple CT scan were requested and with abdominal contrast medium as paraclinical studies.

## Imaging

In the simple CT and with contrast medium of total abdomen, an image of fat density of -115 Hounsfield units (UH) with diameters of  $5.0 \times 3.4$  cm was observed, towards the splenic angle of the colon (Figure 1) associated with retraction of the mesenteric fat and secondary displacement from right to left of the intestinal loops. It was visualized enhancement of the intestinal walls after administration of the contrast medium (figure 2), retraction and swirling of the upper mesenteric vessels adjacent to the image in shape of “target” compatible with intussusception (figure 3). The conclusion of the study was: endoluminal lipoma, which acted as probable head of ileocolic invagination.

With the new imaging data, a colonoscopy was performed in which it was observed, immediately after the hepatic angle, a large, hard, polypoid lesion occupying the entire circumference, but it was not possible to determine its proximal insertion site since it was not allowed the passage of the equipment; the peripheral colonic mucosa presented some linear ulcers interspersed with healthy mucosa; they were samples of the lesion.

Given the findings of the colonoscopy: an intestinal stenosis without the possibility of endoscopic treatment, a right hemicolectomy and ileotransverse anastomosis were performed, by open surgery, without complications. Intestinal resection was approximately 20 cm, including from the distal ileum to the proximal third of the transverse colon. An intraluminal mass of approximately  $10 \times 10$  cm was found at the level of the cecum that produced ileocecal invagination, extended to the transverse colon, which was manually reduced; no involvement of the serosa was found, isolated nodes were observed at the level of the right mesocolon. The other intra-abdominal organs had normal aspect.

## Histopathology

In the histopathological study of the samples extracted in the colonoscopy and in the surgery, a benign mesenchymal tumoral lesion was identified, made up of mature-looking adipose cells, with congestion, hemorrhage and areas of ischemic necrosis. In some peripheral areas of the lesion, granulation tissue was observed due to the abundance of blood vessels with prominent endothelium and reactive-looking fibroblasts. It was concluded that it was a colonic lipoma with zones of ischemic necrosis, abscessation foci and bacterial accumulations (figures 4 and 5).



Figure 1. CT of abdomen in arterial phase. In the splenic angle of the colon lesion with -115 UH of densitometric values associated with retraction of mesenteric fat (arrow).

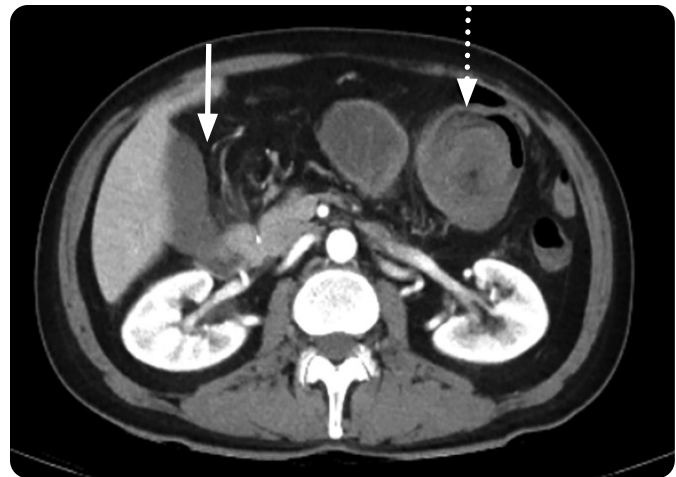


Figure 2. Abdominal axial CT in portal phase. Retraction and swirling of the upper mesenteric vessels (arrow). Target image for intussusception (discontinuous arrow).



Figure 3. Abdominal axial CT scan. Enhancement of the intestinal walls with the administration of the contrast medium (arrow).



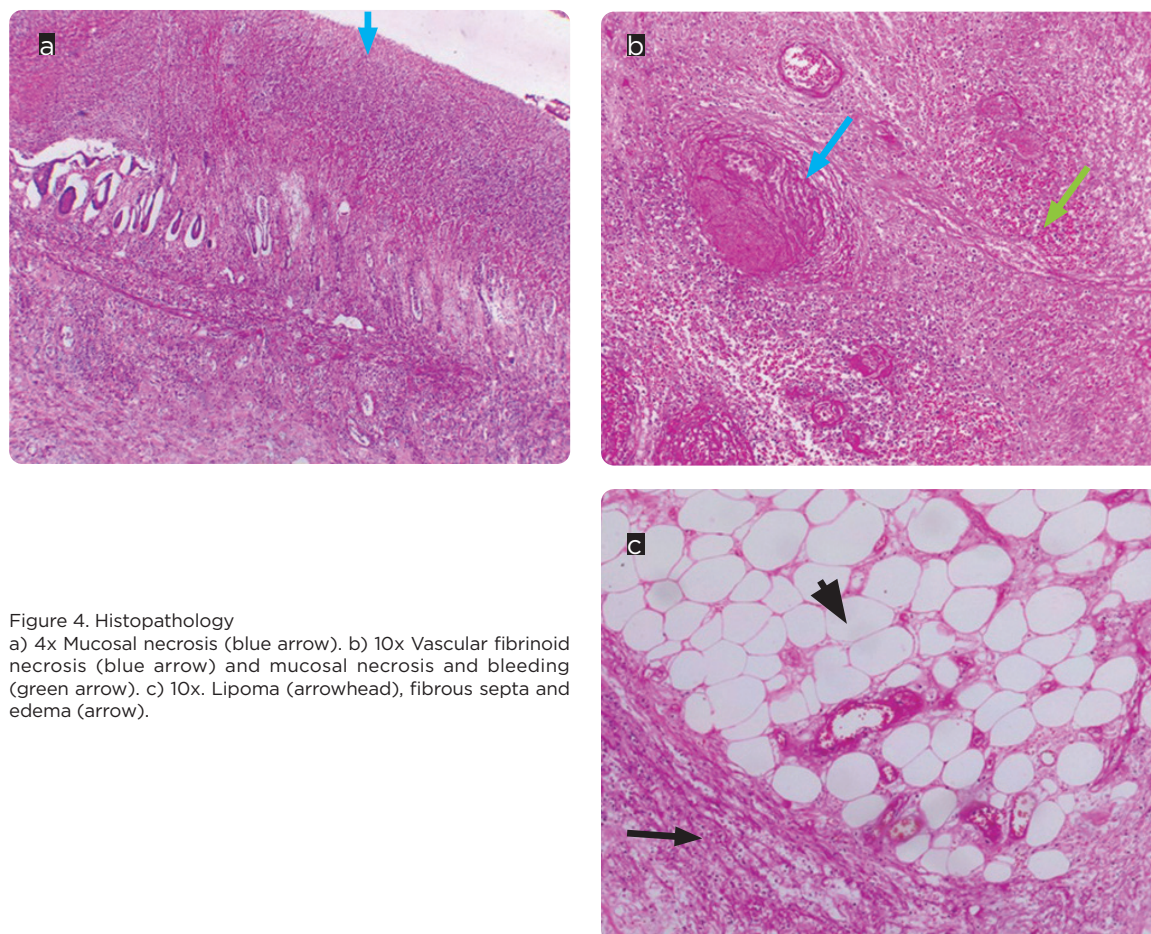


Figure 4. Histopathology

a) 4x Mucosal necrosis (blue arrow). b) 10x Vascular fibrinoid necrosis (blue arrow) and mucosal necrosis and bleeding (green arrow). c) 10x. Lipoma (arrowhead), fibrous septa and edema (arrow).

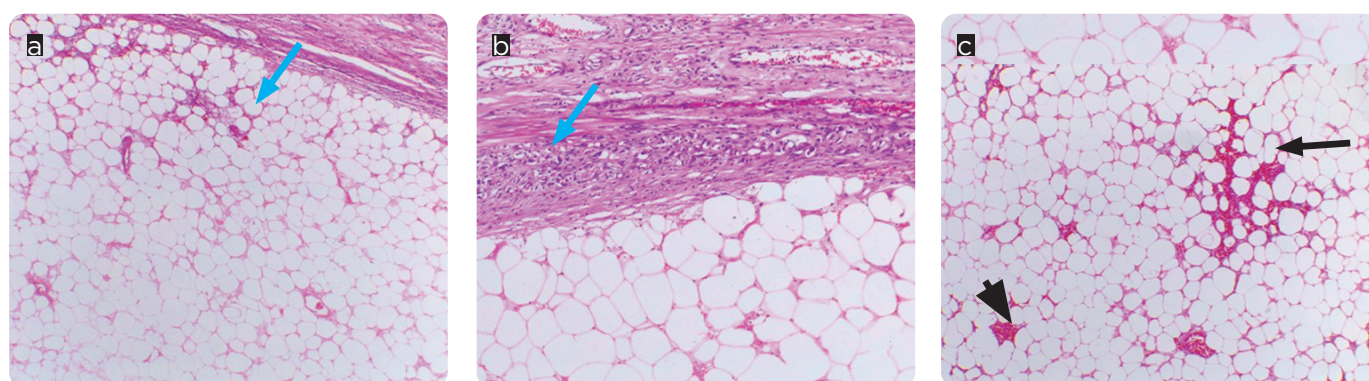


Figure 5. Histopathology

a) 4x Lipoma (blue arrow). b) 4x Lipoma (blue arrow). c) 10x. Lipoma (arrowhead) and granulation tissue (arrow).

## Discussion

Colon lipomas constitute the second benign neoplasm of the colon (2), corresponding to 0.034-4.4% of intestinal neoplasms. Its most frequent locations, in 51-70 % of the cases, are the cecum and the ascending colon (3).

Lipomas are defined as mesenchymal tumors that are composed of slow-growing, mature, lobed adipose tissue with minimal stroma

of connective tissue, located in the submucosa; occasionally, they can extend to the muscular layer of the intestine itself and up to 10% are subserous. Usually, the mucosa is normal, but may show hyperplasia, adenomas, ulcerations, necrosis or polyps. Secondary cellular changes may include hypertrophy, fat necrosis, hyperchromasia and pleomorphism, which, when very extensive, may simulate a liposarcoma; however, this is an extremely rare pathology and for its diagnosis the presence of lipoblasts is required (4, 5).

They are usually asymptomatic, but can manifest themselves with ulcers that lead to hemorrhaging or iron deficiency anemia or intestinal obstruction due to intussusception. The latter have been associated with a size usually greater than 2 cm (6).

Invagination is a rare form of intestinal obstruction in adults that represents 1% of the cases of intestinal obstruction in this population group (1, 7).

In contrast to cases in children, intussusception in adults, in at least 90% of cases, is secondary to a condition that serves as the head of intussusception (8).

It is defined as the introduction of a loop of intestine, with its mesenteric fold (intussusceptum) in the lumen of an adjacent portion of the intestine (intussusciens) as a result of peristalsis. Invaginations are classified according to their location into enteric, ileocolic, ileocecal or colocolonic. In adults it can be subclassified based on the identification or not of a point or head of invagination. Those cases in which the head of invagination is not identified tend to be transitory; however, those in which it exists are usually persistent or recurrent; in some cases they may also be transitory (9).

Although the exact mechanism that precipitates invagination, especially when there is no starting point, is not well understood, this condition has been attributed to dysrhythmic contractions of the colon; in cases where there is an “invagination head” injury, peristalsis acts as a current that pulls the injury backward inducing invagination of one segment of the intestine into another (9). The associated pathological conditions in adults can correspond to lesions such as carcinomas, lipomas, lymphomas, diverticula, and intraluminal adenomatous polyps (8, 10).

The clinical and imaging manifestations may vary depending on the presence or not of an invagination head. The differentiation of these two entities is critical for appropriate treatment and has the potential to reduce the prevalence of unnecessary surgical interventions. In the cases in which there is no head of invagination, it can manifest itself as a vague abdominal pain, with tomographic findings, generally incidental (11).

The cases with an injury that acts as a head of invagination can manifest themselves with atypical clinical findings. Often, there is a previous history of episodic abdominal pain, nausea, and vomiting, symptoms that suggest partial intestinal obstructions. Other manifestations may be related to a neoplastic process, including constipation, weight loss, melena, or a palpable abdominal mass, rather than specific symptoms related to the intussusception itself. The symptoms can be broad due to the variety of causes of invagination (11, 12).

In view of the non-specific clinical manifestations and the suspected intestinal obstruction, patients are usually evaluated with different imaging methods. One of the initial tools, which is available in the great majority of emergency services, is simple abdominal radiography, the findings of which are usually not very specific. It can show a soft-tissue-dense mass in the small bowel loops associated with findings of an intestinal obstruction. No pathological findings are found in 25% of plain abdominal radiographs. Baryta studies can demonstrate the classic sign of the “spring” at the point of invagination; however, these studies are usually not available in the emergency departments and have fallen into disuse for the evaluation of this pathology (13).

Both ultrasound and CT are more sensitive and specific studies in these cases. Some studies have shown that ultrasound has a sensitivity

for detecting invagination of 97.9% and a specificity of 97.8%; its positive predictive value is 86.6% and the negative predictive value is 99.7% in the pediatric population (14). In adults the figures have been shown to be similar; however, the evaluation by this modality is usually limited due to the interposition of intestinal gas content and abdominal fat, so the CT is the study of choice for these patients, with a diagnosis of up to 100 % (15). The findings in the ultrasound are usually the sign of the doughnut or target on the cross-sections and the sign of the pseudokidney in the longitudinal cuts (13).

In CT, intussusception appears as an abnormal bowel mass similar to a target image, in cross sections with a larger diameter than the normal bowel which may be associated with proximal bowel obstruction, mainly in cases where there are lesions in the intestinal lumen. Anatomical structures should always be evaluated, such as the intestinal wall looking for abnormal thickenings, mesenteric fat: alteration in density secondary to the obstruction and mesenteric vessels that change position sometimes causing “signs of the whirlpool. Identifying a mass on CT can serve as a reliable radiological indicator of an invagination which is often a challenge due to the complex appearance of both the intestinal wall edema and the starting point mass, the difficulty increases depending on the degree of involvement of the mesenteric vessels and the thickening of the intestinal loops, the latter making it complex to differentiate a mass from an inflammation (9).

In CT, particularly colonic lipomas, can be observed as well circumscribed intraluminal masses, with very low attenuation, which have a fat component -80 to -120 UH; this method is particularly useful in the identification of large colonic lipomas that cause abdominal pain or invagination (6).

Low attenuation of lipomas can usually be detected in the TC, but as Buetow and collaborators (16) reported in his case series of 10 intussuscepted colon lipomas - of the which nine showed some loss of fat density, and one of them showed a total attenuation of the soft tissues-, the colonic mass may have the appearance of a malignant tumor. Small bowel lipomas with complicated invagination may then not have the classic features on CT (17).

## Conclusion

Intussusception is a rare cause of intestinal obstruction in adults; however, it should be considered as a differential diagnosis when addressing these patients. Most cases in this group of patients are due to malignant lesions, and in a smaller percentage to benign lesions, such as colonic lipoma. Invagination occurs especially when dealing with large lesions. Diagnostic imaging studies such as ultrasound and mainly simple CT scans of the abdomen and with contrast medium are essential to adequately evaluate the anatomy and characteristics of the lesion before surgical management, and to achieve an adequate planning and approach.

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