

# Intestinal intussusception in adults: a rare form of presentation of adenocarcinoma of the cecum

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## ABSTRACT

Intestinal intussusception accounts for only 5% of all causes of mechanical intestinal occlusion in adults. The most frequent is the enteric type, followed by ileocolic and colocolic types.

In adult patients, the main cause is a malignant tumor in 65% of cases, so surgical resection should be the treatment of choice. It usually presents with non-specific symptoms and computed tomography is the most sensitive diagnostic modality. Early diagnosis and timely treatment are important to avoid complications associated with free evolution.

We present a 93-year-old female patient with diffuse, intermittent colicky abdominal pain, diarrhea, weight loss, and a palpable mass in the epigastrium of three months' duration. The abdominopelvic computed tomography showed an extensive rounded mass with vascular structures and air content inside compatible with colocolic intussusception. A laparotomy was performed, revealing intussusception of the cecum up to the distal third of the transverse colon with a large cecal tumor as the head of the invagination. The patient was treated with a right hemicolectomy with oncological criteria and primary anastomosis, with good evolution.

**Keywords:** *intestinal intussusception, colocolic invagination, cecal carcinoma, adults*

## INTRODUCTION

Intussusception or intestinal invagination accounts for only 5% of the causes of intestinal obstruction in adults and of these, 70-90% require surgical treatment. The most frequent type of intussusception is enteric (small intestine in small intestine), followed by ileocolic (small intestine in colon) and colocolic (colon in colon). The causes of this entity are both benign and malignant. In adults the main etiology is a malignant tumor in 65% of cases, so resection treatment is the choice.

Intussusception usually presents with nonspecific symptoms or some associated with obstruction such as abdominal pain,

distension, nausea, vomiting, bleeding, or change in bowel habits.

Computed tomography (CT) is the most sensitive diagnostic modality, although it can present false negatives, so associating other complementary methods such as ultrasound and endoscopy increases diagnostic sensitivity. Early diagnosis and timely treatment are important to avoid complications associated to free evolution.

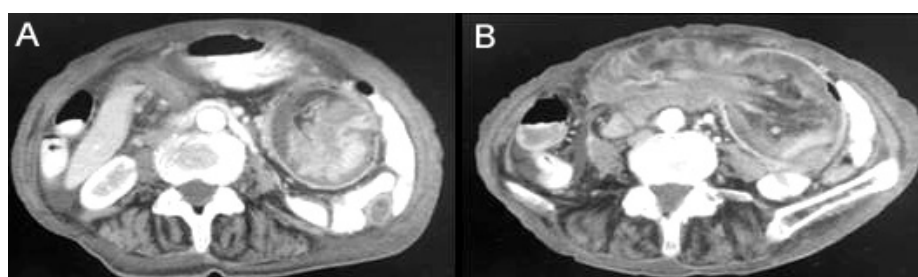
The aim of this article is to present a rare case of colocolic intussusception in an adult patient with atypical symptoms.

## CASE

A 93-year-old female patient came to the emergency room with diffuse, intermittent, colicky abdominal pain that had been developing for three months, with exacerbation in the last seven days, accompanied by frequent liquid stools and weight loss of more than 10 kg. Her personal history included heart failure, cholecystectomy (right paramedian incision), and two cesarean sections (Pfannenstiel-type incision).

Physical examination revealed an acceptable general condition, with marked nutritional repercussions, a soft abdomen with generalized abdominal pain associated with a palpable mass of approximately 15 cm in the upper abdomen, hard and partially mobile.

A contrast-enhanced CT scan of the abdomen and pelvis showed a rounded mass of 10 cm with air and vascular structures inside, compatible with colocolic intestinal invagination (Figs. 1 and 2). In addition, bilateral pleural effusion and moderate multicompartmental free fluid were observed, without air-fluid levels.



**Figure 1.** Contrast-enhanced CT scan. Axial sections showing colocolic invagination. A. "Target" sign. B. "Sausage-shaped" image showing fat with mesenteric vessels within the intestinal lumen.

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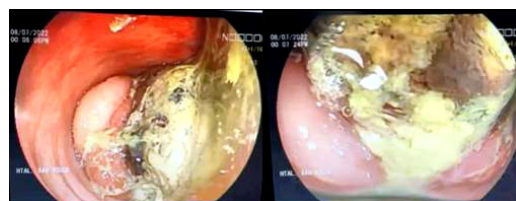
**Figure 2.** Contrast-enhanced CT scan showing colocolic invagination. **A.** Sagittal section: "target" sign. **B.** Coronal section: "sausage-shaped" image.

Colonoscopy progressed to the left transverse colon, where an intestinal invagination was observed at the expense of a vegetative lesion, necrotic in segments, ulcerated and friable on contact with the endoscope, which occupied 100% of the lumen and prevented progression (Fig. 3). Disinvagination maneuvers were not effective.

Exploratory laparotomy revealed a mobile intussusception of the cecum reaching the distal transverse colon (Fig. 4 A). After intensive reduction maneuvers a bulky tumor was identified in the cecum that acted as the lead point of the invagination (Fig. 4 B and C). An oncological extended right colectomy with primary anastomosis was performed (Fig. 5).

The patient evolved favorably with tolerance to the diet on the 4th postoperative day and did not present early complications.

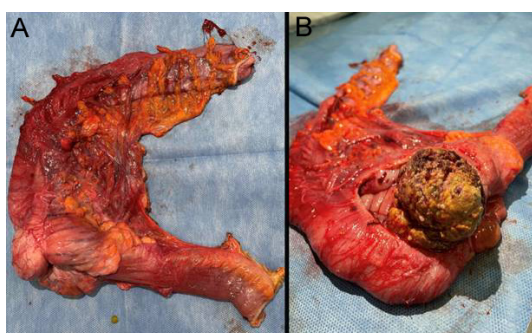
The pathological study reported poorly differentiated colon adenocarcinoma, and negative surgical margins with 18 lymph nodes free of malignancy. Stage pT4a pN0 pM0.



**Figure 3.** Colonoscopy reveals a partially necrotic mass in the left transverse colon occupying 100% of the lumen and preventing progression of the endoscope.



**Figure 4.** Exploratory laparotomy. **A.** Colocolic intussusception reaching the distal transverse colon. **B.** After reduction maneuvers, the terminal ileum with congestive serosa, the cecal tumor and the ascending colon with ischemic signs are observed. **C.** The forceps indicate the cecal tumor, lead point of the invagination.



**Figure 5.** Surgical specimen. **A.** Extended right colectomy. **B.** Open specimen showing a large cecal tumor, invagination lead point.

## DISCUSSION

First reported in 1674 by Barbet of Amsterdam and introduced in 1789 by John Hunter as "introsusception," intussusception is a rare form of adult intestinal obstruction, defined as the telescopic extension of a proximal segment of the intestinal tract, called the intussusceptum, into the lumen of the adjacent distal segment, called the intussusciens.<sup>1</sup> About 5% of cases of intussusception occur in adults, in whom it accounts for 1-5% of the causes of intestinal ob-

struction, with an incidence of 2-3 cases per 1,000,000 persons/year.<sup>2</sup> Some series report a slight predominance in women of 1.85:1.<sup>2</sup>

While in children intussusception is considered a primary and benign condition, in 90% of adults it is secondary to a triggering pathological or structural condition that acts as lead point of intussusception and is frequently diagnosed intraoperatively. These may be benign neoplasms such as polyps or lipomas, or malignant ones such as adenocarcinomas, lymphomas or metastases.

Intussusceptions frequently occur between a mobile free bowel segment and an adjacent fixed segment. They are caused by an altered peristaltic movement of the proximal bowel that invaginates into the distal intestinal lumen with its mesentery. This may result in obstruction or compression of the intestinal vasculature, which may cause ischemia, infarction, or perforation.

The most frequent invagination is located in the small intestine and is called entero-enteric (49.5%), followed by ileocolic (29.1%) and colocolic (19.9%). In adults, the most frequent etiology is a benign tumor (37.4%), followed by a malignant tumor (32.9%), and to a lesser extent, idiopathic (15.1%).<sup>3-5</sup>

In colonic invaginations, the cause is a malignant tumor in 46.5% of cases, with colonic adenocarcinoma being the most common (78.8%), followed by lymphoma and metastatic tumors. Of the intestinal invaginations that develop in

the colon, 70% affect the right colon, while invaginations of the left colon are rare. Adenocarcinoma of the transverse colon itself accounts for only 2.6% of all intestinal invaginations in adults and 10% of colonic invaginations.<sup>6</sup>

Intestinal intussusception in adults causes nonspecific symptoms such as abdominal pain, bloating, nausea, vomiting, constipation, as well as intestinal bleeding and changes in bowel habits. They may present surreptitiously and chronically for weeks or months, or have an acute onset. Most of the series reviewed report abdominal pain as the main symptom, present in 71-90% of cases. It may be periodic or intermittent, associated with obstructive symptoms, vomiting and proctorrhagia. Diarrhea occurs in 20.1% of cases<sup>4,5</sup> which makes the case presented even rarer. The classic triad observed in pediatric patients, characterized by abdominal pain, bloody stools and a palpable abdominal mass is rarely documented; the latter sign is present in 24-42% of adults.<sup>7,8</sup>

Plain abdominal radiographs are usually the first diagnostic tool, since in most cases obstructive symptoms dominate the clinical picture. These radiographs often show signs of intestinal obstruction and can provide information about the site of the obstruction. Ultrasonography can detect typical features of intestinal intussusception such as the target or doughnut sign on a transverse image and the pseudo-kidney sign on the longitudinal image. However, obesity and the presence of air in distended intestinal loops limit image quality and diagnostic accuracy.<sup>9</sup>

Abdominopelvic CT scan with oral contrast is the technique of choice in the evaluation of patients with acute obstructive abdomen, and can identify the etiology. Sensitivity is estimated at 58-100% and specificity at 57-71% in the recognition of intestinal intussusception,<sup>3</sup> and can define the location and nature of the mass and its relationship to surrounding tissues. There are three images described according to the severity and duration of the process. First, there is the "target" sign, which usually appears in the earliest phase and corresponds to the image of the intussusceptum in the center

and the edematous intussusciens in the outer rings. Second, there is the "sausage-shaped" image, which represents the fat with the mesenteric vessels and the intestinal wall. Finally, there is the presence of a kidney-shaped or bi-lobed mass that develops due to edema, thickening of the intestinal wall and vascular involvement.

Colonoscopy allows the identification of the invagination and its location and a biopsy to be taken if a primary organic lesion is found. However, caution should be exercised with insufflation pressure due to the risk of perforation due to chronic tissue ischemia and vascular compromise.<sup>10</sup>

Given the high frequency of associated malignancy, estimated at 65%, preoperative reduction with barium or air is not indicated due to the associated risks: intraluminal seeding, dissemination of microorganisms and tumor cells, and perforation.<sup>11</sup> Therefore, most cases of invagination in adults require definitive surgical treatment.<sup>2</sup>

However, it is important to rule out the presence of an associated lesion with prior studies and to determine the type, diameter, and length of the invagination, since these are predictors of spontaneous resolution of the process.

## CONCLUSIONS

Intestinal intussusception in adults is a rare but challenging condition for the surgeon, as the nonspecific signs and symptoms, whether acute, subacute or chronic, make preoperative diagnosis difficult, which should, however, be taken into account in all cases of acute abdomen.

It is a complex pathology with multiple therapeutic options, although surgery is the treatment of choice, as it is frequently associated with an organic lesion with a high risk of malignancy.

It is important for surgeons to suspect this diagnosis to avoid complications such as intestinal ischemia, perforation or undiagnosed malignant lesion.

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