



# INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

## COLO-COLIC INVAGINATION IN ADULTS:

*A case report and review of the literature*

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**Abstract:** Acute intestinal intussusception is a rare cause of stomach pain in adults, and its diagnosis typically leads to the discovery of an underlying organic cause. The clinical symptoms are ambiguous and non-specific. The use of computed tomography to provide a positive diagnosis and lead the search for an etiological explanation is a reliable method. After reviewing the literature, we describe a case of colo-colic intussusception in an adult that revealed a well-differentiated lieberkuhnian adenocarcinoma.

**Index Terms - adult intestinal intussusception, lieberkuhnian adenocarcinoma, colon, CT scan.**

### I. Introduction

Intestinal intussusception in adults accounts for 5% of all intussusceptions [1, 11]. The clinical presentation is nonspecific, and the diagnosis is often made during surgery [2]. It may present as an acute occlusive syndrome or as a sub-occlusive syndrome with intermittent abdominal pain. Unlike in children, where intestinal intussusception is idiopathic in 90% of cases, its occurrence in adults should suggest an underlying etiology (present in over 90% of cases) [5]. In adults, CT scans can be used to make a positive diagnosis, determine the topography, and search for an etiology [4, 5].

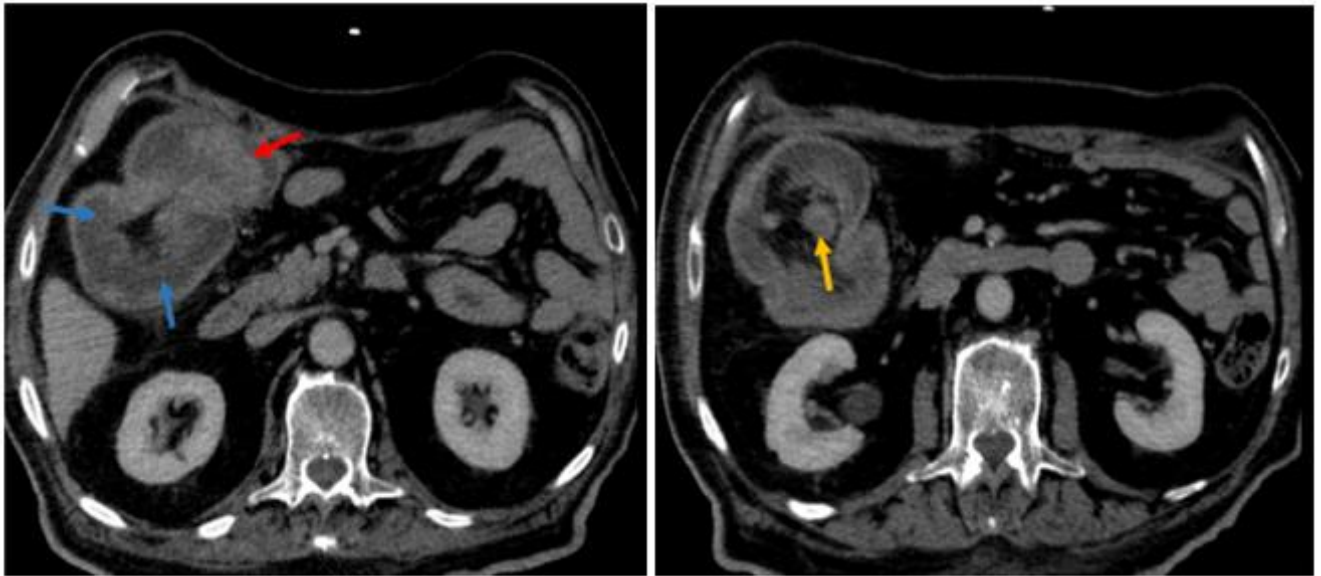
### II. Case report:

We report the case of an 85-year-old man being treated for arterial hypertension who had intermittent abdominal pain for 1 month along with chronic constipation with no additional symptoms. The abdomen was soft on clinical examination, with irritation in the epigastrium and right hypochondrium but no defensiveness. There were no abnormalities noted during the digital rectal examination, and the hernial orifices were free. Abdominal ultrasonography revealed a large subhepatic mass in the transverse section with a cockade-like appearance and a sandwich-like appearance in the longitudinal section, as well as a few adenopathies.

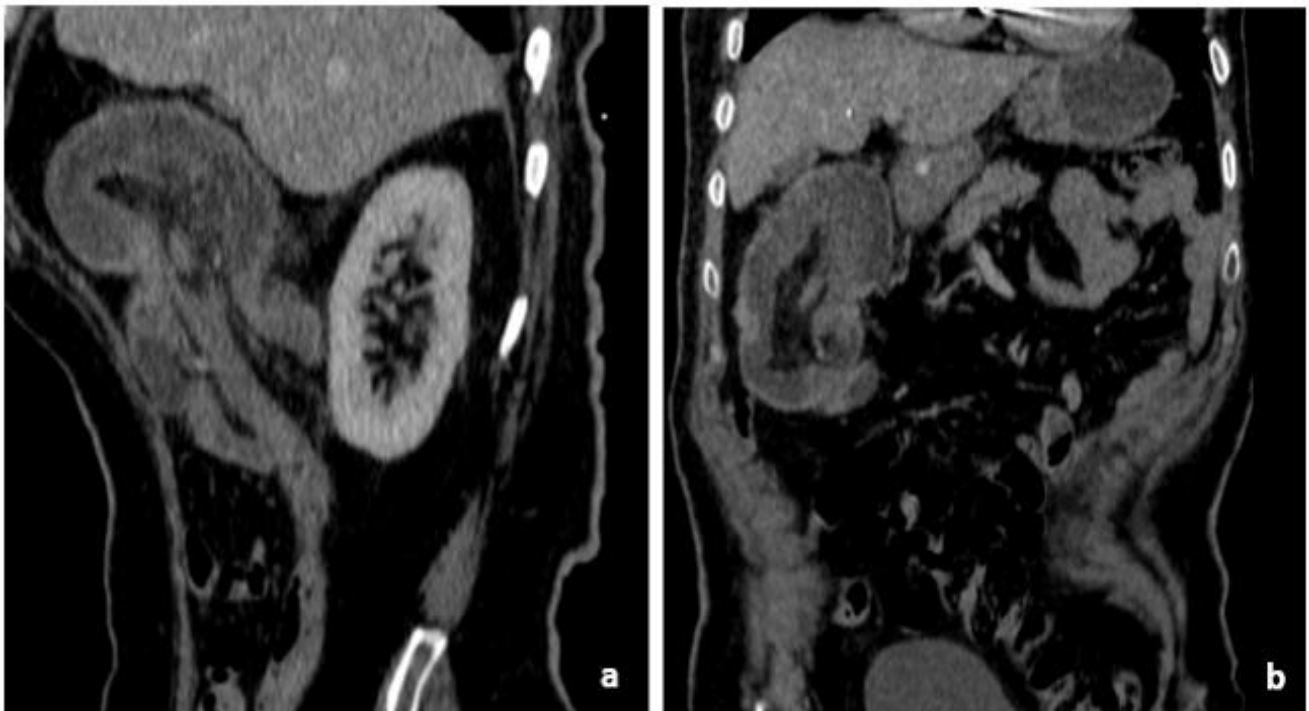
An abdominal CT scan demonstrated colo-colic intussusception at the right colonic angle, as well as considerable submucosal edema and irregular mucosal thickening, enhanced after contrast media injection “**Fig.1 and 2**”. There was no distension of the colon or bowel upstream, and the rest of the abdomen was unremarkable. Colo-colic intussusception was diagnosed as a result of tumoral thickening of the right colonic angle.

The patient was programmed for right hemicolectomy under general anesthesia: premedication with 10 mg of calcium channel blockers 4 hours before the procedure and a hypercaloric diet were instituted. Induction was achieved with 250 gamma of fentanyl, 100 mg of propofol and 50 mg of rocoronium; the maintenance of anesthesia was achieved by gas (sevoflurane) and a minimum alveolar concentration (CAM) of 1.5%. During the procedure, antibiotic prophylaxis with 2g Amoxicillin-clavulanic acid and 500 mg metronidazole was administered and continuous cardiovascular monitoring by invasive arterial pressure and curarization monitoring by bi-spectral index were implemented.

The patient was extubated uneventfully in the recovery room and kept in intensive care for 2 days for clinical-biological monitoring. Post-operative examination was unremarkable. Pathology revealed a well-differentiated lieberkuhnian adenocarcinoma in situ.



**Figure 1: Axial CT scan sections following contrast media injection revealing the cockade appearance, with submucosal edema ( ), tumoral mucosal thickening ( ), and adenopathy within the invaginated mesentery ( ).**



**Figure 2: sagittal (a) and coronal (b) CT scan sections after contrast media injection demonstrate sandwich (a) and pseudo-kidney (b) appearances.**

### III. Discussion :

Intestinal intussusception is known as the protrusion of a digestive segment into a downstream segment due to abnormal digestive peristalsis [2, 10]. It accounts for 1% of all adult bowel obstructions. More than half of all causes of intestinal obstruction in adults are malignant tumors [2, 6].

It might be ileoileal, ileocolic (ileum invaginated in the ileo-caecal region), ileo-caecal (ileum invaginated in the ascending colon), or colo-colic. The last type is the rarest form, while the ileocolic variety is almost due to malignancy [8, 13]. Patients might present with acute occlusion or spontaneously resolving sub-occlusive episodes; clinical signs are not specific [2, 3].

Adults can be diagnosed with conventional radiography, barium opacification, ultrasonography, CT, or MRI. However, CT is the most sensitive technique [1].

The initial imaging test for occlusive syndrome is an unprepared abdomen. In the diagnosis of intestinal intussusception, its sensitivity and specificity are limited. It may show an aerial crescent between the two coves, indicating the location of occlusion [11, 15].

Intestinal opacification with water-soluble contrast media can orient the diagnosis by showing a "coil-spring" appearance (due to contrast medium crossing through the lumen of the downstream segment restricted by the invaginated loop) or a "cup-shaped" subtraction image [13, 14, 15].

Ultrasound in cross-section reveals a digestive structure made up of many concentric layers that correspond to the invaginated loop inside the downstream segment (onion sign). The hyperechoic mesentery may exist between the two loops and be observed on the anti-mesenteric border of the invaginated loop (the crescent in the donut sign) [7]. The mesentery is encased between the two loops in a longitudinal section, giving it a sandwich-like look [7]. A lack of vascularization on color Doppler indicates an increased risk of necrosis [15].

CT is the most sensitive scanning technique. It enables a positive, topographical, and etiological diagnosis to be made, as well as guiding the treatment strategy. The appearance of the CT depends on the location, slice orientation, intraluminal content, and intestinal wall state. The typical image is formed by the walls of the two intestines separated by a hypodense fatty layer, giving a cockade-like appearance in the transverse section and a sandwich-like appearance in the longitudinal section [4]. Adenopathies and arteries that are enhanced by contrast media injection appear frequently in invaginated mesenteric fat. Distinguishing between the various layers may be difficult in the presence of parietal edema [4, 11], which indicates venous congestion. CT can reveal complications such as intestinal ischemia, perforation, and secondary lesions.

MRI can also be employed, with results comparable to CT [12]. A T1 and T2 parietal hypersignal, as well as a T1 enhancement defect following gadolinium injection, are associated with parietal necrosis.

Colonoscopy, in the event of an ileocolic or colocolic type, aids in the confirmation of the intussusception, pinpointing its location, and searching for an underlying cause [14].

Adult intussusception usually occurs due to a benign cause (lipoma, Crohn's disease, adenomyoma, endometrioma, diverticulum, etc.), whereas colonic intussusception is typically caused by a malignant cause (adenocarcinoma, lymphoma, GIST, carcinoid tumor, etc.). [1, 12].

Intestinal intussusception can be discovered incidentally on imaging; in this situation, young age, absence of clinical symptoms, a diameter of less than 36 mm, and a length of less than 35 mm of the intussusception loop all indicate non-tumoral intussusception, which is most often transient [7, 9, 12]. However, it might be difficult to discern between organic and non-organic origins, which, given the incidence of malignancies implicated, requires surgical excision in all instances of adult colonic invaginations [2, 3, 5, 15].

### IV. Conclusion:

Imaging, particularly computed tomography (CT), aids in the diagnosis of adult intestinal intussusception and the search for the existence of a causal lesion. Colo-colic forms are uncommon and usually suggest a malignant etiology.

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