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# Ileo-Ileal Intussusception of the Bowel in Adults: A Review

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***Abstract***

*A proximal portion of the gastrointestinal tract telescoping into the lumen of the neighboring segment is known as intussusception of the intestine. This circumstance is common in youngsters and manifests as the traditional triad of sharp abdominal pain, bloody diarrhea, and a sensitive lump that can be felt. Ileo-ileal intussusception in adults, which accounts for <1% of all intussusception cases and 1% to 5% of bowel blockage, is nevertheless regarded as a rare disorder. Idiopathic cases, or those without a lead point lesion, make up 8–20% of all cases. Organic lesions such as inflammatory bowel disease, postoperative adhesions, Meckel's diverticulum, benign and malignant lesions, metastatic neoplasms, or even iatrogenic factors such as the presence of intestinal tubes, jejunostomy feeding tubes, or following gastric surgery can all result in secondary intussusception. The most accurate diagnostic method, computed tomography, can tell apart between intussusceptions with and without a lead point. Operation is the adult ileo-ileal intussusceptions require definitive treatment. In every situation where a cancer is suspected, a formal bowel resection using oncological principles is performed. For benign lesions, it is safe to reduce the intussusceptible bowel to lessen the amount of resection or, in some cases, prevent the short bowel syndrome.*

## Intruduction

Intussusception was first noted in 1674 by Barbette of Amsterdam and further described in a thorough study in 1789 by John. A rare type of adult bowel obstruction that is characterized by the telescoping of the intussusceptum, the proximal segment of the GI tract, into the lumen of the intussuscipiens, the adjacent distal segment of the GI tract. In 1871, Sir Jonathan Hutchinson performed the first operation on a kid who had intussusceptions. **[**1,2**]**

A proximal portion of the gut (intussusceptum) telescopes into the lumen of the neighboring distal segment (intussuscipiens). Occasionally, a distant section of retrograde intussusception is the medical term for when the bowel telescopes into the lumen of the nearby proximal segment. In adults, intussusception is a rare and uncommon clinical condition; however it is a rather common cause of intestinal blockage in children. Adult intussusception (AI) accounts for 1-5% of all adult intestinal

obstructions and accounts for around 5% of all intussusceptions. Adult intussusception is typically brought on by a tumor acting as the intussusception's apex. [3,4] The most frequent benign tumor in both small- and large-bowel intussusception is a lipoma. Just 1% to 5% of intestinal blockages in adults are caused by adult intussusception, which accounts for 5% of all intussusception cases. The issue is different from different elements of pediatric intussusception. Pneumatic or hydrostatic (air contrast enemas) decrease of the intussusception is sufficient to correct the problem in 80% of patients when it occurs in children.[5]

Contrarily, about 90% of intussusception cases in adults are attributable to a pathologic disease that acts as a lead point, such as carcinomas, polyps, Meckel's diverticulum, colonic diverticulum, strictures, or benign neoplasms, which are typically found intraoperatively. [6,7]

Radiologic decompression is not addressed preoperatively in adults due to a high incidence of concomitant cancer, which is roughly 65%[8,9].

## Mechanism and Aetiology

Ileo-ileal intussusception is more likely to happen in the small intestine and has an unclear specific etiology in 1%–2% of cases in adults (primary or idiopathic). The cause of secondary intussusception, on the other hand, is thought to be any pathologic lesion of the bowel wall or irritant inside the lumen that disrupts normal peristaltic activity and acts as a lead point, which can cause an invagination of one segment of the bowel into the other. [8]

The connections between freely moving segments and retroperitoneally are where an intussusception can occur most frequently in the gastrointestinal system or segments that are fixed by adhesion[9]. According to their locations, intussusceptions can be divided into four groups: There are four types of intussusception: (1) entero-enteric, which affects only the small intestine; (2) colo-colic, which only affects the large intestine; (3) ileo-colic, defined as the prolapse of the terminal ileum within the ascending colon; and (4) ileo-cecal, where the ileo-cecal valve is the leading point of the condition.

According to the etiology, intussusceptions have also been categorized (benign, malignant or idiopathic). An intussusception in the small intestine can result from either the presence of intra- or extra-luminal lesions, including inflammatory lesions, Meckel's diverticulum, post-operative adhesions, lipomas, adenomatous polyps, lymphomas, and metastases. These lesions may be iatrogenic, such as in patients having gastrojejunostomies or intestinal tubes[10].

## Clinical Presentation

Adult intussusception presents clinically in a variety of ways. The majority of instances have been documented in adults, and the presenting symptoms are nonspecific according to partial obstruction, as chronic[4,11]. Adults rarely show with the characteristic pediatric symptoms of acute intussusception (a triad of cramping abdominal discomfort, bloody diarrhea, and a palpable sensitive mass). The non-specific symptoms and indicators of intussusception include nausea, vomiting, gastrointestinal bleeding, changes in bowel habits, constipation, or abdominal distension[11].

According on whether a lead point is present or not, intussusception in adults can be further divided into the following categories: transitory non-obstructing intussusception without a lead point. Lead point has been reported in people with Crohn's disease or celiac disease, but it is more usually idiopathic and goes away on its own without any particular treatment. In contrast, intussusception with an organic lesion as the lead point typically manifests as a persistent or relapsing intestinal blockage, demanding a specific surgical therapy.

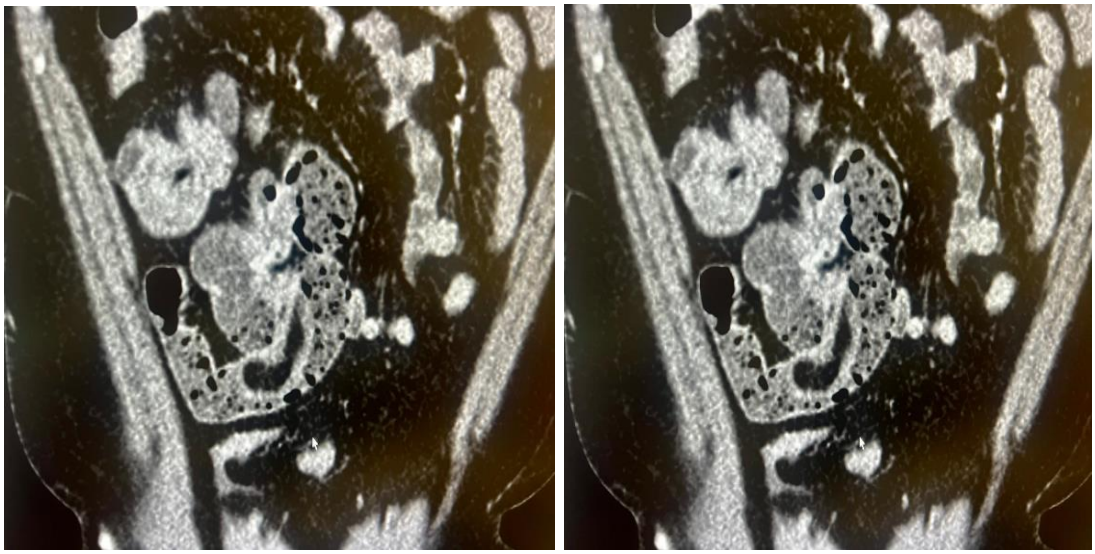
### Diagnosis- Imaging

Although the clinical picture is often dominated by obstructive symptoms, plain abdomen films are frequently used as the initial diagnostic technique. Similar imagings usually exhibit symptoms of intestinal blockage and can reveal where the obstruction is located[12,13]. A barium enema examination may be helpful in patients with colo-colic or ileo-colic intussusception, during which a "cup-shaped" filling defect or "spiral" or "coil-spring" appearances are typically demonstrated. Upper gastrointestinal contrast series may show a "stacked coin" or "coil-spring" appearance.

Both in adults and children, ultrasound is thought to be a helpful diagnostic technique for intussusception[13]. The traditional imaging characteristics are the transverse view has "target" or "doughnut" signals, while the longitudinal view has "pseudo-kidney" or "hay-fork" signs. Unquestionably, this process needs to be handled and interpreted by a qualified radiologist in order to validate the diagnosis. Unfortunately, the clarity of the images and the ensuing diagnostic precision are constrained by obesity and the presence of significant air in the inflated bowel loops.

Nowadays, abdominal computed tomography (CT) is thought to be the radiologic technique that is most sensitive for confirming intussusception, with reported diagnosis 58%–100% accuracy [4, 12,

13,14**]**. The "target" or "sausage"-shaped soft tissue mass with a layering effect is one of the distinguishing characteristics of a CT scan and mesenteric arteries within the intestine lumen are another **[**10**]** unique feature. A CT scan may help stage the patient whose intussusception is thought to



be caused by cancer by defining the position, nature, and connection of the mass to surrounding tissues**[**15**]**.

**Figure 1-** Pre operative ( before surgery)- CT scan showing small bowel intussusception

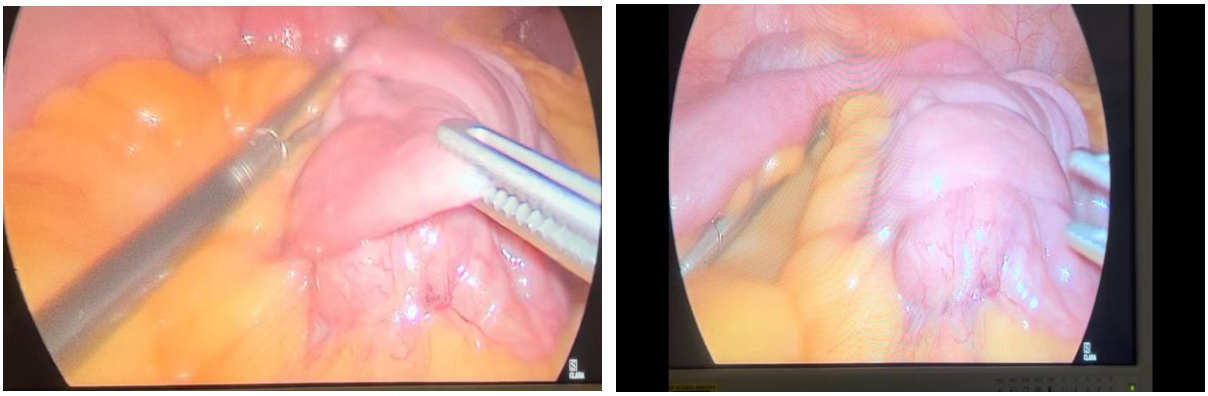
**Diagnosis by Endoscopy**

Intussusception cases presenting with subacute or chronic large bowel blockage are often evaluated using flexible endoscopy of the lower GI tract **[**15**]**. The main advantages of endoscopy are confirmation of intussusception, localisation of the illness, and illustration of the underlying organic lesion acting as a lead point. Due to the high risk of perforation occurring against a background of chronic tissue ischemia and potential necrosis of the intussuscepted bowel segment's wall, snare polypectomy is not advised in patients with chronic intussusception who present with a polypoid mass on barium or endoscopic examination.

**Surgical Treatment**

Adults commonly present with acute, subacute, or chronic nonspecific symptoms**[**12**]**, which causes the initial diagnosis to be missed or delayed and only confirmed when the patient presents with further symptoms is lying on a surgical table.

The majority of surgeons agree that adult intussusception necessitates surgical intervention because to the high prevalence of anatomical abnormalities and occurrence of cancer.The manipulation of the intussusceptible intestine during reduction and the degree of bowel resection, however, are still debatable **[**13**]**. Preoperative reduction with barium or air is not recommended as a sure treatment for adults, in contrast to pediatric patients, whose intussusception is primary and benign. Intraluminal seeding and venous tumor propagation are potential dangers of first manipulation and reduction of an intussusceptible bowel microorganism seeding and perforation. An increased risk of anastomotic consequences from manipulating friable and edematous intestinal tissue and the migration of tumor cells into the peritoneal cavity. Moreover, if the intestinal wall exhibits symptoms of inflammation or ischemia, decrease should not be attempted. Due to the high incidence of bowel cancer as the underlying etiologic factor in patients with ileo-colic, ileo-cecal, and colo-colic intussusceptions,



particularly those over 60 years old, formal resections using suitable oncologic techniques are advised, with the construction of a primary anastomosis between healthy and viable tissue.

**Figure 2-** Intra-Operative findings (during surgery)

**Figure -3** Post-operative- specimen

However, the surgeon may lessen the intussusception if a preoperative diagnosis of a benign lesion is safely made by milking it out in a distal to proximal fashion direction**[**13**]**, permitting a little resection. Accordingly reduction and limited resection prevented the recurrence of intestinal intussusceptions caused by benign lesions. Patients with Peutz-Jeghers syndrome, who run the risk of developing short bowel syndrome from several tiny intestinal polyps producing intussusception, should always undergo a combination procedure involving multiple snare polypectomies and restricted intestinal resections **[**14**]**. Moreover, reduction is advised in individuals who have postoperative intestinal blockage brought on by an intussusception if the bowel looks to be viable and non-ischemic **[**14**]**.

Laparoscopy has been utilized effectively in a few circumstances, depending on the general health of the patient and the accessibility of surgeons with the necessary laparoscopic training. Reduction and/or en bloc resection can be carried out using the same technique after laparoscopically diagnosing intussusception and the underlying illness.

## Discussion

Intussusception in adults is different from that in children. Less than 1 in 1300 abdominal procedures and 1 in 100 individuals have the condition, making it unusual intestinal blockage as operated on. The ratio of children to adults is around 20 to 1 **[**6**]**. In contrast to intussusceptions in infants, where over 80% of cases are idiopathic, almost 90% of cases in the adult population have a proven cause **[**7**]**. Resection is required in adults rather than reduction in youngsters because of this.

Unspecific obstructive symptoms including nausea, vomiting, and abdominal pain characterize adult intussusceptions. There may also be additional symptoms, like such as abdominal mass, weight loss, fever, constipation, and melena **[**11**]**. Adult intussusception is caused by a tumor in 20% to 50% of patients **[**12**]**. Preoperative diagnosis of adult intussusception is uncommon and primarily radiological due to the hazy, variable, and cryptic clinical presentation. Simple abdominal skiagrams can show signs of acute intestinal blockage **[**6**]**. Colonic lipomas show up as smooth, ovoid, well-defined, radiolucent masses on a barium enema due to the presence of fat. Due to their erratic size and shape, they exhibit the "squeeze sign" **[**13**]**.

Ultrasonography is often used to evaluate suspected intussusception as it is cheap, readily available, and noninvasive. The classic features include the “target and doughnut sign” on transverse view and

the “pseudokidney sign” in longitudinal view. The major disadvantages are operator dependency and difficulty in image interpretation in presence of air, which is often present in cases of obstruction [6, 12]. The preoperative diagnostic accuracy of ultrasonography is 78.5%. In cases of palpable abdominal mass, the diagnostic accuracy of ultrasonography is even better 86.6% [13]. CT scan has been reported to be the most useful imaging technique, with a diagnostic accuracy of 58%–100% and a specificity of 57–71% [6, 14]. The CT findings of intussusceptions are a mass-like lesion, including the inner intussusceptum, an eccentric fat density mass that represents the intussuscepted mesenteric fat, and the outer intussuscipiens, and this appears as a “target” or a “sausage” mass according to imaging plane [15]. In view of the uncertain aetiology and diagnosis and high incidence of malignancy (approaching 50%), the treatment of intussusception in adults is invariably surgical resection.

## Conclusion

Although uncommon, adult ileoileal intussusception presents a surgical challenge and is very rate accounts less than 1%. In most cases, preoperative diagnosis is missed or delayed because vague and without the pathognomonic clinical picture linked to intussusception in children, the symptoms are frequently subacute. The most accurate imaging method for identifying intussusception and differentiating between a lead point's presence or absence is abdominal CT. Surgical intervention is required because adult intussusception is usually linked to malignant organic lesions. The affected bowel segment must typically be surgically removed as part of the treatment. If the affected segment is still viable or no indication of cancer exists, reduction can be tried in cases with small bowel intussusceptions.

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