



## Original Research Article

## Cancer masquerading as an intussusception: Experience at tertiary care rural hospital

Mangesh Damodar Hivre<sup>1\*</sup>, Pravinkumar Ghongade<sup>2</sup>, Dilip Gupta<sup>1</sup>, Anupama Gupta<sup>3</sup>, Shrutika Khapre<sup>4</sup><sup>1</sup>Dept. of General Surgery, Mahatma Gandhi Institute of Medical Sciences, Wardha, Maharashtra, India<sup>2</sup>Dept. of Pathology, All India Institute of Medical Sciences (AIIMS), Nagpur, Maharashtra, India<sup>3</sup>Dept. of Pathology, Mahatma Gandhi Institute of Medical Sciences, Wardha, Maharashtra, India<sup>4</sup>Dept. of Obstetrics and Gynaecology, Datta Meghe Institute of Higher Education and Research, Wardha, Maharashtra, India

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## ABSTRACT

**Introduction:** One segment of the intestine telescopes into another, resulting in obstruction or intestinal ischemia. A pathological lead point, such as a tumor, causes the disease. A pathologic lead point in the lumen, wall, or outside the wall can cause adult intussusception (AI).

**Materials and Methods:** Retrospective case series of eight patients diagnosed with AI over 18 years in a tertiary rural tertiary a decade (2010-2020).

**Result:** Out of 8 AI cases, 6 were women, and 2 were men. The median age at diagnosis was 44 years. AI was verified by USG (25%), with CT scan being (100%) sensitivity preoperatively. AI distribution (2 in the small bowel, four at the ileocecal region, and 2 in the colon). The most commonly reported presenting symptom was abdominal pain. (8/8,100%). 75% (6/8) of patients underwent urgent surgery after presenting with acute intestinal obstruction. At the same time, two cases underwent elective surgery. Out of them, five cases were malignant (adenocarcinoma) (62.5%), and three cases were benign tumors (37.5%). (Inflammatory myofibroblastic tumor, a Meckel's diverticulum, and appendicitis).

**Conclusion:** Due to the lack of specific symptoms, the diagnosis of AI by clinicians and surgeons is frequently missed out. When dealing with acute abdominal pain and signs of bowel obstruction, it's important to consider this less common diagnostic possibility because intussusception is a surgical emergency with high mortality rates in the case of delayed treatment. A surgical approach must be practiced to avoid missing underlying causes like neoplasm.

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## 1. Introduction

When one segment of the intestine telescopes into an adjacent bowel segment, a condition known as intussusception develops that can cause obstruction and even intestinal ischemia. The disease process is more frequent in children than adults, but when it does occur, it is probably caused by a pathological lead point such as a tumor.<sup>1</sup> Adult intussusception (AI) is challenging

to diagnose because it mimics many other pathologies. Intussusceptions are more prone to develop when intestinal peristalsis deviates from its typical pattern. The pathologic lead point that often causes adult intussusception can be found anywhere in the intestine, including the lumen, the wall, or outside. In 80% to 90% of symptomatic cases, the cause can be identified.<sup>2</sup> Most cases of intussusception in children are idiopathic (primary), with the majority of instances involving the ileum and only very seldom the stomach, colon, and the remaining small intestine. It predominantly affects male infants aged 4 to 10 months.<sup>3,4</sup>

\* Corresponding author.

E-mail address: [mangeshhivre@mgims.ac.in](mailto:mangeshhivre@mgims.ac.in) (M. D. Hivre).

On the other hand, 90% of the time, adult intussusception is secondary to an underlying pathology and affects both genders equally.<sup>5</sup> 52% of cases of AI involve the small bowel, 38% the large bowel, and 10% involve the stomach and surgical stomas.<sup>3</sup> Common causes of small bowel intussusception are benign lesions. Whether the etiology originates in the intestines or the colon, this holds. Intussusception of the colon is more likely to have a pathogenic cause (usually a colonic adenocarcinoma). Malignant lesions that produce small intestinal intussusception are frequently the result of the spread of illness (i.e., carcinomatosis). Nearly all cases of ileocolic intussusception have a malignant etiology in the ileocecal valve.

Clinical signs of AI can vary and frequently lack specificity. Patients may also experience nausea, vomiting, changes in bowel habits, bloody stools, abdominal distention, and diffuse abdominal pain. Although a clinical examination may detect diffuse abdominal tenderness or abdominal distention, it frequently finds no abnormalities. The clinical diagnosis of AI is difficult due to the ambiguity of these clinical findings and their resemblance to many other more prevalent conditions, including infectious gastroenteritis, bowel obstruction brought on by peritoneal adhesions, and inflammatory bowel diseases. Therefore, a high index of suspicion is necessary for AI diagnosis, which frequently calls for imaging tests like computed tomography (CT).<sup>6</sup> Notably, the rate of preoperative AI diagnosis has increased due to the widespread use of CT in medicine.<sup>7</sup> The current study presents a case series of eight successfully managed adult patients, paying close attention to factors such as lead point diagnostic methods and treatment plans, especially considering our conclusions.

## 2. Materials and Methods

Intussusception cases diagnosed and treated between January 2010 and December 2020 are the subject of this retrospective investigation. Patient records were retrieved manually from the archives in the department of Pathology, general surgery, and hospital information system. All the pertinent information on the patients was compiled and studied sequentially. The study included those adult patients with an intussusception diagnosis older than 18. No additional inclusion or exclusion criteria were used to choose the patients other than age and diagnosis. Along with clinical information, the nature of the treatment, and how the patients responded regarding recovery and results, we collected and analyzed all the demographic and epidemiological profiles. The study involves the analysis of de-identified patient data.

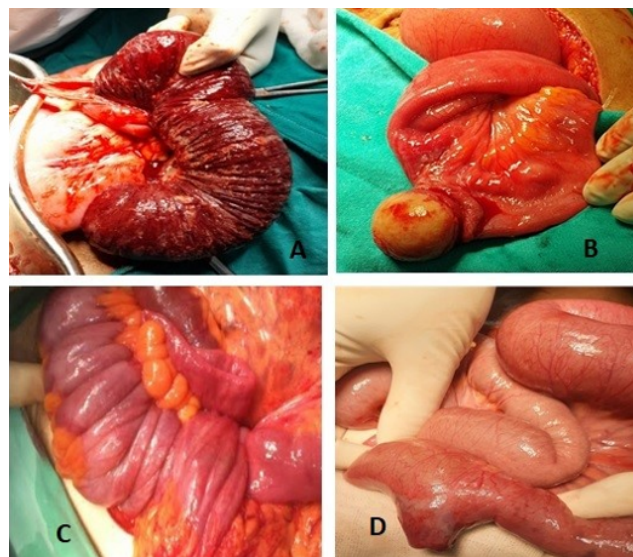
## 3. Results

### 3.1. Age, symptomatology, and clinical presentation

Eight patients diagnosed with adult intussusception (AI) were found in the surgical consultation database. Six females and two males were present. With a range of 18–62 years, the median age at diagnosis was 44 years. Unsurprisingly, none of these eight patients had previously undergone abdominal surgery. Vomiting was present in half of the cases (4/8,50%), and abdominal pain was the most prevalent presenting symptom (8/8,100%). In 25% (2/8) of the cases, changes in stool color were noted. Two patients (or 25%) had a sudden small intestine obstruction. None of the patients had a history of intussusception in the past.

#### Diagnostic studies

USG was done in all eight patients. Only 2 cases (25%) were confirmed to be AI on USG. Hence, the CT scan was advised only in the remaining six cases to confirm the diagnosis. All six cases (6/6,100%) were identified as AI on a CT scan. The above methods were used for all eight patients to make a preoperative diagnosis of AI. No patients underwent small bowel enteroscopy (SBE) or Colonoscopy.



**Figure 1:** A: Colocolic intussusception; B: Ileo ileal intussusception showing lead point; C: Ileocolic intussusception; 1D: Meckel diverticulum presenting as intussusception

**Table 1:** Summary of cases in the present study

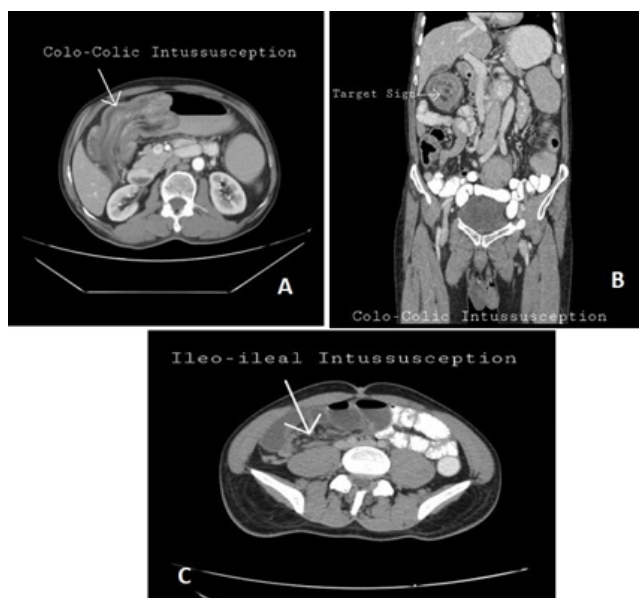
S.No.	Age/ Sex	History	Type	Surgery	Reduction	Intraoperative findings	Location of Lead Point	Radiology report	H/P Report
1	43/F	Pain, vomiting, abdominal distention	Ileo- ileal	SI Resection Anastomosis	Yes	Ileo-ileal intussusception secondary to a greyish-white mass found in the ileum acting as a lead point	Ileum	Small bowel obstruction with ileo-ileal intussusception with soft tissue attenuating intraluminal lesion in the ileum as a lead point	Inflammatory Myofibroblastic tumor of ileum Adenocarcinoma
2	62/M	Pain abdomen and black- colored stools	Colo- colic (hepatic flexure)	Right Hemicolectomy	No	Ulceroproliferative growth at hepatic flexure with colocolic intussusception seen decision taken to do right hemicolectomy	Hepatic Flexure	Telescoping of the proximal transverse colon along hepatic flexure (acting as intussusceptum) (Maximum length- 11 cm) into the mid transverse colon (acting as intussusciens) in the sub-pyloric region forming a sausage-shaped mass with concomitant thickened ( maximum thickness 1.8 cm) & oedematous intussusciens colonic loop in the subhepatic region.	Adenocarcinoma
3	55/M	Pain in epigastric regio and multiple episodes of vomiting	Ileo- caecal	Right Hemicolectomy	Yes	A large mass was felt in the cecum involving the serosa cecum, found mobile multiple lymph nodes were seen in the adjacent mesentery, the mass causing partial obstruction of the proximal small gut. Right hemicolectomy was done with ileotransverse anastomosis.	Caecal mass	Well-defined mass of approximate size 6.5 x 4.2 cm with the swirled appearance of the loop within loop and telescoping of colonic loops giving sandwich-like appearance in right hypochondriac and right lumbar region	Adenocarcinoma

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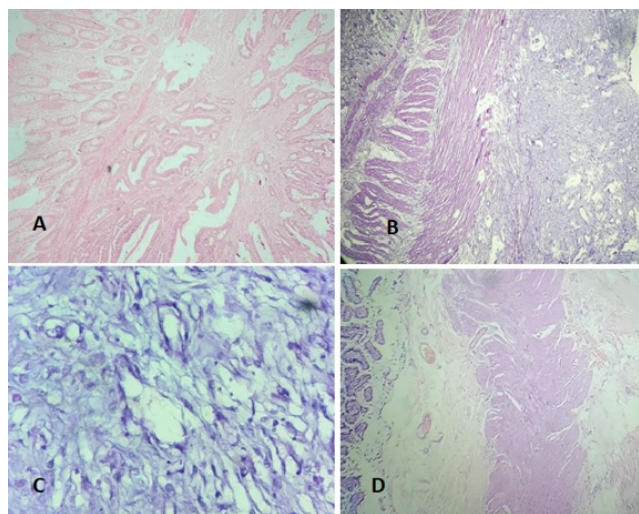
Table 1 continued

4	36/F	Pain in the umbilical region	Ileo-Colic	Right Hemicolectomy	Yes	Polypoid growth at the cecum causes cecocolic intussusception. Right hemicolectomy done	IC junction mass	Telescoping of the caecum (acting as intussusceptum) into the ascending colon (acting as intussusciptient) reaching upto the hepatic flexure of the colon forming a sausage-shaped mass of approximate size 10.8 x 7 x 5.6 cm ( AP x CC x TR) with mesenteric fat & vascular complex within with concomitant thickened ( maximum thickness 1.6 cm) & edematous intussusciptient colonic loop in the right lumbar region. Caeco colic intussusception	Adenocarcinoma
5	50/F	Pain abdomen and blood-stained stools	Ileocolic	Right Hemicolectomy	No	The terminal ileum was intussuscepted into the ic junction extending up to hepatic flexure reduction of the intussusception portion of the bowel loop was tried, but the reduction was not possible. Right hemicolectomy done	Ic junction	There is evidence of dilated bowel loops (4.1 cm) all over the abdomen, with evidence of multiple concentric rings of the bowel forming a mass in the right iliac fossa.	Appendicitis with marked congestion
6	42/F	Pain, Vomiting, and Fever	Ileo-caecal	Inoperable	No	Ileo-caecal intussusception with caecal mass densely adherent to adjoining structures. Mass nonresectable; hence Ileo transverse anastomosis done.	IC Mass	An oval soft tissue density heterogeneously enhancing lesion along the mesenteric border of the caecum with heterogeneously enhancing wall thickening of adjacent proximal ascending colon suggests neoplastic etiology.	Adenocarcinoma
7	18/F	Pain abdomen and repeated episodes of vomiting	Ileo-ileal	SI Resection Anastomosis	Yes	Ileo-ileal intussusception is present secondary to Meckel's diverticulum. Reduction done and resection of healthy margins done	Ileum	A small amount of oral contrast in the duodenum and jejunum. Ileo-ileal intussusception in the centre of abdomen. Prominent, non-enlarged mesenteric lymph nodes	Meckel's diverticulum
8	45/F	Pain in the abdomen, Nausea, and fever	Colo-colic	Right Hemicolectomy	No	Cecal mass adherent to surrounding structures seen. Mass found to be in operable ileotransverse anastomosis decided.	Transverse colonic mass	An oval soft tissue density heterogeneously enhancing lesion along the mesenteric border of the caecum with heterogeneously enhancing wall thickening of adjacent proximal ascending colon suggests neoplastic etiology.	Adenocarcinoma

\*SI -Small Intestine IC- Ileo Caecal, M- Male, F-Female, H/P- Histopathology



**Figure 2:** A: Telescoping of the proximal transverse colon along hepatic flexure (acting as intussusceptum) maximum 11 cm into the mid transverse colon (acting as intussusciptens); B: Sausage-shaped mass with concomitant thickened and oedematous intussusciptens colonic loop in the subhepatic region; C : Evidence of soft tissue attenuating intraluminal lesion in the ileum showing moderate enhancement on the post-contrast scan. With the mass as the lead point, there is associated telescoping of adjacent short segment ileal loop and its mesentery.



**Figure 3:** A: Showing normal colonic mucosa with adenocarcinoma at intussusception site(40X); B: Inflammatory myofibroblastic tumor as an intussusceptum (40X); C: High view of Inflammatory myofibroblastic tumor as an intussusceptum (100X); D: Meckel diverticulum as intussusceptum (40X)

**Pathology, treatment, and follow-up**

Patients had an intussusception lead point (two in the small bowel, four at the ileocecal region, and two in the

colon). Operative procedures were necessary for all eight patients. Six of the eight patients operated on had an acute intestinal obstruction and required an emergency procedure. The remaining two patients underwent elective surgery. All eight of the patients underwent laparotomies. Five out of eight patients in the laparotomy group underwent a right hemicolectomy due to an ileocecal and colonic mass, two underwent small bowel resection, and one underwent ileotransverse bypass because she was inoperable.

Table 2 shows the location, pathology, and scope of the surgery. All eight patients had an established pathologic diagnosis. Five cases (62.5%) had malignant etiologies, while three (37.5%) did not. Out of these three benign lead point cases that caused AI, one was diagnosed as an inflammatory myofibroblastic tumor, while the other two were appendicitis and a Meckel’s diverticulum. On follow-up, there were no significant postoperative morbidities. Patients were monitored for an average of 24 months, ranging from 6 to 42 months.

**4. Discussion**

For adult intussusception (AI), imaging modalities like CT scans and abdominal ultrasound (USG) possess a high level of sensitivity for prompt and timely diagnosis to detect underlying causes and early management of intussusception.<sup>7</sup> Intussusception is a frequent cause of intestinal obstruction in children. In adults, the intussusception associated with intestine obstruction is almost 1%. The approximate age of these cases was 54.5 years, with no gender preponderance. In approximately 90% of children, intussusception surfaced idiopathically without definitely related cause.<sup>8</sup> In contrast, over 90% of AI have an obvious etiology, and tumors produce more than 65% of these conditions<sup>4</sup>

Peyer’s patch in the terminal ileum (Hypertrophy of lymphatic tissues) is considered the leading point of intussusception in less than 10 % of the cases in children. It may be aggregated and progressed by infection of viruses.<sup>9</sup> On the contrary, the etiology of AI includes carcinoma, colonic diverticulum, lymphoma, metastatic lesions, polyps, lipoma, strictures, various inflammatory lesions, or, rarely, Meckel’s diverticulum. Malignancy like Adenocarcinoma contribute to 30% of all AI in the small intestine and 66% of AI in the colon.<sup>10</sup>

Intussusception accounts for 1% of adult small intestinal blockages, with tumors being the most common cause.<sup>11</sup> Based on the origin and extension locations, bowel intussusception is typically classified into four types (a) Colocolonic type: confined to the colon and rectum (no anal protrusion). (b) Ileocecal type: the ileocecal portion invaginates into the ascending colon; and (c) Ileocolic type: the ileum passes the ileocolic segment, but the appendix does not invaginate; (d) Enteric type: the intussusception is limited to the small intestine; Intussusception affects the

**Table 2:** A literature review of case studies in the Indian population

S. No.	Author	Study duration (years)	Cases	Enteric	Ileocolic	Colonic	Malignancy
1	Gupta et al. <sup>3</sup>	2015-2020	7	4		3	42%
2	Hanan et al. <sup>4</sup>	1997 -2007.	16	5	6	5	50%
3	Ghaderi et al. <sup>2</sup>	1989-2009	15	11	3	1	13%
4	Vinoth D et al. <sup>5</sup>	2013 - 2019	13	10	3	NIL	23%
5	Godara et al. <sup>6</sup>	1997-2007	14	6	6	2	35%
6	Present study	2010-2020	8	2	1	5	62.50%

small intestines as opposed to the large colon. According to Hong et al.<sup>12</sup> a systematic review, enteric 49.5%, ileocolic 29.1%, and colonic site types account for 19.9% of the pooled rates, respectively. One thousand two hundred fourteen cases of adult intussusception (AI) were analyzed and reviewed in the literature. An average of 63% of AI were associated with tumors; 50% of cases were malignant. Malignant tumors contributed to 48% of AI cases in the colon; in the small intestine, malignant tumors accounted for 17 % of AI. After tumors, postoperative factors are the second leading cause of AI.<sup>9,13</sup> The current study result is consistent with previous studies. Due to the range of etiology causing AI, the early prompt diagnosis and treatment options are still a challenge for treating surgeons. Because 50 % - 71.9% of the cases of AI were detected to be associated with polypoidal lesions and tumors in a few studies, the analysis of the results indicated that surgical treatment should be the approved choice, especially for AI cases.<sup>14</sup>

## 5. Limitations

This study has several drawbacks. To begin with, because this study was conducted retrospectively, there could have been inherent bias in the selection procedure, and various criteria could have been improperly recorded. Second, the number of adults with intussusception was too small for definitive conclusions. Despite these limitations, this study provides important information that will benefit the management of adult intussusception.

## 6. Conclusion

Enteric intussusception is adults' most common kind of intussusception. Adult bowel intussusception has a rapid onset or a slow, insidious progression. Due to the lack of specific symptoms and the preoperative nature of the diagnosis, assigned scoring systems do not assist surgeons, detection is frequently missed or put off, and CT is the most often deployed diagnostic technique. When encountering acute abdominal pain and symptoms of bowel obstruction, it's crucial to think about this less common diagnostic prospect because intussusception is a surgical emergency with high mortality rates in cases of delayed treatment.

AI may be a clinical manifestation of serious illnesses like cancer. The present study suggested surgical treatment modality to avoid missing potentially curable malignancies. While a conservative approach was advised in minimal-risk patients

## 7. Source of Funding

None.


## 8. Conflicts of interest


The authors have no conflicts of interest.


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**Dilip Gupta**, Professor  <https://orcid.org/0000-0002-8114-043X>

**Anupama Gupta**, Professor  <https://orcid.org/Gupta>

**Shrutika Khapre**, Assistant Professor  <https://orcid.org/0000-0003-2227-8612>

### Author biography

**Mangesh Damodar Hivre**, Assistant Professor  <https://orcid.org/0000-0002-7694-7108>

**Pravinkumar Ghongade**, Assistant Professor  <https://orcid.org/0000-0003-2219-3256>

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