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# Computed Tomography in Adult Intussusception

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**Abstract.** Computed tomographic (CT) changes of intussusception include the early target mass with fascial planes around the mass retained; with progress and bowel wall thickening, the characteristic mass with layering effect occurs (i.e., areas of high density with curvilinear low-density zones). Traction on the associated mesenteric vasculature may be noted. Scattered air-fluid levels indicate the associated presence of bowel obstruction. As edema of the bowel progresses, the layering effect is obscured, and the compromised bowel assumes an amorphous shape surrounded by intraperitoneal fluid. The presence of intramural air is indicative of vascular compromise of the intussuscepting bowel.

**Key words:** Intussusception, CT – Intussusception, target mass, layering, intramural air.

Intussusception, while primarily a disease of infants, is recognized with increasing frequency in adults, since the advent of computed tomography (CT). The purpose of this communication is to report four patients with intussusception seen incidentally in adults over a period of a year, diagnosed by CT during investigation of miscellaneous pathologies and to draw attention to additional features that may be associated with intussusception of the bowel.

## Material and Methods

Scans were obtained on the Elscint 2400 with a scanning time of 2.1 s and 10-mm collimation, with scans at 1.0-cm intervals from the diaphragm to the symphysis pubis and additional scans as needed. Oral contrast material consisted of a flavored solution of 3% Telabrix (meglamine-ioxitalamate) administered 1 h before the examination and an additional 250 ml given just before the study. Intravenous contrast material was used routinely, unless contraindicated by a clinical history. Where considered necessary, a contrast enema was given using the 3% Telabrix solution. CT was the initial diagnostic procedure in the cases examined.

Findings and related etiology are shown in Table 1.

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## Discussion

Intussusception is the invagination of a segment of bowel (the intussusceptum), along with its mesentery, into the lumen of an adjacent portion of bowel (intussuscipiens). In the event of the intussusception again invaginating into an adjacent segment, the condition is termed a compound intussusception. Merine et al. [1] have reported nine such cases of enteroenteric intussusceptions. The prevalence in adults of small bowel and colon intussusceptions is 5–16% [2, 3]. In adult intussusception, 80% of patients have an organic cause, with benign or malignant tumors accounting for approximately 65% of these, the frequency of malignancy being much higher in those adult cases only involving the colon. Thus, adult patients with intussusception should be treated as though a malignant tumor was present [4]. Benign tumors account for 40% in the small intestine, among which lipoma is the most common, especially in the terminal ileum [5].

As intussusception of the bowel is invariably associated with either acute intestinal obstruction or partial and recurrent obstruction, air-fluid levels and proximal bowel distention should alert one to the associated intussusception, which in its earliest stage is seen as a "target" mass. The central lumen represents the intussuscepted bowel loop,

**Table 1.** Findings and related etiology

| Patient | Age | CT | Pathology |
|---|---|---|---|
| ZAH | 49 | Ileocolic intussusception<br>1. Target mass<br>2. Distorted small intestine vasculature<br>3. Splenomegaly | Hodgkin's lymphoma |
| KPO | 49 | Ileoileal intussusception<br>1. Target mass<br>2. Small bowel distention | Reticulum cell sarcoma |
| MA | 33 | Colocolic intussusception | Leiomyoma |
| ML | 67 | Colocolic intussusception<br>1. Pelvic target mass<br>2. Vascular distortion<br>3. Intramural air | Carcinoma of colon<br><br>Compromised bowel |

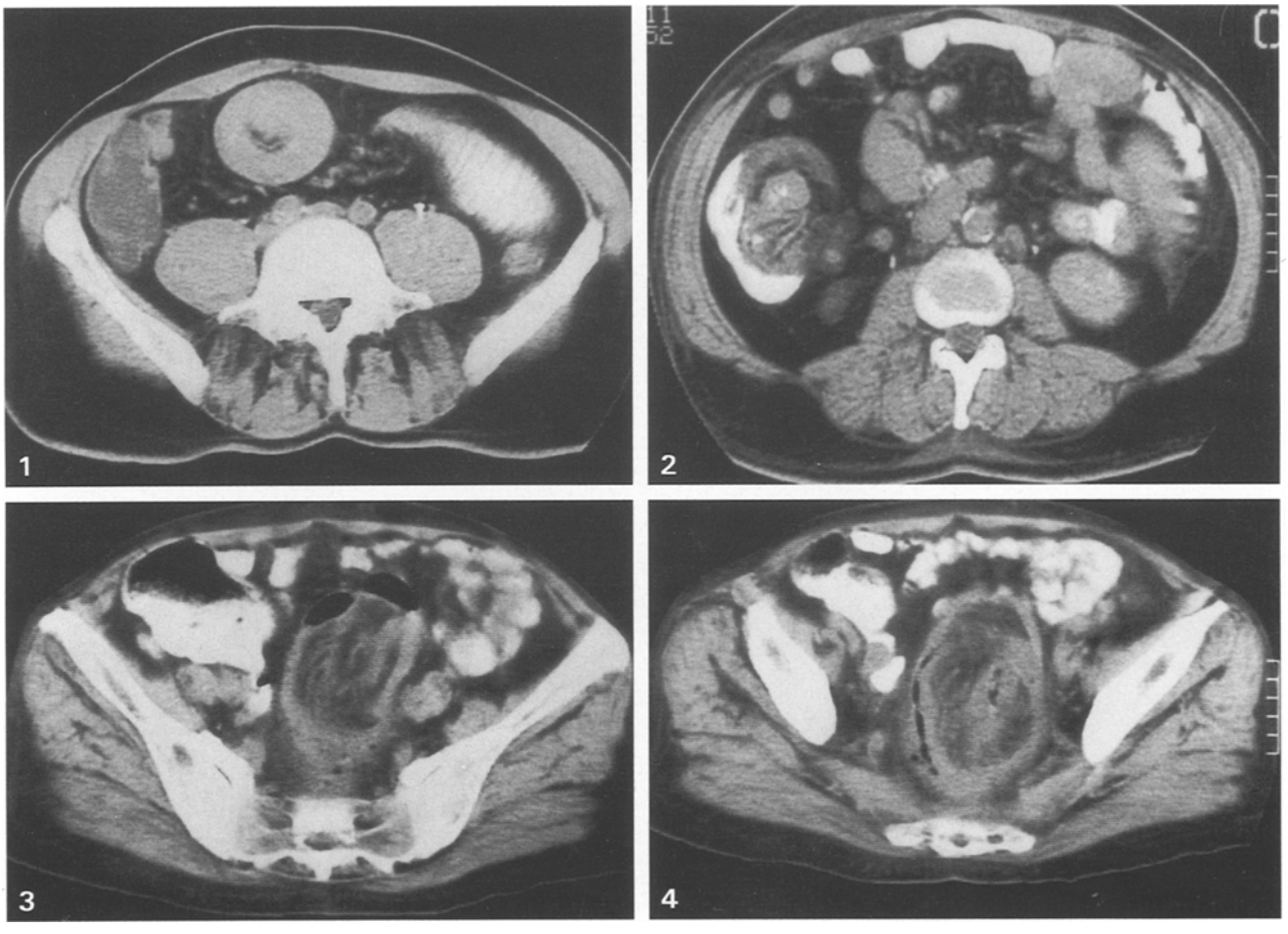


**Fig. 1.** Enteroenteric intussusception showing "target mass" with central bowel lumen.

**Fig. 2.** Ileocolic intussusception with target mass and eccentric invaginated mesenteric fat.

**Fig. 3.** CT of pelvic region showing leash of distorted centrally placed vessels associated with colocolic intussusception (see Fig. 4).

**Fig. 4.** Colocolic intussusception. Note sliver of intramural air (right lower aspect of mass) indicating compromised bowel.

which is in turn surrounded by the bowel wall (Fig. 1). An eccentric low-density region represents the invaginated mesenteric fat (Fig. 2). Traction on the associated mesenteric vascular arcade may accompany this eccentrically placed area of mesenteric fat. Further advance of the intussusception may produce a layering effect (i.e., bandlike areas of high density intermingled with curvilinear regions of low density) [6]. This layering effect may be obscured with severe bowel thickening and edema effacing the fat interface. At the gangrenous stage, the amorphous mass may be surrounded by extensive intra-peritoneal fluid with localized peritonitis, and even perforation of the bowel. Depending on the angle of the incident CT beam, relative to the longitudinal and transverse axes of the intussusception, the appearance of the target mass may vary, on occasions, assuming a reniform shape.

Our experience has not differed from the well-documented CT findings in adult intussusception. However, an additional feature, not usually referred to, has been the associated mesenteric vascular distortion seen either in the immediate vicinity or in preceding CT cuts (Fig. 3) in proximity to the target mass of the intussusception; additionally, we have been able to alert the clinician of the associated presence of vascular compromised bowel changes in the case where bowel wall air crescents were present (intramural air) (Fig. 4).

## References

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