

Generic and specific applications include:

- Pain/Fever/Vomiting
 - pancreatitis
 - appendicitis
 - diverticulitis
 - ischemia
 - enterocolitis (infectious, inflammatory)
- Pain/Mass
 - ? etiología
- Trauma
- Unclassified
 - "search and destroy"

Disadvantages include:

- Not universally available, expensive
- Preparation time usually required
- Requires cooperative patient

Occasionally unsuspected acute diseases of the stomach and duodenum, such as perforation or peptic ulcer will be discovered, but the major contributions are usually accomplished beyond the duodenal bulb. Uncommon but diagnosable diseases of the duodenum such as *Malrotation with volvulus*¹ and *perforated diverticula* will be illustrated.

However we will concentrate on the more mundane, most common diseases of the small bowel such as *obstruction*. Illustrations will include obstruction due to *hernias*², *metastatic tumor*³, *adhesions*, *contiguous abscesses*, *radiation*. Frequently the obstructive component of the disease will not be prospectively anticipated, and the referring physician will need to be convinced of this unorthodox application and interpretation of CT. Alternatively, particularly for the enlightened, CT- experienced surgeon, the potential for not only a definitive diagnosis of obstruction, but also the anatomic details of the

obstructing process may lead to the choice of CT as the preferred screening procedure rather than a conventional barium examination, particularly in high grade obstruction.

The differentiation of small bowel obstruction from paralytic ileus utilize principles well known from analyses of both plain films and small bowel follow through examination:

CT ILEUS - 50 PATIENTS

<u>INTESTINAL SIGNS</u>	<u>PARALYTIC</u>	<u>OBSTRUCTIVE</u>
<u>GENERAL</u>		
Dilation - Continuity	+	++++
Dilation - Severity	+++	++++
Fluid Volume	++	++++
Contrast Dilution	++	++++
<u>LOCAL</u>		
Transition Zone	"0"	++++
Transition Etiology	0	+++

There is considerable overlap between the two conditions in regard to general signs. The most useful, although not unequivocal, is the presence of continuous dilation to the point of obstruction versus alternating dilation and normal calibre in ileus. Local signs are the most reliable and include the presence of a transition from dilated to narrow calibre lumen and the identification of a transition etiology. The former is almost never identified (one patient) in ileus and invariably seen in obstruction. Transition etiology is the sine quo non of obstruction, however not invariably identified, and particularly inapparent in patients with obstruction secondary to adhesions.

Intussusception is a recognizable variant of the small bowel obstruction pattern^{4,5}. The basis of the pathognomonic pattern is the eccentric curvilinear fat stripe present in the intraluminal "mass". The fatty density represents the fat adherent to the serosal surface

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which incompletely surrounds the bowel. This "half-moon" appearance in the intraluminal "mass" is the clue to the presence of intussusception. The actual lead point may or may not be visualized.

The multiple signs of bowel ischemia are accurately detected by CT^{6,7,8}. The specific signs would appear to be more frequently detected by CT than plain film⁹:

CT: MESENTERIC ISCHEMIA

	<u>CT (n = 100)</u>	<u>KUB (n = 67)</u>
Bowel Wall Thick	61%	25%
Intramural Gas	44%	9%
Intravenous Gas	24%	4%

While plain films inevitably will be obtained in patients with the signs and symptoms suggesting bowel ischemia, in patients with high-suspicion and non-diagnostic plain films, a CT should follow. Angiography may then be targeted, in patients with diagnostic studies, to the specific circulation affected.

REFERENCES:

1. Fisher JK. Computed Tomographic Diagnosis of volvulus in intestinal malrotation. Radiology 1981; 140:145-146
2. Megibow AJ, Wagner AG. Obturator hernia. JCAT 1983; 7(2): 350-352
3. Balthazar EJ. CT of the gastrointestinal tract: principles and interpretation AJR 1991; 156: 23-32
4. Donovan AT, Goldman SM. Computed tomography of ileocecal intussusception: mechanism and appearance. JCAT 1982; 6(3): 630-632