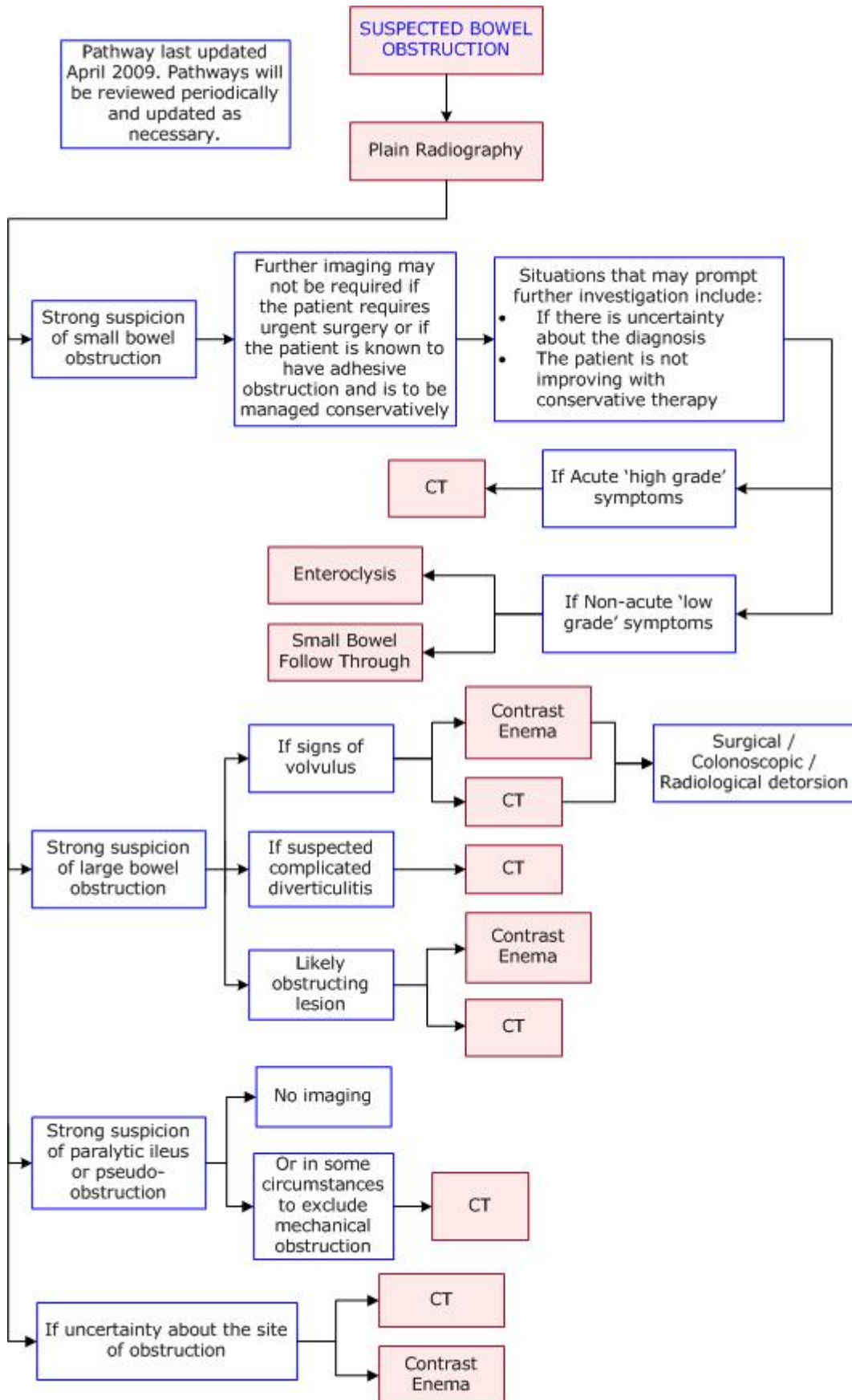




DIAGNOSTIC IMAGING PATHWAYS

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PLAIN RADIOGRAPHY

- The initial imaging study of choice for confirming bowel obstruction, defining the approximate level of obstruction and may show the likely cause (eg gallstone ileus, incarcerated hernia, closed loop obstruction/volvulus and ischaemic bowel). [1-4](#)
- 60-70% sensitivity for detection of small bowel obstruction. [1,5](#)
- Performs better in high-grade obstruction. [1](#)
- Findings suggesting the diagnosis of small bowel obstruction include: [1,2](#)
 - Distended loops of small bowel.
 - Collapsed colon.
 - The "string of pearls" sign resulting from the small amount of residual air compared with the large amount of retained fluid.
 - Pseudotumour related to distended fluid filled loops.
- Approximately 80% sensitivity for detecting and predicting the level of large bowel obstruction. [6,7](#)
- In large bowel obstruction, it is important to note the degree of caecal distension on the plain abdominal films, since marked distension will point to the need for urgent decompression (by surgery or other intervention) to prevent caecal perforation.
- Limitations: [1,2](#)
 - Fails to diagnose the cause of obstruction in most cases.
 - In obstruction of ileocaecal region, it may be difficult to determine whether the level is in the proximal large bowel or distal ileum.
 - Cannot reliably detect the presence of ischaemic complications.

COMPUTED TOMOGRAPHY IN EVALUATING OF SMALL BOWEL OBSTRUCTION (SBO)

- Generally considered the imaging modality of choice when plain abdominal radiography and the clinical features suggest an acute small bowel obstruction. [1-4,8](#)
- 90-96% sensitivity for detection of acute high-grade obstruction. [1,3,9,10](#)
- Useful in: [4](#)
 - Confirming or excluding small bowel obstruction (versus pseudo-obstruction). [1,3,11](#)
 - Defining the degree and site of obstruction. [1,8,11](#)
 - Identifying the cause of small bowel obstruction (73-95% sensitivity). [1,3,8,10,12](#)
 - Confirming or excluding the diagnosis of ischaemia (>90% sensitivity and specificity). [11-13](#)
- Advantages: [4](#)
 - Superior to enteroclysis in showing extraluminal masses, revealing abscesses, malignancy, anterior adhesions as well as features of strangulation. [3](#)
 - Ability to depict other causes of an acute abdomen.

- Limitations:
 - Lower sensitivity (approximately 50%) for the detection and location of low-grade small bowel obstruction. [1,9](#)

ENTEROCLYSIS

- Requires nasoduodenal intubation and the administration of contrast, with images being taken to observe the passage of contrast through the small bowel. [2](#)
- Imaging modality of choice for evaluation of low-grade or intermittent small bowel obstruction. [2,4](#)
- Advantages:
 - Superior to CT in diagnosis and defining the location of the low-grade obstruction. [16](#)
 - Has the ability to gauge the severity of obstruction objectively. [5](#)
- Findings in small bowel obstruction include: [2](#)
 - Dilatation of loops of small bowel.
 - Delayed transit time of the barium to a point of transition in the calibre of the bowel lumen.
- Limitations: [2](#)
 - Need for nasoenteric intubation.
 - Time required for contrast to reach the obstruction.
 - Dilution of barium because of excess residual intraluminal fluid.
 - Demonstration of extrinsic causes is sometimes difficult.
 - Contraindicated in complete obstruction with suspected bowel ischaemia.
- Role of CT enteroclysis in the diagnosis and management of small bowel obstruction is being evaluated. [17](#)

SMALL BOWEL FOLLOW THROUGH

- Ingestion of oral contrast is followed by intermittent fluoroscopy of the small bowel every 15 to 30 minutes until contrast reaches the right colon.
- In cases of high-grade obstruction, dilution of oral contrast in dilated proximal small bowel may diminish the ability to assess mucosal detail and the entire length of the small bowel. [3,19,20](#)
- Using a cutoff of 4 hours to differentiate between complete/high-grade obstruction from lesser degrees, SBFT was able to predict 96% of patients who did not require surgery, but only 56% of those with high-grade obstruction. [4](#)
- In suspected low-grade small bowel obstruction, a dedicated small bowel follow through examination is appropriate if enteroclysis is unavailable. [19](#)
- Findings in small bowel obstruction include: [2](#)
 - Failure of contrast to reach the colon within 4 hours
 - Dilatation of loops of small bowel

- Delayed transit time of the barium to a point of transition in the caliber of the bowel lumen.
- With complete obstruction, no barium will be visualised past the point of obstruction in delayed images taken 24 hours after administration of contrast.
- With partial obstruction, barium will pass the obstructed portion into collapsed bowel loops.
- Advantages: [2](#)
 - Does not require nasointestinal intubation
 - Compared to enteroclysis, SBFT is easier to perform and does not require additional expertise
- Limitations: [2,19](#)
 - Time required for contrast to reach the obstruction.
 - Dilution of barium because of excess residual intraluminal fluid resulting in non-uniform small bowel filling.
 - Partially obstructing lesions may not be visualised due to limitations in assessment of intestinal distensibility and fixation of small bowel loops
 - Inability of the patient to drink sufficient quantities of barium.
 - Contraindicated in complete obstruction with suspected bowel ischaemia

COMPUTED TOMOGRAPHY IN LARGE BOWEL OBSTRUCTION (LBO)

- Indicated as an alternative to contrast enema in evaluation of large bowel obstruction, particularly with elderly and/or immobile patients: [14](#)
- Advantages:
 - Does not require insertion of rectal tube and contrast and is therefore better tolerated than a contrast enema.
 - In one study, successfully diagnosed colonic obstruction in 96% of patients and pseudo-obstruction in 93% of patients. [15](#)
- Limitations: [15](#)
 - False negative and false positive results.
 - Limited diagnostic utility with partly obstructing lesions.

SINGLE CONTRAST RETROGRADE ENEMA

- Useful investigation in the management of patients with apparent large bowel obstruction. [18](#)
- 96% sensitivity and 98% specificity diagnosing large bowel obstruction. [6](#)
- Delineates the level of large bowel obstruction and distinguishes distal small bowel obstruction from colonic obstruction. [18](#)
- In some patients in whom an acute distal small bowel obstruction is suspected on plain abdominal

- films, or whom the level of obstruction is indeterminate, it is appropriate to perform a single contrast retrograde enema to exclude a caecal lesion.
- Dilute barium or water soluble iodinated contrast is used. If surgery is imminent, water-soluble contrast is preferred.
- Limitations: The examination is sometimes incomplete if a patient cannot hold the contrast or tolerate insertion of the rectal tube. False positives (eg. localised spasm) and false negatives may lead to misdiagnoses. [15](#)

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Website

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