MESENTERIC ISCHAEMIA TEACHING CASES

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AIMS

- To familiarise the various causes of bowel ischaemia.
- To appreciate the various imaging appearances of bowel ischaemia on CT.

AETIOLOGY

1. Arterial occlusion: MOST COMMON (60-75% ACUTE BOWEL ISCHAEMIA).
2. Venous occlusion (10% ACUTE BOWEL ISCHAEMIA)
3. Strangulated bowel obstruction: Closed loop obstruction.
4. Hypo-perfusion (nonocclusion).

MULTIPLE FINDINGS:

- Homogeneous or heterogeneous hypoattenuating or hyperattenuating wall thickening
- Bowel Dilatation
- Abnormal or absent wall enhancement
- Mesenteric stranding /fluid
- Mesenteric vascular engorgement
- Ascites
- Pneumatosis
- Mesenteric/portal venous gas

DISTRIBUTION:

- Small and/or large bowel
- Diffuse vs localised
- Superficial or transmural

Variable and Nonspecific CT appearance of acute bowel ischaemia.

CT PROTOCOL

NEGATIVE /NEUTRAL ORAL CONTRAST AND IV CONTRAST

To assess mural enhancement

SCANNING PROTOCOL

70-80mls non ionic iodinated IV contrast material . 4 mls/second

Pre contrast Phase: Vascular calcification Hyperdense intravascular clot Intramural hemorrhage

Arterial Phase: Smart prep to Abdominal aorta . Coeliac axis and mesenteric vessels

Portal venous Phase: 70 second scan delay. Mesenteric veins, bowel wall. Other causes of acute abdominal pain

Multiplanar review

CASE 5

HX:

70 F Abdominal pain and distention, vomiting. Previous intraabdominal surgery.

CT ABDO AND PELVIS

Close loop mid small bowel obstruction in pelvis with mesenteric oedema and two transition points close to each other (Coronal: proximal 38 distal 35).

Poor mural enhancement of obstructed small bowel.

Upstream dilatation of more proximal SB, proximal to proximal transition pt.

Ascites. No free gas.

OR:

DENSE ADHESIONS DUE TO PREVIOUS CAESARIAN. MID SMALL BOWEL CLOSE LOOP SBO WITH INFARCTION.

DX CLOSE LOOP SMALL BOWEL OBSTRUCTION WITH SECONDARY INFARCTION

CASE 5

CLOSE LOOP BOWEL OBSTRUCTION

Segment of bowel is obstructed at two points along its course - progressive accumulation of fluid and gas within the isolated loop.

Sites of obstruction are adjacent to each other, often the result of a single constricting lesion that occludes the bowel and affects adjacent mesentery .

Isolated segment continues to secrete fluid → progressive dilatation and fluid filled → impair venous return → ischaemia.

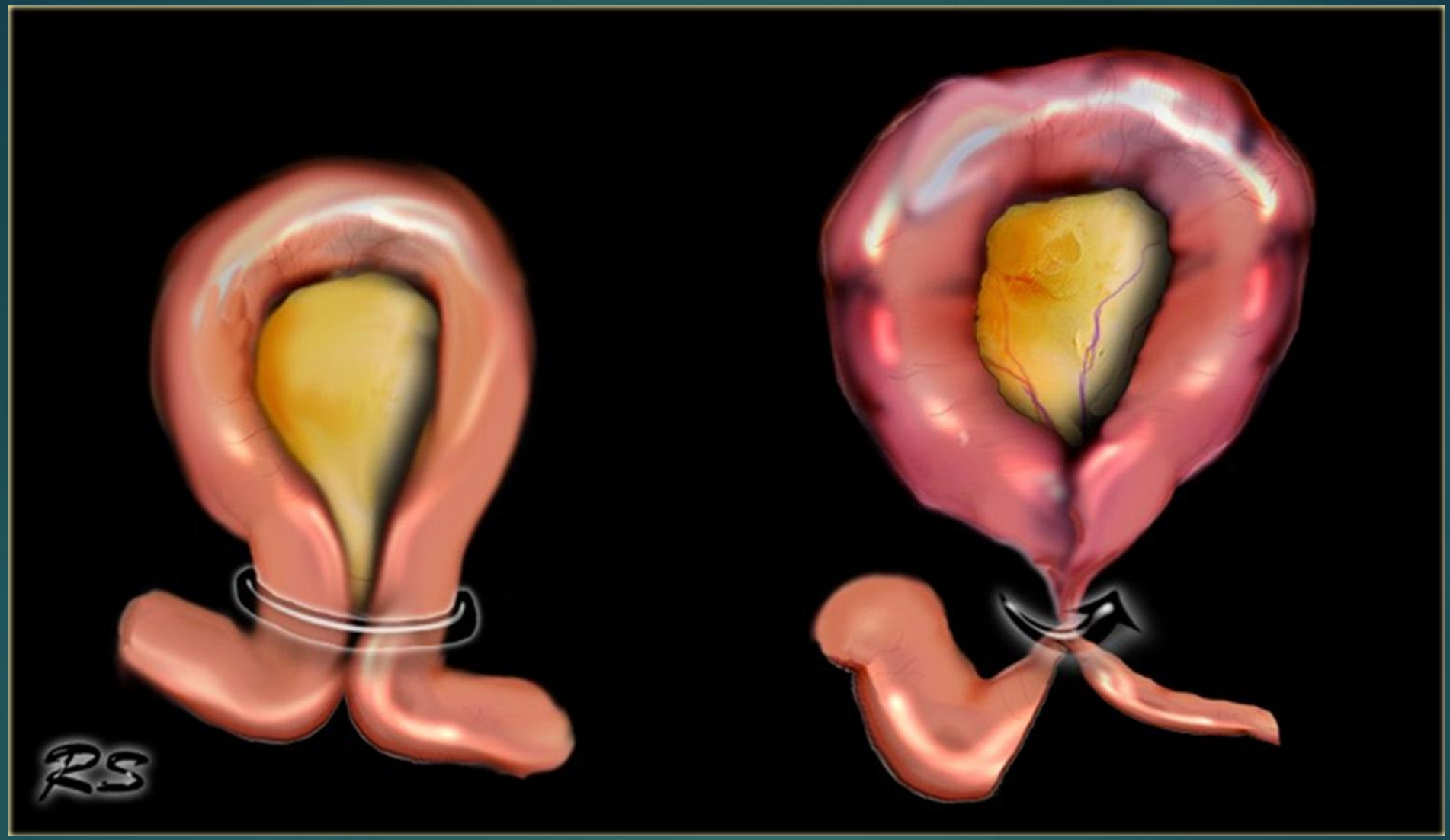
Increased risk of volvulus due to bowel proximal and distal to the dilated segment continues to peristalse around its point of obstruction: Increasing risk the risk of coexistent ischemia.

Causes:

Adhesions: Most common.

Internal hernias

Congenital or iatrogenic defects in the mesentery or omentum: Roux-en-Y gastric bypass



https://radiologyassistant.nl/abdomen/bowel/closed-loop-in-small-bowel-obstruction
Dr Robin Smithuis, "Radiology Assistant" weblink

CASE 5

CLOSE LOOP BOWEL OBSTRUCTION

Focal dilated cluster of bowel + poor mural enhancement + mesenteric fat stranding

Two transition points adjacent to each other: Multiplanar view

Upstream dilatation of bowel proximal to transition point.

CASE 6

ISCHAEMIC COLITIS

Hypoperfusion and vasospasm of the splanchnic arteries: most common.

Watershed areas of the colon suspectible: Splenic flexure and rectosigmoid

Areas of relatively poor perfusion at the junction of major vascular territories.

Typically left-sided involvement is typical in elderly patients with hypoperfusion.

Clue: Location Location Location!

Conservative management.

TEACHING POINTS

- Bowel dilatation = early sign of bowel ischaemia.
- Look for mural enhancement, or lack of.
- Low threshold for rescanning of patients with "normal" CT.
- Look at mesenteric vessels on all CTS, especially when patients present with nonspecific symptoms: Nausea, vomitting abdominal pain, weight loss.

TEACHING POINTS

- Close loop SBO:

Perienteric fat stranding and oedema . DDX: Venous ischaemia.

Mural wall hypoenhancement.

Most common cause: Adhesions.

Transition points Close to each other: Coronals.

Upstream dilatation of bowel proximal to proximal transition point

- Look at bowel loop wall enhancement if there is mesenteric fat oedema and vice versa
- Ischaemic Colitis:

Hypoperfusion. No thrombus.