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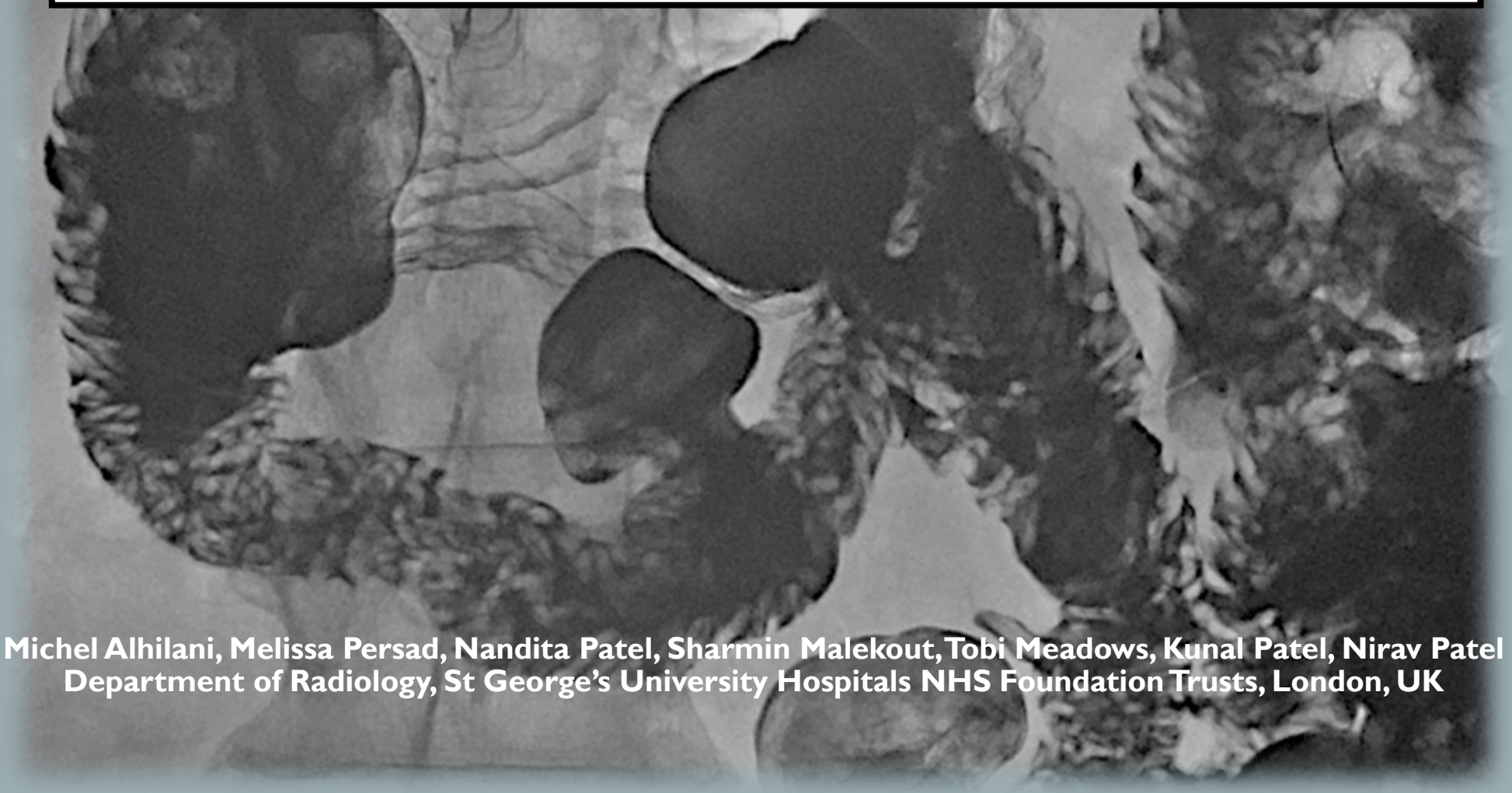
SMALL BOWEL DIVERTICULA – A FULL BAG OF PRESENTATION



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UNCOMPLICATED SMALL BOWEL DIVERTICULAR DISEASE

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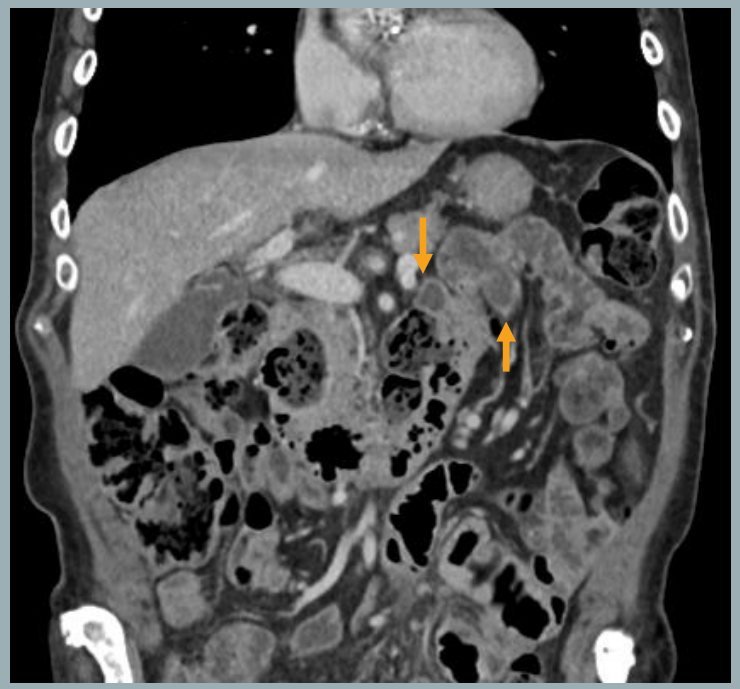
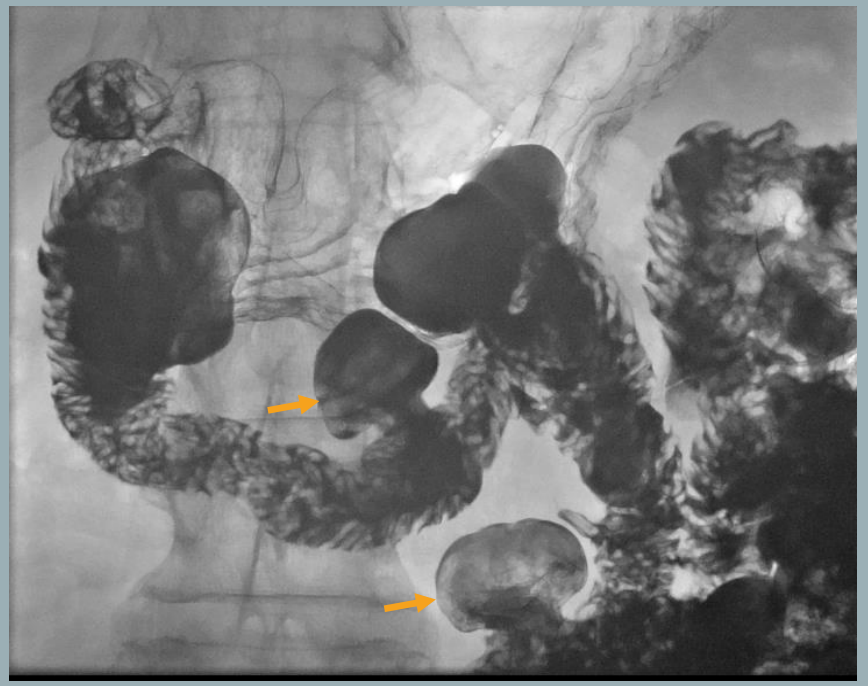
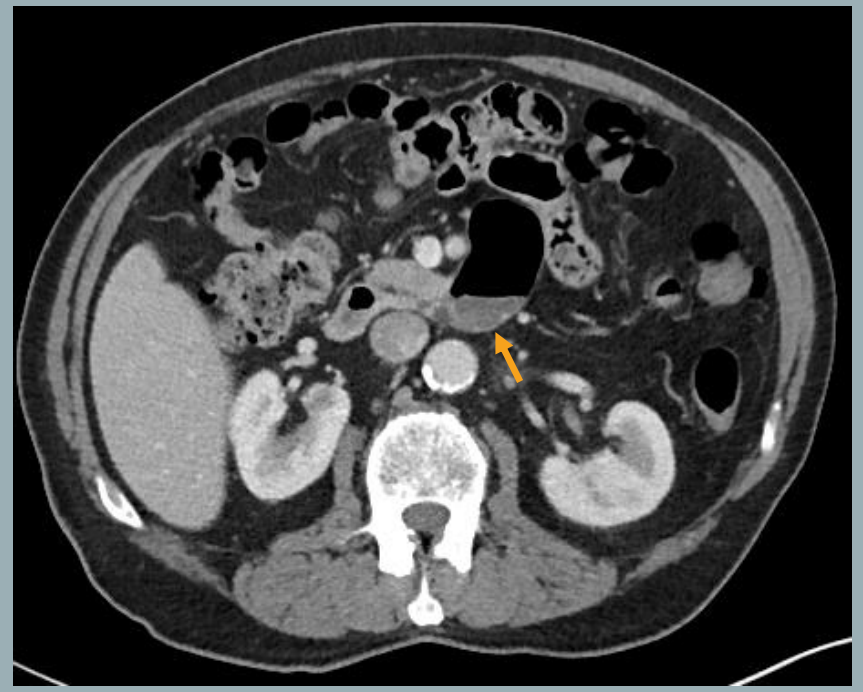
Small bowel diverticular disease is a relatively uncommon condition compared to diverticulosis in the colon. The presentation and location can vary:

- **Duodenum:** Most common site, around 60-80% of small bowel diverticula occur in the duodenum, particularly D2 and D3. Duodenal diverticula can be true (containing all layers of the intestinal wall) or pseudodiverticula (outpouchings only involving the mucosa and submucosa).
- **Jejunum:** Less common: Approximately 15-20% of small bowel diverticula occur in the jejunum. Mainly true diverticula.
- **Ileum:** Least common: Only about 5-10% of small bowel diverticula occur in the ileum. Primarily true diverticula.





CASE 1: Coronal view CT Abdomen and pelvis with contrast (left) and barium swallow study (right) of an 83-year-old male patient, showing multiple small bowel diverticula seen within the duodenum and jejunum.



CASE 2: Axial view CT Abdomen and pelvis with contrast of an 88-year-old male patient with a large D3 duodenal diverticulum.

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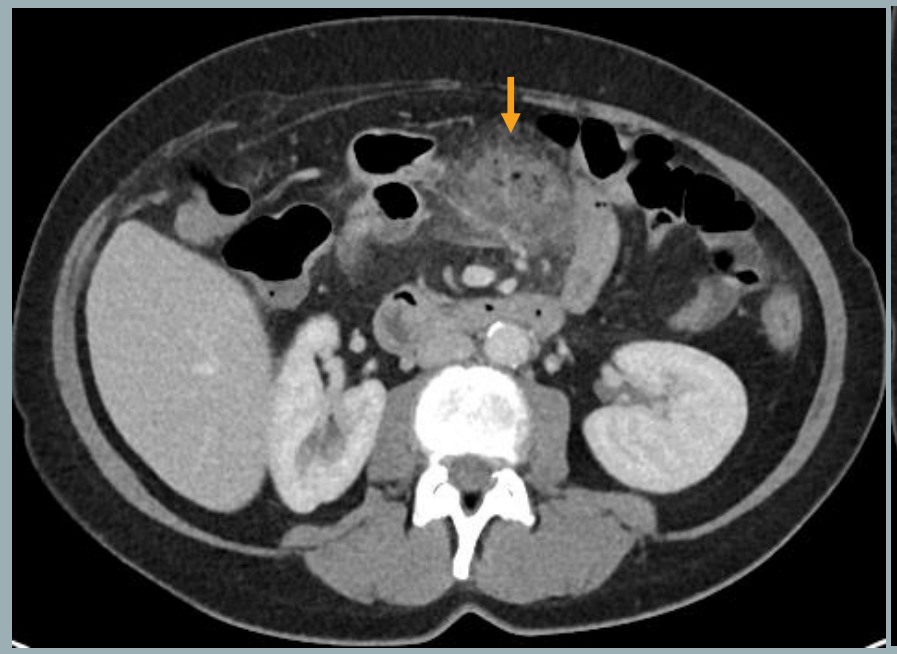
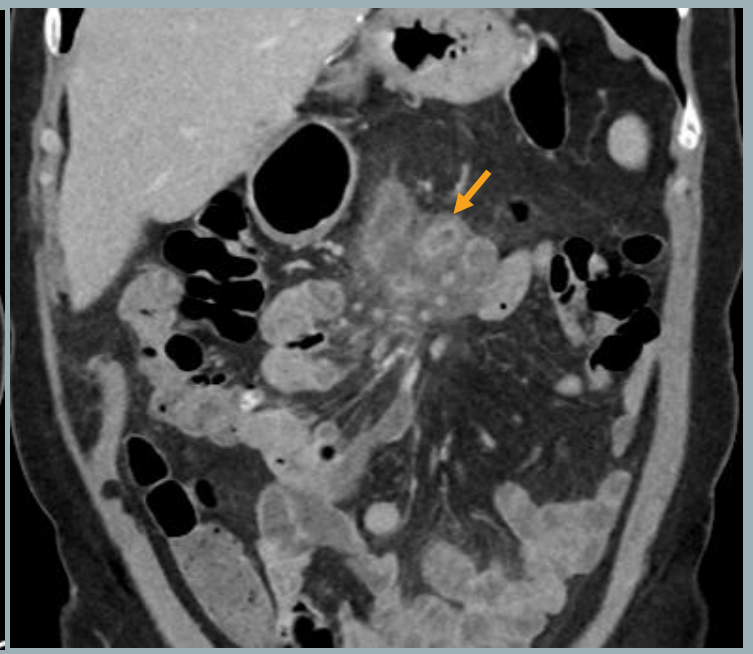
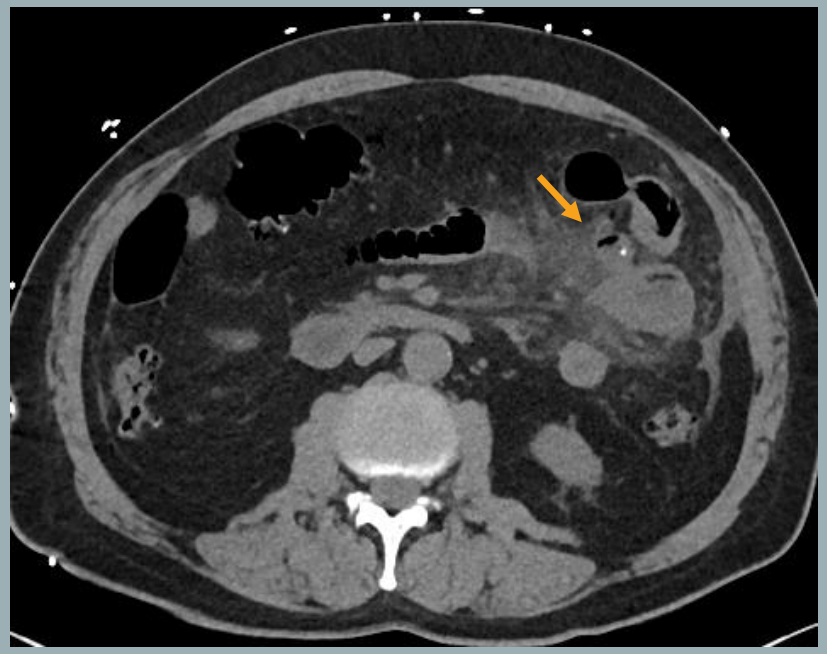




CASE 3: Axial (left) and coronal (right) views of CT Abdomen and pelvis with contrast of a 58-year-old female patient with jejunal diverticulitis with no evidence of perforation.



CASE 4: Axial view CT Abdomen and pelvis non-contrast of a 91-year-old male patient with acute jejunal diverticulitis. No drainable collections.

Small bowel diverticula are largely asymptomatic but can occasionally lead to complications ranging from inflammation, bleeding, bacterial overgrowth and perforation.

CT/MR features of small bowel diverticulitis are similar to colonic diverticulitis:

1- Thickened and enhancing diverticular wall
2- Peri-diverticular mesenteric fat stranding
3- Acute inflamed adjacent small bowel
4- Thickened and enhancing bowel wall
5- Mesenteric fat stranding
6- Reactive local nodal enlargement

Management: Due to the rarity, there is no standard recommendation but conservative management has been shown to be successful.

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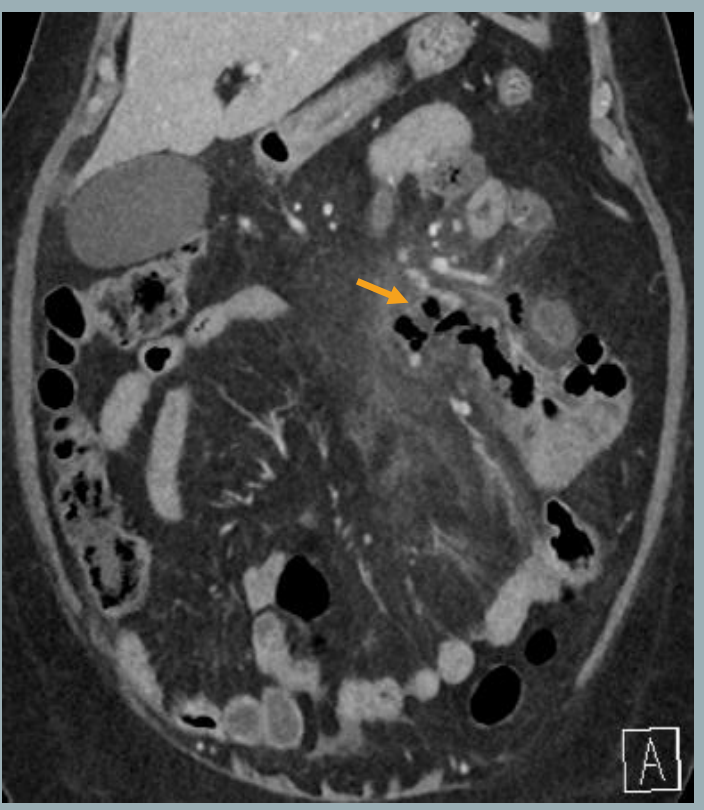
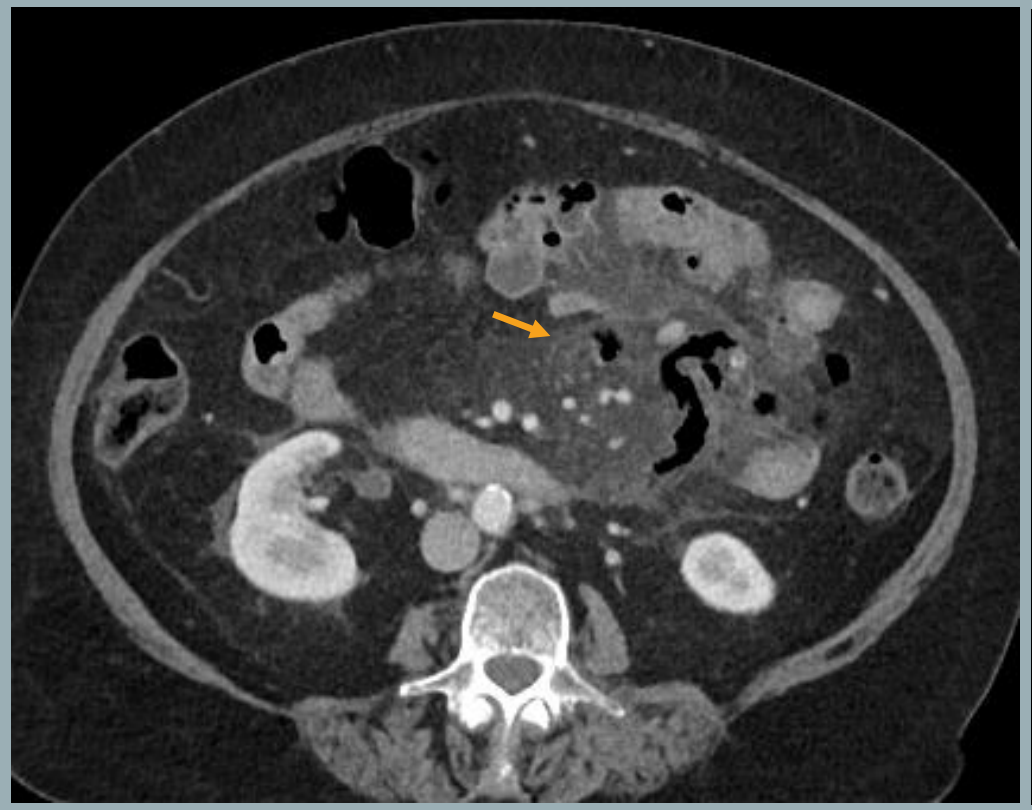
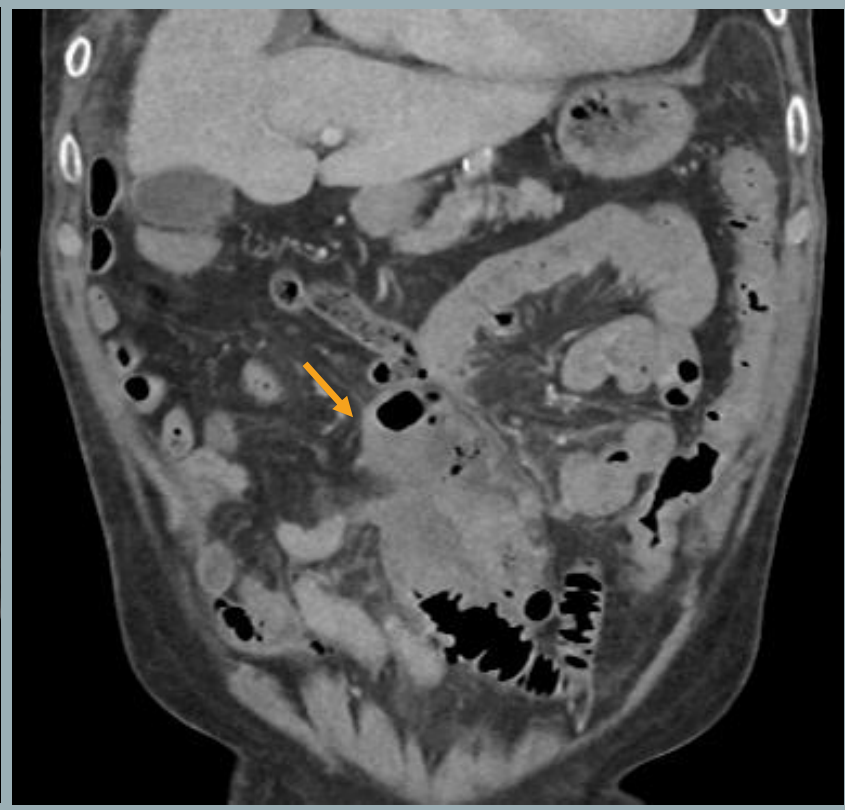




CASE 5: Coronal (left) and axial (right) views of CT Abdomen and pelvis with contrast of an 81-year-old female patient with a sealed perforated jejunal diverticulitis. The bowel wall enhancement is preserved. No drainable collections are seen.



CASE 6: Coronal view CT Abdomen and pelvis with contrast of an 84-year-old male patient with mid small bowel diverticulitis with perforation.

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BLEEDING SMALL BOWEL DIVERTICULUM

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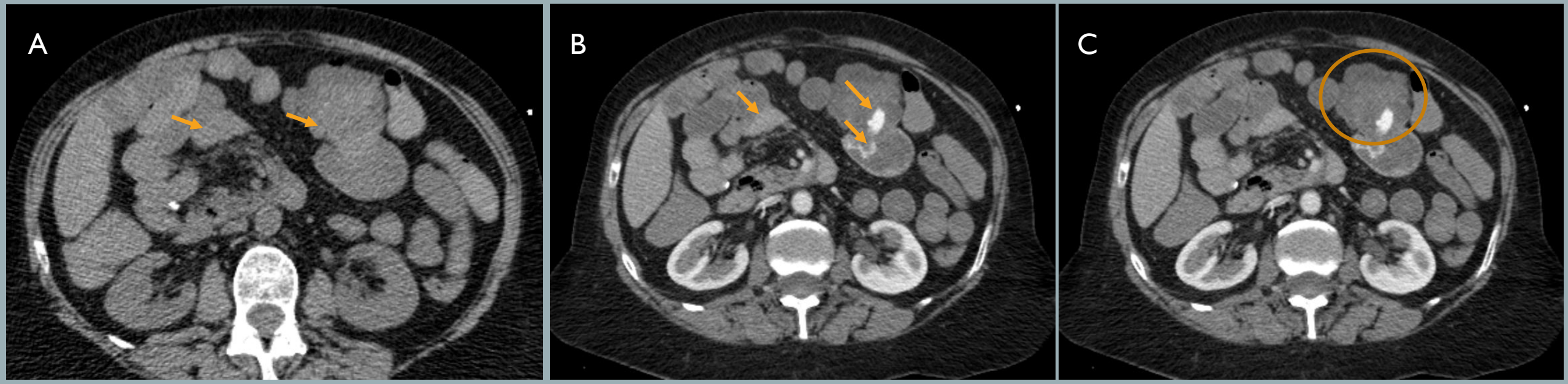

CASE 7 (A) CT abdomen and pelvis non-contrast demonstrating high density luminal material in keeping with blood. **(B)** Post contrast CT abdomen and pelvis images show active bleeding from the wall at the neck of a small bowel diverticulum. **(C)** The diverticulum appears large and lobulated and was mistaken for a tumour.

- Whilst rare, bleeding in small bowel diverticula can occur secondary to increased pressure damaging blood vessels within the pouches, typically presenting as dark, tarry stools or iron-deficiency anaemia.
- Unlike bleeding in large bowel diverticulosis, which is often painless, small bowel bleeding may be accompanied by abdominal pain.
- Management of bleeding small bowel diverticula depends on severity, ranging from close monitoring and dietary adjustments for mild cases (like adding fibre-rich vegetables to the diet) to endoscopic procedures/surgery for heavier or persistent bleeding.

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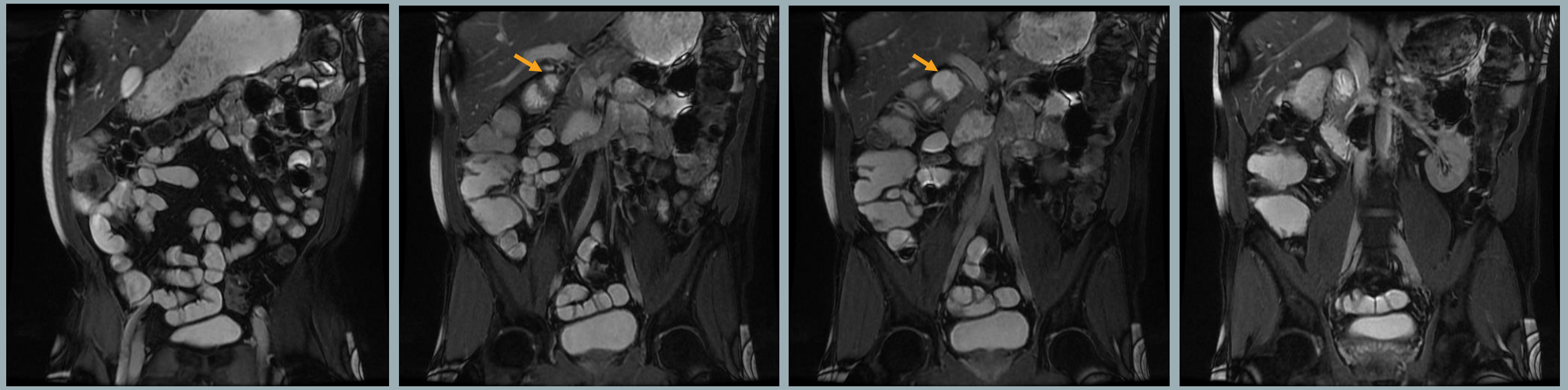
PERIAMPULLARY DIVERTICULA



CASE 8: Small bowel MRI of a 46 year old man demonstrating a pre-ampullary diverticulum. There is a duodenal diverticulum seen arising from the periampullary region which is best appreciated on the coronal images (arrow).

Periampullary diverticula are outpouchings in the duodenum near the ampulla of Vater. They can be occult or mimicking other pathologies such as tumours. Identification is crucial as they can pose technical challenges to ERCP.

Complications:

- Increased risk of ERCP failure due to difficulty cannulating the bile duct.
- Sphincter of Oddi dysfunction, leading to bile duct stones and pancreatitis.
- Diverticulitis (inflammation of the diverticulum itself).

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MECKEL'S DIVERTICULUM

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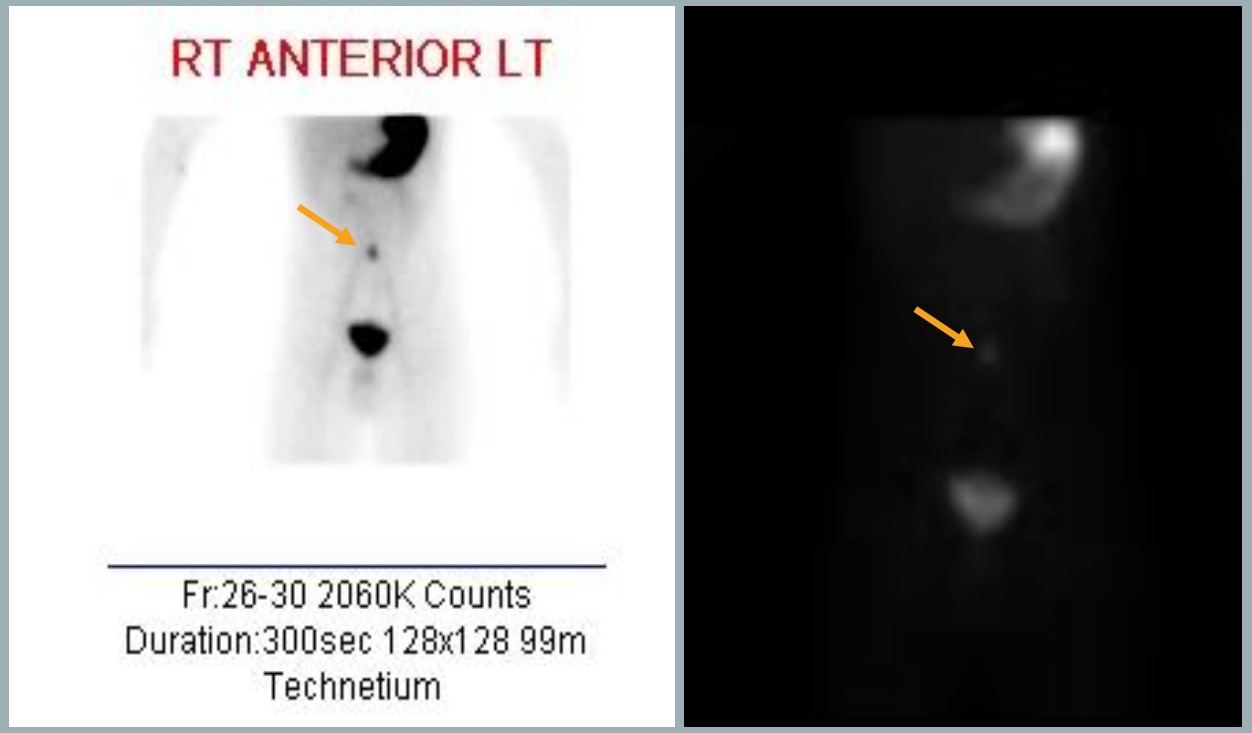
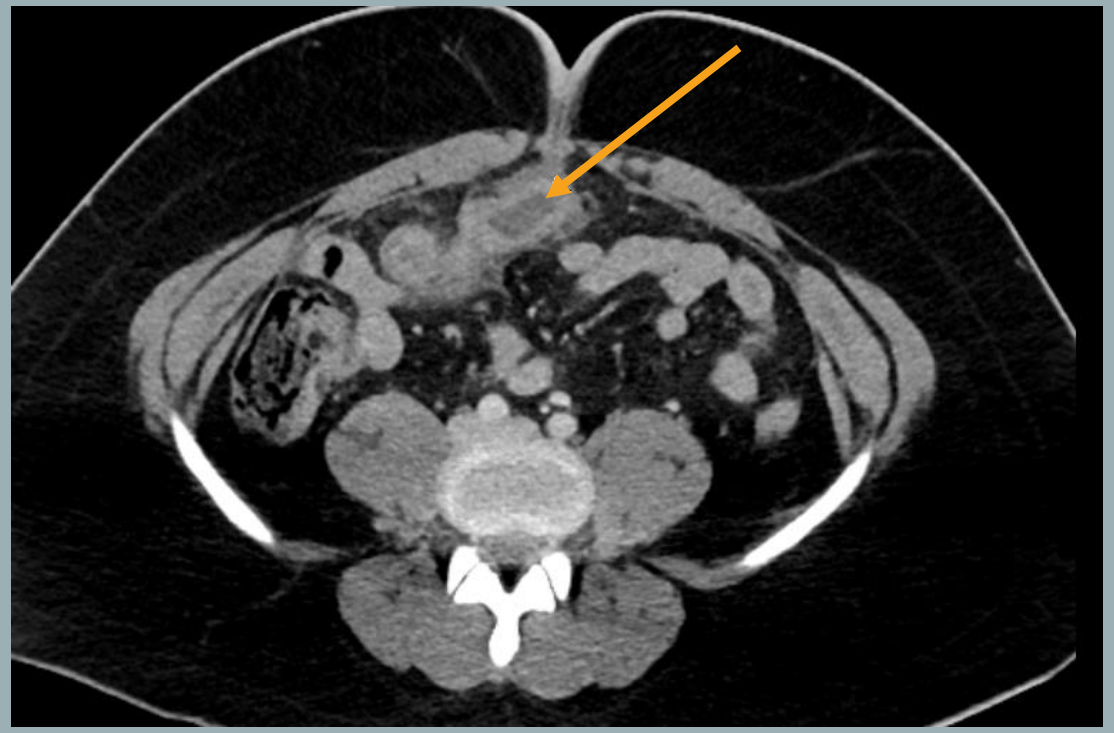


CASE 9: 99mTc-pertechnetate (TCO4-) Meckel's diverticulum study of a 6-year-old boy with history of melaena. Scintigraphic appearances are consistent with ectopic gastric mucosa in the midline of the abdomen presumably related to a Meckel's diverticulum.



CASE 10: CT abdomen and pelvis with contrast showing a thickened, blind ending loop of bowel projecting from the ileum with mural enhancement. This is a case of a **Meckel's diverticulitis.**

Meckel's diverticulum is a congenital remnant of the umbilical cord, in the small intestine, affecting approximately 2% of individuals but is often indolent. When present, complications include gastrointestinal bleeding and intestinal obstruction, causing pain and constipation. Diagnosis is facilitated by involves CT scans or nuclear imaging involving pertechnetate. Due to the presence of ectopic gastric or pancreatic tissue, Meckel's diverticulum can also be associated with tumours.

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LEARNING POINTS

- Despite not being routinely assessed on acute abdominal imaging, a prospective radiological diagnosis of small bowel diverticular disease plays a pivotal role in subsequent management.
- Awareness of small bowel diverticula and it's complications can prevent the reporter from overlooking this finding and improve diagnostic accuracy and thus patient management.
- Periampullary diverticula in particular, can have significant complications and increase the risk of ERCP failure, making assessment crucial.

Resources:

https://radiopaedia.org/articles/small-intestine-diverticular-disease?lang=gb

Rangan, V. and Lamont, J.T., 2020. Small bowel diverticulosis: pathogenesis, clinical management, and new concepts. *Current Gastroenterology Reports*, *22*, pp.1-7.

Wesson, H.K., Natoli, K.R., Harris Jr, J.E. and Zenilman, M.E., 2019. Small Bowel Diverticula. In *Shackelford's Surgery of the Alimentary Tract, 2 Volume Set* (pp. 908-913). Elsevier.