

# Edge of film cardiac and aortic pathology on abdominal imaging – impactful review areas for abdominal radiologists

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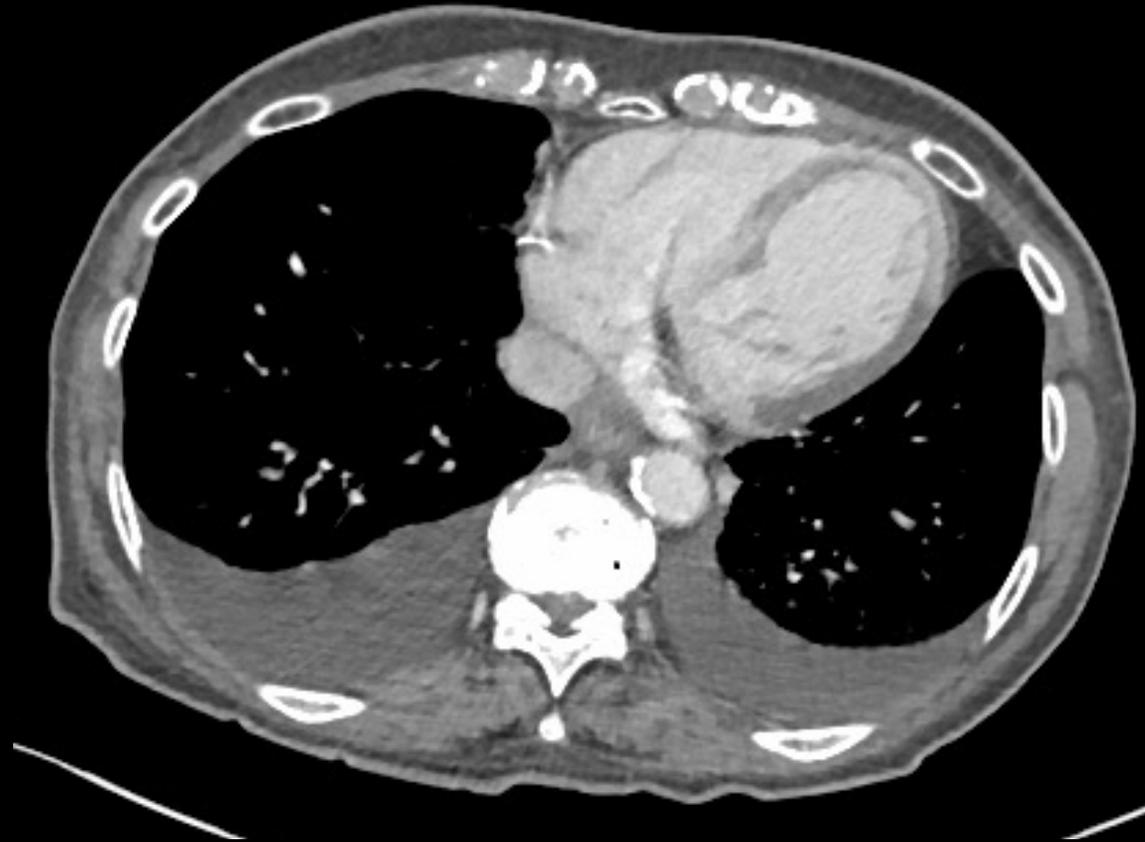
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# Learning outcomes

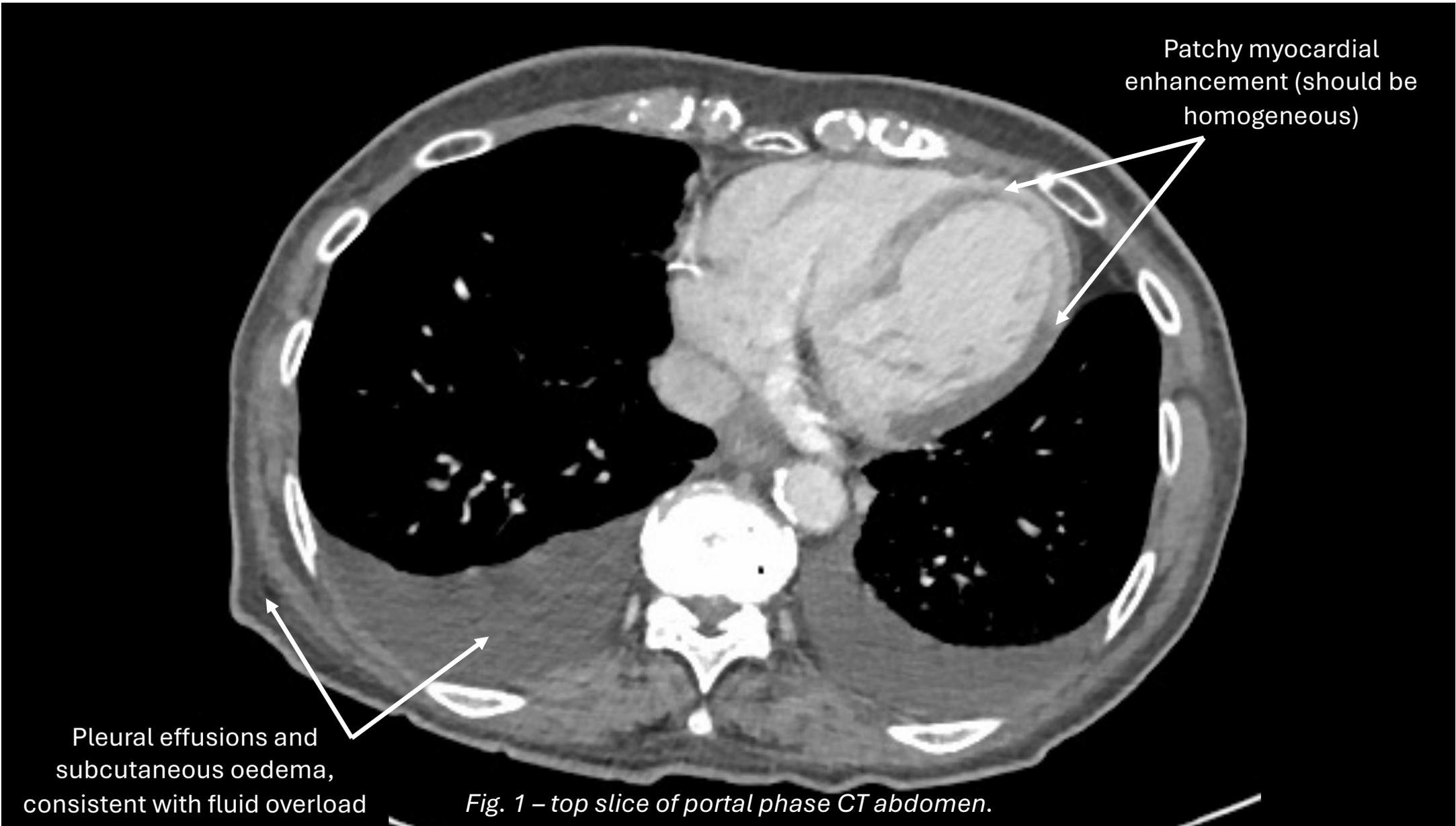
1. Become familiar with critical “edge of film” cardiac and aortic findings on acute abdominal imaging.
2. Understand the significance of these findings for the radiology report.
3. Develop impactful review areas to ensure these critical pathologies are identified in a timely manner.

# Case 1

- 87F presenting with diffuse abdominal pain, elevated capillary blood glucose and lactate 4.5.
- Appendicitis suspected clinically.
- CT abdomen & pelvis, portal phase performed.



*Fig. 1 – top slice of portal phase CT abdomen.*



# Case 1

- Remainder of CT showed free fluid, but no abdominal cause for pain.
- Suspicion for acute myocardial ischaemia raised in report.
- Troponin and ECG performed, in-keeping with STEMI.
- Treated for acute coronary syndrome, passed away from heart failure in days following.



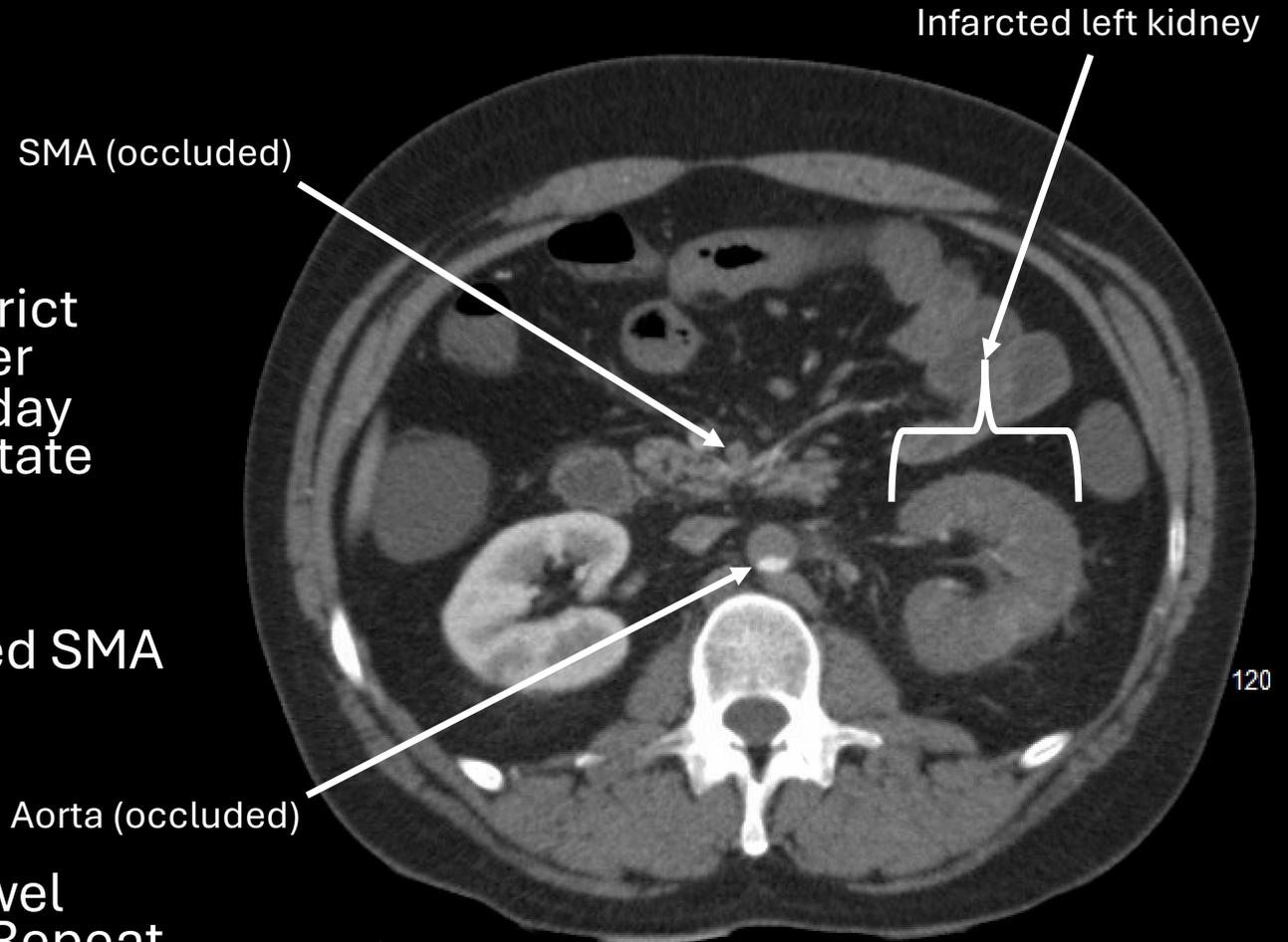
*Fig. 1 – top slice of portal phase CT abdomen.*

# Case 1 - learning points

1. The heart is often a neglected review area on CT abdomen.
2. Acute myocardial ischaemia may demonstrate hypo-enhancement of the myocardium: extracellular contrast media (including standard iodinated media) show reduced uptake in the first pass.
3. Large infarcts may be visible even on non-ECG-gated CT. Identification ensures prompt diagnosis and opportunity for treatment.

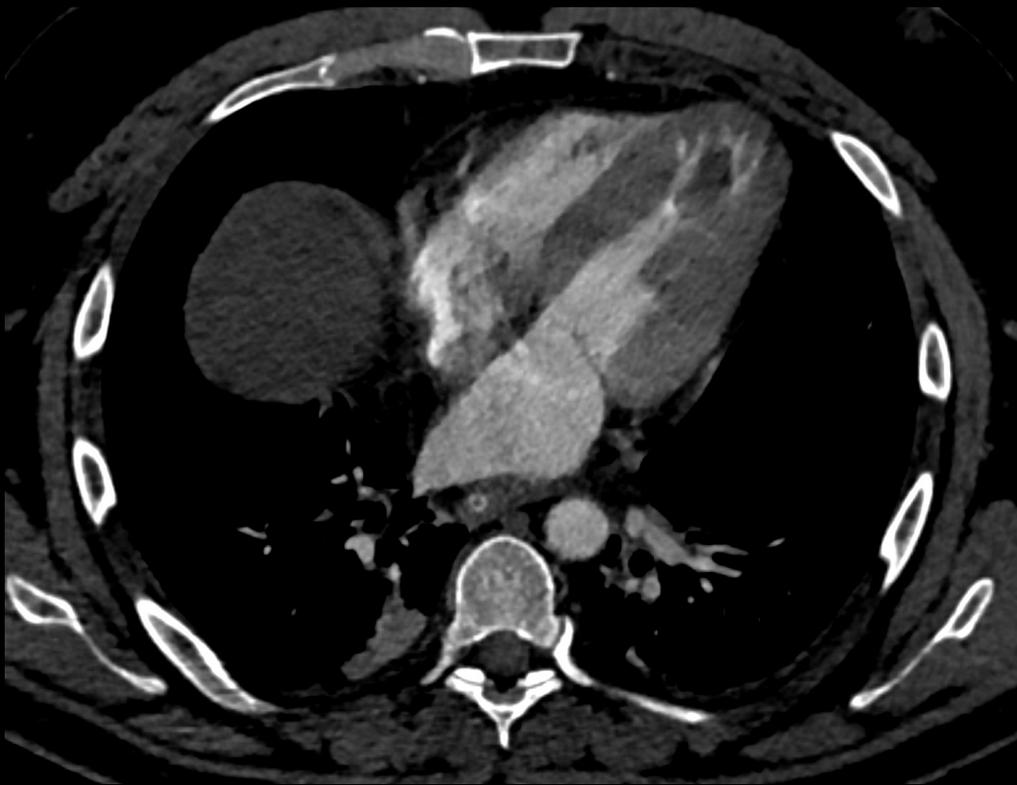
## Case 2

- 29M transferred from district general hospital with lower abdominal pain and one day fresh rectal bleeding. Lactate 2.7, PT 29.1.
- CT prior to transfer showed SMA and aortic thrombus with infarcted left kidney.
- Suspected new small bowel ischaemia after transfer. Repeat CT triple phase abdomen performed.



*Fig. 2 – arterial phase CT abdomen.*

## Case 2



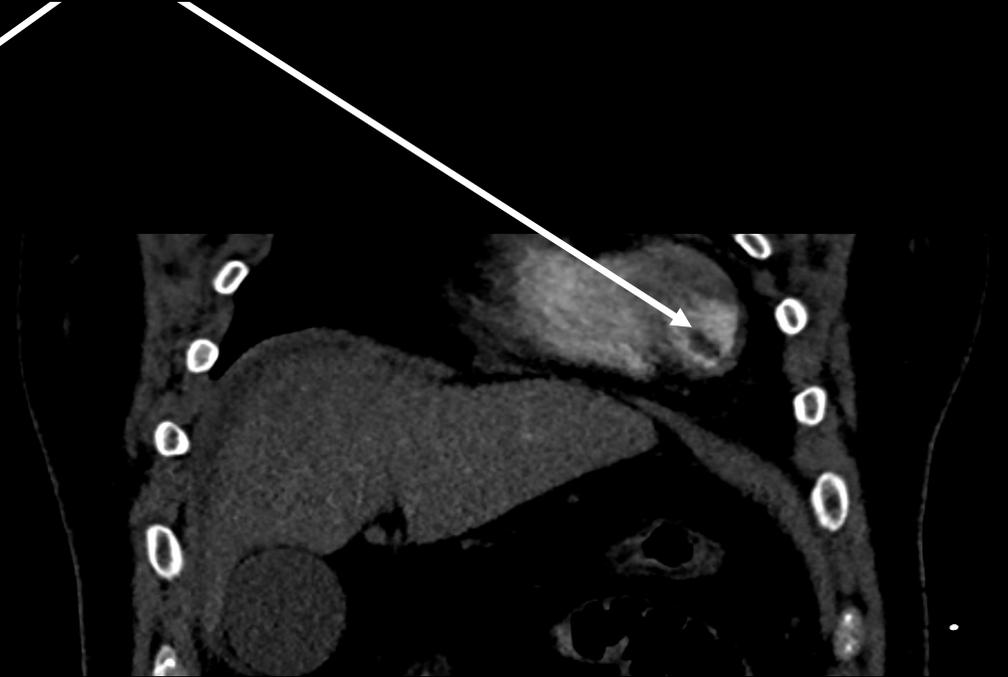
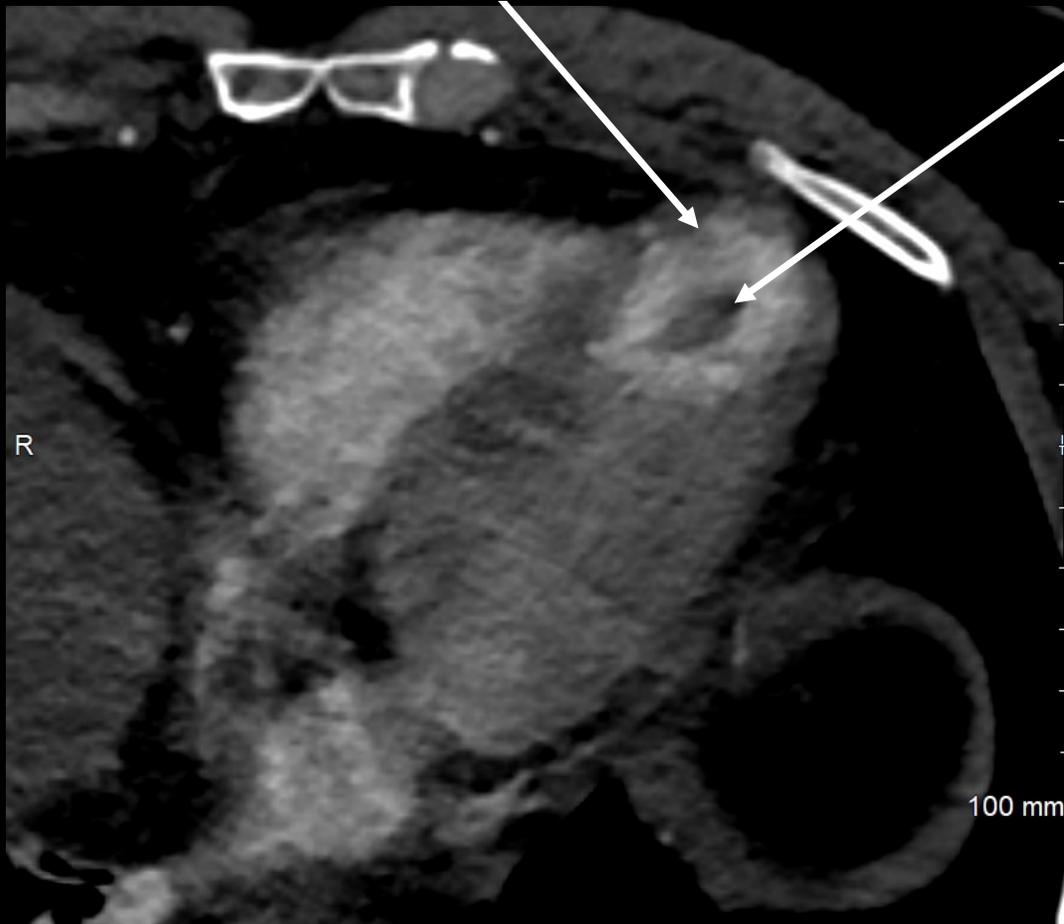
*Fig. 3 – arterial phase repeat CT after transfer, top slice.*



*Fig. 4 – portal phase repeat CT : ischaemic small bowel loops with portal venous gas.*

Left ventricular apex aneurysm  
with thinning of the left  
ventricular apex wall

Thrombus within the LV  
aneurysm



*Fig. 5 – cropped coronal reformat of arterial  
phase CT abdomen.*

*Fig. 3 – arterial phase of repeat CT after transfer, top slice.*

## Case 2

- Finding of LV thrombus and aneurysm raised for myocardial infarction, however no ECG or echo features to support this.
- The patient went on to have a small bowel resection with subsequent intestinal failure, and lower limb vascular insufficiency.
- The patient had genetic testing later the same year and confirmed homocysteinuria, which is strongly associated with thrombotic disease.

## Case 2 – learning points

1. Satisfaction of search – multiple abnormalities on a CT can lead to missed pathology elsewhere without robust review areas.
2. Edge of film – arterial phase imaging, while not ECG-gated, provides an opportunity to identify left heart thrombus.
3. Large intracardiac thrombi may even be visible on portal phase imaging.

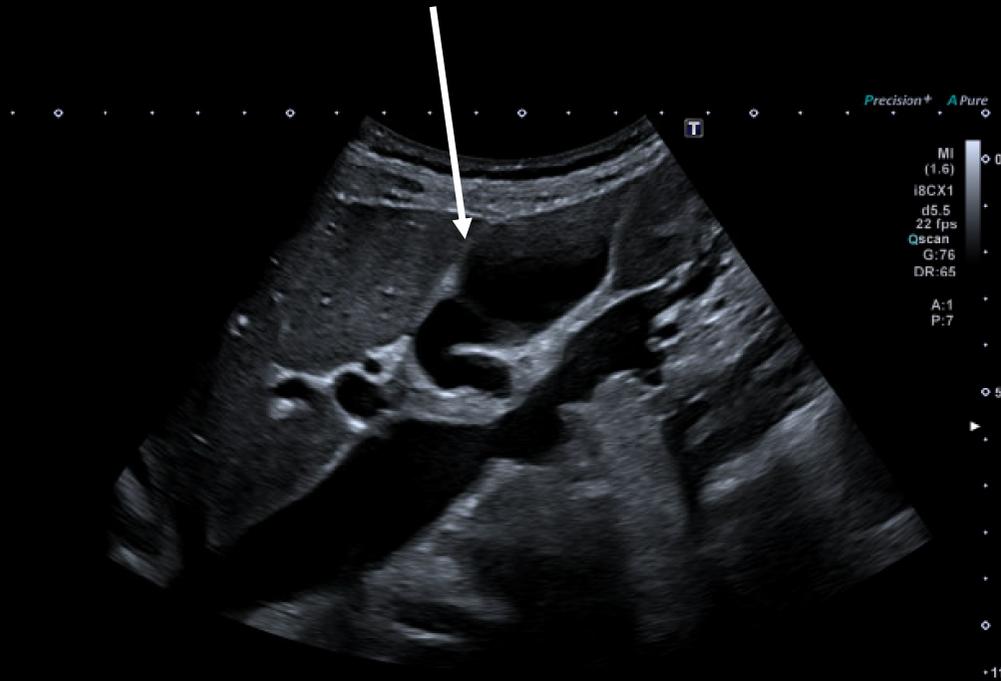
## Case 3

- 71F attended with two weeks of intermittent upper abdominal pain, worsening in the last day.
- Associated nausea and elevated inflammatory markers: CRP 61, WCC 11.8.
- Referred for US abdomen to investigate for ?cholecystitis.



*Fig. 6 – US (transverse, epigastrium).*

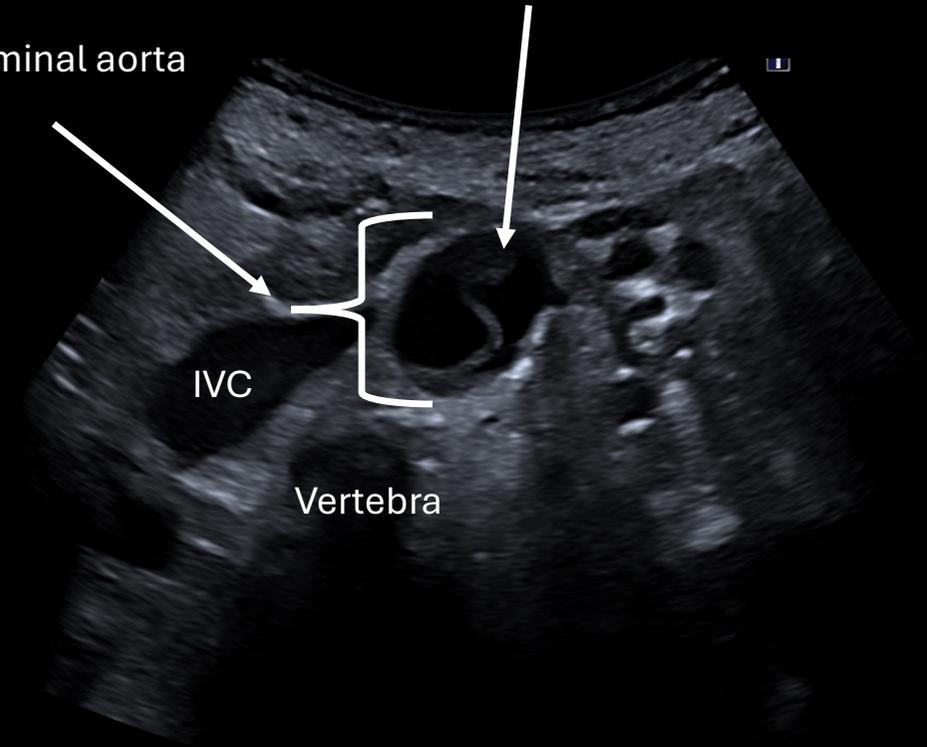
Thin-walled anechoic gallbladder. No calculi or pericholecystic fluid.



*Fig. 7 – US images of the gallbladder.*

Echogenic, mobile intimal flap dividing the aortic lumen into true and false channels.

Abdominal aorta



*Fig. 8 – US (transverse, epigastrium, labelled)*

## Case 3

- Immediate CT Aorta performed which showed type A aortic dissection.
- Patient transferred for aortic root repair and aortic valve replacement.
- Pathology showed granulomatous vasculitis and was diagnosed with giant cell arteritis (patient also reported visual loss).

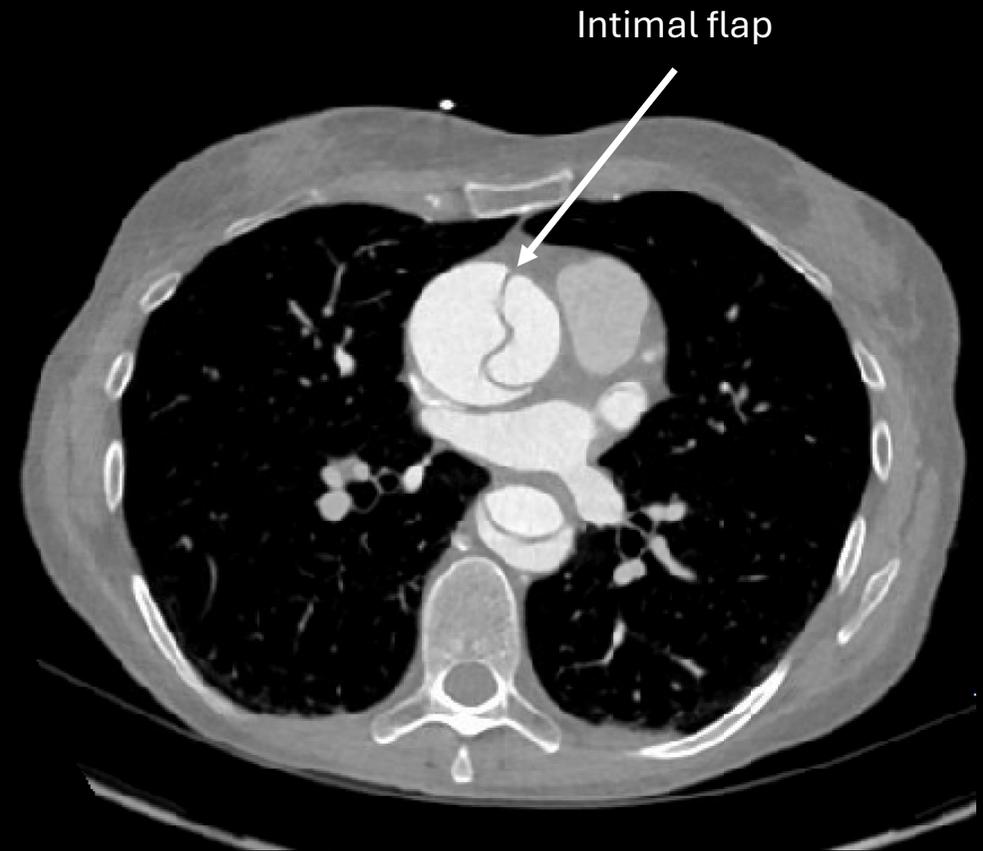


Fig. 9 – CT aorta post-contrast.

## Case 3 – companion case

- Another patient presenting with epigastric pain.
- Only finding of note was crescentic thickening of the descending aorta.
- Confirmed as acute (hyperdense) intramural haematoma on subsequent unenhanced CT.
- Conservative management of this intramural haematoma under vascular surgeons.



*Fig 10 – aortic intramural haematoma (portal phase CT).*

## Case 3 – companion case



*Fig 10 – aortic intramural haematoma (portal phase CT).*

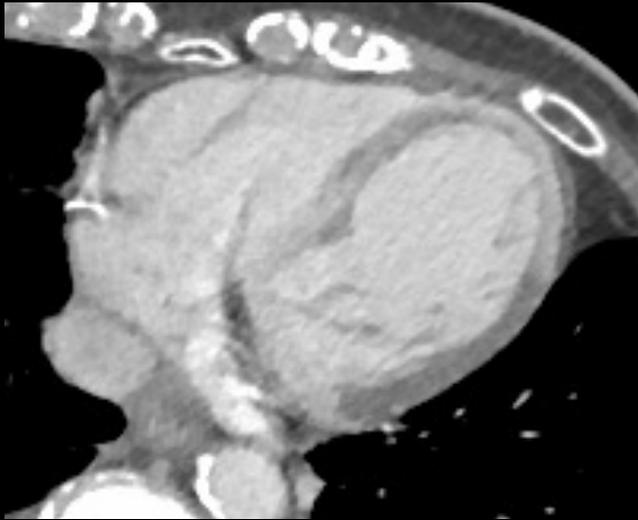


*Fig 11 – hyperdense aortic intramural haematoma (unenhanced CT).*

## Case 3 – learning points

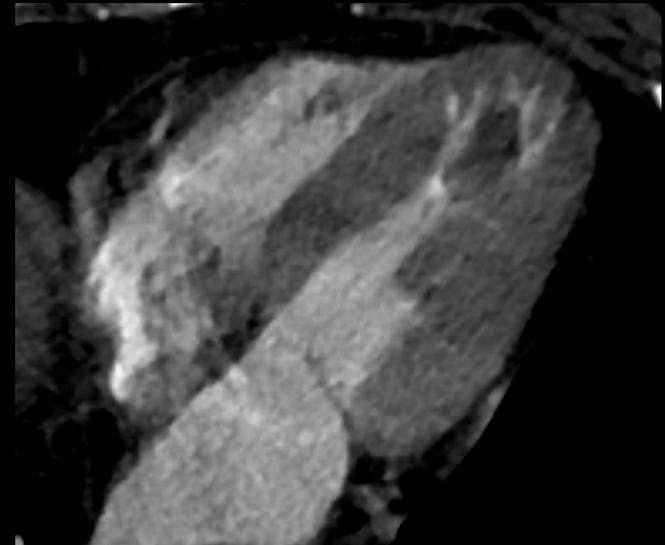
1. Thorough US assessment of acute abdominal pain should include review of the abdominal aortic calibre and lumen.
2. Acute dissection may be visible on US as a curvilinear intimal flap in the lumen. CT is essential to confirm extent/anatomy prior to intervention.
3. Acute intramural haematoma is subtle on post-contrast CT. An unenhanced CT may be required to confirm.

# Impactful review areas - heart

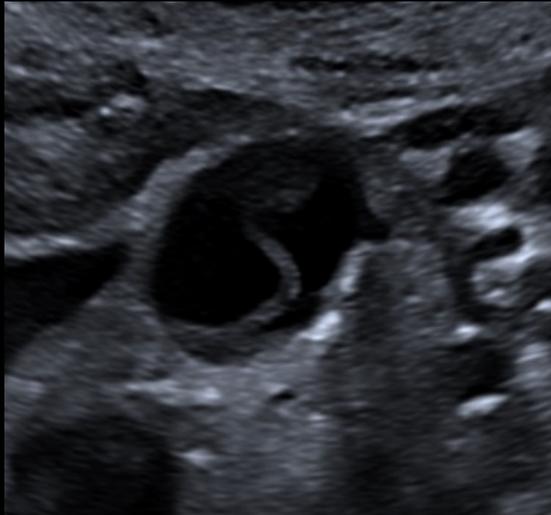


Review the myocardium for evidence of ischaemia.

Review the chambers for thrombus.



# Impactful review areas - aorta



Review the lumen for intimal dissection.

Review the wall for intramural haematoma.



# Summary of learning

1. The heart is partially imaged on abdominal CT. Myocardial infarction may present with abdominal pain: large infarctions may be visible as myocardial hypo-enhancement.
2. Post-contrast imaging provides opportunities to identify intra-cardiac thrombus, with implications for subsequent embolisation of clot into the abdomen.
3. The aorta is readily reviewed on most abdominal US and CT. Both intimal dissection and intramural haematoma may be identified on non-dedicated imaging.