

Acute Visceral Vascular Diagnosis in the Abdomen

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Disclosures: None

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- **Aneurysms**
 - **AVMs + AVF**
 - **Dissection**
 - **Occlusions**
-
- **Venous : SMV+PV, OV**

Visceral artery aneurysms

- Abnormal (>50% normal vessel size) focal dilatation
- True aneurysms and pseudoaneurysms
- 0.01% to 2% on autopsy and angiographic studies = >>half the cases splenic artery
- MC: Asymptomatic = discovered incidentally.
- LC: Hemorrhage, pain, palpable

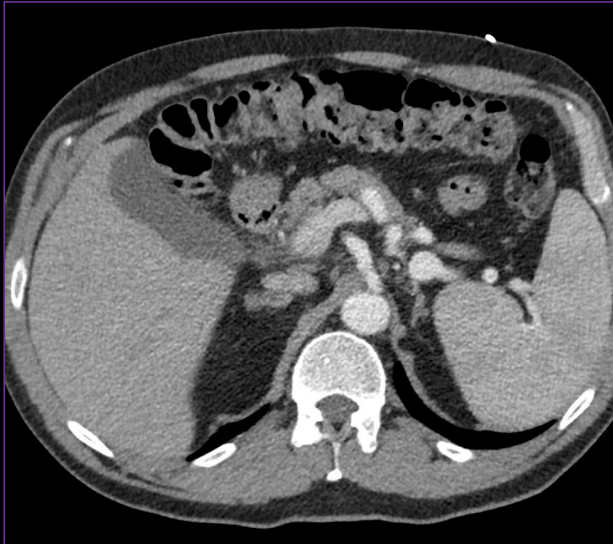
- Risk of rupture: 5-25%, depending on types and >>size
- If rupture -> high rate of morbidity and mortality (1/3)

Not uncommon + Multiple aneurysms present in one-third of the cases.

- Von Recklinghausen's disease
- Ehlers-Danlos syndrome
- Periarteritis nodosa
- Marfan's
- Wegner's Granulomatosis

- **MC: splenic artery aneurysm: ~70%**
- Hepatic artery aneurysm: <20%
- Renal, Celiac and SMA aneurysm, GDA & pancreatic branches: ~ 5%
- Jejunal and ileocolic arteries, IMA aneurysm: <1-3%

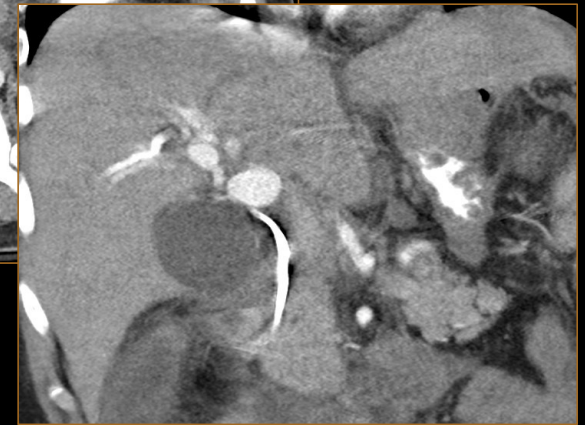
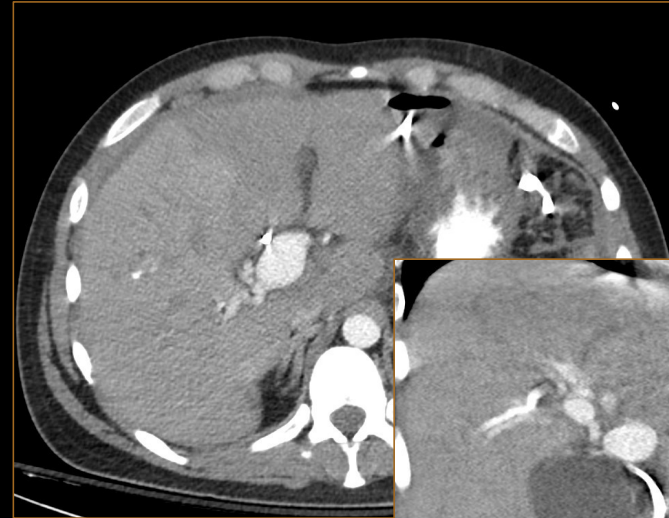
Splenic artery aneurysms



Treat at
2 cm



Hepatic artery aneurysms



High risk of rupture
(80%)

LO
TH

Renal artery aneurysms

Females, Fifty, FMD

Pregnancy-associated RAA rupture is associated with 80% mortality

1.0-1.5 cm: follow-up in 1-2 years, as long as the patient is not premenopausal

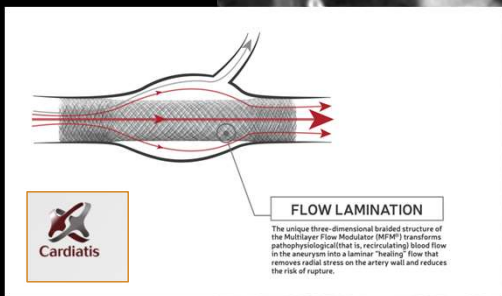
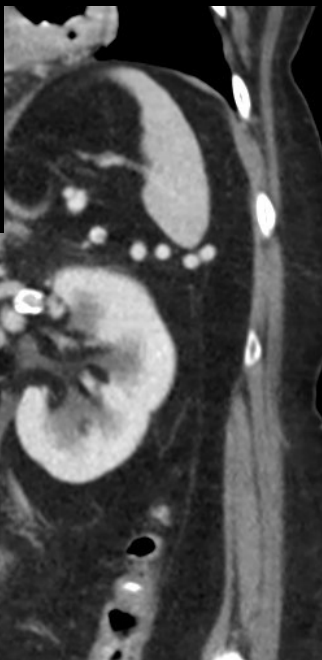
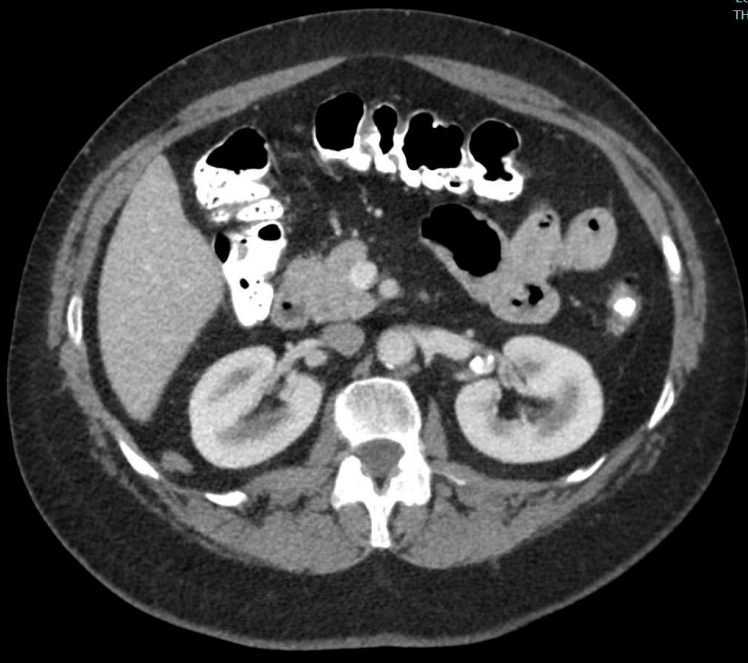
>1.5 cm
consider surgical or endovascular repair

>2 cm
surgical treatment is recommended for

Modality of management depends on location:

branch RAA: embolization
main renal artery RAA: ligation and bypass surgery, nephrectomy or stent placement

Stent shown: by Cardiatis (BL) (preserves flow while promoting treatment of excluded area)



SMA Thrombosis & Thromboembolism

Thrombosis:

Atherosclerosis

Smoking

Hypercoagulable status

- Proximal 2 cm.

Embolism (>50%):

MI history

Mechanical heart valve/ Valve dysfunction

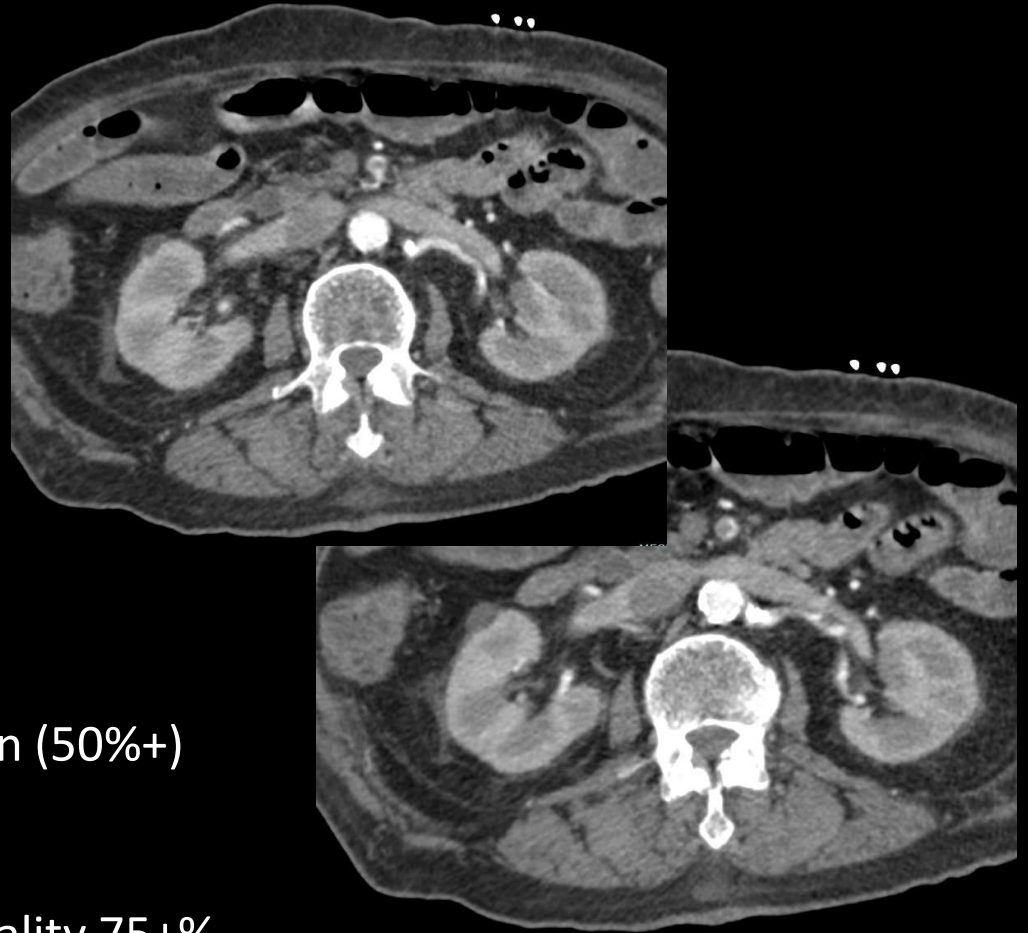
Atrial fibrillation

Right to Left shunt

- At level of (or distal to) middle colic origin (50%+)

- Other organs (Kidney, Spleen)

Check for secondary (bowel) findings. Mortality 75+%



SMA thrombectomy and stenting



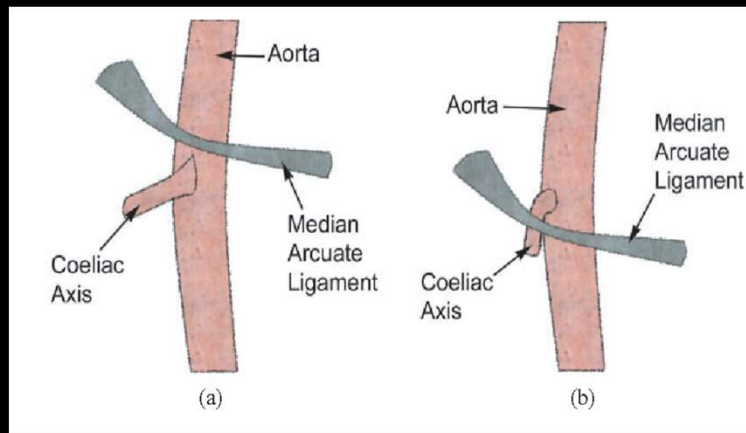
SMA dissection



Median arcuate ligament syndrome

- Females, 30 /40 years, thin
- “Chronic post prandial abdominal pain “ which may be relieved by change in position (worse supine).
Weight loss.

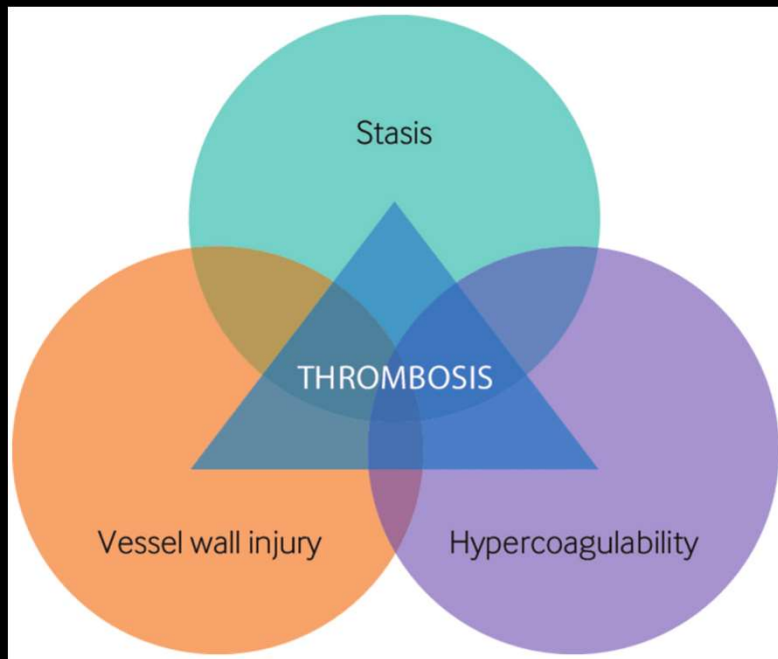
Suspected that celiac compression is occurring in those who have MAL which is more inferior (closer to the celiac artery -> resulting in positional impaired flow and ongoing ischemia)



Degree of compression varies with respiration: Greatest during end-expiration when the two structures are closest together.

Image: British Journal of Radiology 2008, "The median arcuate ligament syndrome revisited by CT angiography and the use of ECG gating"-N. Manghat, et al.

Portal venous system thrombosis



Reduced flow in portal hypertension and cirrhosis

HCC, hepatobiliary , cholangiocarcinoma , gastric and pancreatic malignancies

Hypercoagulable state
Protein C & S deficiency
Factor V leiden mutation
Antiphospholipid syndrome
Malignancy

Myeloproliferative disorders

Inflammatory bowel disease

Dehydration

Oral contraceptive pills

Pregnancy

Trauma

Endothelial disturbance

Local

inflammation/infection

Acute pancreatitis

Ascending cholangitis

Abdominal surgery

Tumor thrombosis

Impacts staging and treatment approach

Tumor thrombus has a soft tissue component + thrombotic component.

- Renal cell carcinoma
- Hepatocellular carcinoma
- Wilms tumor
- Adrenal cortical carcinoma

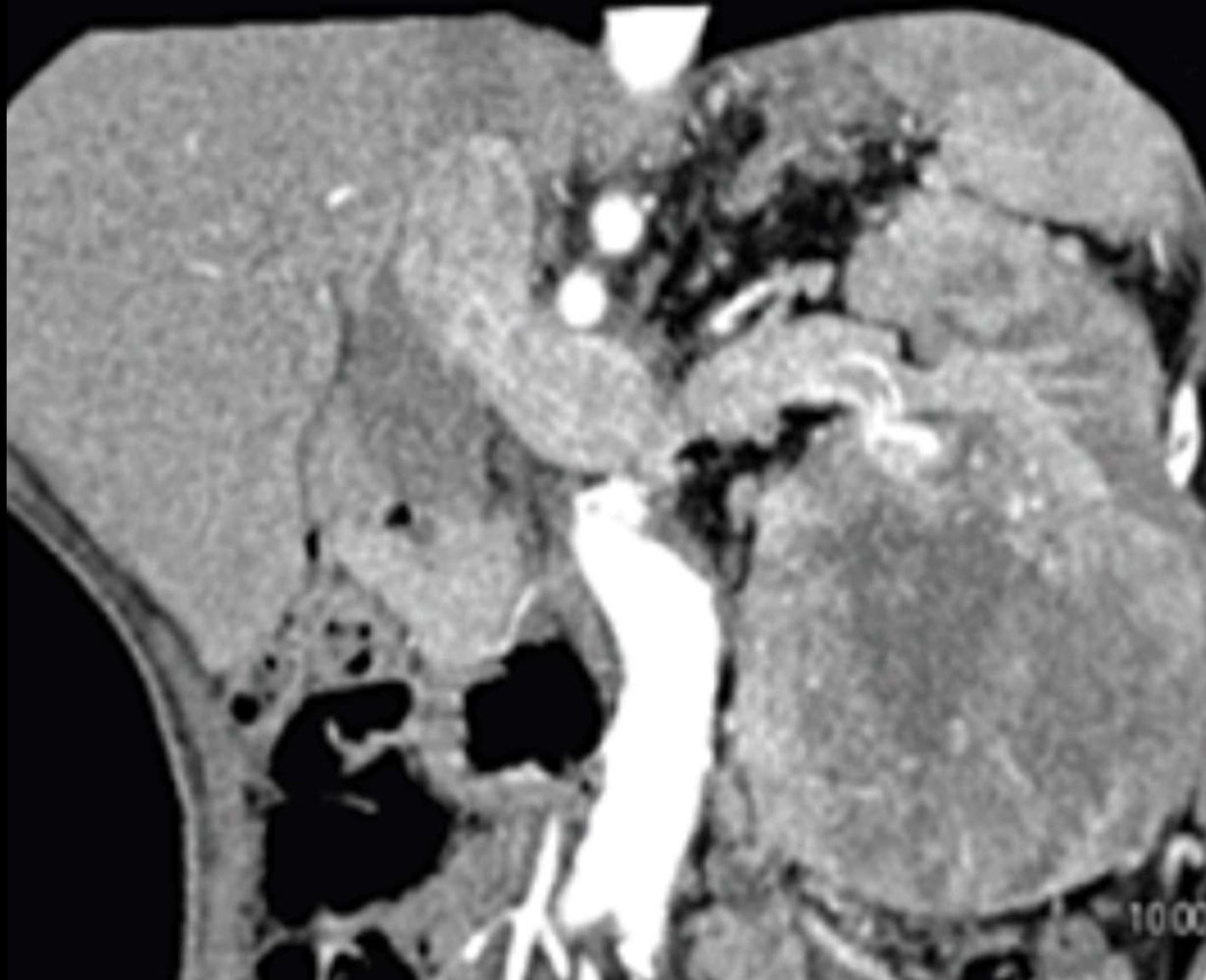
CT : Enhancement, vessel expansion

US: Color Doppler flow within the thrombus

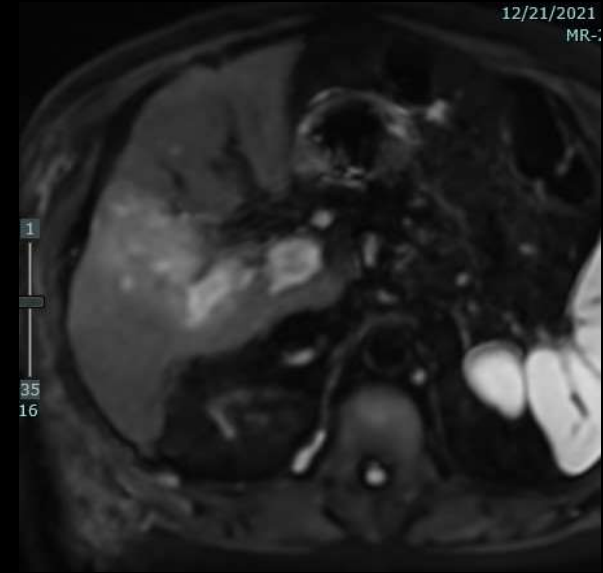
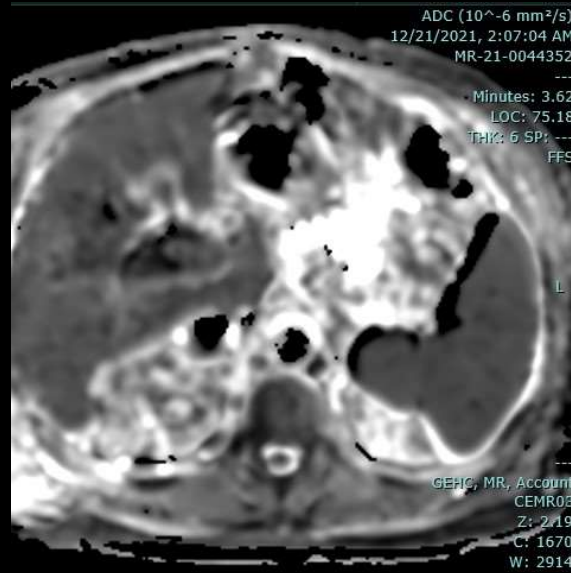
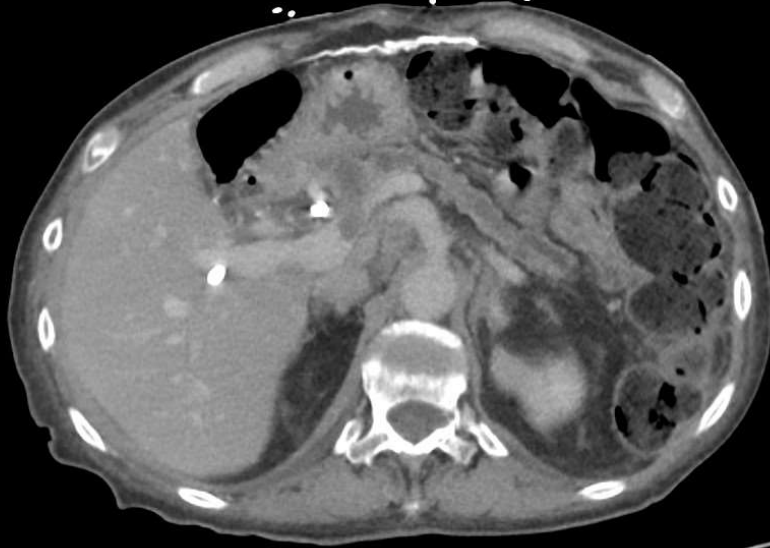
MR: diffusion restriction

FDG-PET: > FDG activity associated with thrombus

Renal vein thrombosis



Pancreatic Ca. & MVP tumor thrombus



T2 : intermediate to high T2 signal
Gad + Enhancement
Restricted diffusion

Like CT: Enhancing, directly extending, and expanding

Hepatic Venous Outflow Obstruction “Budd Chairi”

Acute or chronic will predict symptoms

Acute: rapid onset ascites

Majority of cases result from thrombosis within the hepatic veins.

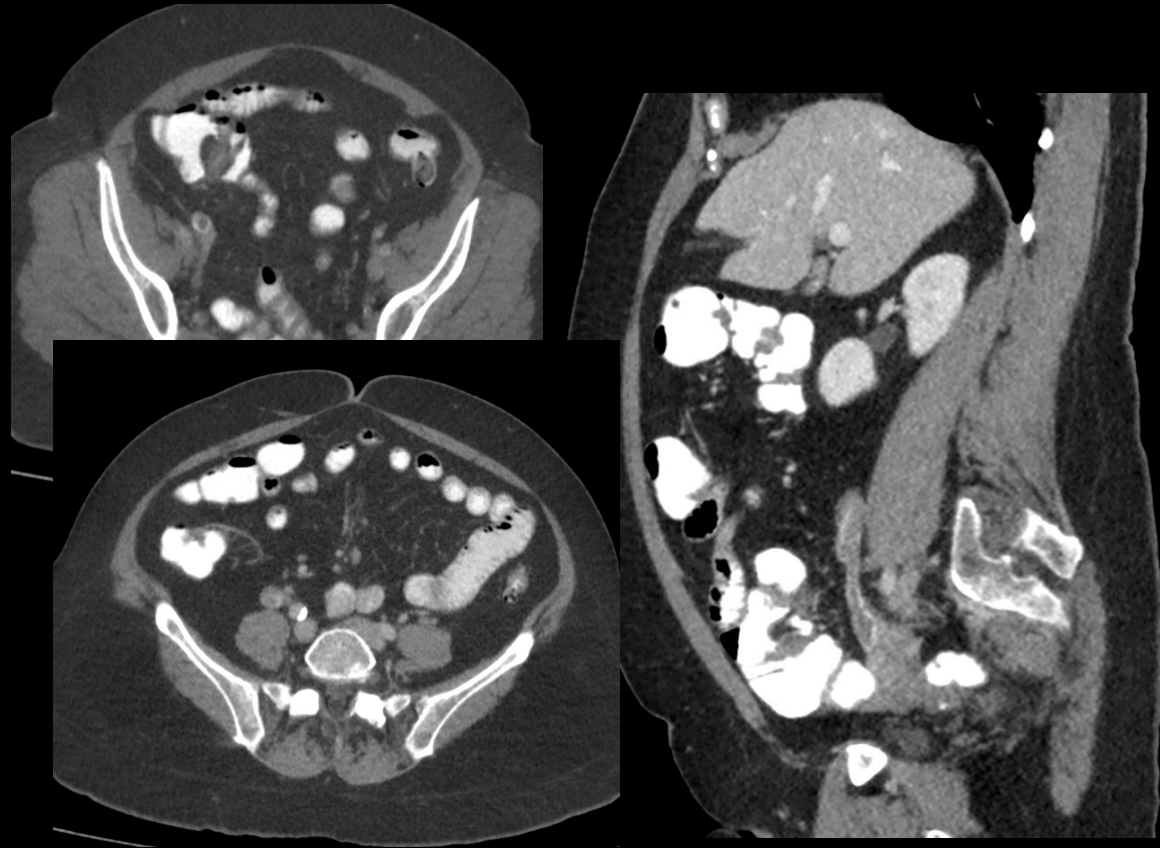
- Idiopathic (one-third of cases)
- Pregnancy/ post partum/ ocps
- Congenital
- Hepatic vein / inferior vena cava web
- Venous thrombosis (injury, infection / SIRS, dehydration, tumor invasion such as HCC)
- Coagulopathies (SSD, PCV, antipl syndrome, ocps)

Ovarian vein thrombosis

- Not uncommon!
- “ RLQ pain”
- Postpartum (puer- peral), endometritis, pelvic inflammatory disease, and gynecologic surgery

80-90%: Right ovarian vein

CT: tubular structure with an enhancing wall and low-attenuation thrombus in the expected location of the ovarian vein



Summary

- Many of these diagnosis will be incidental or have no specific indication on ED presentation, such as “ Abdominal pain”
- Most of these diagnosis will be made on single phase exam
- Visceral Artery Aneurysms and Pseudoaneurysm : Check for >1 , Monitor + Refer to VIR/vascular surgery clinic
- Arterial thromboembolism: Where is it coming from?
- Look at the veins!