AMSER Case of the Month

April 2025

57-year-old male presenting with persistent hypotension POD1 robot-assisted radical prostatectomy

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Patient Presentation

- History of Present Illness: A 57-year-old male presenting with persistent hypotension refractory to fluids and down trending hemoglobin despite transfusions POD1 robot-assisted radical prostatectomy. Patient stated he felt weak and vaguely unwell.
- Medical History: GERD, Hypertension, Overactive bladder, Gleason 4+4 Prostate cancer, Sleep Apnea
- Surgical History: Colonoscopy, Esophagogastroduodenoscopy, prostatectomy
- Social History: Alcohol use once a weak. No tobacco or illicit drug use.

Physical Exam and Pertinent Labs

- Physical Exam: Afebrile, alert, pale, hypotensive with systolic in the 80s, no dyspnea or increased work of breathing, abdomen nondistended.
- Complete Blood Count: Hgb 11.6 at 09:44, then 9.4 at 12:53,and then 8.5 at 15:19, despite transfusions of FFP and PRBC.
- Complete Metabolic Panel: Sodium 125, Lactate 2.7, Cr 1.25

What Imaging Should We Order?

Select the applicable ACR Appropriateness Criteria

American College of Radiology
ACR Appropriateness Criteria®
Suspected Retroperitoneal Bleed

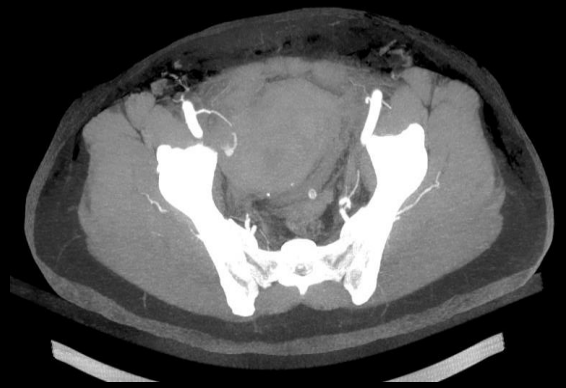
Variant 1: **Clinically suspected retroperitoneal bleed. Initial imaging.**

Procedure	Appropriateness Category	Relative Radiation Level
CT abdomen and pelvis with IV contrast	Usually Appropriate	☢☢☢
CT abdomen and pelvis without and with IV contrast	Usually Appropriate	☢☢☢☢
CTA abdomen and pelvis with IV contrast	Usually Appropriate	☢☢☢☢☢
Aortography abdomen and pelvis	May Be Appropriate (Disagreement)	☢☢☢☢
CT abdomen and pelvis without IV contrast	May Be Appropriate	☢☢☢
US abdomen and pelvis	Usually Not Appropriate	O
Radiography abdomen and pelvis	Usually Not Appropriate	☢☢☢
MRA abdomen and pelvis with IV contrast	Usually Not Appropriate	O
MRA abdomen and pelvis without and with IV contrast	Usually Not Appropriate	O
MRA abdomen and pelvis without IV contrast	Usually Not Appropriate	O
MRI abdomen and pelvis without and with IV contrast	Usually Not Appropriate	O
MRI abdomen and pelvis without IV contrast	Usually Not Appropriate	O
RBC scan abdomen and pelvis	Usually Not Appropriate	☢☢☢

The STICU physician ordered a CTA abdomen and pelvis without and with contrast.

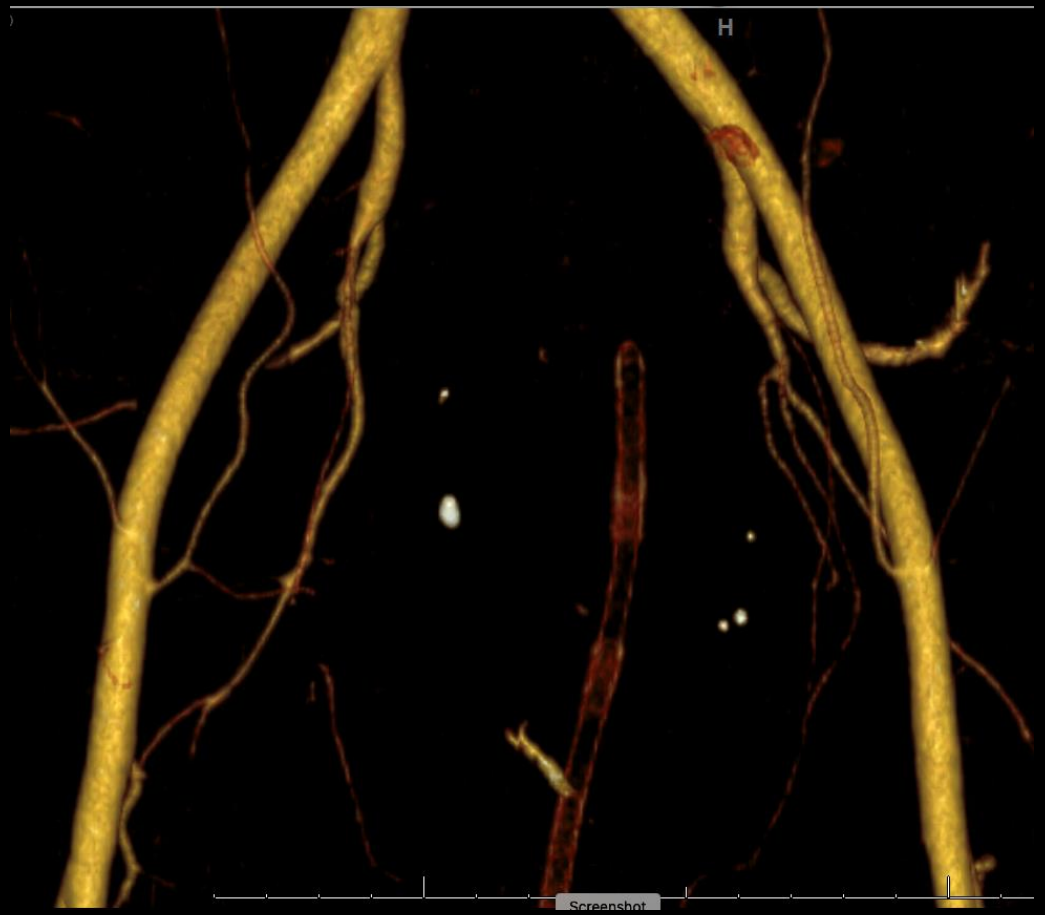
CTA Abdomen and Pelvis non-enhanced images (unlabeled)

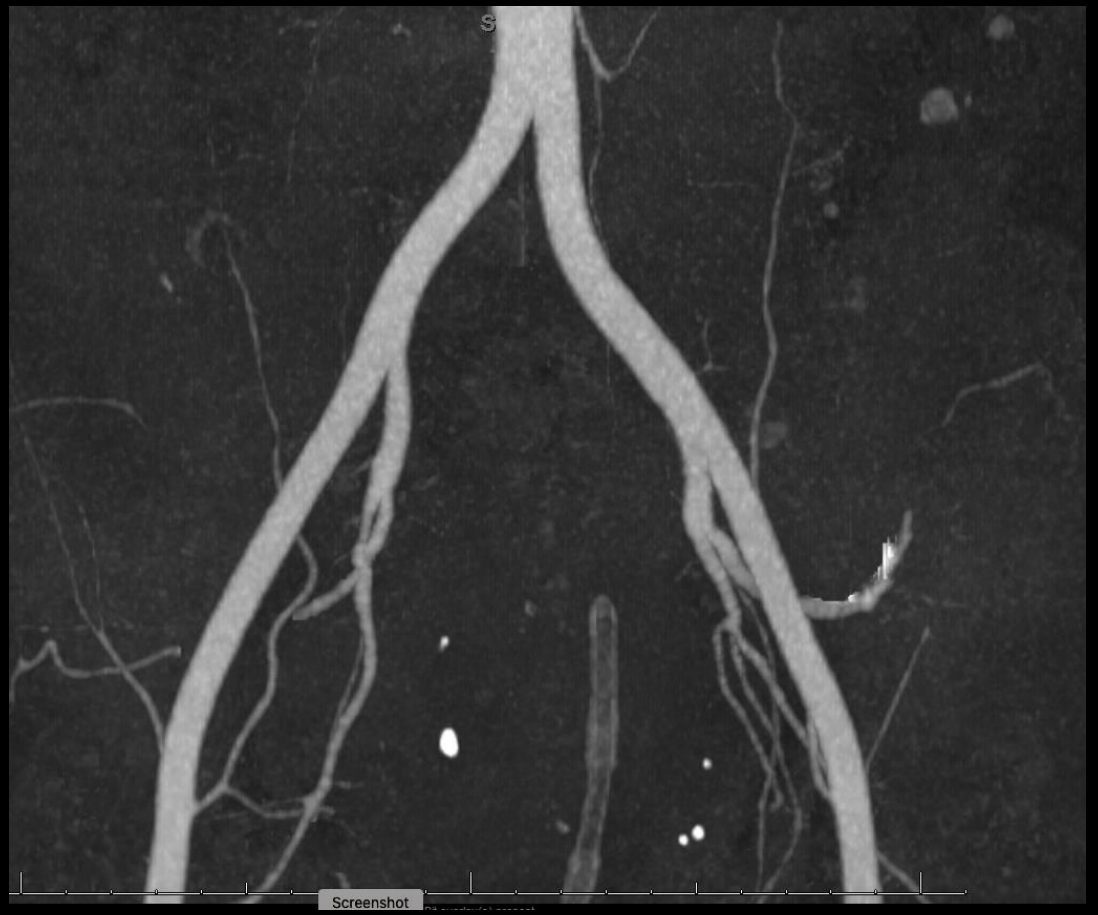
CTA Abdomen and Pelvis arterial phase MIP (unlabeled)



CTA Abdomen and Pelvis delayed phase (unlabeled)

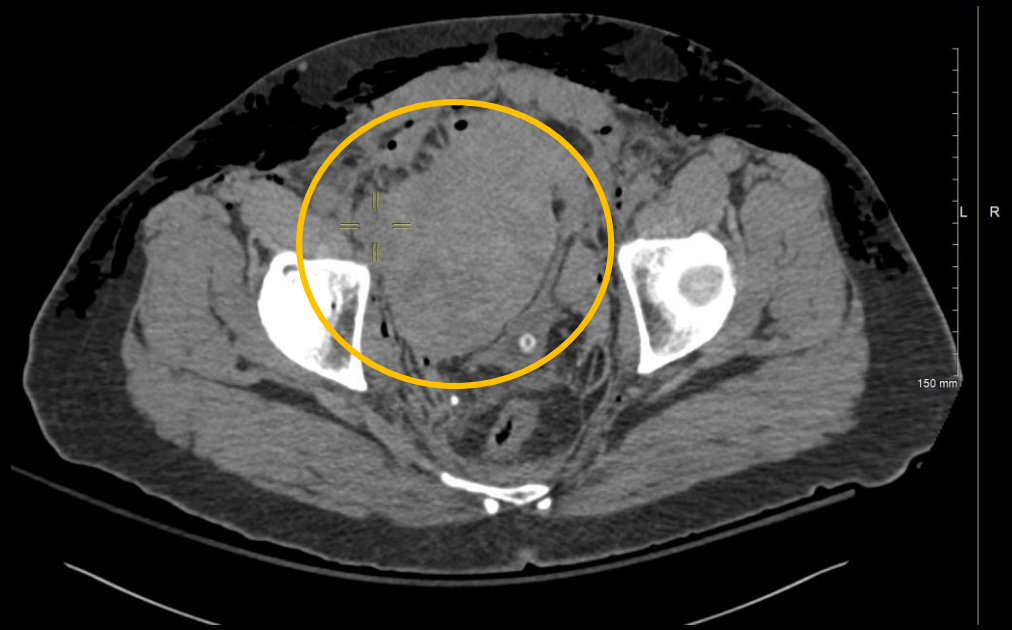
3D-MIPS (unlabeled)

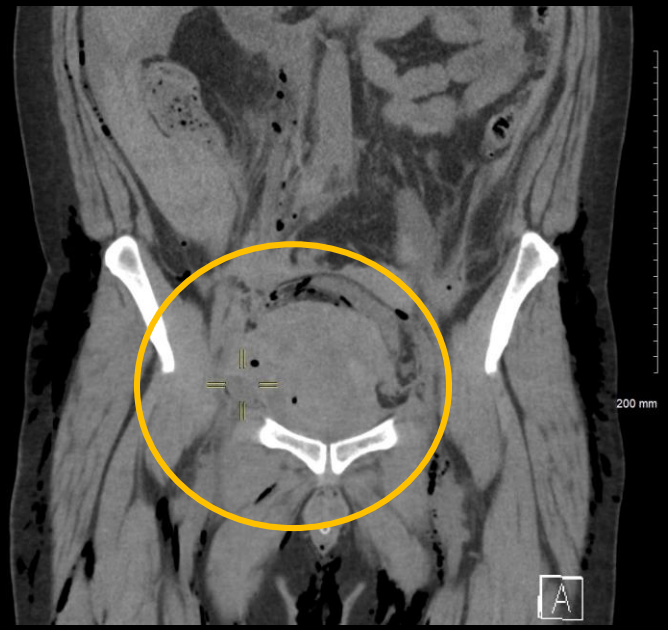




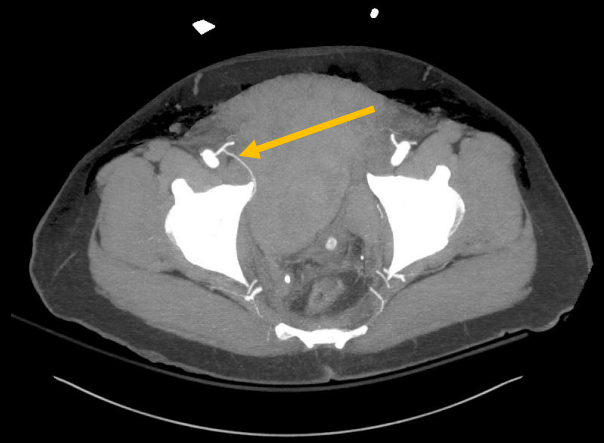
CTA Abdomen and Pelvis non-enhanced images (labeled)

Large mixed density fluid collection, most likely hematoma



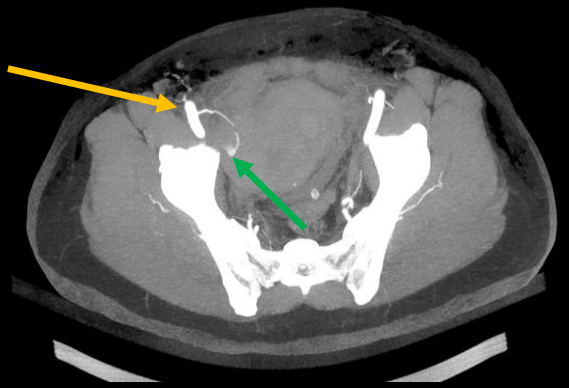


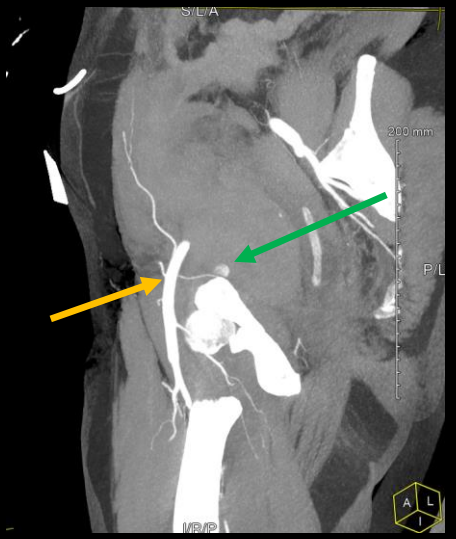
Axial CTA Abdomen and Pelvis with Contrast (labeled)



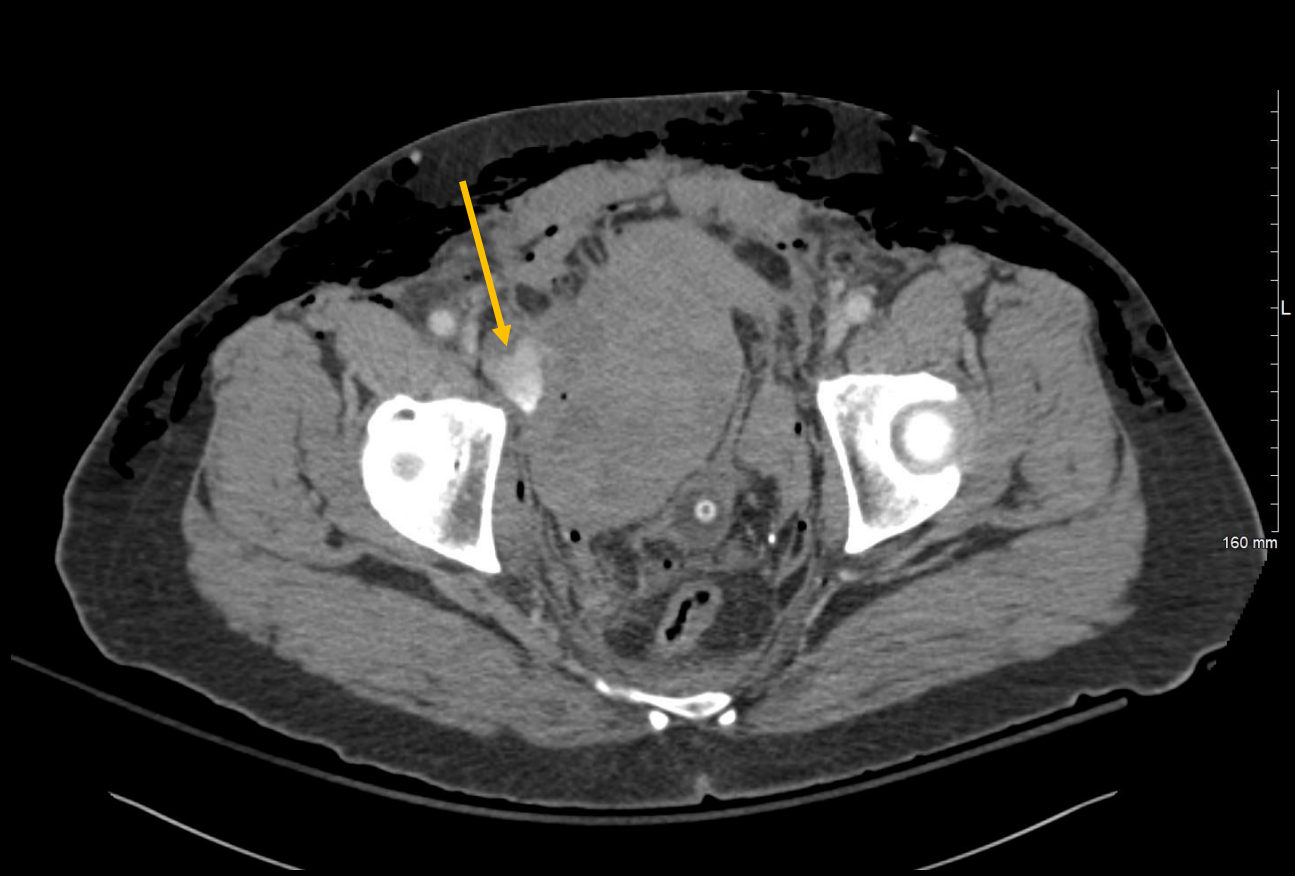
Anastomosis arising from the right inferior epigastric artery connecting to right obturator artery (orange arrow)

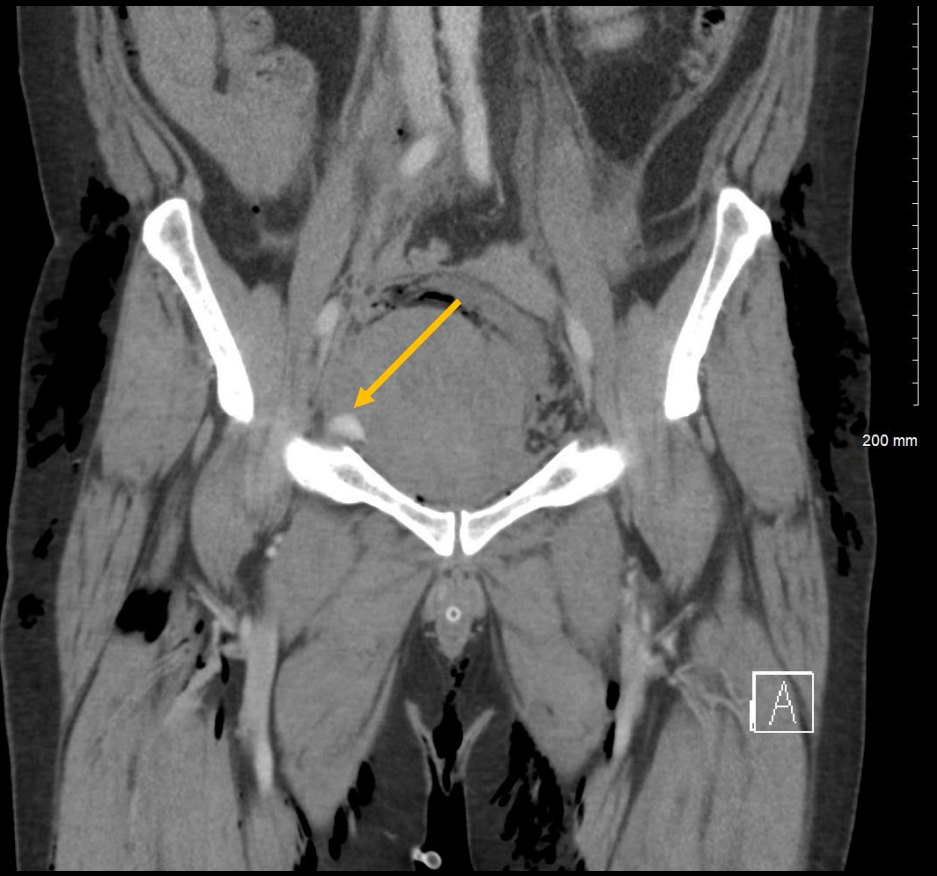
Vessel extends to a blush of contrast in early arterial phase (green arrow), consistent with arterial contrast extravasation





CTA Abdomen and Pelvis delayed phase (labeled)





Hyper-attenuation/extravasation increases in size on delayed phase (orange arrow), supportive of bleeding

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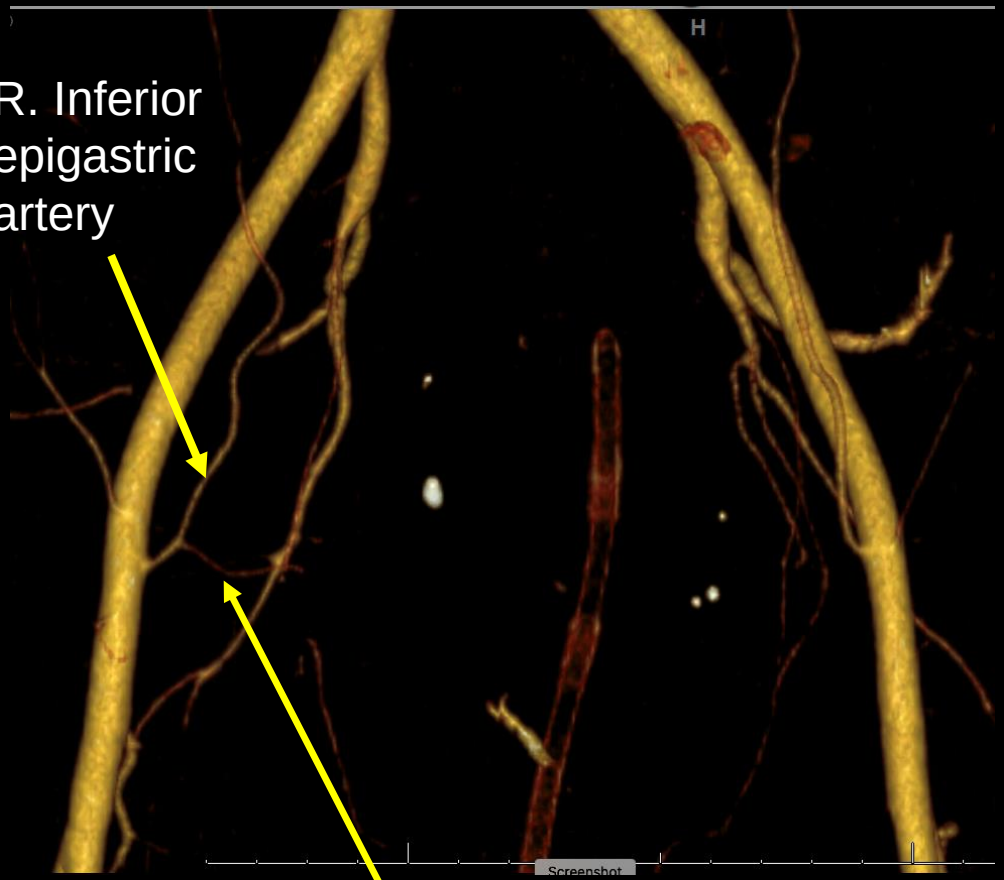
3D-MIPS (labeled)



R. Inferior epigastric artery

Corona Mortis arising from the right inferior epigastric artery and connecting to obturator artery

R. Obturator Artery

Final Dx:

Severe hemorrhage secondary to injured arterial corona mortis

Case Discussion

- Corona mortis, also known as the crown of death, is an anatomical variant characterized by an anastomosis between the obturator and external iliac or inferior epigastric arteries or veins. It is located behind the superior pubic rami in the retropubic space, a variable distance from the symphysis pubis.
- Prevalence
  - Venous connections are more common than arterial connections, with prevalence of 42% and 17%, respectively.
  - In addition, Asian populations are more frequently affected.
- Clinical significance:
  - Increases surgical complexity and importance of pre-operative surgical planning
  - Potential for iatrogenic injury during pelvic surgical procedures, such as hernia repairs, pelvic or orthopedic interventions, gynecological surgeries and abdominal wall surgeries, as well as injury due to pelvic trauma, both resulting in severe hemorrhage and difficult hemostasis.

Case Discussion

- Clinical Features:
  - In a non-operative or non-traumatic setting, it is asymptomatic and an incidental imaging finding.
  - In either a post-operative patient or one with pelvic trauma who has sustained an injury to the corona mortis with active bleeding, the patient typically presents with signs of significant hemorrhage and hemodynamic instability.
    - Tachycardia and hypotension due to acute blood loss
    - Abdominal and/or pelvic pain, which can be exacerbated by a hematoma
    - Abdominal mass or swelling
    - Signs of hypovolemic shock: progressive oliguria, diaphoresis, pallor
- Diagnosis:
  - CT, especially thin-slice CT reconstructions, is effective at identifying corona mortis, with 64-slice image providing the best resolution.
  - CTA is also helpful, especially in pelvic trauma or preoperative planning because it can map out the anatomical details.
  - In setting of an injured corona mortis, you can see nonhomogeneous hematoma near site of injury and contrast extravasation in active arterial bleeding.

Case Discussion

- Treatment:
  - No intervention required if asymptomatic, but its presence should be taken into account during pre-operative planning for any future pelvic surgeries.
  - If there is injury to the corona mortis with severe bleeding, options include:
    - IR with supraselective embolization via balloon-assisted coiling
    - Surgical control involving ligation or suturing injured vessel
    - Plus standard treatment for severe hemorrhaging, such as activation of MTP.
- Patient Outcome
  - This patient underwent surgery where they evacuated the hematoma and found the bleeding vessel. They used a combination of clips and sutures to stop the bleeding and finished by coating the area with Vistaseal and placing Floseal over the anastomosis. The patient recovered and had no further complications.

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