

AMSER Case of the Month

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36-year-old female patient with vaginal bleeding

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Patient Presentation

- Patient is a 36-year-old female who presented with acute onset vaginal bleeding, abdominal pain, and syncope.
- She recently stopped taking her oral contraceptive pills one month prior.
- The patient presented with dark brown vaginal bleeding which subsequently turned bright red.
- Patient was pale, diaphoretic, ill-appearing

Pertinent Labs

- Pertinent Labs:
 - β -hCG: 12,729 IU/L
 - Hgb 10.2 (baseline 13.9 from 2020), Hct 31, platelets 164, WBC 9.33
 - Vitals: 103/56, HR 87, RR 17, Temp 36.6 °C

What Imaging Should We Order?

ACR Appropriateness Criteria

Clinical Condition: Acute Pelvic Pain in the Reproductive Age Group

Variant 1: Gynecological etiology suspected, serum β -hCG positive.

Radiologic Procedure	Rating	Comments	RRL*
US pelvis transvaginal	9	Both transvaginal and transabdominal US should be performed if possible.	0
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US duplex Doppler adnexa	8		0
MRI pelvis without IV contrast	6	This procedure can be performed if US is inconclusive or nondiagnostic. See the Summary of Literature Review and <i>ACR Manual on Contrast Media</i> for the use of contrast media.	0
MRI abdomen and pelvis without IV contrast	6	This procedure can be performed if US is inconclusive or nondiagnostic. See the Summary of Literature Review and <i>ACR Manual on Contrast Media</i> for the use of contrast media.	0
MRI pelvis without and with IV contrast	1		0
MRI abdomen and pelvis without and with IV contrast	1		0
CT pelvis without IV contrast	1		☼☼☼
CT pelvis with IV contrast	1		☼☼☼
CT pelvis without and with IV contrast	1		☼☼☼☼
CT abdomen and pelvis without IV contrast	1		☼☼☼
CT abdomen and pelvis with IV contrast	1		☼☼☼
CT abdomen and pelvis without and with IV contrast	1		☼☼☼☼

Rating Scale: 1,2,3 Usually not appropriate; 4,5,6 May be appropriate; 7,8,9 Usually appropriate

***Relative Radiation Level**

This imaging modality was initially performed. The study was limited to due to extensive abdominal tenderness but showed free fluid in Morrison's Pouch.



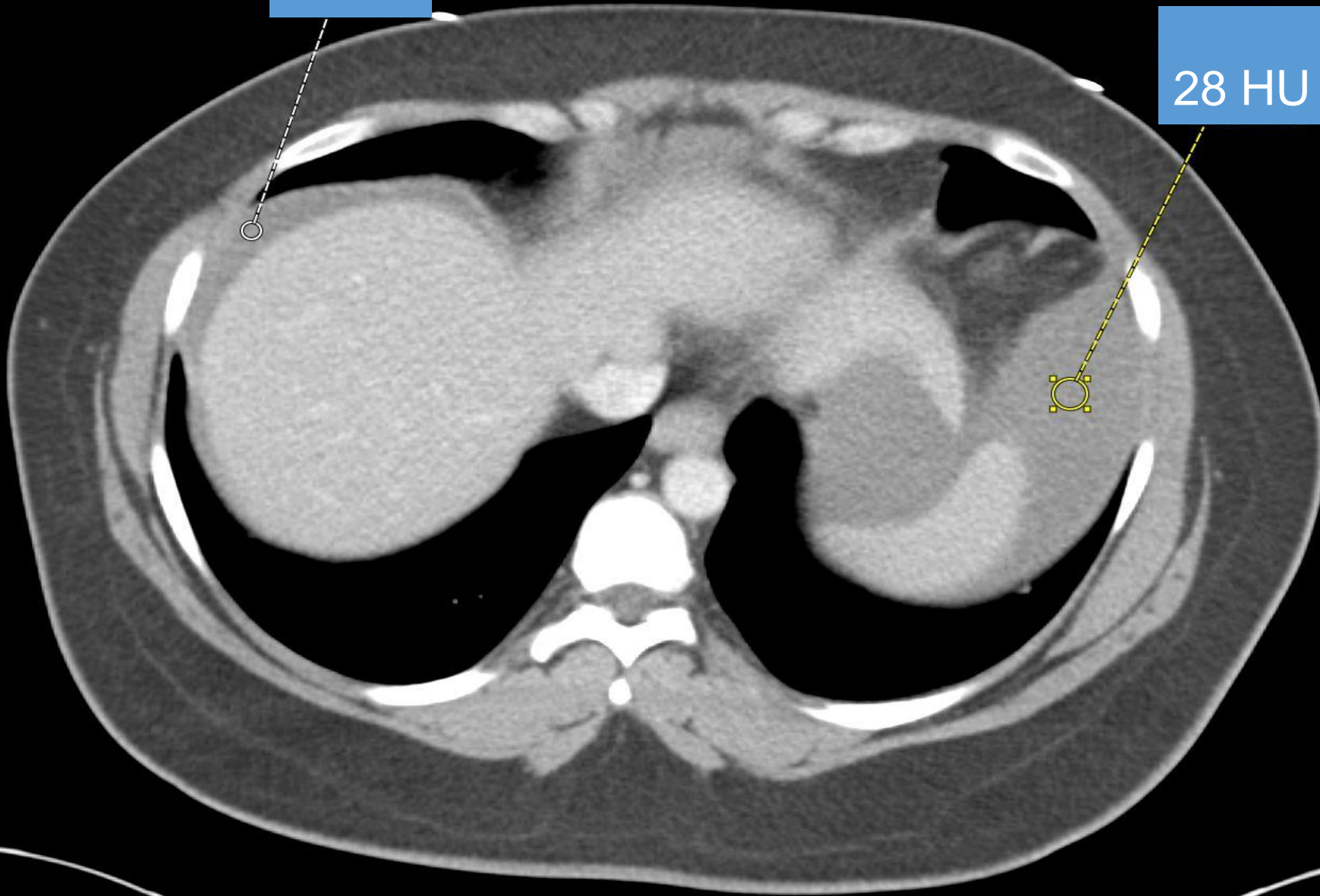
Due to the patient's hemodynamic instability, she then underwent a CT abdomen and pelvis with IV contrast



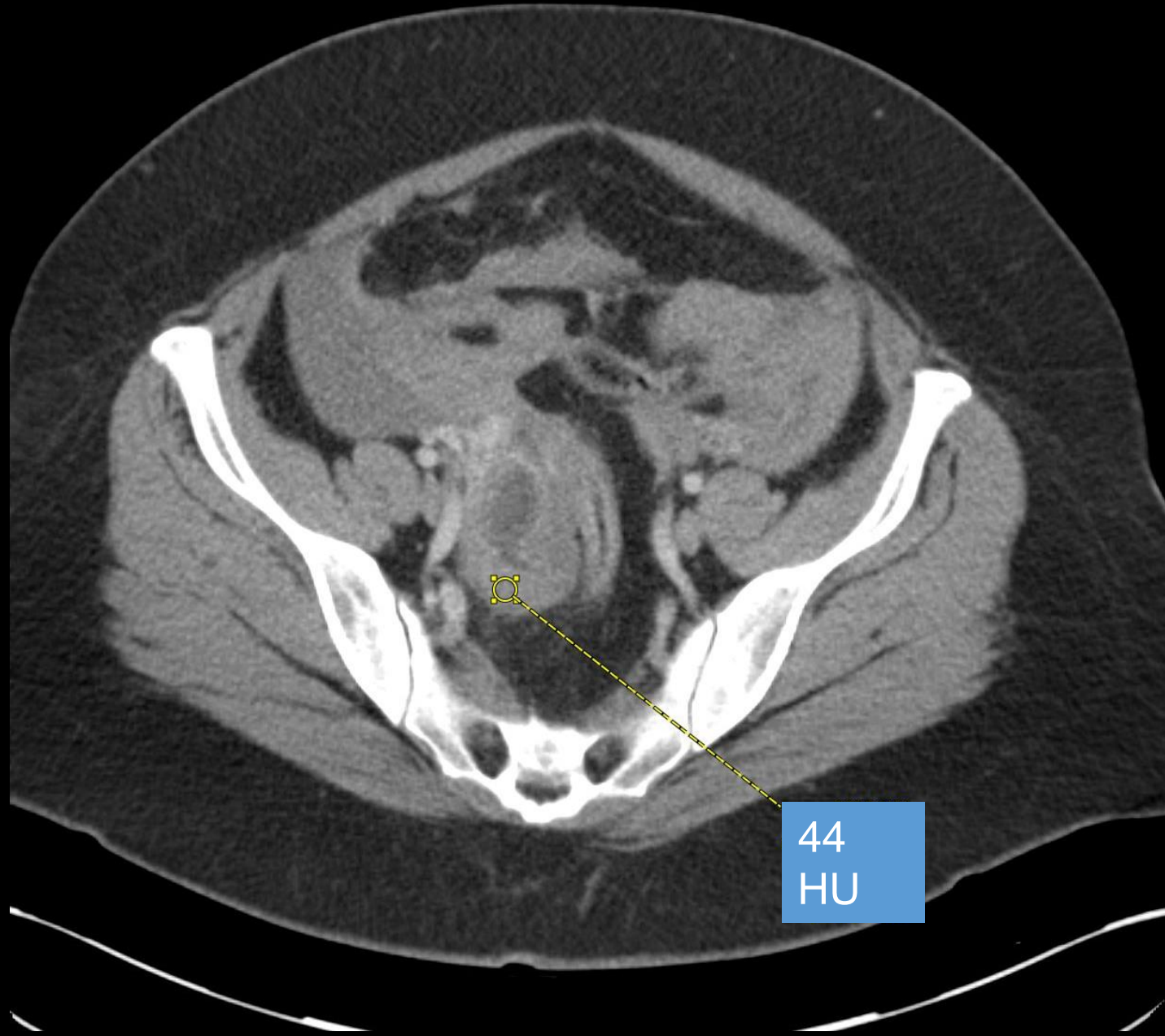
Findings (unlabeled)

27
HU

28 HU



Findings (unlabeled)



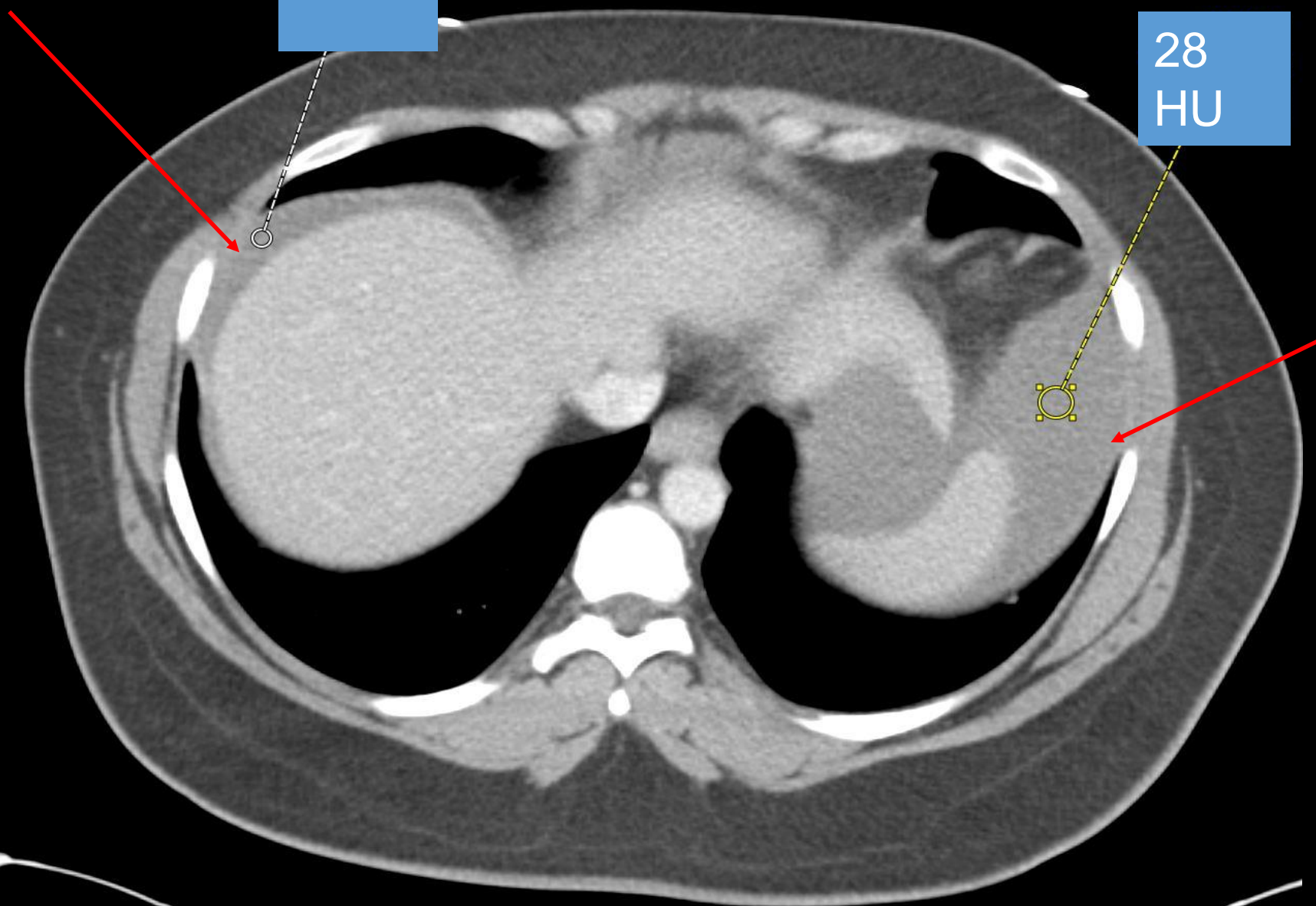
Findings (unlabeled)



Findings: (labeled)

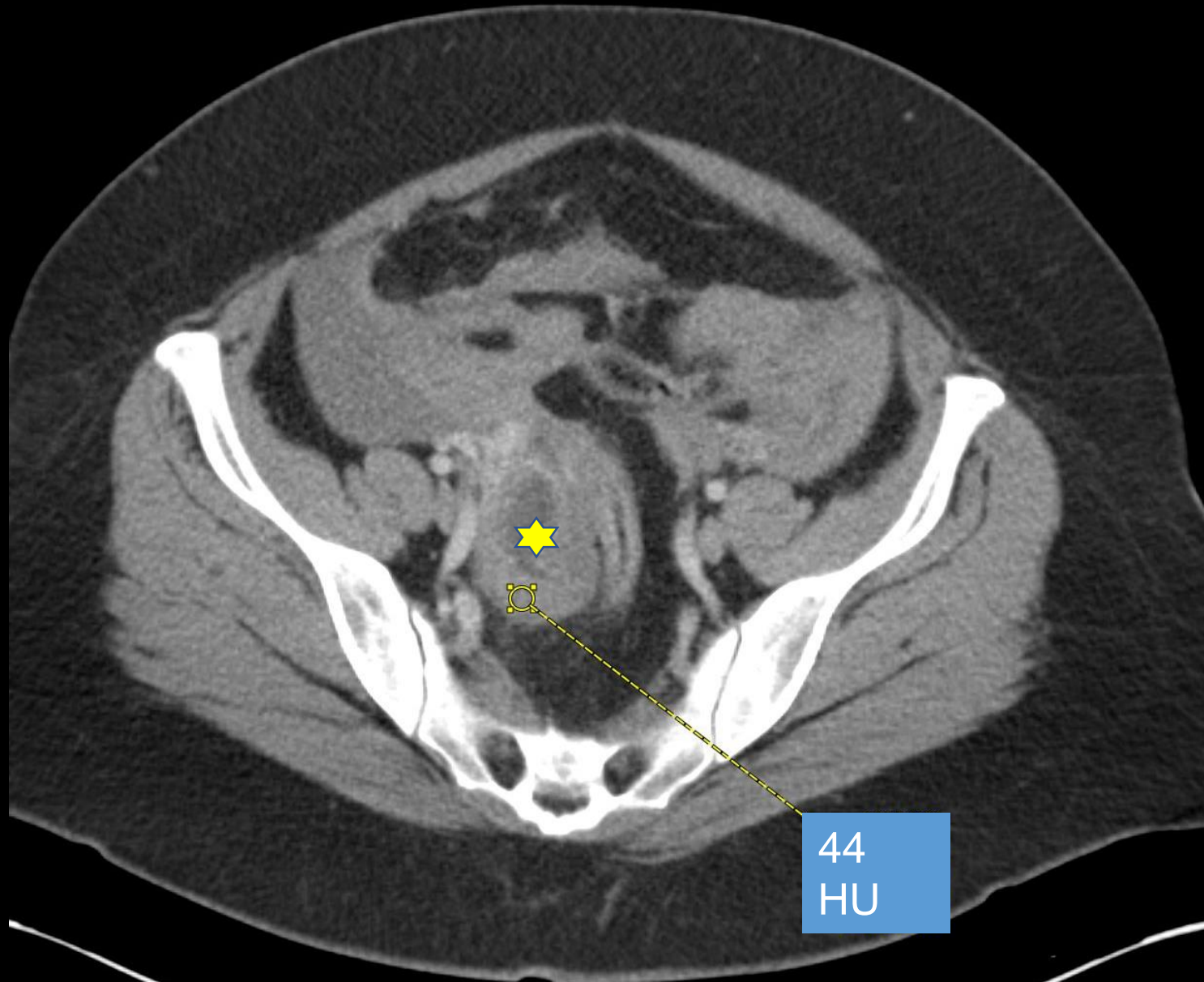
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HU

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HU



Arrows show evidence of hemoperitoneum. Perihepatic and perisplenic fluid with ~30 HU consistent with blood.

Findings: (labeled)



A tubular structure (*) in the right adnexa is visible and may be the source of the blood.

44
HU

Findings: (labeled)



No obvious gestational sac is present in the uterus.

B: Bladder
U: Uterus
R: Rectum

Final Dx:

Ruptured Ectopic Pregnancy

Case Discussion

- The estimated prevalence of ectopic pregnancy is 1% to 2%, and ruptured ectopic pregnancy accounts for 2.7% of pregnancy related deaths.
- The severity of the patient's presentation will dictate the work-up algorithm.
- Pregnancies in the fallopian tube account for 97 percent of ectopic pregnancies: 55 percent in the ampulla; 25 percent in the isthmus; 17 percent in the fimbria; and 3 percent in the abdominal cavity, ovary, and cervix.

Diagnosis and Management:

- Pelvic ultrasonography (transabdominal +/- transvaginal US) combined with measurement of serum β -hCG levels is an effective strategy for diagnosing and managing suspected ectopic pregnancy.
- The discriminatory zone is the serum hCG level above which a gestational sac should always be visualized on ultrasound when an intrauterine pregnancy is present.
- Compared to transabdominal US (6000-6500 IU), transvaginal US (1500-2000 IU) has a lower discriminatory zone and is more sensitive.

Diagnosis and Management Continued:

- Findings suggestive of ectopic pregnancy include:
 - Fluid in the pouch of Douglas, an adnexal mass and an empty uterus
 - An adnexal mass, empty uterus or pseudogestational sac and a positive β -hCG
 - Direct demonstration of ectopic fetus and fetal heart

References:

- Doubilet, Peter M et al. “Diagnostic criteria for nonviable pregnancy early in the first trimester.” *The New England journal of medicine* vol. 369,15 (2013): 1443-51. doi:10.1056/NEJMra1302417
- Lubner, Meghan et al. “Blood in the belly: CT findings of hemoperitoneum.” *Radiographics : a review publication of the Radiological Society of North America, Inc* vol. 27,1 (2007): 109-25. doi:10.1148/rg.271065042
- Barash, Joshua H et al. “Diagnosis and management of ectopic pregnancy.” *American family physician* vol. 90,1 (2014): 34-40.
- Hendriks, Erin et al. “Ectopic Pregnancy: Diagnosis and Management.” *American family physician* vol. 101,10 (2020): 599-606.