

AMSER Case of the Month

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35 Year Old Male with Hematochezia and Syncope



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Patient Presentation

- **HPI:** 35-year-old male presenting with 48 hours of profuse hematochezia and syncopal episode
- **PMH:** Anxiety, asthma, hemorrhoids
- **PSH:** S/P banding of hemorrhoids
- **Vitals:** BP 154/111, 76 BPM, 37.3 degrees C
- **Labs:** Hemoglobin 14 on admission, 7.8 after 2 days. BMP unchanged, INR 1.2, LDH 95, normal haptoglobin and fibrinogen
- **Other:** Colonoscopy was done immediately prior to imaging, which did not reveal the source of bleeding - non-bleeding hemorrhoids

What Imaging Should We Order?

Select the applicable ACR Appropriateness Criteria

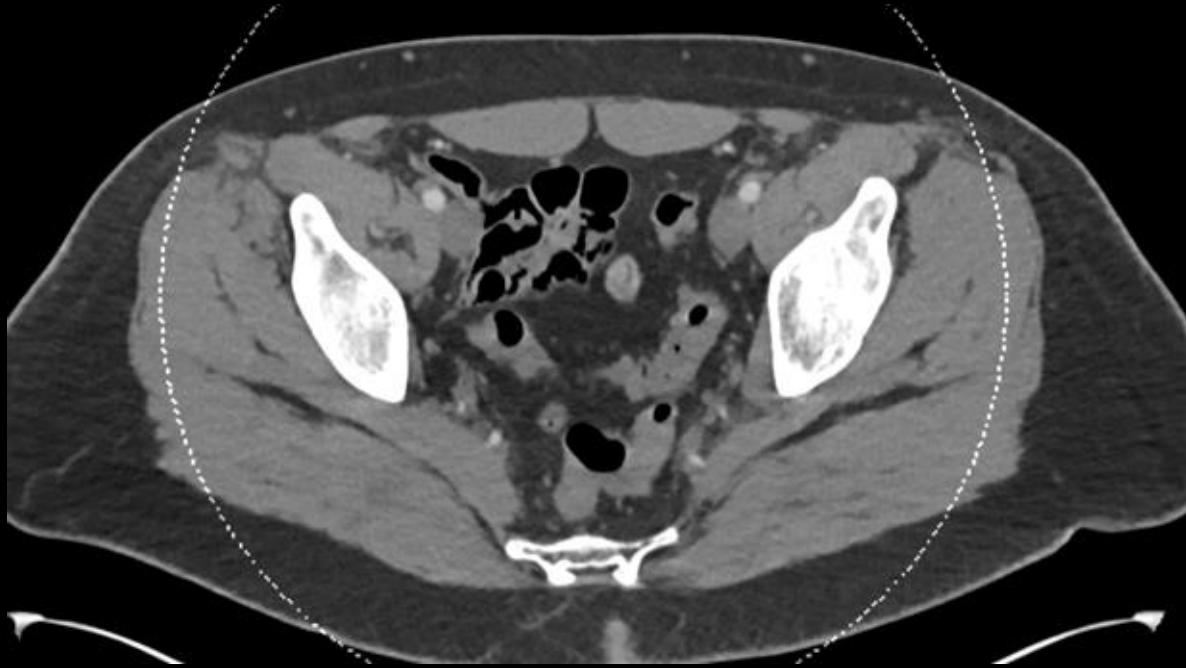
Variante 1 Lower gastrointestinal tract bleeding. Active bleeding clinically observed as hematochezia or melena in a hemodynamically stable patient. Next step.

Procedure	Appropriateness Category
CTA abdomen and pelvis without and with IV contrast	Usually Appropriate
Diagnostic/therapeutic colonoscopy	Usually Appropriate
RBC scan abdomen and pelvis	Usually Appropriate
Transcatheter arteriography/embolization	May Be Appropriate
MRA abdomen and pelvis without and with IV contrast	Usually Not Appropriate
Surgery	Usually Not Appropriate

This imaging modality was ordered by the ER physician

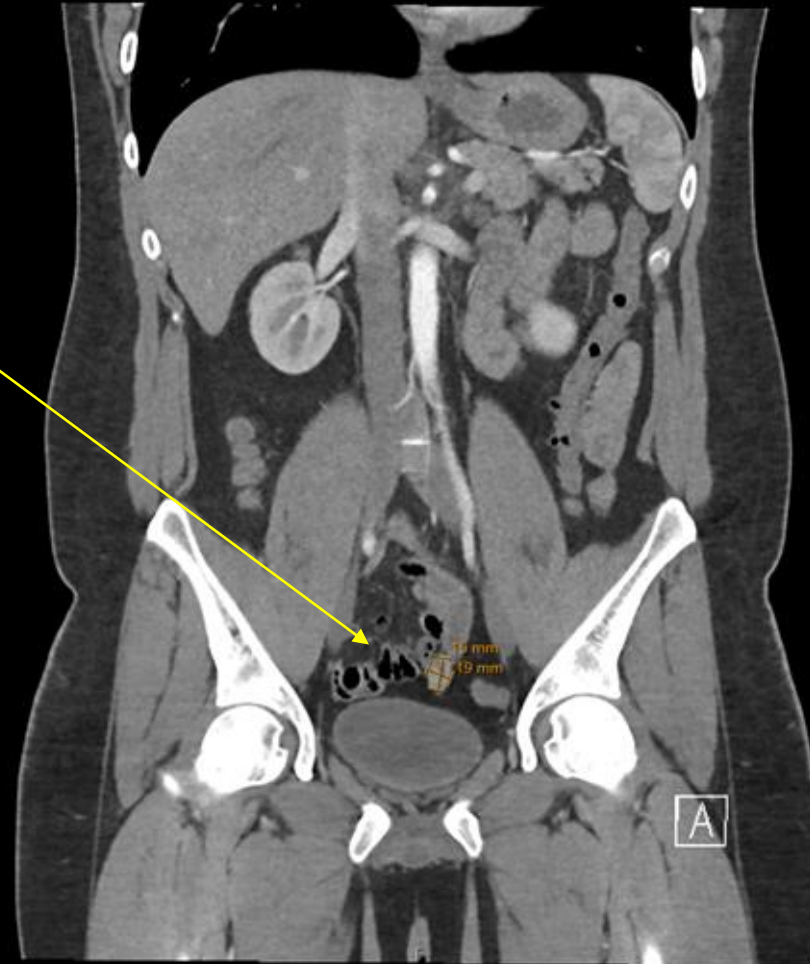
Scenario	Scenario ID	Procedure	Adult RRL	Peds RRL	Appropriateness Category
Upper GI bleeding, nonvariceal, no clear source on endoscopy, initial imaging	3102195	● CTA abdomen and pelvis without and with IV contrast	10-30 mSv ☆☆☆☆	10-30 mSv [ped] ☆☆☆☆	Usually appropriate
		● Arteriography visceral	1-10 mSv ☆☆	10-30 mSv [ped] ☆☆☆☆	May be appropriate
		● CTA chest without and with IV contrast	1-10 mSv ☆☆	3-10 mSv [ped] ☆☆☆☆	May be appropriate
		● RBC scan abdomen and pelvis	1-10 mSv ☆☆	0.3-3 mSv [ped] ☆☆	May be appropriate
		● CT enterography	10-30 mSv ☆☆☆☆	3-10 mSv [ped] ☆☆☆☆	May be appropriate
		● Fluoroscopy upper GI series	1-10 mSv ☆☆	0.3-3 mSv [ped] ☆☆	Usually not appropriate
		● MR enterography	0 mSv O	0 mSv [ped] O	Usually not appropriate
		● CT abdomen and pelvis with IV contrast	1-10 mSv ☆☆	3-10 mSv [ped] ☆☆☆☆	Usually not appropriate
		● CT abdomen and pelvis without IV contrast	1-10 mSv ☆☆	3-10 mSv [ped] ☆☆☆☆	Usually not appropriate

Findings (unlabeled)



Findings: (labeled)

Contrast enhancing structure extending out from normal bowel. No extravasation.



Suspected Diagnosis: Meckel's Diverticulum

Next step?

A Technetium 99m scan to confirm Meckel's Diverticulum was performed and negative?!?!.

Ph:1 Fr:1 95Counts 0sec Duration:1sec 128x128 Pic:4.8mm 99m Technetium	Ph:1 Fr:2 107Counts 1sec Duration:1sec 128x128 Pic:4.8mm 99m Technetium	Ph:1 Fr:3 91Counts 2sec Duration:1sec 128x128 Pic:4.8mm 99m Technetium	Ph:1 Fr:4 388Counts 3sec Duration:1sec 128x128 Pic:4.8mm 99m Technetium	Ph:1 Fr:5 2823Counts 4sec Duration:1sec 128x128 Pic:4.8mm 99m Technetium	Ph:1 Fr:6 15K Counts 5sec Duration:1sec 128x128 Pic:4.8mm 99m Technetium	Ph:1 Fr:7 18K Counts 6sec Duration:1sec 128x128 Pic:4.8mm 99m Technetium	Ph:1 Fr:8 22K Counts 7sec Duration:1sec 128x128 Pic:4.8mm 99m Technetium	Ph:1 Fr:9 24K Counts 8sec Duration:1sec 128x128 Pic:4.8mm 99m Technetium	Ph:1 Fr:10 25K Counts 9sec Duration:1sec 128x128 Pic:4.8mm 99m Technetium	Ph:1 Fr:11 24K Counts 10sec Duration:1sec 128x128 Pic:4.8mm 99m Technetium
Ph:1 Fr:12 23K Counts 11sec Duration:1sec 128x128 Pic:4.8mm 99m Technetium	Ph:1 Fr:13 22K Counts 12sec Duration:1sec 128x128 Pic:4.8mm 99m Technetium	Ph:1 Fr:14 21K Counts 13sec Duration:1sec 128x128 Pic:4.8mm 99m Technetium	Ph:1 Fr:15 20K Counts 14sec Duration:1sec 128x128 Pic:4.8mm 99m Technetium	Ph:1 Fr:16 18K Counts 15sec Duration:1sec 128x128 Pic:4.8mm 99m Technetium	Ph:1 Fr:17 17K Counts 16sec Duration:1sec 128x128 Pic:4.8mm 99m Technetium	Ph:1 Fr:18 16K Counts 17sec Duration:1sec 128x128 Pic:4.8mm 99m Technetium	Ph:1 Fr:19 15K Counts 18sec Duration:1sec 128x128 Pic:4.8mm 99m Technetium	Ph:1 Fr:20 14K Counts 19sec Duration:1sec 128x128 Pic:4.8mm 99m Technetium	Ph:1 Fr:21 15K Counts 20sec Duration:1sec 128x128 Pic:4.8mm 99m Technetium	Ph:1 Fr:22 15K Counts 21sec Duration:1sec 128x128 Pic:4.8mm 99m Technetium
Ph:1 Fr:23 15K Counts 22sec Duration:1sec 128x128 Pic:4.8mm 99m Technetium	Ph:1 Fr:24 15K Counts 23sec Duration:1sec 128x128 Pic:4.8mm 99m Technetium	Ph:1 Fr:25 16K Counts 24sec Duration:1sec 128x128 Pic:4.8mm 99m Technetium	Ph:1 Fr:26 16K Counts 25sec Duration:1sec 128x128 Pic:4.8mm 99m Technetium	Ph:1 Fr:27 16K Counts 26sec Duration:1sec 128x128 Pic:4.8mm 99m Technetium	Ph:1 Fr:28 16K Counts 27sec Duration:1sec 128x128 Pic:4.8mm 99m Technetium	Ph:1 Fr:29 16K Counts 28sec Duration:1sec 128x128 Pic:4.8mm 99m Technetium	Ph:1 Fr:30 16K Counts 29sec Duration:1sec 128x128 Pic:4.8mm 99m Technetium	Ph:1 Fr:31 16K Counts 30sec Duration:1sec 128x128 Pic:4.8mm 99m Technetium	Ph:1 Fr:32 15K Counts 31sec Duration:1sec 128x128 Pic:4.8mm 99m Technetium	Ph:1 Fr:33 15K Counts 32sec Duration:1sec 128x128 Pic:4.8mm 99m Technetium



Patient hemoglobin continued to drop. Exploratory laparotomy was performed.
The area of interest was resected. Surgical pathology revealed **Meckel's
Diverticulum with mixed gastric oxyntic and pancreatic tissue.**

Case Discussion

- Meckel's Diverticulum is one of the most common embryological anomalies of the GI tract. Although generally asymptomatic, about 5% of patients can present with symptoms such as gastrointestinal bleeding, intussusception, obstruction and diverticulitis. Generally, these patients present with complications prior to 2 years of age – an expectation which can obscure diagnosis in adults¹.
- In patients with GI bleeding, the cause is often from the presence of ectopic gastric mucosa found within the diverticulum¹.
 - In these cases, a Tc-99m scan is indicated due to its low burden of radiation and non-invasive ability to image gastric tissue well².
 - Sensitivity of these scans in pediatric patients is estimated between 80-90%^{3,4}.
 - In adult patients, this is poorly characterized. However, estimates are in the range of 60% for sensitivity⁵.

Case Discussion (cont.)

- Reasons likely for this patient's false negative Tc99 scan:
 - Pancreatic tissue does not take up Tc99 as well.
 - In a case report, 3 pediatric Meckel's cases with pancreatic tissue showed false negative Tc99 scans. Interestingly, all 3 cases presented with bleeding as the chief complaint⁶.
 - GI bleeding can cause false negative scans⁵.
- Take-aways
 - Meckel's diverticulum can contain various pathology/tissue, most commonly gastric
 - Tc99 sensitivity is affected by patient age, symptoms, and tissue within the diverticulum
 - Particularly in adults, **negative Tc99 scan does not exclude Meckel's diverticulum** as the diagnosis. CTA Abd and Pelvis should be used with clinical clues to suspect it as a likely diagnosis.

References:

1. Elsayes, K. M., Menias, C. O., Harvin, H. J., & Francis, I. R. (2014). *Radiologist's perspective for the Meckel diverticulum and its complications*. **The British Journal of Radiology**, **87**(1037), 20130743. <https://doi.org/10.1259/bjr.20130743>
2. Yan, P., & Jiang, S. (2023). *Tc-99m scan for pediatric bleeding Meckel diverticulum: A systematic review and meta-analysis*. **Jornal de Pediatria**, **99**(5), 425–431. <https://doi.org/10.1016/j.jped.2023.03.009>
3. Hwang, J., Kim, Y., Kim, J., et al. (2023). *Meckel's diverticulum in adults: Surgical concerns*. **Annals of Coloproctology**, **39**(5), 381–389. <https://doi.org/10.3393/ac.2022.00982.0140>
4. Shah, A., & Jain, A. (2023). *99mTc-pertechnetate in diagnosis of Meckel diverticulum in an adult*. **Journal of Nuclear Medicine Technology**, **51**(2), 162–164. <https://doi.org/10.2967/jnmt.122.265506>
5. Lin, S., Suhocki, P. V., Ludwig, K. A., & Shetzline, M. A. (2003). *Gastrointestinal bleeding in adult patients with Meckel's diverticulum: The role of technetium-99m pertechnetate scan*. **Southern Medical Journal**, **96**(1), 43–46.
6. Lai, G., Ma, J., Hou, F., & Xu, B. (2025). *Clinical analysis of Meckel diverticulum with ectopic pancreas in children: Three case reports*. **Medicine**, **104**(23), e41794. <https://doi.org/10.1097/MD.00000000000041794>