

Case Setup

Ultrasound Preparation:

- Ensure phased array, linear, and curvilinear probes are present, functioning and clean.
- Ensure the ultrasound screen is easily visible to the examinee, either directly or via screen share.

When Examinee Enters:

“Hello Doctor, I am Dr. _ and will be assisting as your examiner for this ultrasound case. As a reminder, please ask me to change probes, change depth, gain, or mode of ultrasound to assist you with the case. Please ask for help to reposition the patient or bed. Do you have any questions?”

Case vignette:

“As you have noted, the patient is presenting with **severe abdominal pain, abdominal distension, and vomiting.**”

For diagnostic ultrasound:

“I would like for you to now demonstrate how you would assess **the patient’s abdominal pain** using ultrasound to evaluate for bowel pathology. Which probe would you like to use?”

Probe settings:

- Linear
 - Gain 10, depth 5cm
- Phased array
 - Gain 10, depth 10cm
- Curvilinear
 - Gain 10, depth 10cm

If asked to change probe settings:

- “Tell me when to stop adjusting [gain/depth]
 - Adjust the gain and depth slowly, allowing the examinee to stop you.

“When you find an acceptable image, please let me know.”

After examinee has selected their image, **using their own clip/image:**

“Thank you, I will take the probe from you now. Please direct your attention to the screen. Please point out any artifacts, anatomy, or pathology that would be important for this complaint.”

Then show the examinee the pathology clip/image:

“Now assume this image/clip is the image obtained of this patient. Please point out any pathology you see on this image/clip.”

Application:

“What would your immediate next steps be for this patient?”

-Refer to the grading criteria if using it as an educational case.

End of case:

“Thank you, that concludes your case.”

Case Pearls & Pitfalls:

- 1) There are two methods when assessing abdominal pain concerning for bowel obstruction: the “lawn mower” technique and “point of greatest pain.” People will often start with one method and then employ the other sequentially.
 - a) Lawn mower: start in RUQ or LUQ and then move down until you reach the pelvic region. Then go back to the top of the abdomen and scan down more medially to where you were before. Repeat this until you have scanned the entire abdomen.
 - b) Point of greatest pain: Ask the patient where the pain is greatest and apply the probe at that location. This will usually be at the site of obstruction.
- 2) Bowel obstructions on ultrasound can have several key features:
 - a) Dilated and often fluid filled bowel loops (2.5cm for small bowel, 6cm for large bowel)
 - b) Thickened bowel wall (>3mm)
 - c) Abnormal peristalsis (to-and-fro movement)
 - d) Free fluid surrounding the obstructed bowels
- 3) Diarrheal illnesses can cause fluid filled loops of bowel, but these will have intact forward peristalsis and will not be dilated.