

Reading Hospital School of Health Sciences

Medical Imaging Program

Clinical Case Study-Esophagus & UGI

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Each student will be assigned clinical a seminar case study for each procedure taught within the semester. The case study will allow the student to practice their knowledge of image critique, anatomical structure identification and pathology identification. Students will submit answers to the below questions for each projection within the case study. **Completed answers to the questions below and the pathology and anatomical structure labeling within the PowerPoint must be uploaded into the Edvance 360 dropbox.**

Answer #1-#9 for each assigned projection

RAO ESOPHAGUS

1. Is orientation of the image correct? **No**
 - If orientation is incorrect, explain why. **This image should be mirrored so that the esophagus is on the right side of our screen.**
 - State how to modify the orientation. **I would mirror the image.**
2. Is all necessary anatomy included? **Yes**
 - Explain the anatomy required by evaluation criteria. **Esophagus from the lower part of the neck to its entrance into the stomach (EG junction).**
 - Drag the arrows with letters on the Case Study slides to identify anatomical structures within each slide.
3. Is the body part centered appropriately? **Yes**
 - Identify the correct location for centering. **This image should be centered to level of T5/T6 and then off centered left of the spine about 2 inches.**
 - If centering is incorrect, explain how you would move the central ray to achieve proper centering. **N/A**
4. Is the body part positioned accurately? **No**
 - If the body part is not positioned accurately:
 - i. Explain what anatomy demonstrates inaccurate positioning (over or under-rotation etc). **The esophagus is still just barely touching the spine proximally, but not distally, so if anything this image could be slightly under-rotated proximally.**
 - ii. State the modification of positioning necessary to meet evaluation criteria. **I would rotate the patients shoulders away from the IR slightly to ensure the esophagus is more off the spine and laying between the spine and the heart proximally.**
5. Is the collimation and IR orientation as required? **Yes**
 - State the proper collimation size to be used. **12x17**
 - State how the IR should be oriented to the patient. **portrait**

6. Is the proper marker(s)/annotation(s) utilized on the image? **No**
 - State if the marker was placed in the proper location. **There was no right marker on this image**
 - State if any additional marker(s)/annotation(s) are required. **The right marker should be placed on the patients right side because that is the side that is closest to the IR.**
7. Is the exposure within the appropriate EI range? **Yes**
 - Identify the correct technique. **120 kVp @ center cell for AEC, or 6 mAs for a fixed technique.**
 - If not within the appropriate EI range, explain specifically how to adjust the technical factors to bring the EI into range. **N/A**
8. Are there any artifacts present on the image? **No**
 - If an artifact is present, list which artifact(s) would make the image not acceptable and an additional exposure to the patient. **N/A**
9. Overall, is this image ACCEPTABLE or NOT ACCEPTABLE? **NOT ACCEPTABLE**
 - State the reasons this image will require the patient to have a second exposure. **This image is missing the marker, so I would repeat this image and place a marker on the patients right side, and I would also increase the patients obliquity slightly at the shoulders to get the proximal esophagus off the spine a little more. This image should also be mirrored before sending the image after the repeat image is taken.**

SCOUT IMAGE FOR UGI

1. Is orientation of the image correct? **This image can not be determined if it is oriented correctly without knowing the patients right from left side.**
 - If orientation is incorrect, explain why. **I would place a marker on the appropriate right or left side and then orientation could be determined.**
 - State how to modify the orientation. **N/A**
2. Is all necessary anatomy included? **Yes**
 - Explain the anatomy required by evaluation criteria. **You need up to the fundus of the stomach on this image.**
 - Drag the arrows with letters on the Case Study slides to identify anatomical structures within each slide.
3. Is the body part centered appropriately? **No**
 - Identify the correct location for centering. **Slightly above crest and down the MSP.**
 - If centering is incorrect, explain how you would move the central ray to achieve proper centering. **This images centering should be moved superiorly to be centered slightly above crest. This image is centered too inferiorly.**
4. Is the body part positioned accurately? **Yes**

- If the body part is not positioned accurately:
 - i. Explain what anatomy demonstrates inaccurate positioning (over or under-rotation etc). *N/A*
 - ii. State the modification of positioning necessary to meet evaluation criteria. *N/A*
5. Is the collimation and IR orientation as required? *Yes*
- State the proper collimation size to be used. *14x17*
 - State how the IR should be oriented to the patient. *Portrait*
6. Is the proper marker(s)/annotation(s) utilized on the image? *No*
- State if the marker was placed in the proper location. *There was no marker present.*
 - State if any additional marker(s)/annotation(s) are required. *There should be a right or left marker present on either side of the patient.*
7. Is the exposure within the appropriate EI range? *Yes*
- Identify the correct technique. *90 kVp @ all three cells for AEC, or 10 mAs for fixed technique.*
 - If not within the appropriate EI range, explain specifically how to adjust the technical factors to bring the EI into range. *N/A*
8. Are there any artifacts present on the image? *Yes*
- If an artifact is present, list which artifact(s) would make the image not acceptable and an additional exposure to the patient. *The patients finger is present on this scout image. It is not in anatomy of interest, but the tech should have tried to move their finger out of the light.*
9. Overall, is this image ACCEPTABLE or NOT ACCEPTABLE? *ACCEPTABLE*
- State the reasons this image will require the patient to have a second exposure. *This image for a scout is acceptable. These images are really up to the RA if they believe they see everything they need to see. If anything this image could be centered a little superior to the level of crest to ensure the entire stomach is on this image. However, if the RA said the image was good, then this should not be repeated. If they would like another image, this could be centered superiorly to ensure all anatomy is on. I believe this image is acceptable however.*

PA STOMACH

1. Is orientation of the image correct? *No*
- If orientation is incorrect, explain why. *The stomach should be on the right side of the screen, this image should be mirrored.*
 - State how to modify the orientation. *I would mirror the image so the stomach is on the right side of the screen.*
2. Is all necessary anatomy included? *Yes*

- Explain the anatomy required by evaluation criteria. **Entire stomach and duodenal loop, and medial and lateral margins and the body of the stomach.**
 - Drag the arrows with letters on the Case Study slides to identify anatomical structures within each slide.
3. Is the body part centered appropriately? **Yes**
- Identify the correct location for centering. **4 inches above crest and slightly left of midline of the body.**
 - If centering is incorrect, explain how you would move the central ray to achieve proper centering. **N/A**
4. Is the body part positioned accurately? **Yes, but slight rotation.**
- If the body part is not positioned accurately:
 - Explain what anatomy demonstrates inaccurate positioning (over or under-rotation etc). **This patient is slightly rotated to their left side. I can tell this because spinous processes are off slightly from midline, and the left wing of the pelvis is slightly broader than the right.**
 - State the modification of positioning necessary to meet evaluation criteria. **I would not repeat for this rotation, but this image is gonna need to be repeated for not having a marker, so I would also roll this patients right side back toward the table.**
5. Is the collimation and IR orientation as required? **Yes**
- State the proper collimation size to be used. **14x17**
 - State how the IR should be oriented to the patient. **Portrait**
6. Is the proper marker(s)/annotation(s) utilized on the image? **No**
- State if the marker was placed in the proper location. **This image should have a right or left marker on the appropriate side.**
 - State if any additional marker(s)/annotation(s) are required. **A right or left marker on the appropriate side.**
7. Is the exposure within the appropriate EI range? **Yes**
- Identify the correct technique. **90-120 kVp @ center cell for AEC, or 5 mAs for fixed technique.**
 - If not within the appropriate EI range, explain specifically how to adjust the technical factors to bring the EI into range. **N/A**
8. Are there any artifacts present on the image? **No**
- If an artifact is present, list which artifact(s) would make the image not acceptable and an additional exposure to the patient. **N/A**
9. Overall, is this image ACCEPTABLE or NOT ACCEPTABLE? **NOT ACCEPTABLE**
- State the reasons this image will require the patient to have a second exposure. **This image needs a marker, and the slight rotation of the patient should be fixed to ensure the patient is flat on their back on the table.**

Right Lateral Stomach

1. Is orientation of the image correct? **No**
 - If orientation is incorrect, explain why. **This image should be mirrored as well.**
 - State how to modify the orientation. **Mirror the image to make the stomach on the right side of the screen when we are looking at it.**
2. Is all necessary anatomy included? **Yes**
 - Explain the anatomy required by evaluation criteria. **Entire stomach and duodenal loop**
 - Drag the arrows with letters on the Case Study slides to identify anatomical structures within each slide.
3. Is the body part centered appropriately? **Yes**
 - Identify the correct location for centering. **4 inches above crest and side to side should be centered at the bisected region of midaxillary line and anterior abdomen.**
 - If centering is incorrect, explain how you would move the central ray to achieve proper centering. **N/A**
4. Is the body part positioned accurately? **Yes**
 - If the body part is not positioned accurately:
 - i. Explain what anatomy demonstrates inaccurate positioning (over or under-rotation etc). **N/A**
 - ii. State the modification of positioning necessary to meet evaluation criteria. **N/A**
5. Is the collimation and IR orientation as required? **No**
 - State the proper collimation size to be used. **11x14 - this image looks like the could have increased collimation**
 - State how the IR should be oriented to the patient. **portrait**
6. Is the proper marker(s)/annotation(s) utilized on the image? **No**
 - State if the marker was placed in the proper location. **No, there is no marker present on this image**
 - State if any additional marker(s)/annotation(s) are required. **Right marker should be placed posterior to the stomach.**
7. Is the exposure within the appropriate EI range? **Yes**
 - Identify the correct technique. **90-120 kVp @ center cell for AEC, or 15 mAs for fixed technique**
 - If not within the appropriate EI range, explain specifically how to adjust the technical factors to bring the EI into range. **N/A**
8. Are there any artifacts present on the image? **No**
 - If an artifact is present, list which artifact(s) would make the image not acceptable and an additional exposure to the patient. **N/A**
9. Overall, is this image ACCEPTABLE or NOT ACCEPTABLE? **NOT ACCEPTABLE**
 - State the reasons this image will require the patient to have a second exposure. **This image should be repeated with the appropriate marker (right) placed posterior to the patients stomach. When repeated,**

they could increase collimation to ensure they are at 11x14, and before sending the image they should mirror the image so the stomach is facing the right side of the screen.

PATHOLOGIES

10. Select **ONE** of the following pathologies from **EACH** section below to research and answer the following questions. Then insert an image which best demonstrates the selected pathology into the Case Study PowerPoint.

Esophagus- Diverticula

- a. Define the pathology - **A pouch that protrudes outward in a weak portion of the esophageal lining.**
- b. Identify if the pathology is subtractive, additive or neither. **Neither**
 - a. Explain if the technique would need be modified. **No**
- c. Identify symptoms that a patient would have with this pathology - **Difficulty swallowing, food stuck in throat, regurgitating food when laying, bending, or standing up, pain while swallowing, chronic cough, bad breath, chest pain, and neck pain.**
- d. Identify the type of imaging that is obtained for best visualization of this pathology - **Fluoroscopic barium esophagography is the best modality for visualizing this pathology.**
 - a. State if there are any other additional non-radiographic studies associated with diagnosis of this pathology - **endoscopy can find diverticula in the esophagus.**

UGI- Pyloric Stenosis

- a. Define the pathology -**Uncommon condition in infants that causes a narrowing of the pylorus which prevents food from entering the small bowel.**
- b. Identify if the pathology is subtractive, additive or neither. **Could be additive if stomach is fluid filled, and destructive if the stomach is air filled.**
 - a. Explain if the technique would need be modified. **No change to technique.**
- c. Identify symptoms that a patient would have with this pathology - **vomiting after feeding, dehydration, persistent hunger, stomach contractions, changes in bowel movements, and weight loss.**
- d. Identify the type of imaging that is obtained for best visualization of this pathology - **Ultrasound is the preferred imaging modality for this pathology, but plain radiographs and fluoro are also used to diagnose this pathology.**
 - a. State if there are any other additional non-radiographic studies associated with diagnosis of this pathology - **Just ultrasound.**

