

eFAST

*Dr Moloud ▶
Balafar*

*Assistant ▶
Professor, Tabriz
University Of
Medical Science*

EFAST *Definition*

Extended
Focused
Assessment with
Sonography in
Trauma

Objectives

Overview of the the eFAST Scan
Use in Trauma
Advantages and limitations
Demonstrate Technique
Normal and abnormal scans
Training and Accreditation

EFAST

Rapid and Bedside

Non-Invasive

Repeatable

High sensitivity and specificity

Depends on the question being
asked/answered

Consider it as part of Primary
survey

Chest = CXR

Abdomen = FAST

EFAST

How can we use it?

Clinical Examination

Answers specific Questions

Is there free fluid in the
abdomen?

Is there free fluid in the
pericardium?

Is there evidence of a
pneumothorax/haemothorax?

Guides management

EFAST

How's it performed?

Real time Views

Abdominal

Perihepatic/RUQ

Perisplenic/LUQ

Pelvic (Long and Trans)

Cardiac

Pericardial (usually subcostal)

Thorax

Parasternal

Prob

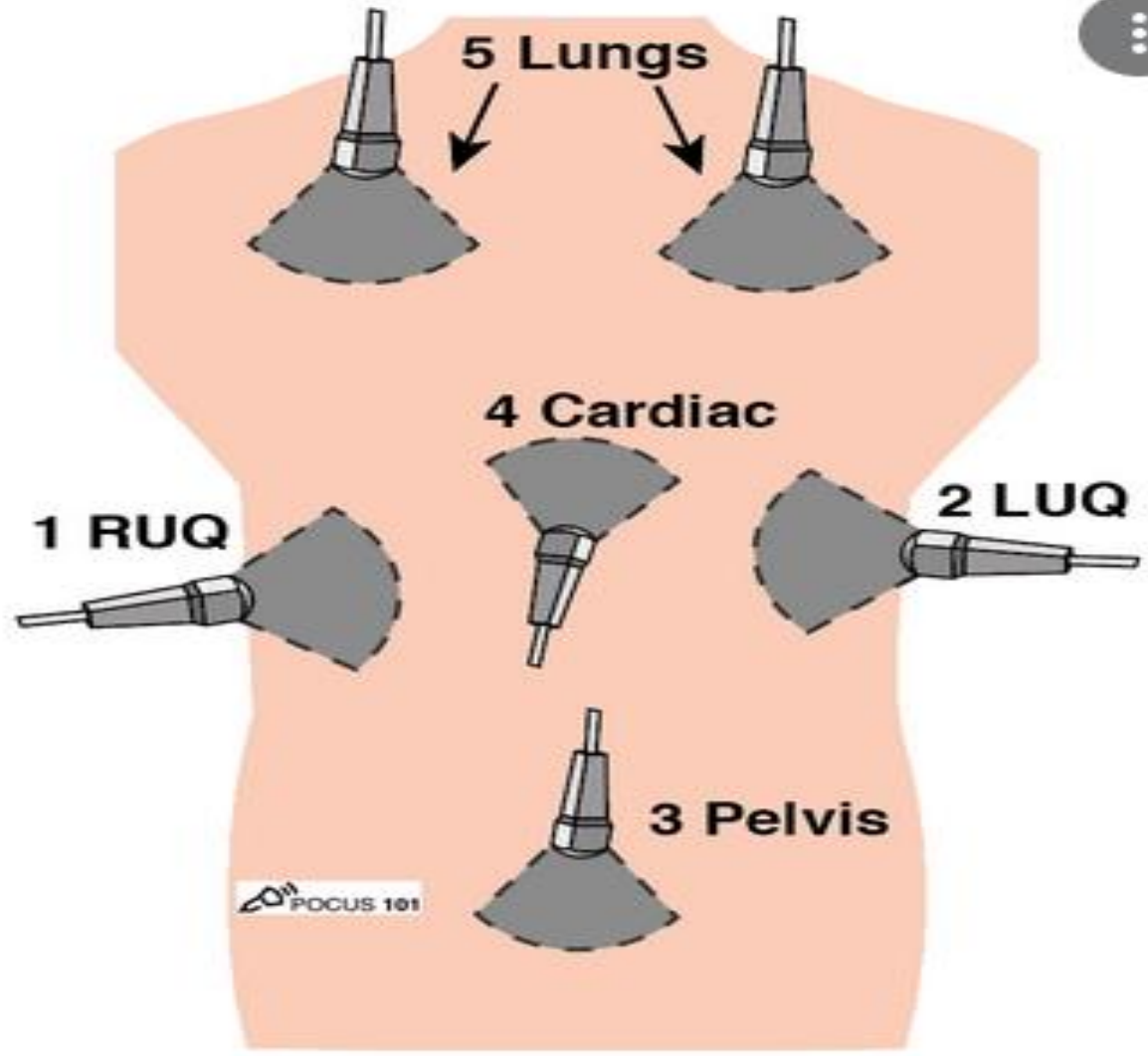
Linear Probe

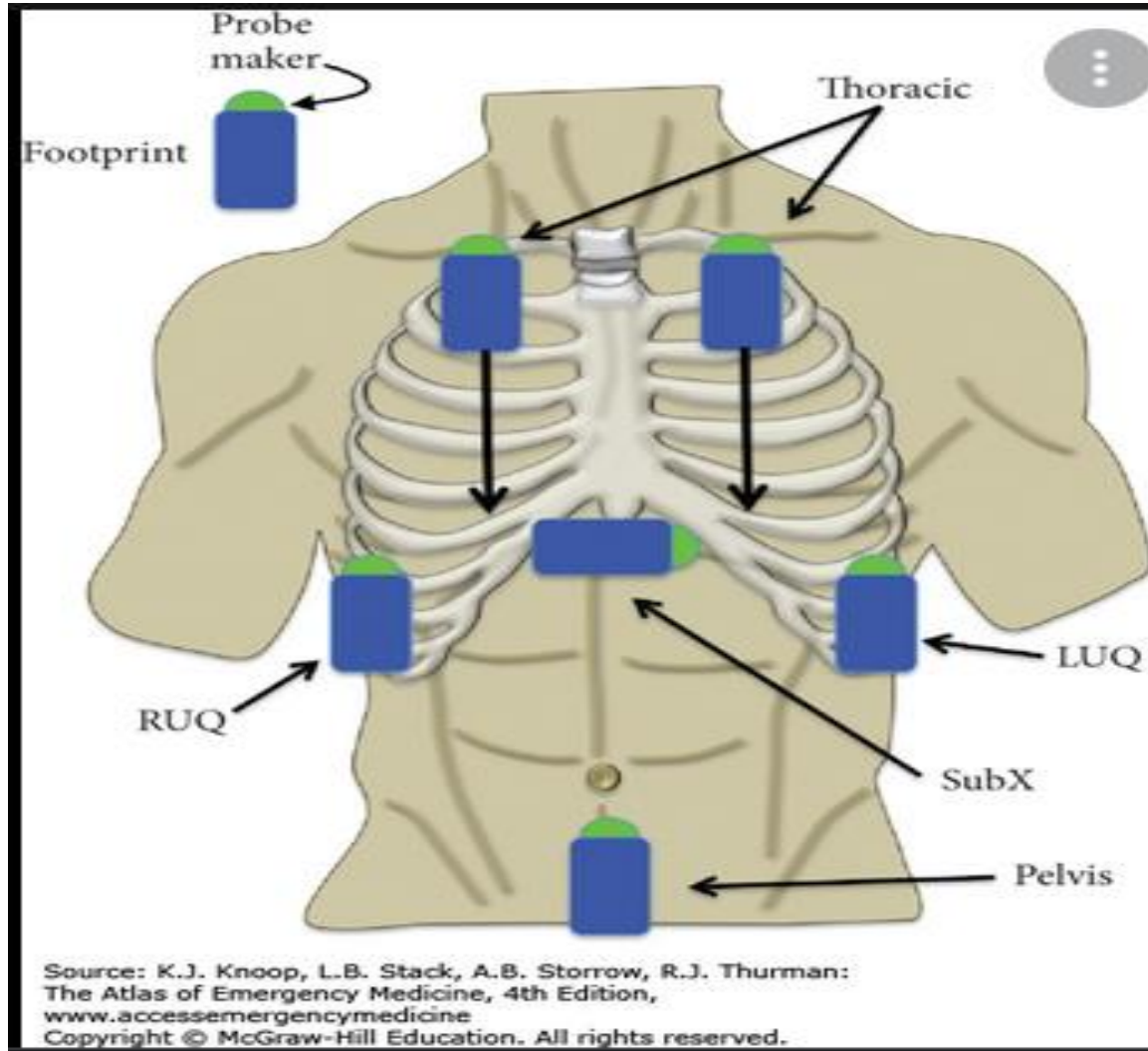
Convex Abdominal Probe



High-frequency ultrasound prob...

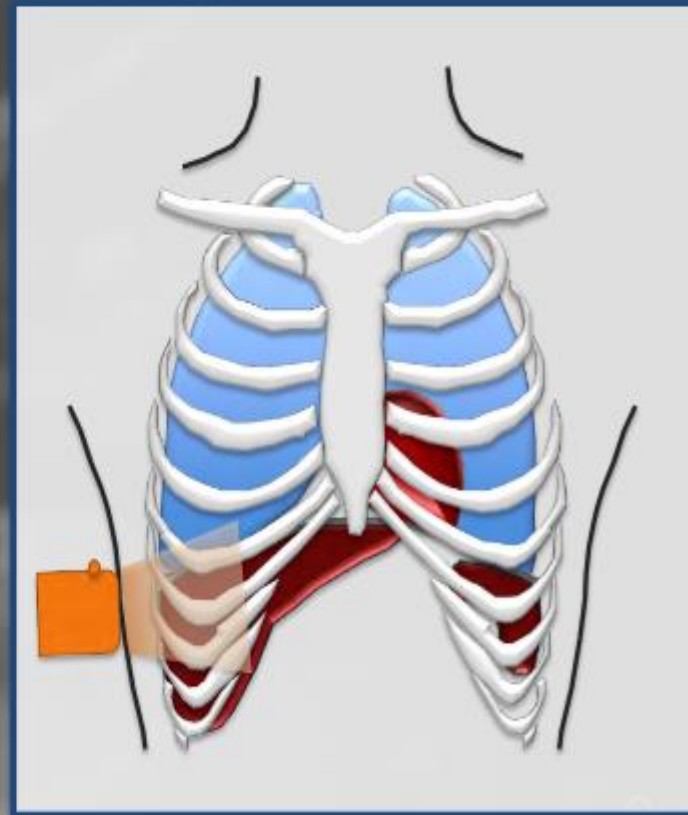


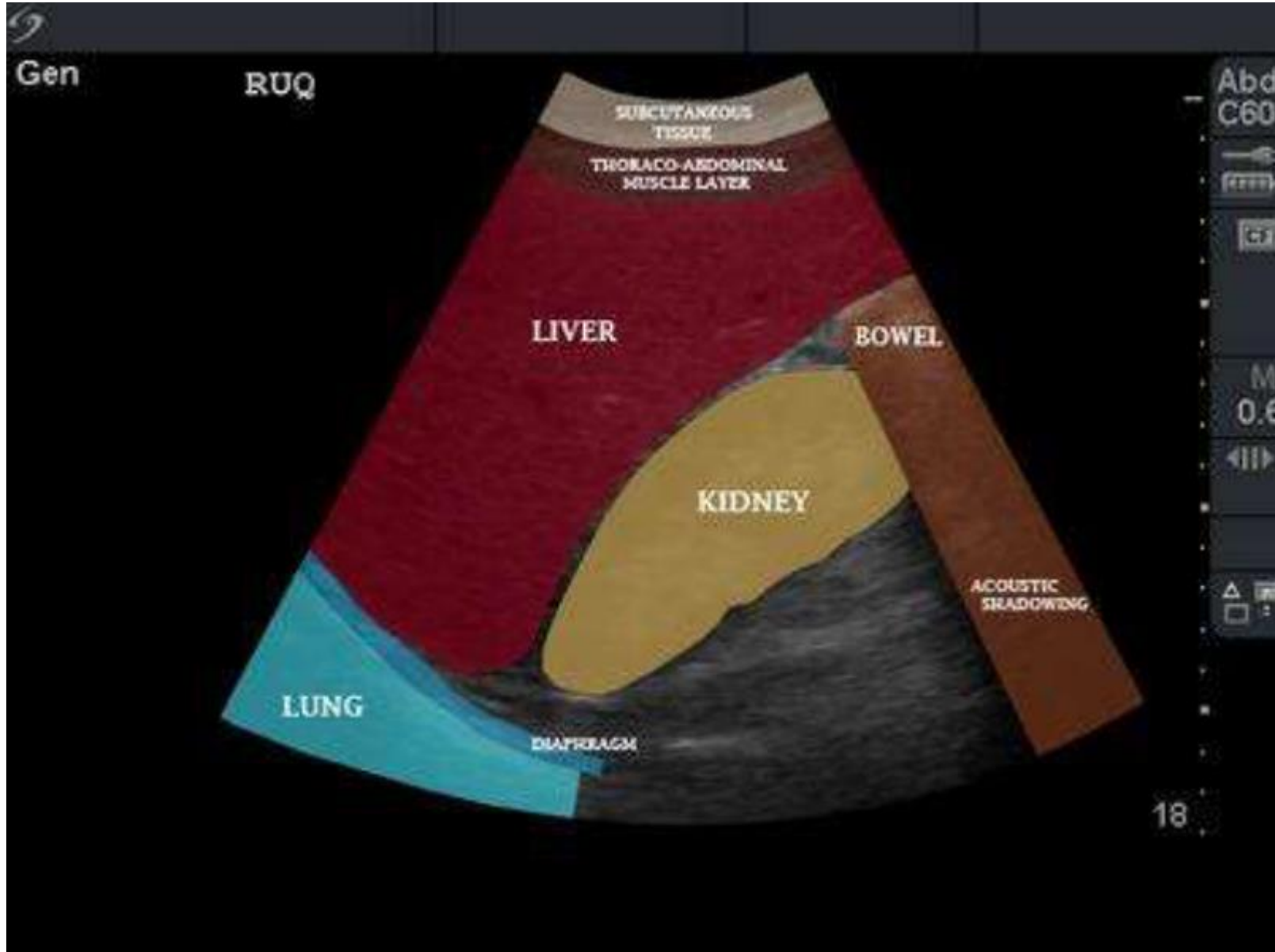


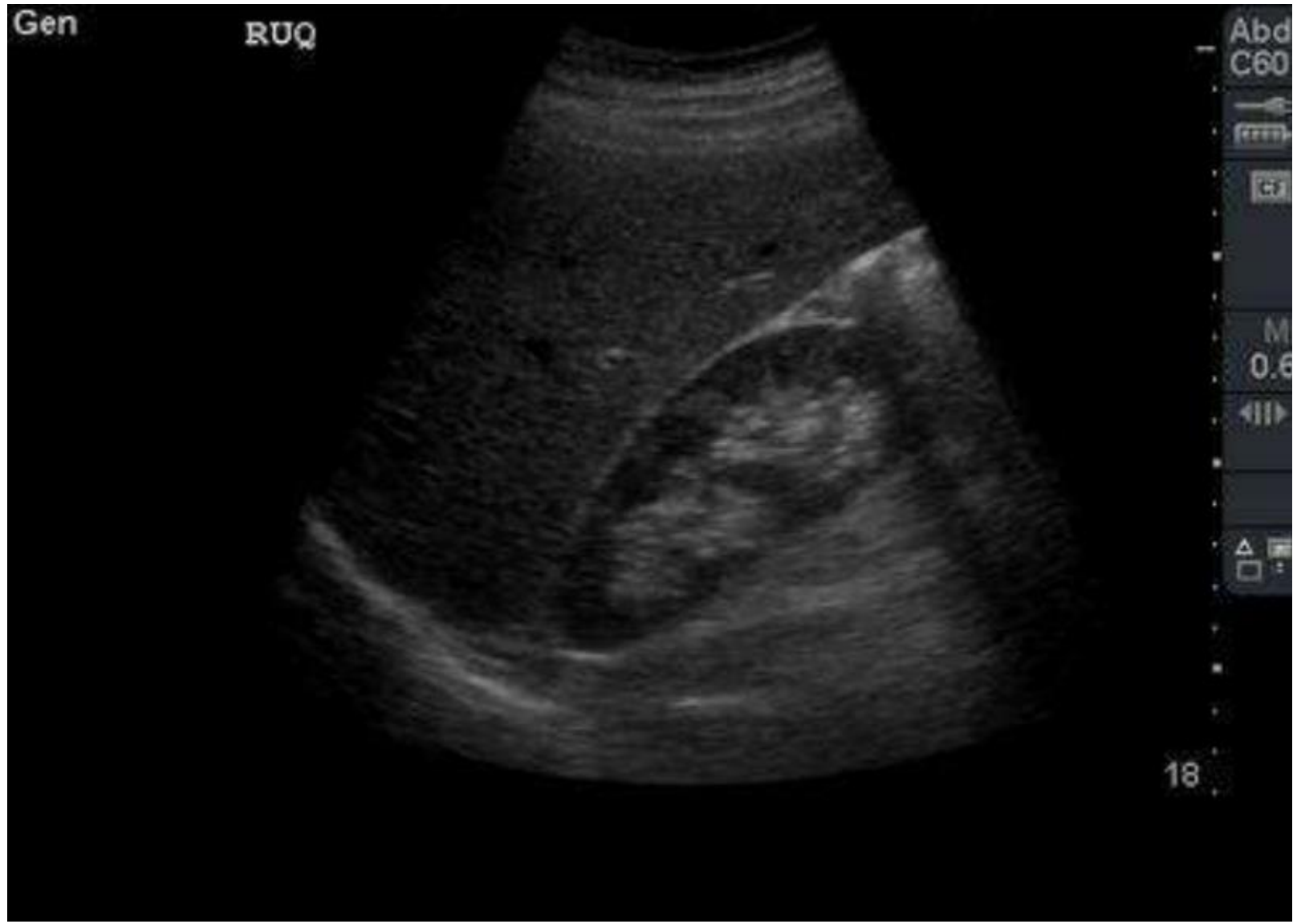


Right Upper Quadrant

- Probe Position
 - Indicator to pt's head
 - 8-11th rib space
 - Angle posteriorly
- Slide probe around rib shadow

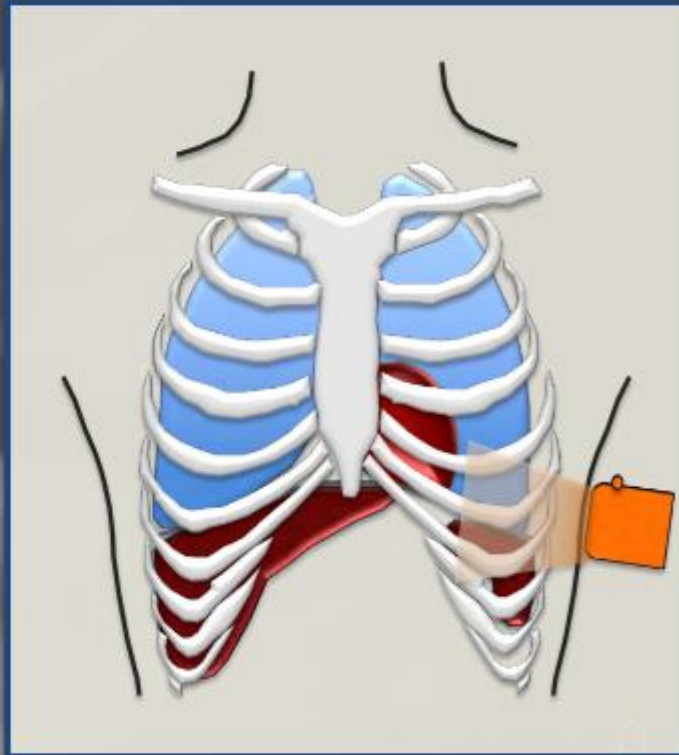




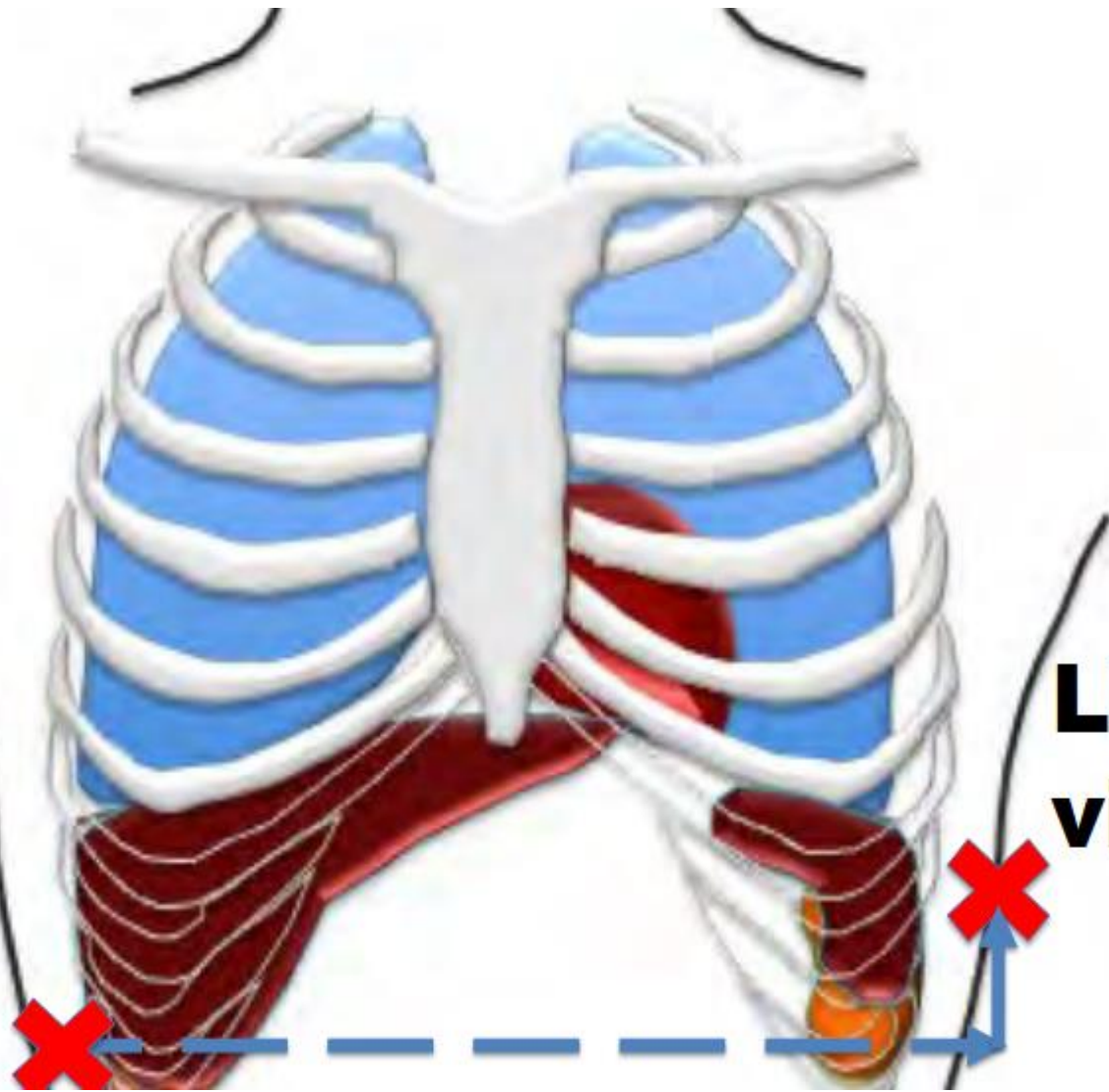


Left Upper Quadrant

- Probe Position
 - Indicator to pt's head
 - 6-9th rib space
- Rib shadow may be challenging
- Inhalation displaces anatomy inferiorly

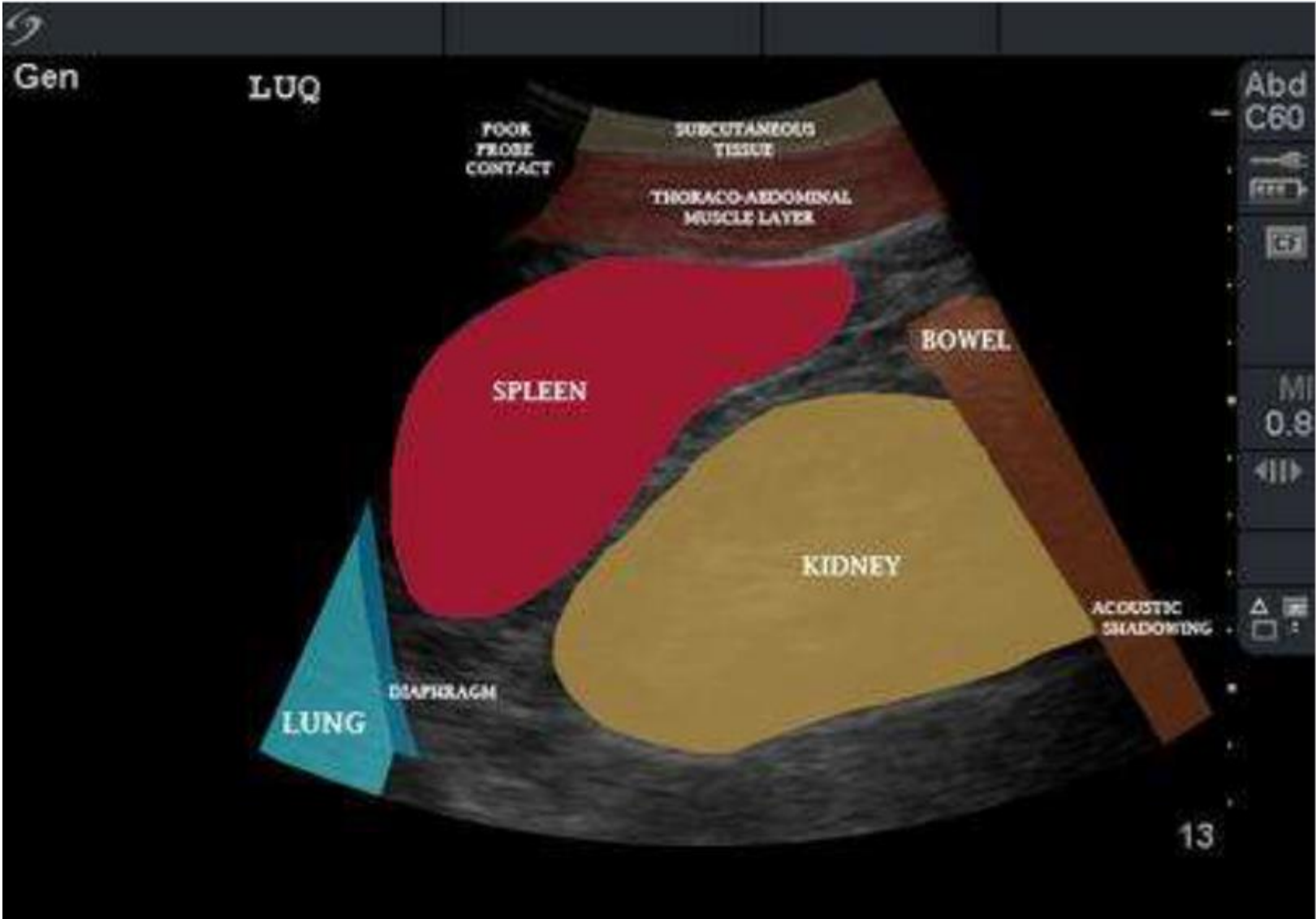


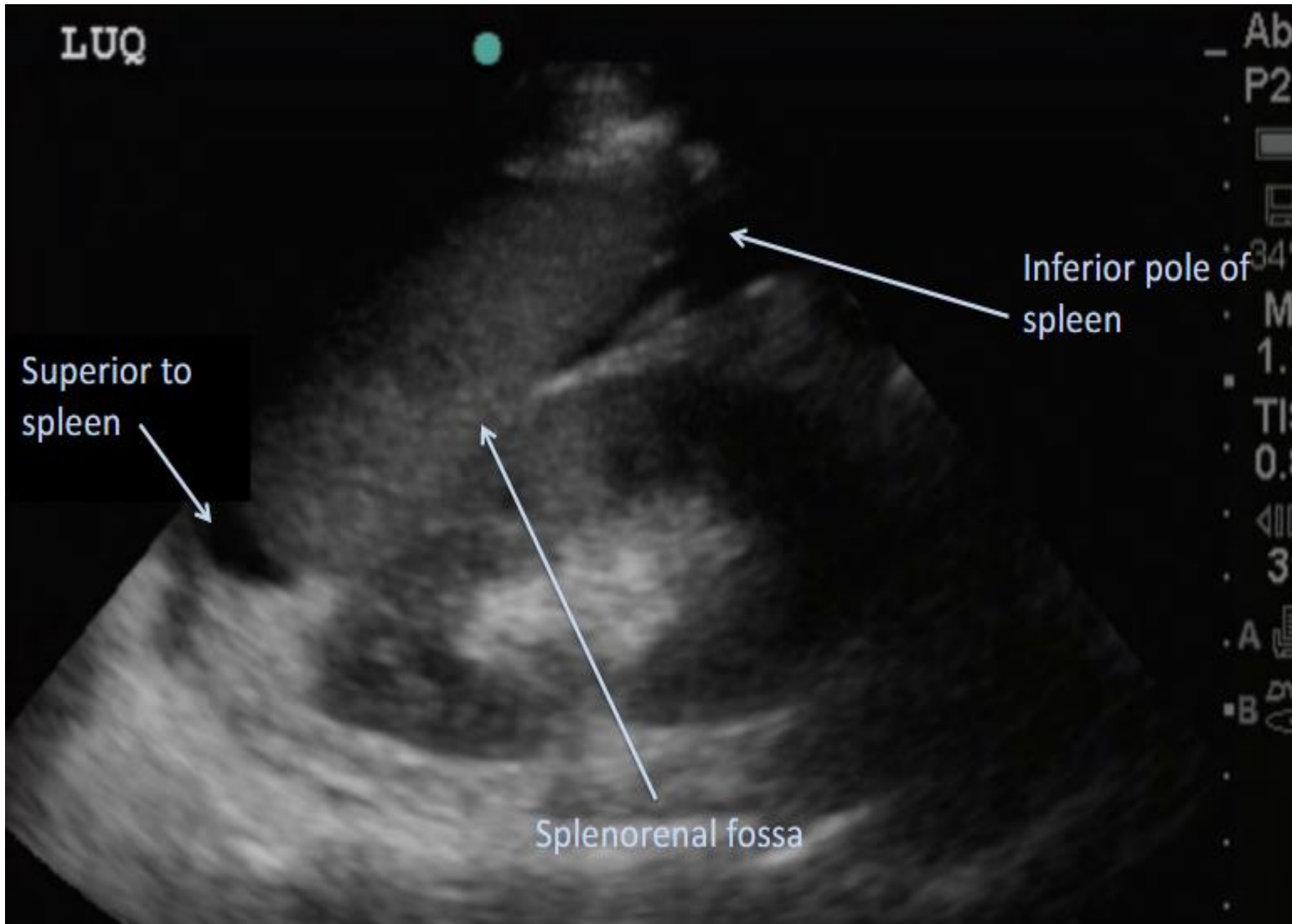
**RUQ
view**



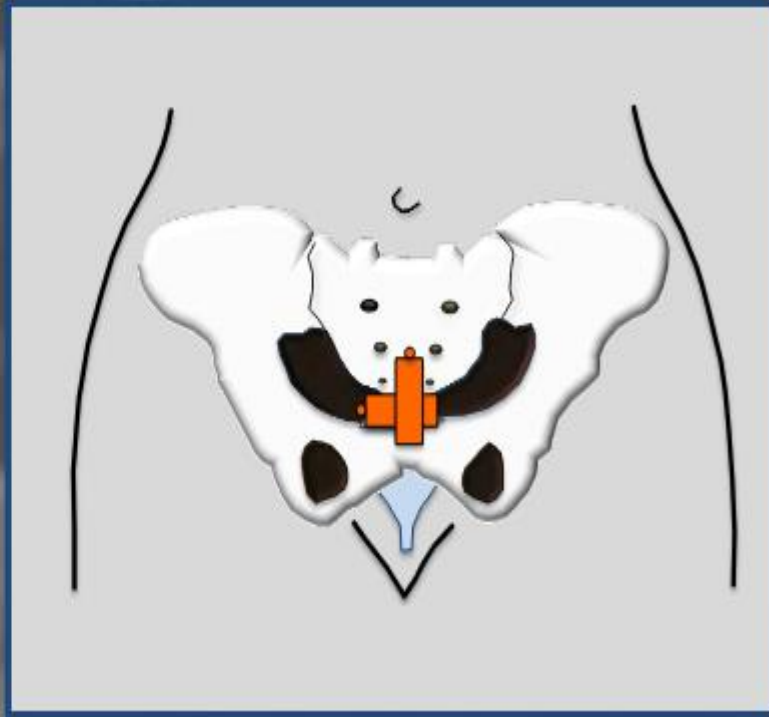
**LUQ
view**

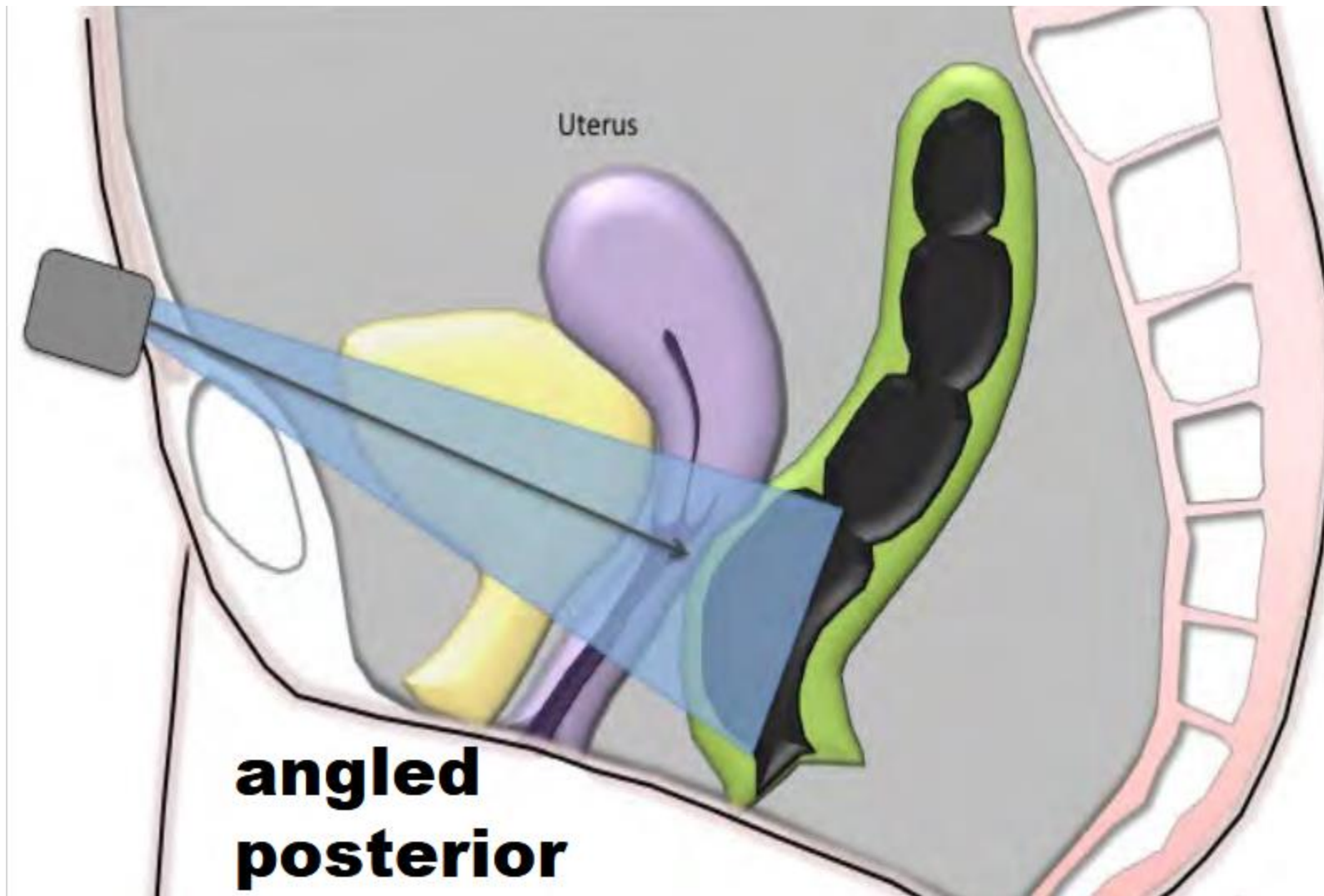


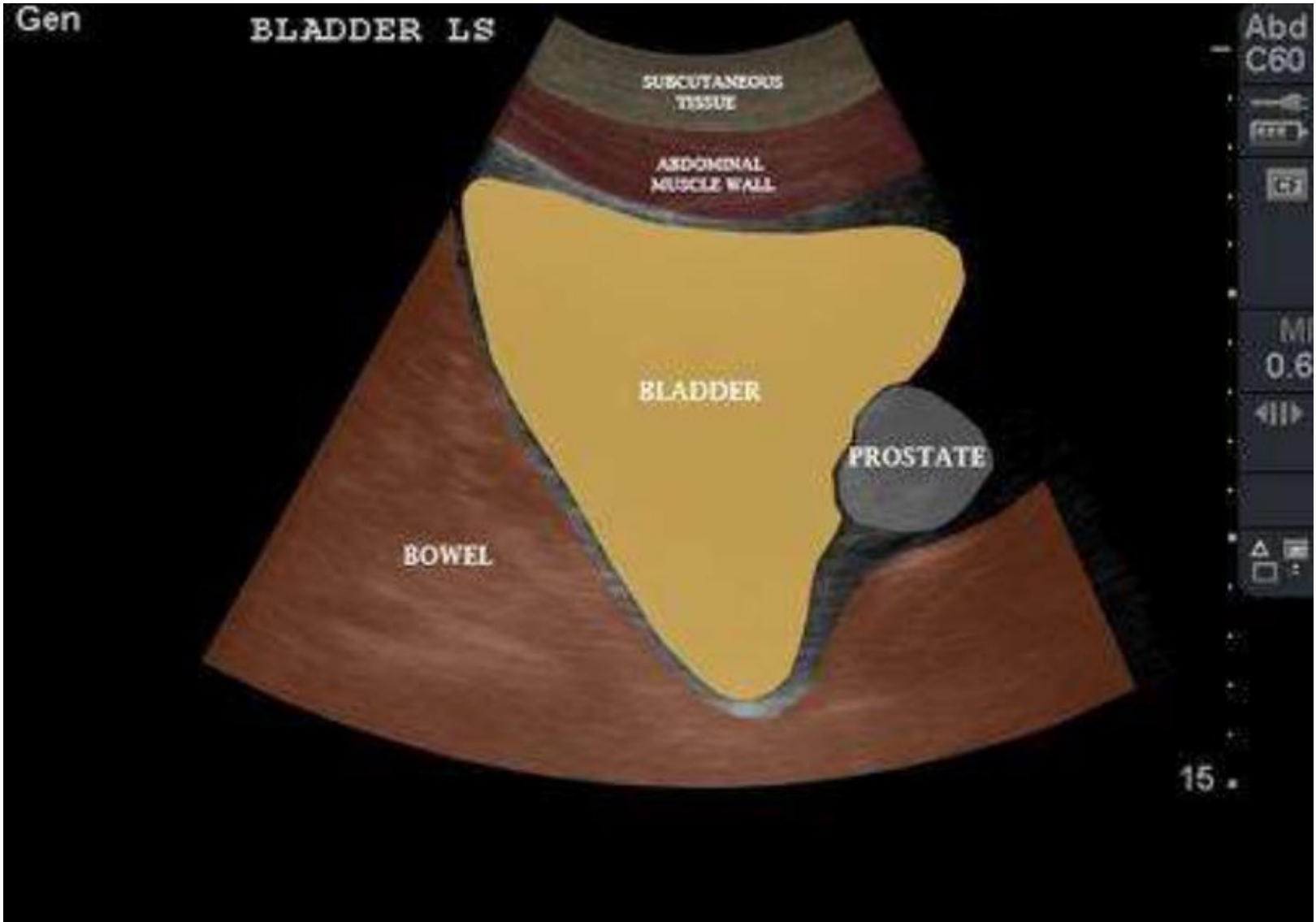




- Probe Position
 - Midline cranial to the pubic bone
- Transverse
 - Indicator to pt's right
- Longitudinal
 - Indicator to pt's head

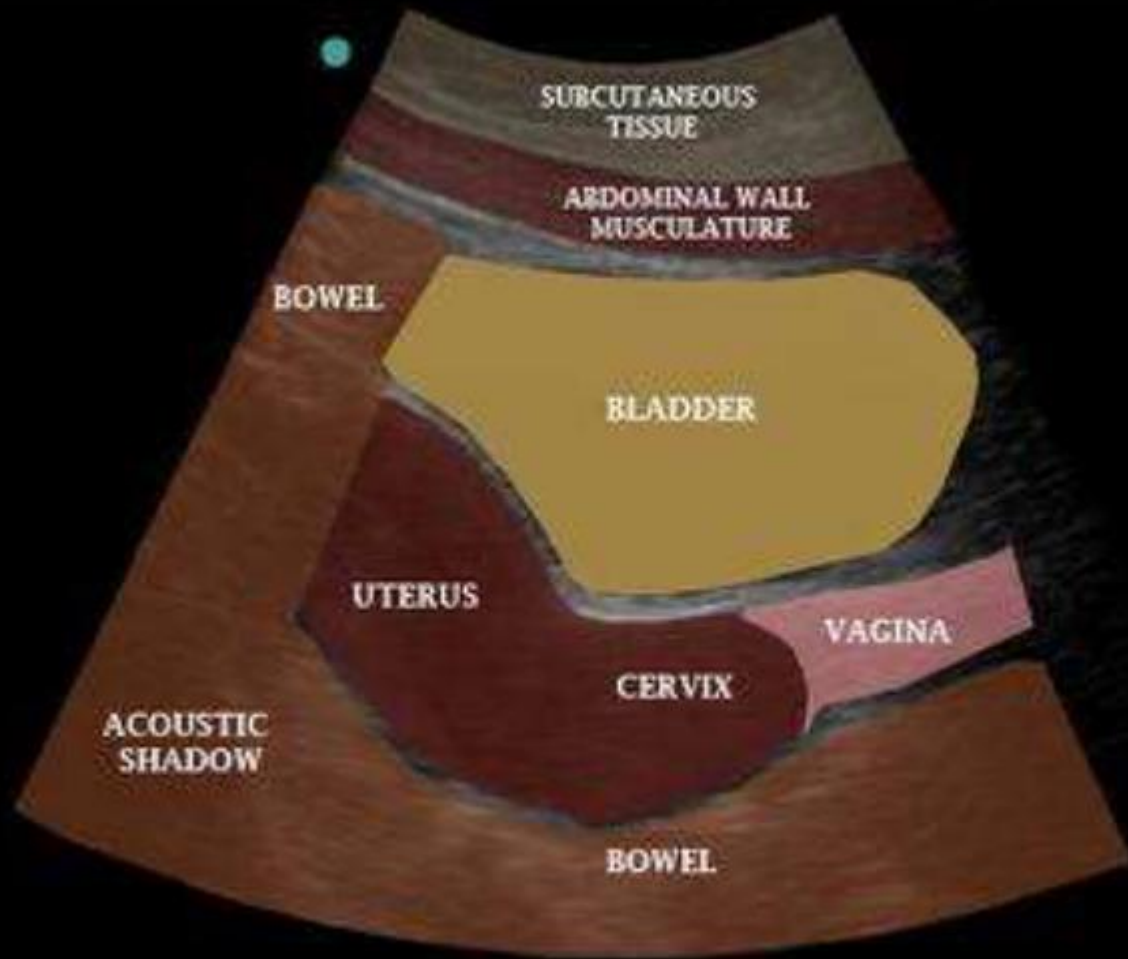








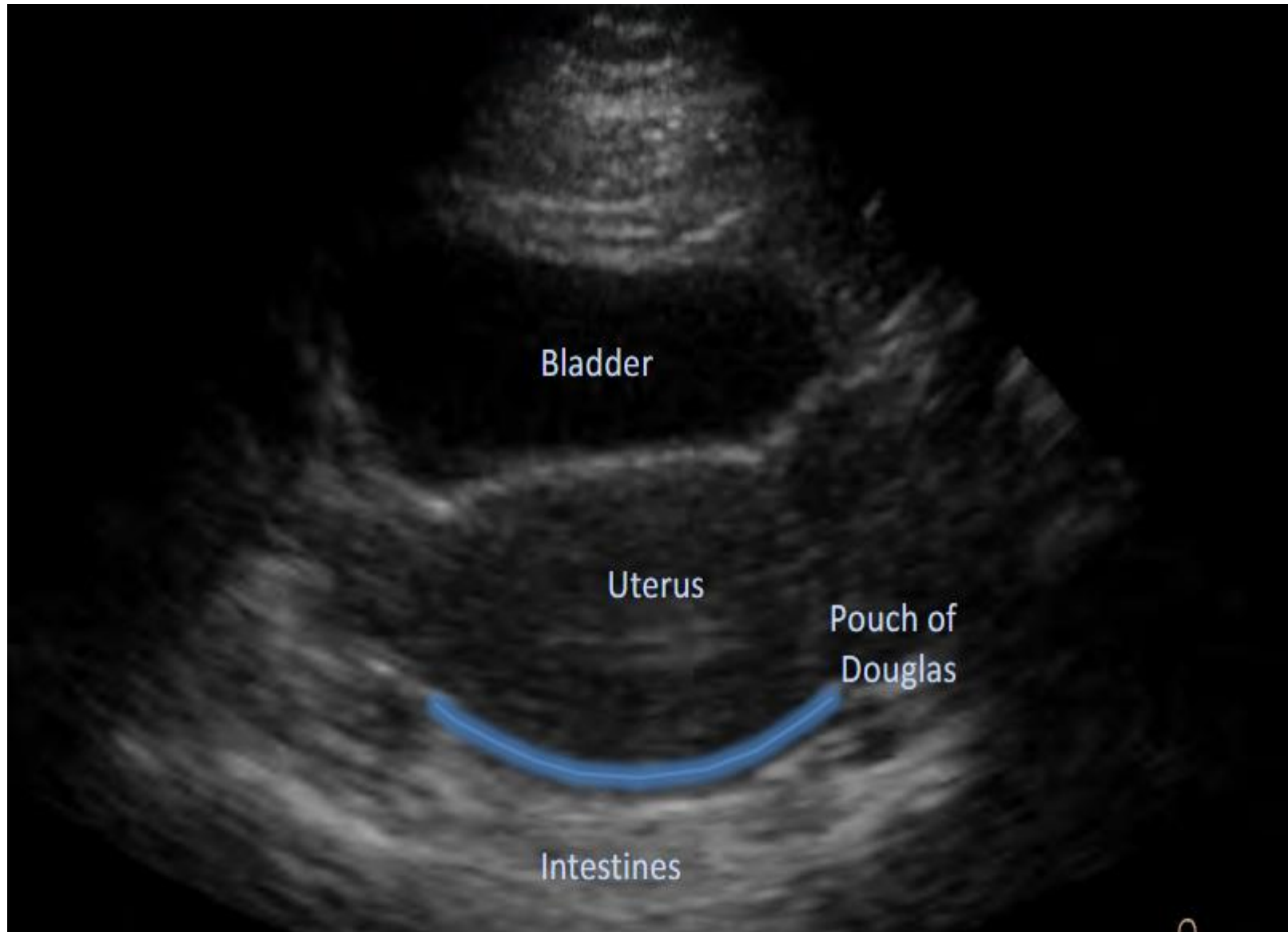
Gen MB



Abd
C60

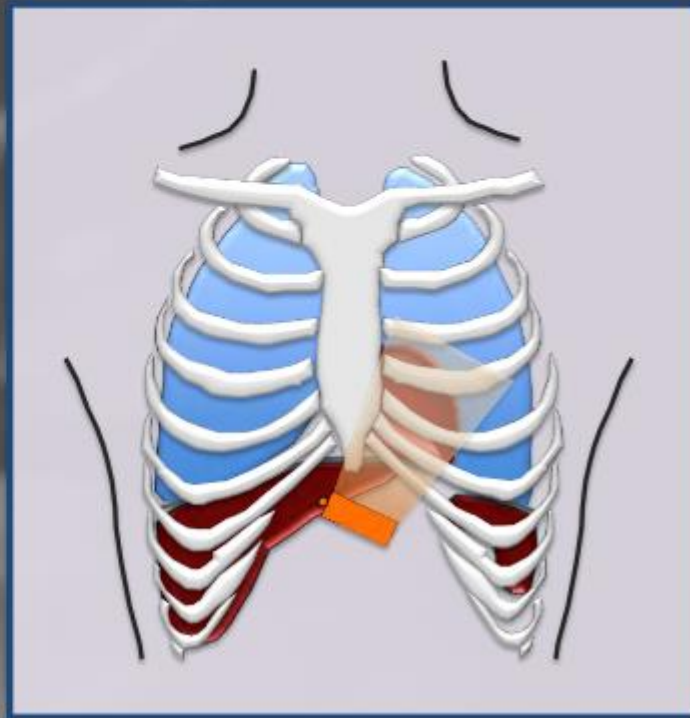
M
0.8

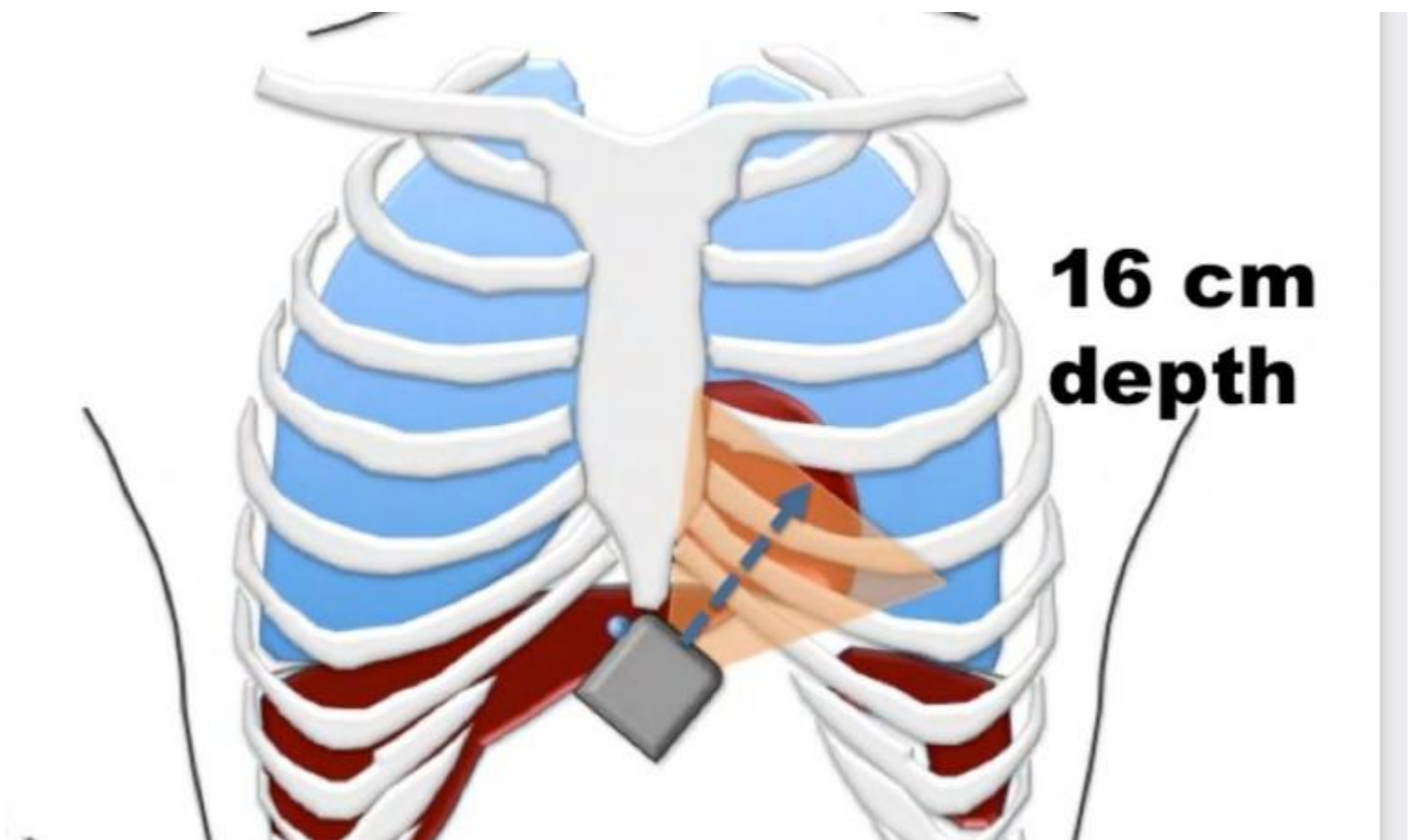
△
□



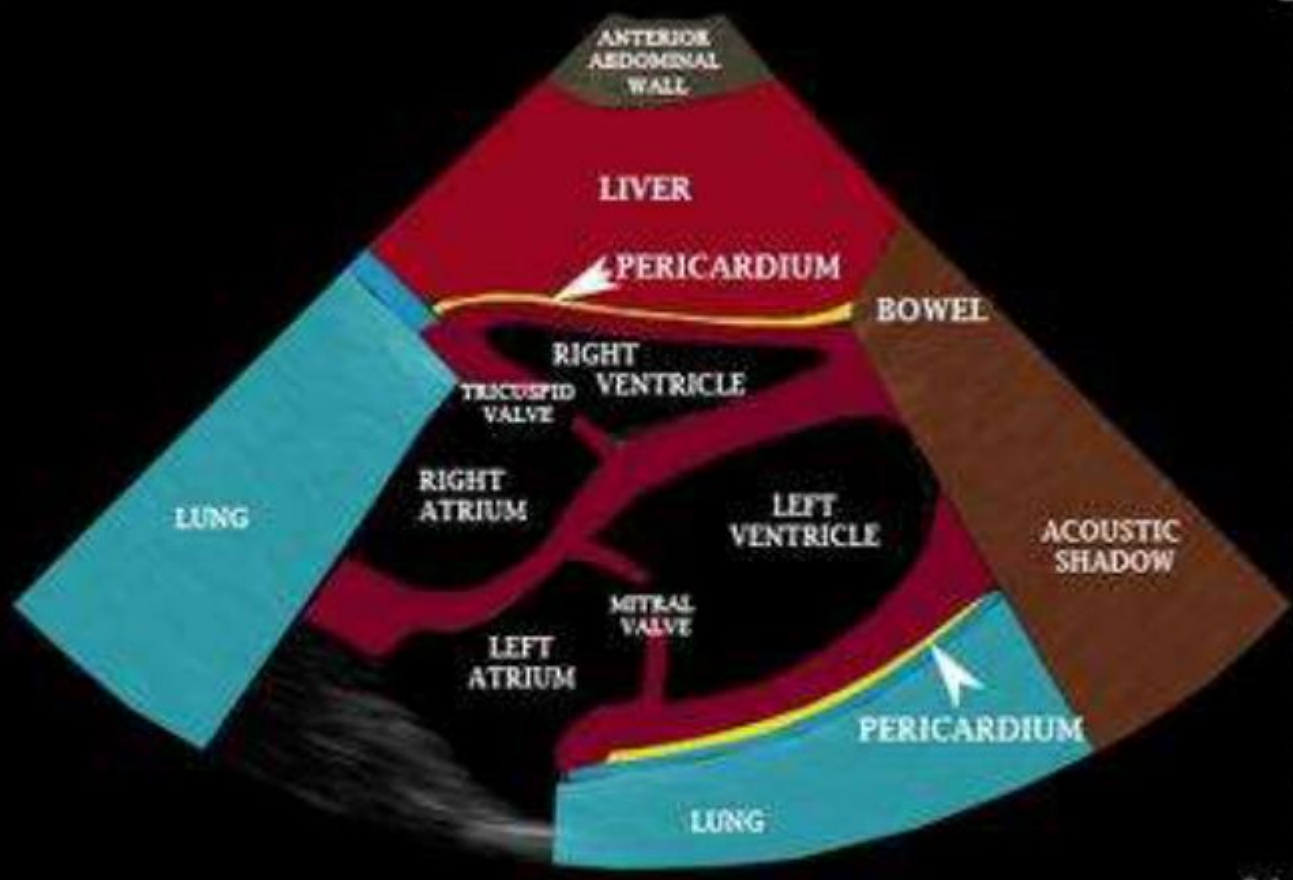
Subxiphoid View

- Probe Position
 - Placed in epigastrium
 - Indicator to pt's right
 - Angle to pt's left shoulder
- Increase depth





**16 cm
depth**

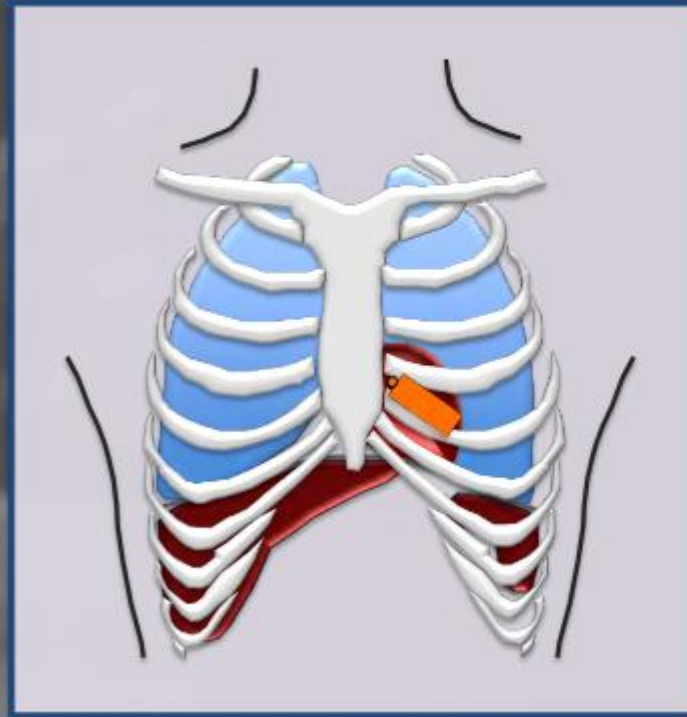


Cre
P17
[RE]
[G]
N
0.7
411
[A]
[]



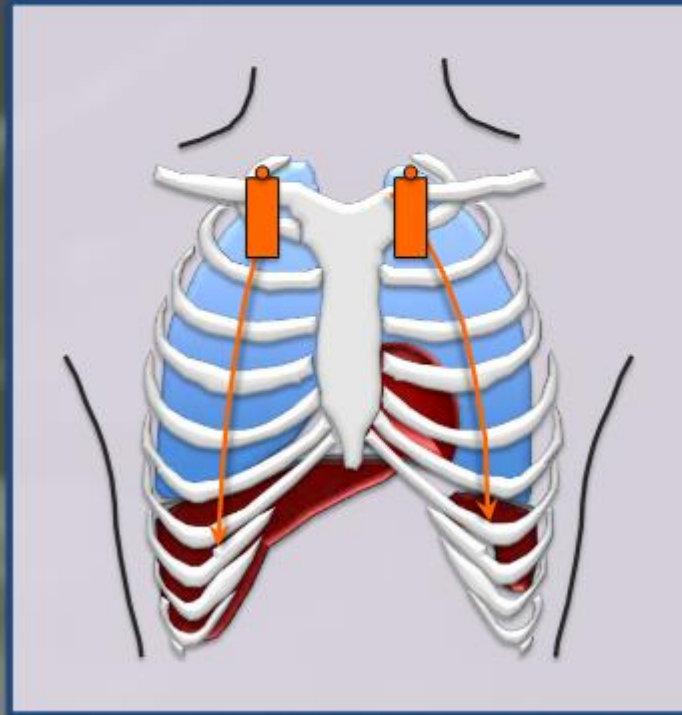
Parasternal View

- Probe Position
 - Left of the sternum
 - 2-4th intercostal space
- Long Axis
 - Probe indicator to patient's right shoulder
 - Sagittal plane



Pneumothorax

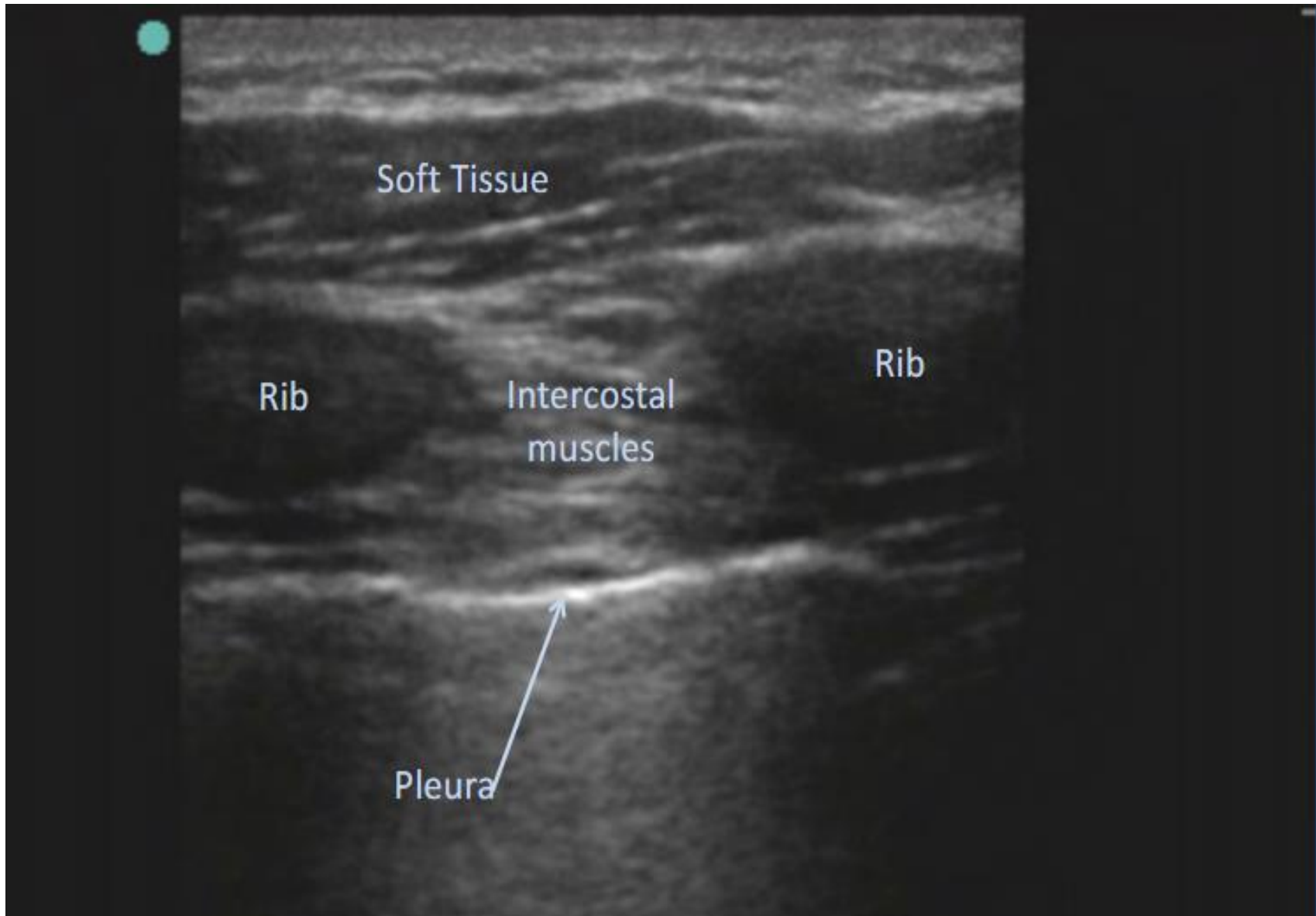
- High frequency linear probe
 - (5-10 MHz)
- Place probe on anterior chest wall, indicator to pt's head
- Slide down chest wall to interrogate each rib interspace

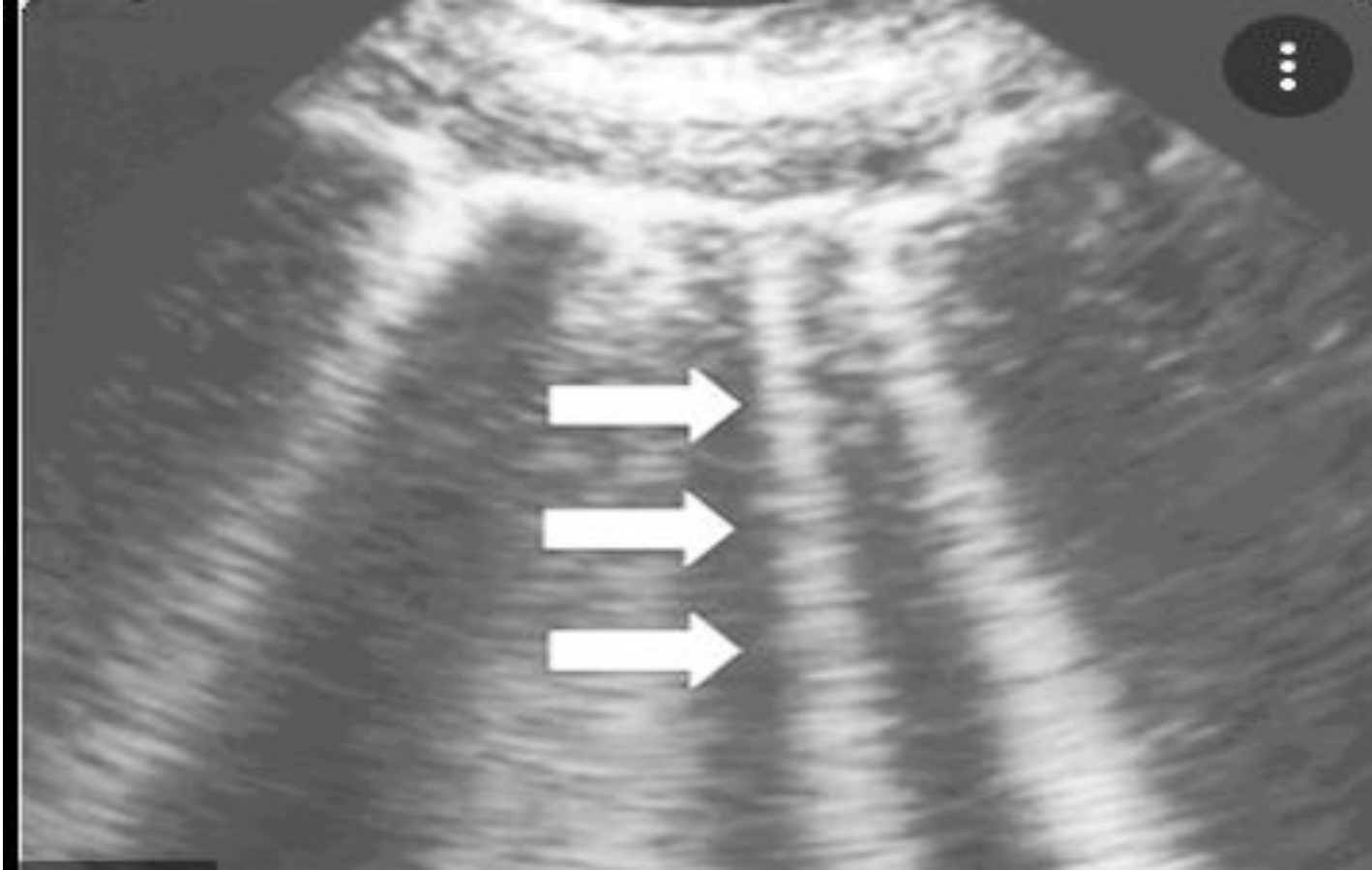


Technique

1. Probe
2. Location
3. Orientation

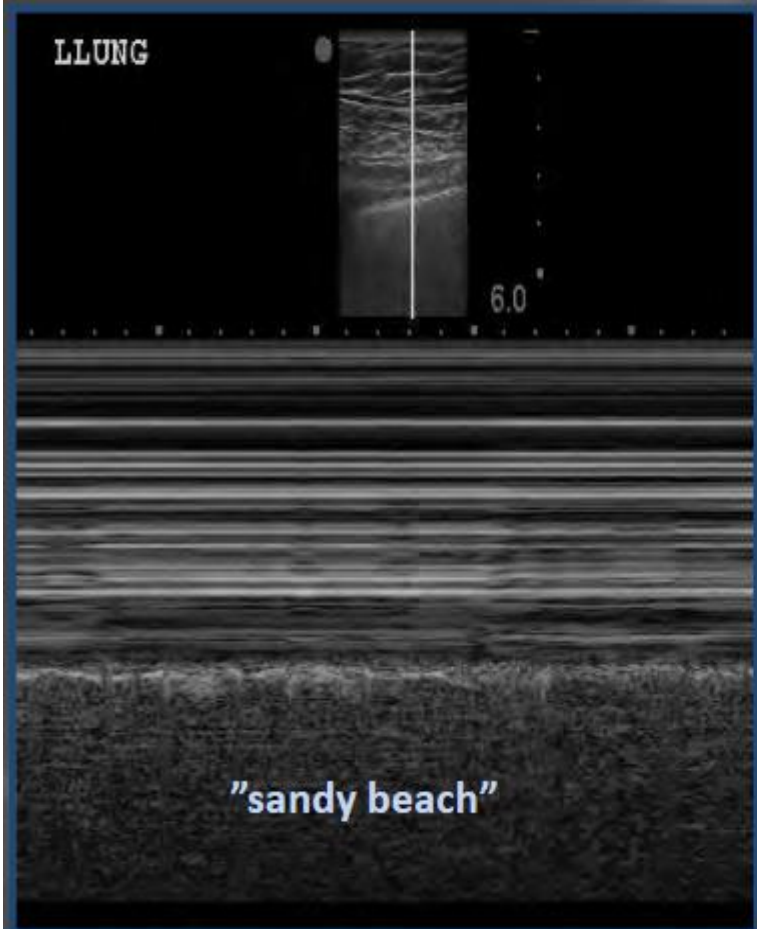




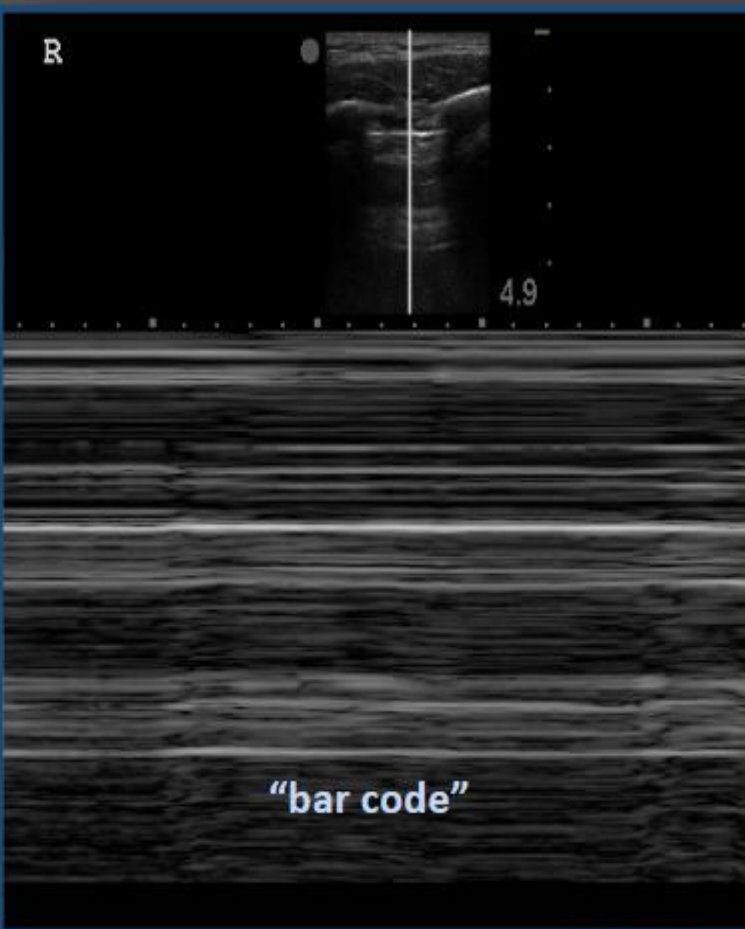


Anterior Thoracic Scan

- B-Mode
 - Watch for slide of the pleura
 - Lack of sliding indicates pneumothorax
- M-Mode
 - Place cursor on the pleura
 - Normal lung: “sandy beach”
 - Pneumothorax: “bar code sign”
- May see the leading edge of pneumothorax



Normal



Pneumothorax

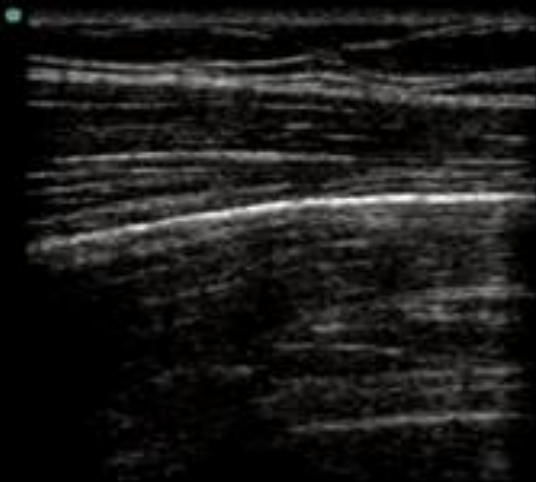
Recortar slice



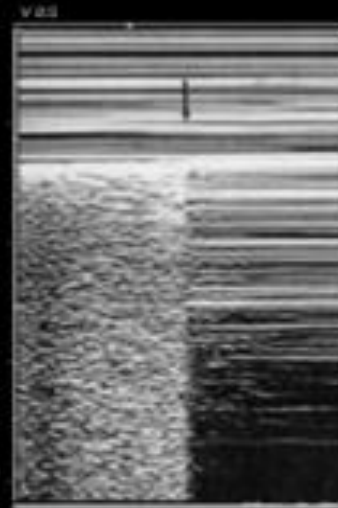
Lung point

Recortar slide

1.0071



1.0071



4.0

1.0071 1.0071 1.0071 1.0071 1.0071 1.0071 1.0071 1.0071 1.0071 1.0071



Pneumothorax

- Occurs in 15-50% of pts with chest trauma
- Supine CXR
 - Misses up to 1/3 of all pneumothoraces
 - Only 50-70% sensitive at detection ptx
 - Inaccurate for anterior ptx due to air layering
- Ultrasound
 - Detects small or anterior ptx
 - Sensitivity 92-100% (equal to CT scan)
 - Negative predictive value 99-100%

- Upper Quadrant views

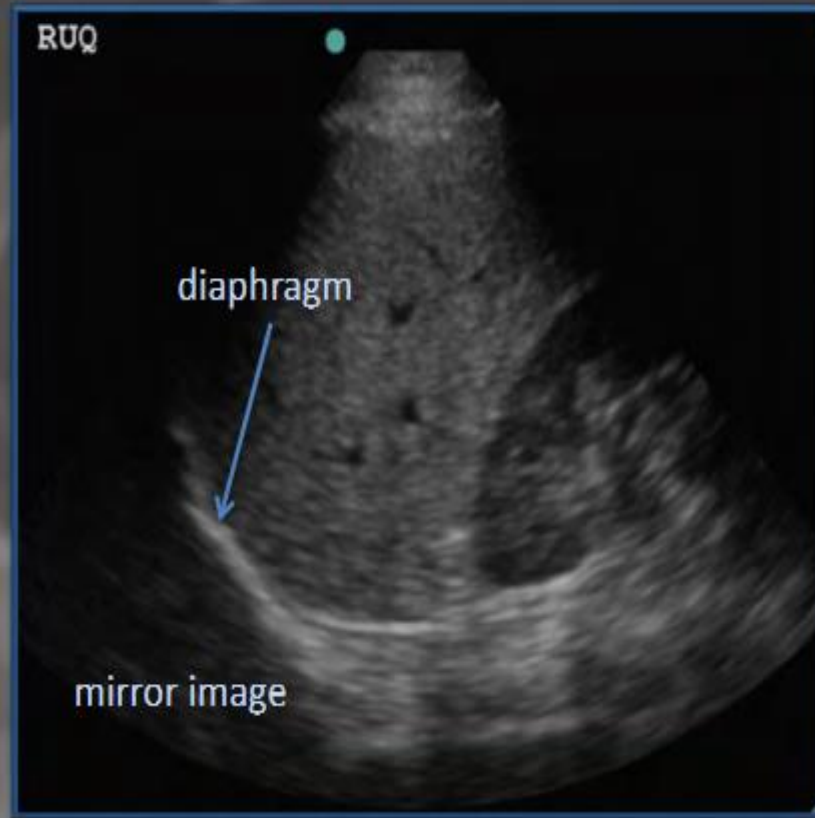
- Slide probe cranially to view diaphragm/liver interface

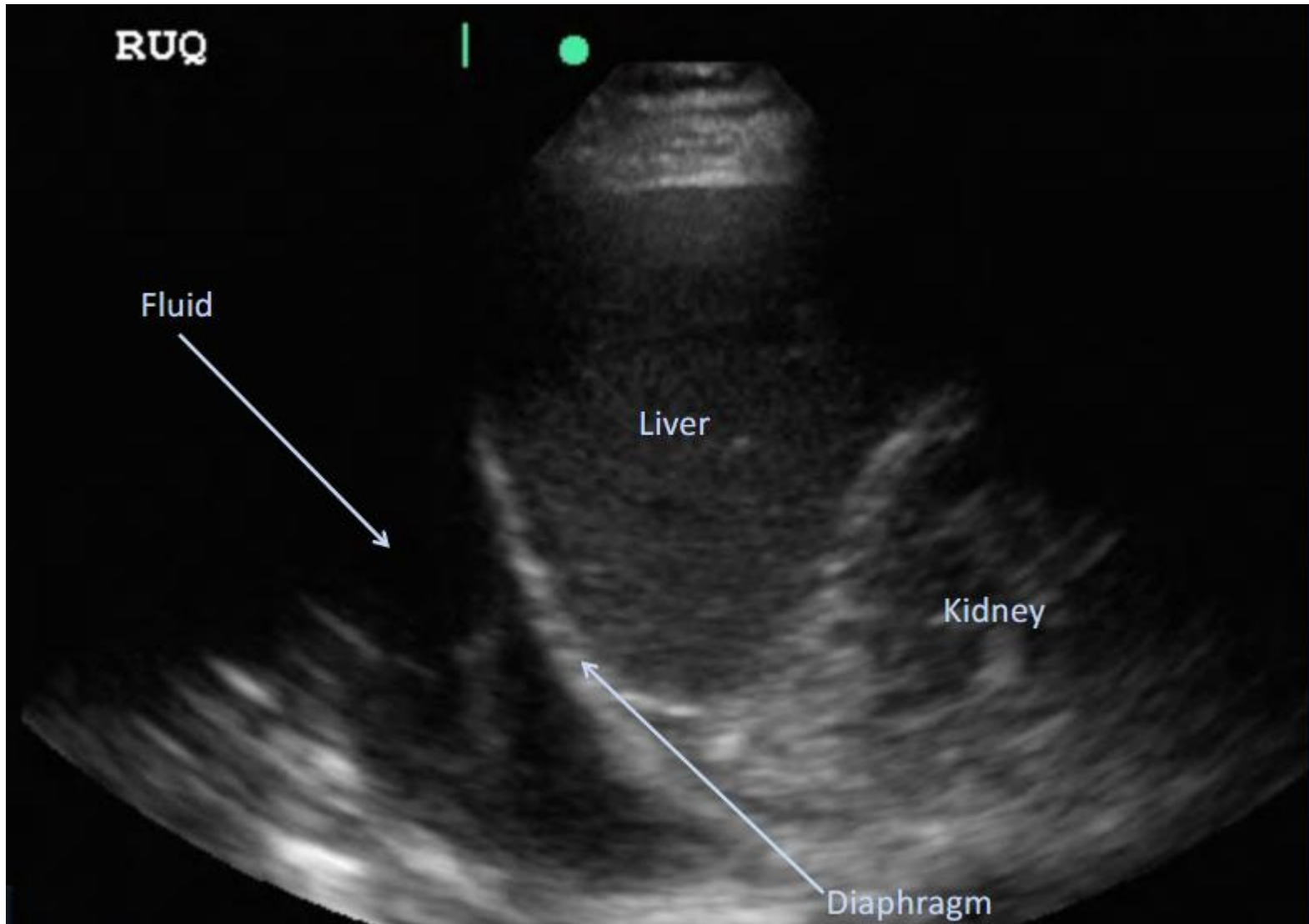
- Normally, diaphragm acts as mirror, so liver appears to be on either side

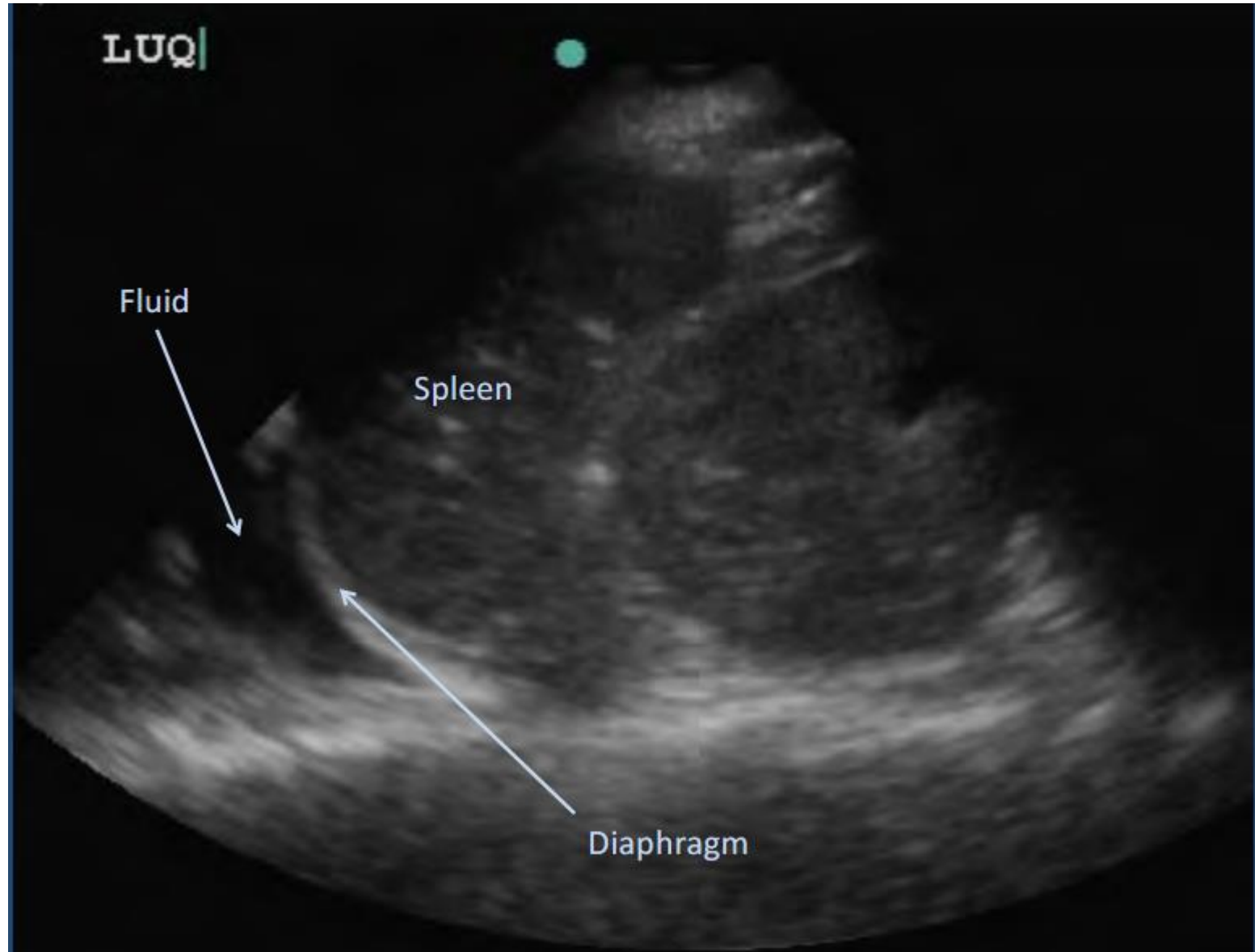
- Fluid within thoracic cavity

- Lack of mirror artifact

- Spine sign continues







EFAST

How does it help?

Guides Management

Prioritization

What should be dealt with first

Ensures more accurate assessment

Thoroughness

EFAST

How does it not help?

Wrong questions

Is there any intraperitoneal bleeding?

Is there any intra-abdominal injury?

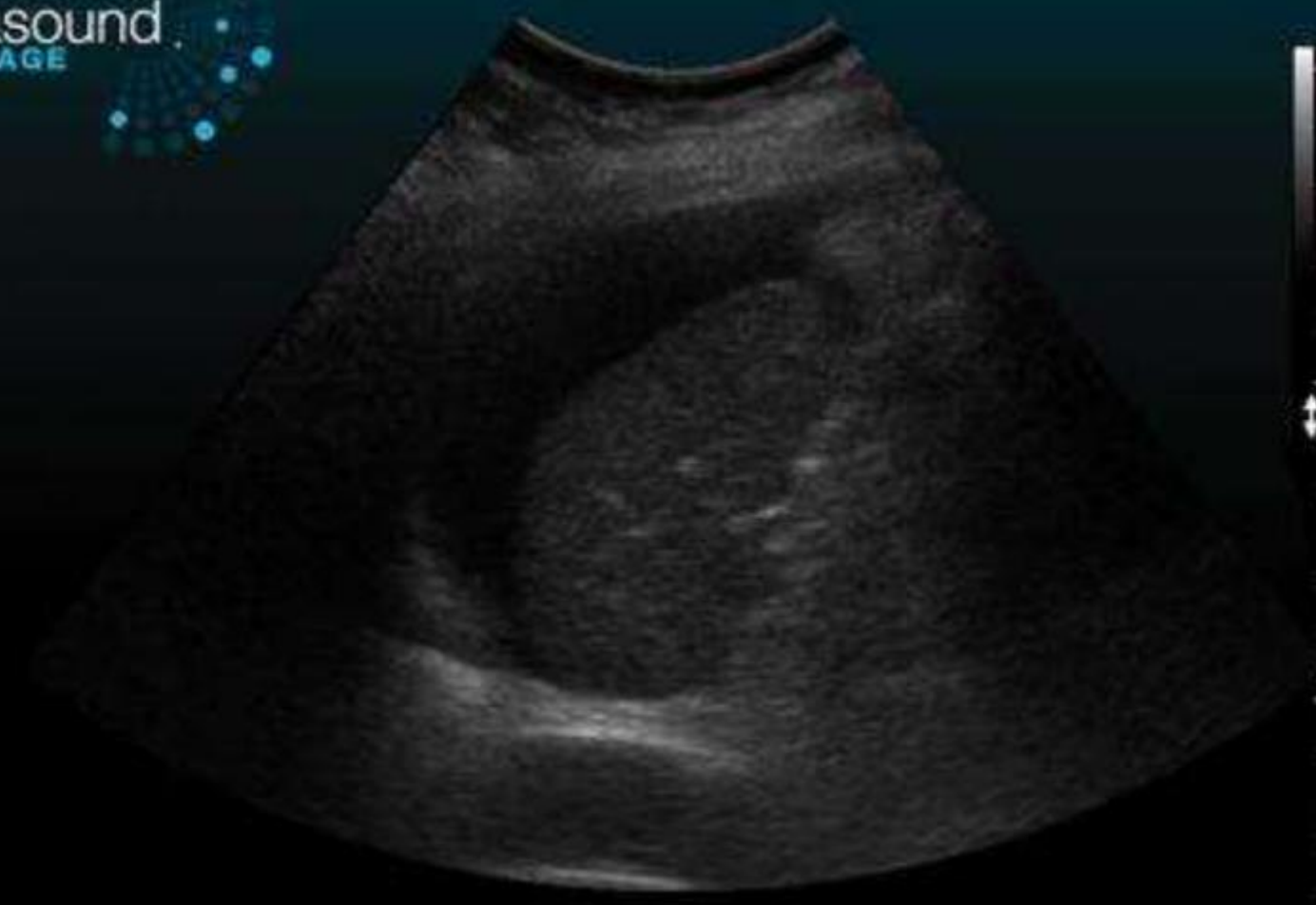
Can I send the patient home?

EFAST

Pathology



ultrasound
VILLAGE



ultrasound
VILLAGE

Free
Fluid





Limitations

Operator dependent

High sensitivity and specificity
for intraperitoneal fluid

Doesn't tell you what structures
are involved

Doesn't tell you what the fluid is

Significant injuries to structures
can occur without free fluid

Transducer

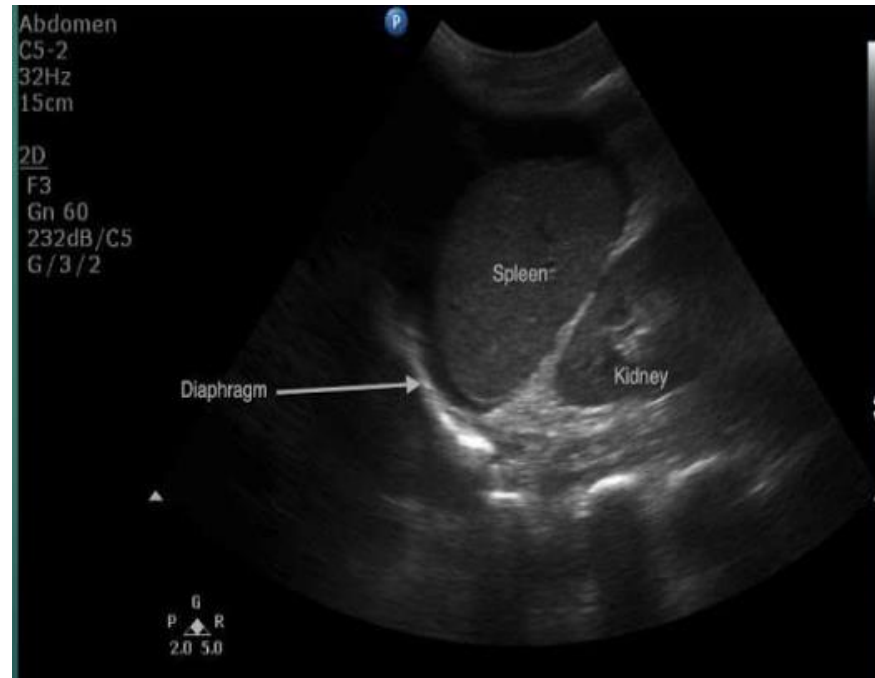
- Coronally (longitudinally)
 - Marker towards patients head
 - Mid - axillary line
 - Lower ribs
 - Slide, rotate and Fan
 - 4 review areas
1. Hepato-renal recess (Morrisons pouch)
 2. Inferior pole of kidney into right paracolic gutter
 3. Below diaphragm
 4. Pleural cavity



Left Upper Quadrant

Transducer

- Coronal plane
- Marker cephalad
- More superior than RUQ
- 6th - 9th intercostal spaces
- More posterior than RUQ
 - posterior axillary line
 - 4 review areas
 1. Pleural cavity
 2. Below the diaphragm (perisplenic space)
 3. Between spleen and left kidney
 4. Inferior pole left kidney (left paracolic gutter)

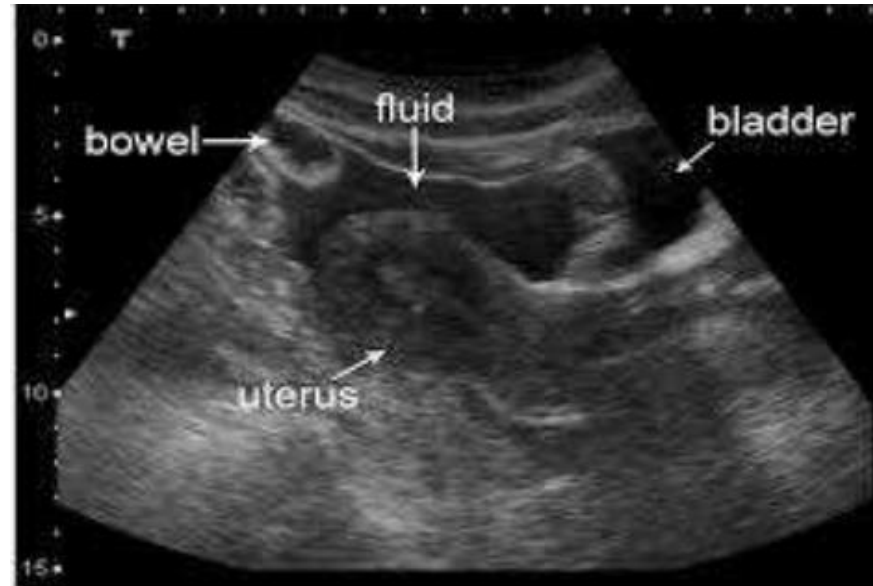


Subxiphoid / Subcostal - 4 chamber view

- Transducer ▶
 - Transverse, marker to patients liver
 - Subxiphoid
- Directed towards patients left shoulder
 - Liver as acoustic window
 - May need to increase depth
- Effusion = dark band (anechoic), that separates bright (hyperechoic) pericardium from heterogenous grey myocardium



- Transducer ▶
 - Midline
 - Marker towards patients head
 - Caudal end of probe just superior to pubic symphysis
 - Fan left to right
 - Review areas
 - Men
 - 1. rectovesical space
 - Women
 - 1. vesicouterine space
 - 2. rectouterine pouch (pouch of Douglas)



Suprapubic - Trans

- ▶ Transducer
 - Midline
 - Transverse
- Marker towards patients right
 - Fan superior to inferior
 - Review area
- Posterior wall of bladder



Clinical Questions

Is there free fluid?

Peritoneal

Pericardial

Pleural

Is there a pneumothorax

