



FOCUSED CARDIAC ULTRASOUND

MIKE BREUNIG, PA-C



AAPA 2023
Nashville, TN



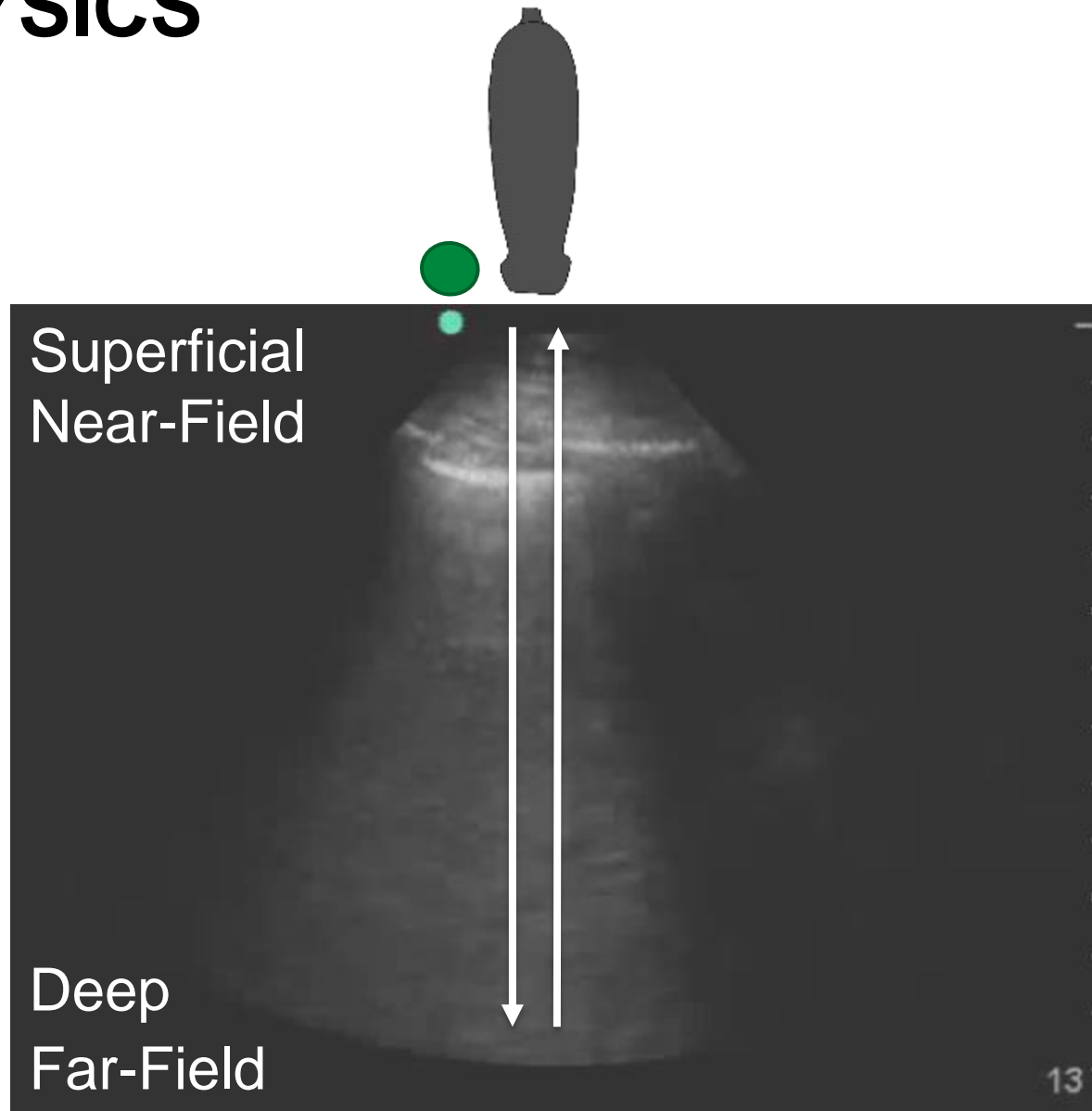
DISCLOSURES

None

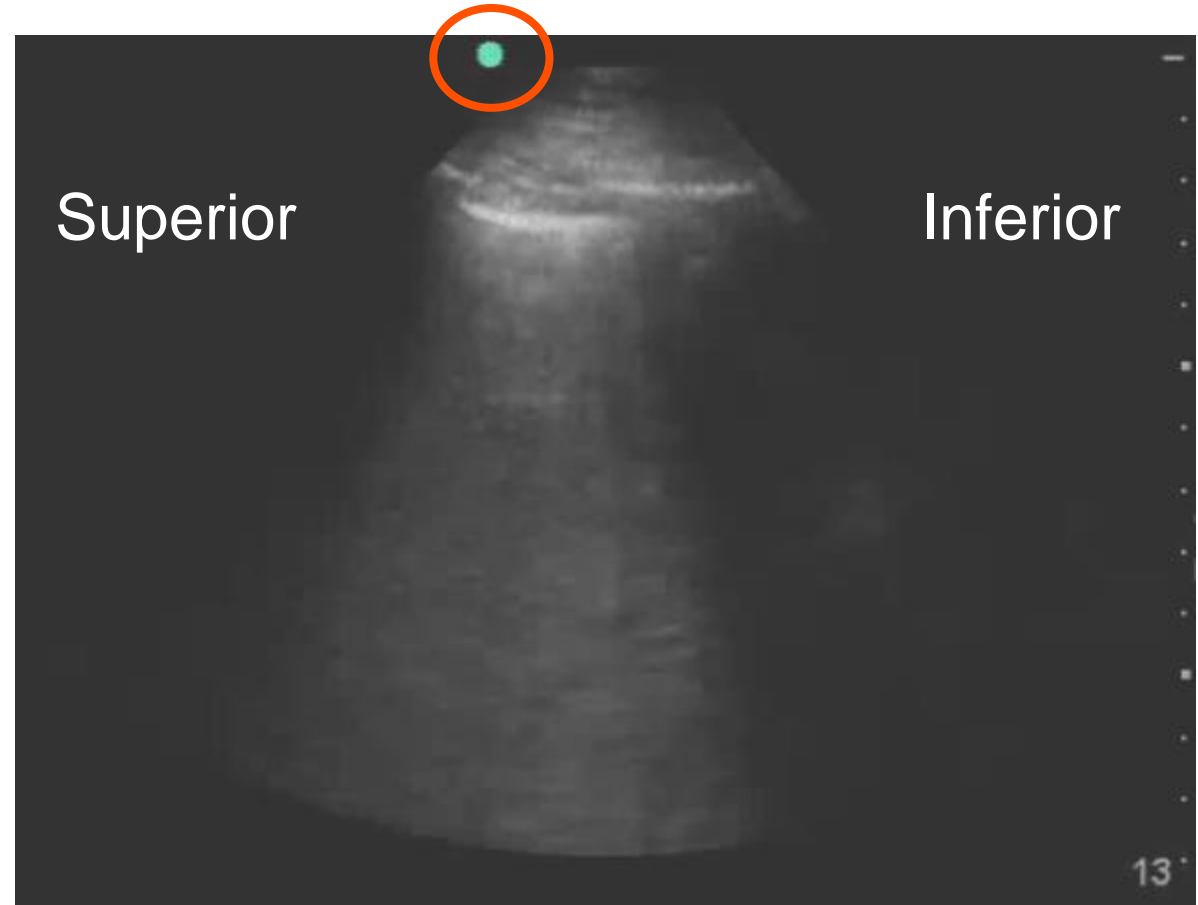
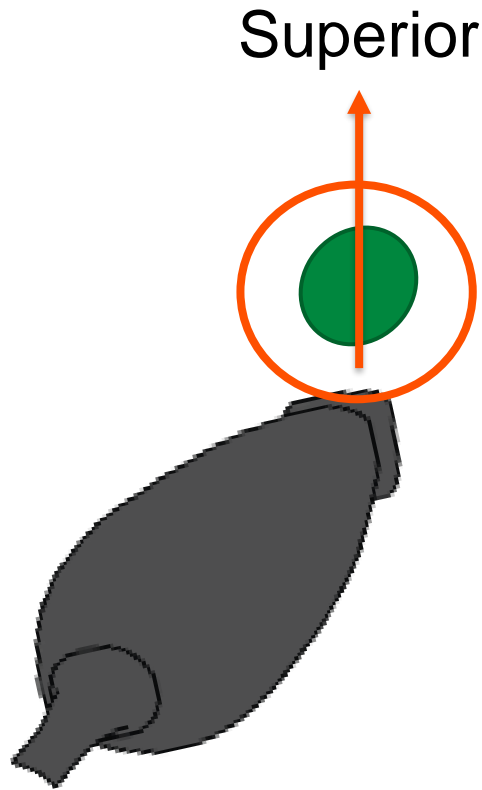
LEARNING OBJECTIVE

- Identify scope and indications of FOCUS
- Recall the 5 Cardinal views of FOCUS
- Contrast normal and abnormal findings on FOCUS
- Obtain FOCUS images

POCUS PHYSICS

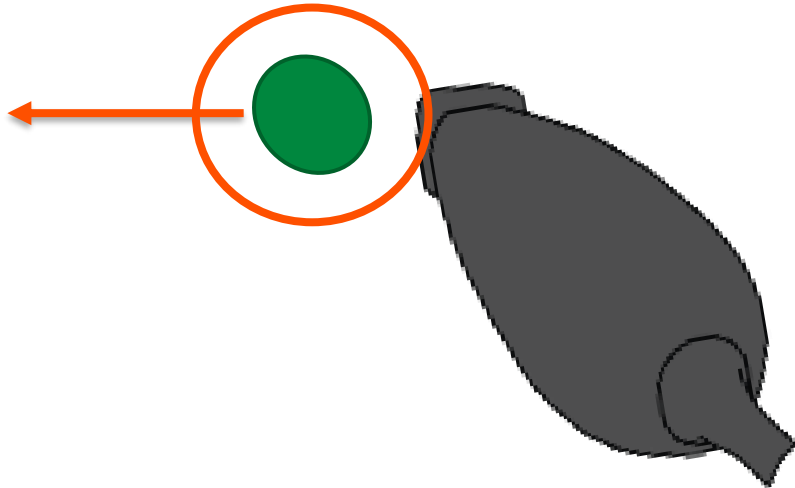


INDICATOR MARKERS



INDICATOR MARKERS

Patient's
Right



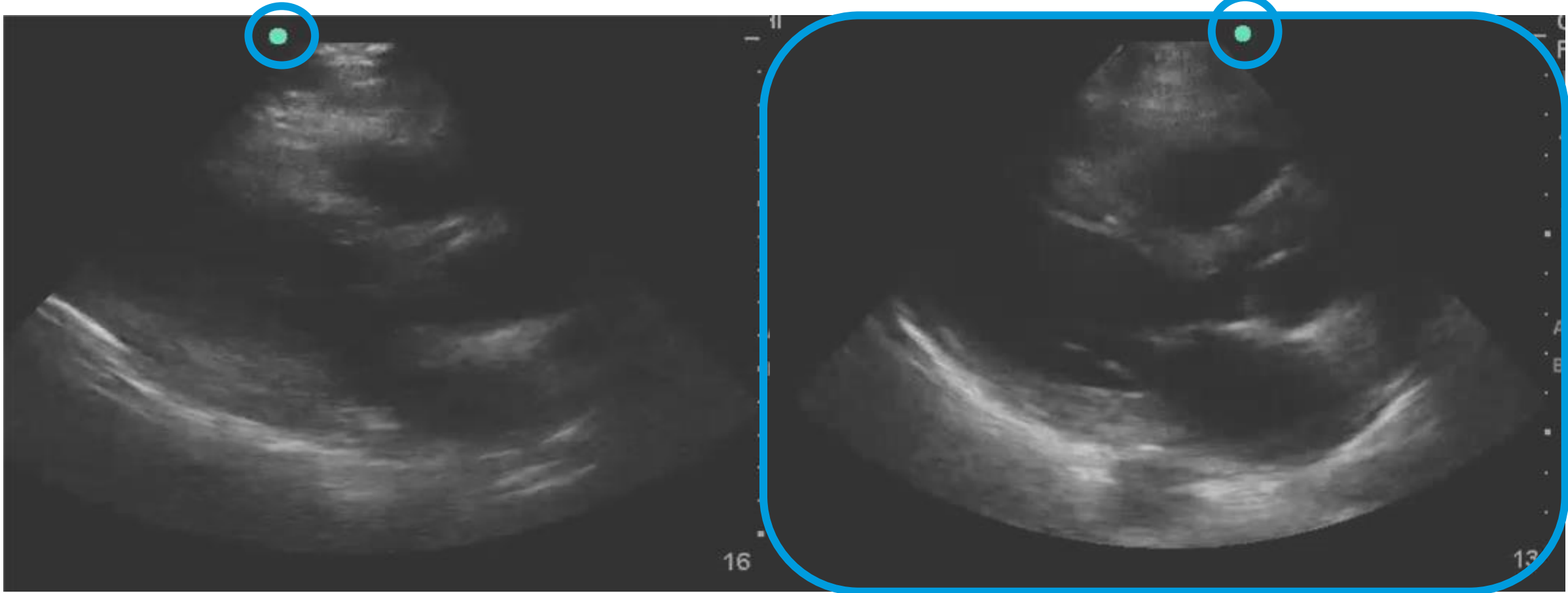
Patient's
Right



Patient's
Left

INDICATOR MARKERS

CARDIAC



Emergency Medicine

Most other places

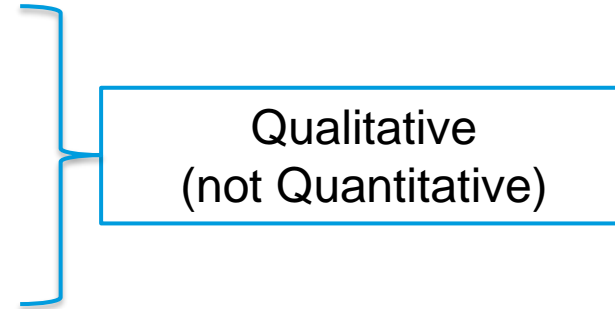
FOCUSED CARDIAC ULTRASOUND

5 Cardinal Views of the Heart

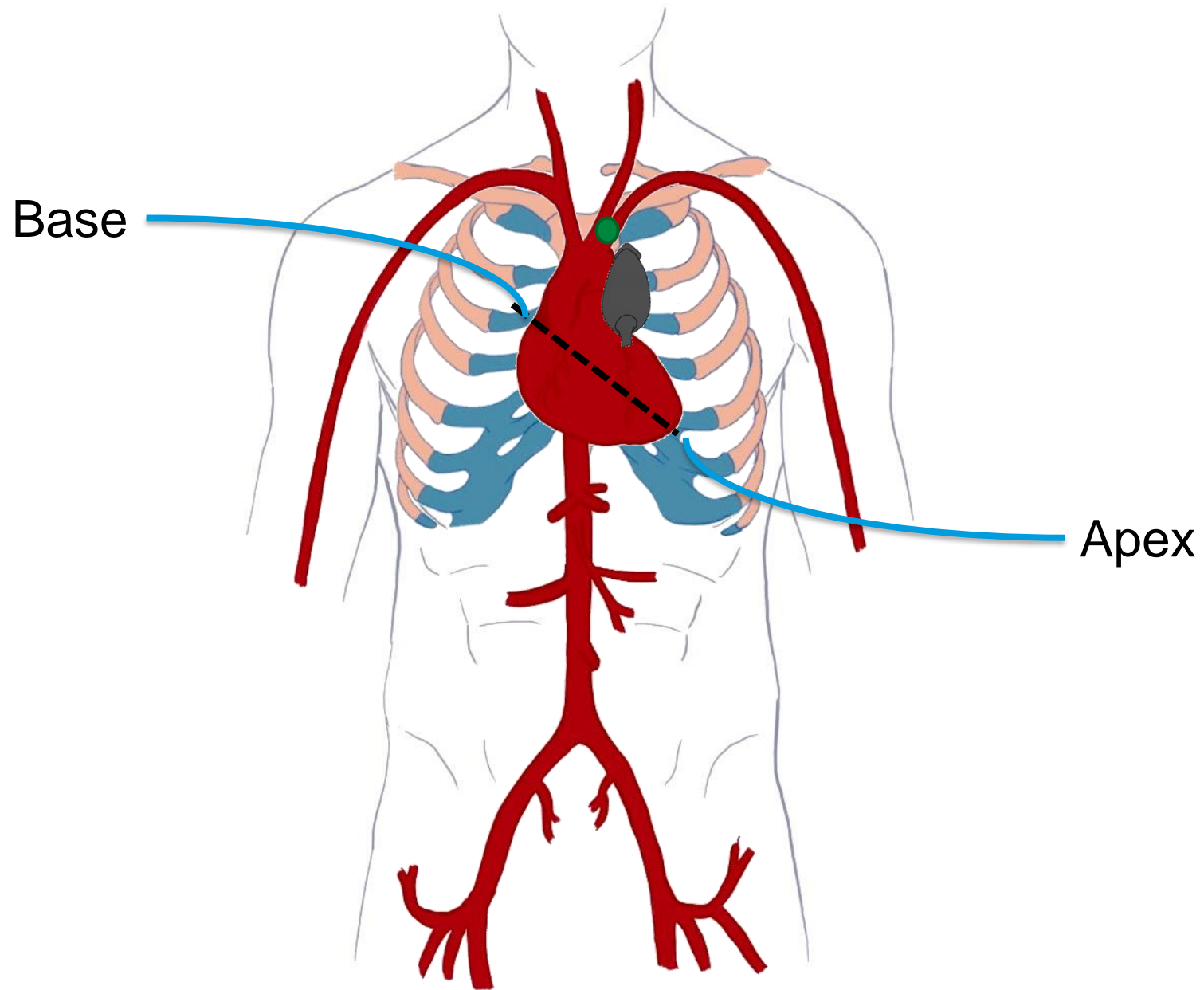
- Parasternal Long Axis (PLAX)
- Parasternal Short Axis (PSAX)
- Apical 4 Chamber (A4C)
- Subcostal 4 Chamber (S4C)
- Inferior Vena Cava (IVC)

FOCUSED CARDIAC ULTRASOUND (FoCUS)

- Scope:
 - LV size / systolic function
 - RV size / systolic function
 - IVC size and respiratory variation
 - Pericardial effusions / Cardiac Tamponade
- Indications:
 - Hypotension
 - Respiratory Failure
 - Intravascular volume assessment

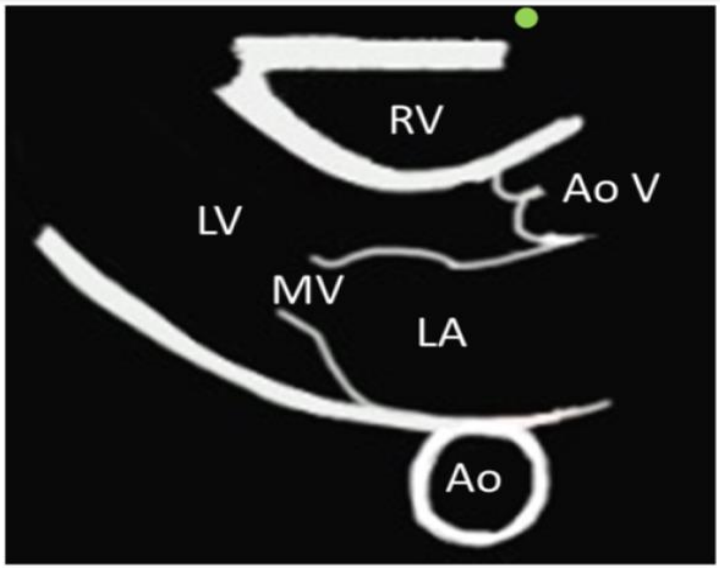
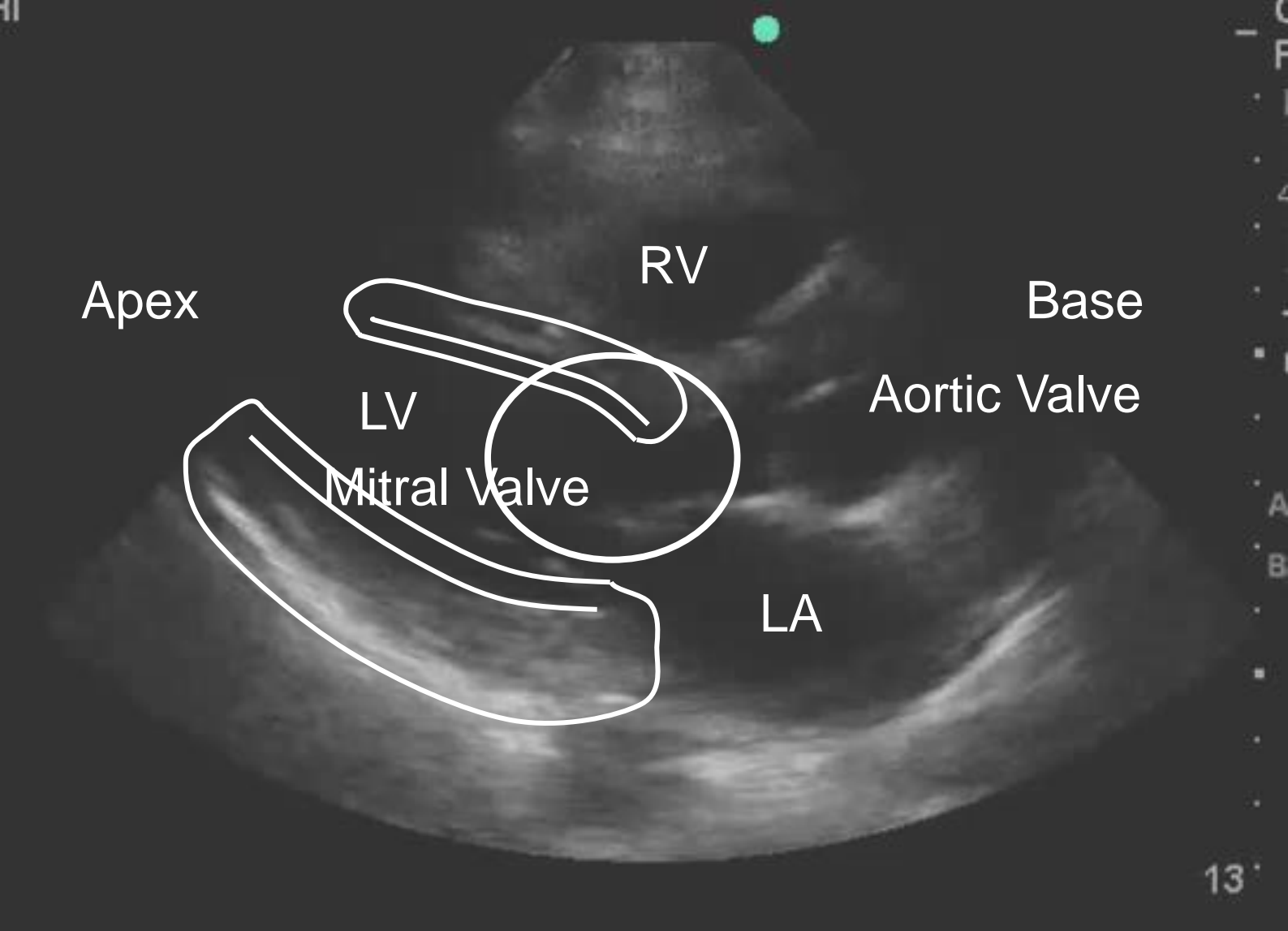
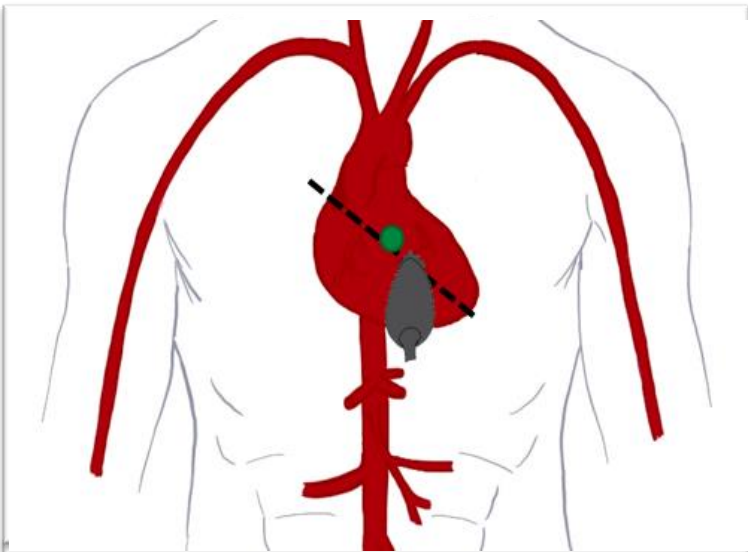


FoCUS PLAX



FoCUS PLAX

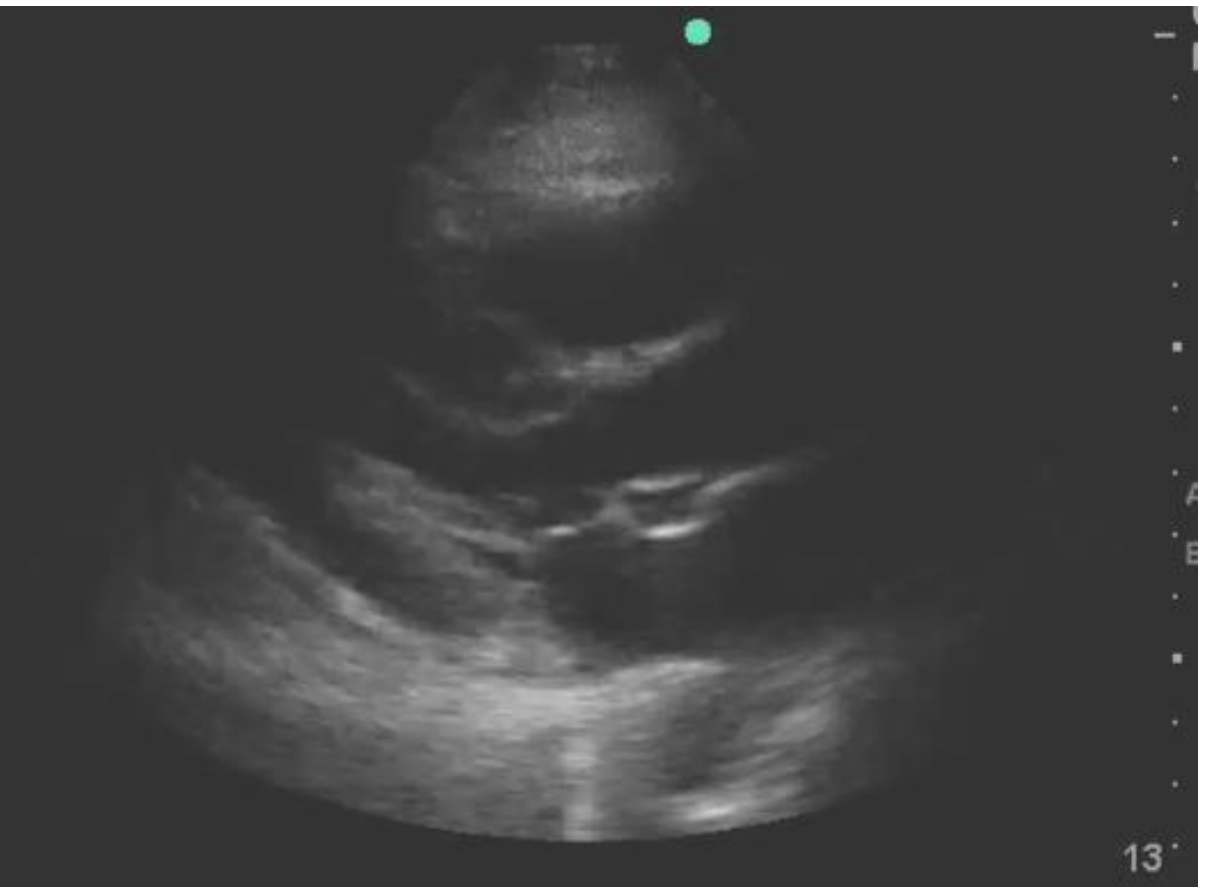
- 1. Endocardial Excursion
- 2. Myocardial Thickening
- 3. E Point Septal Separation



FoCUS PLAX



Normal



Hyperdynamic

FoCUS PLAX

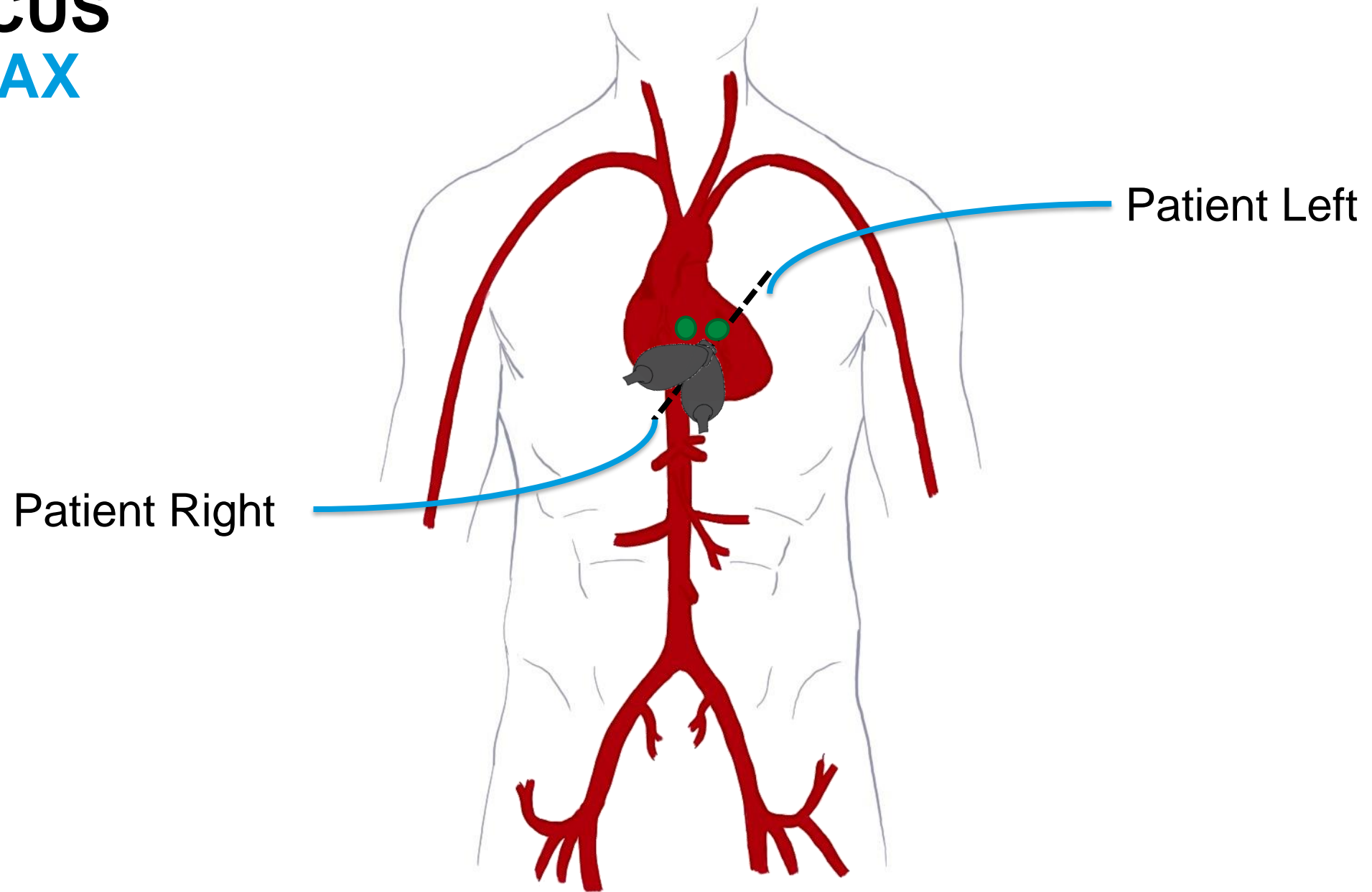


Normal

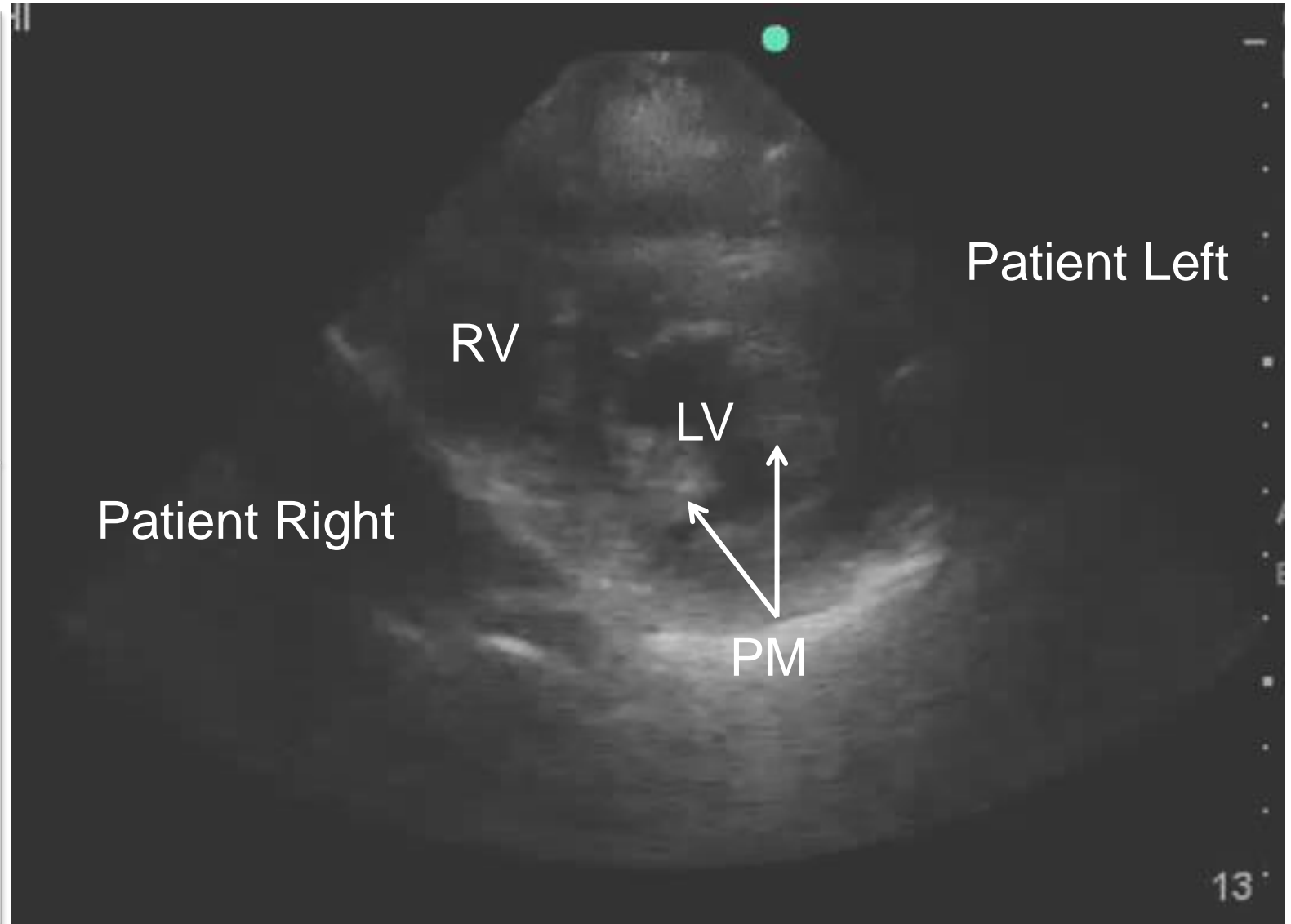
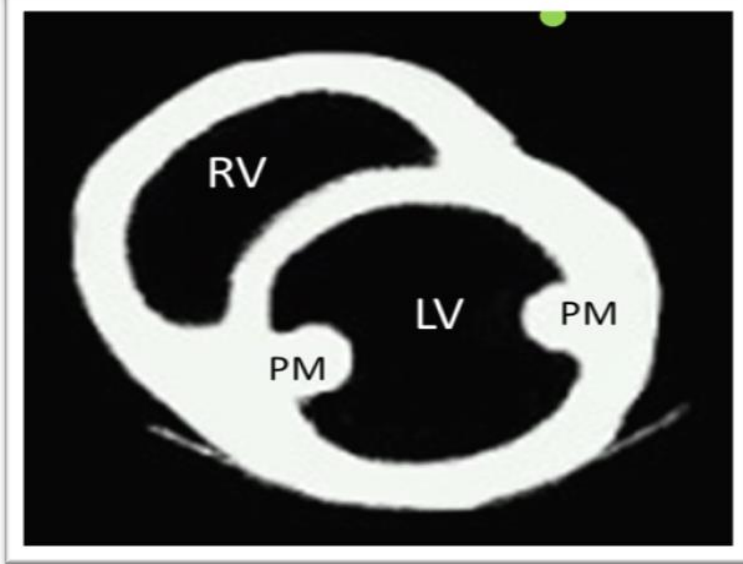
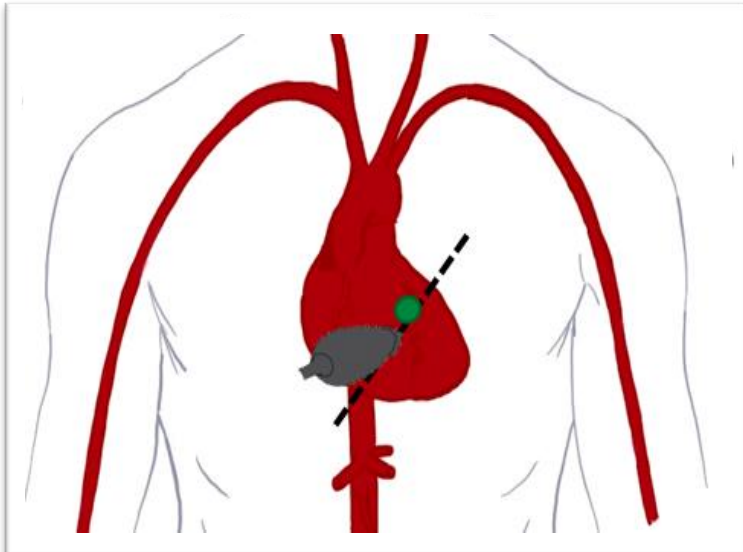


Reduced

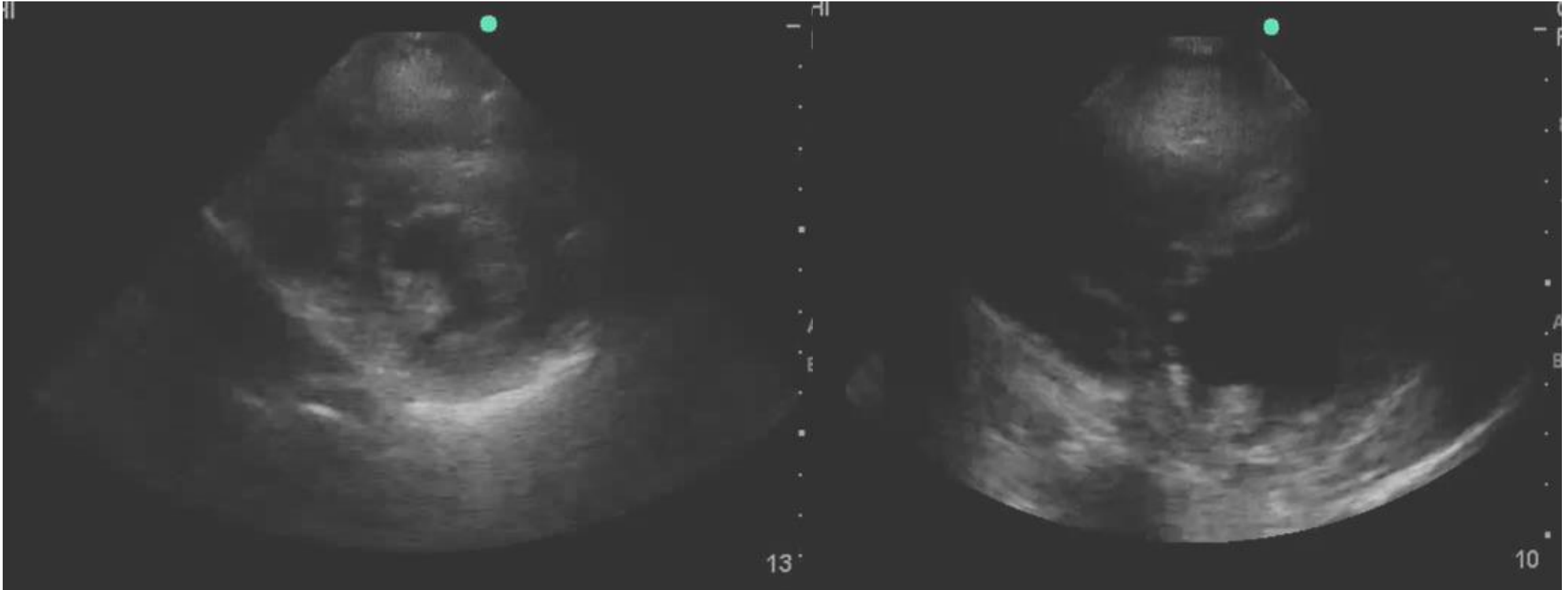
FoCUS PSAX



FoCUS PSAX



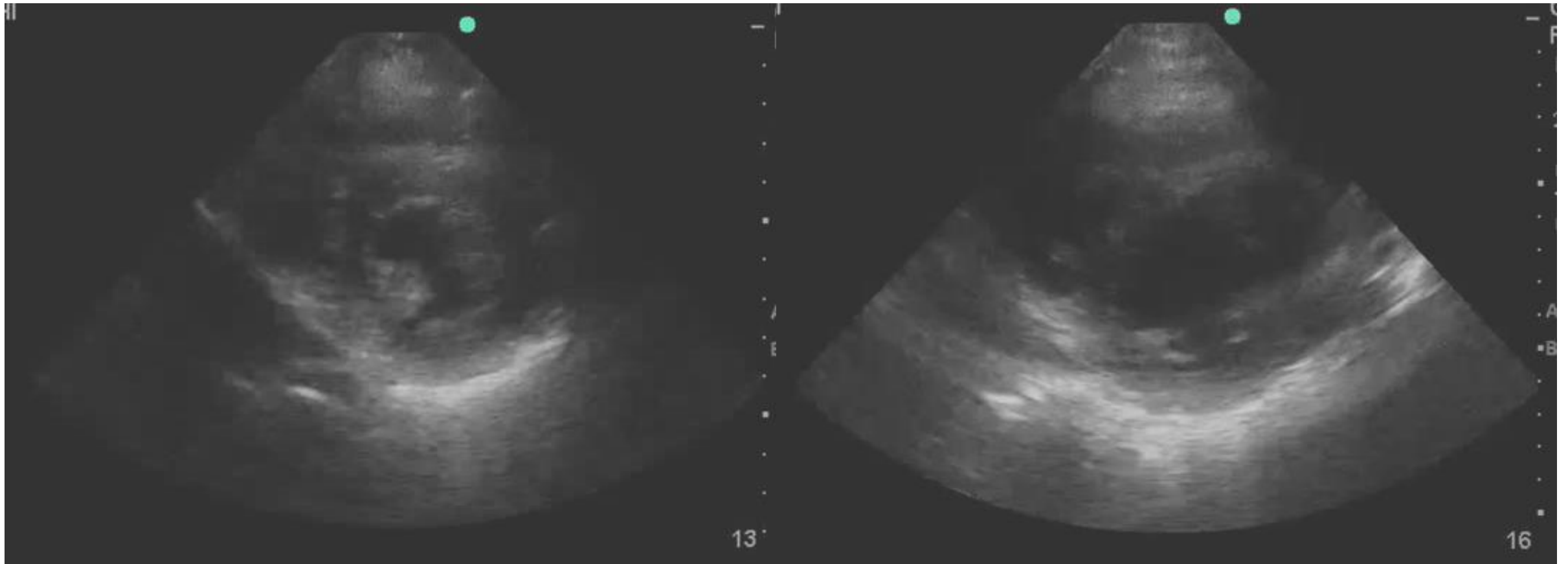
FoCUS PSAX



Normal

Hyperdynamic

FoCUS PSAX

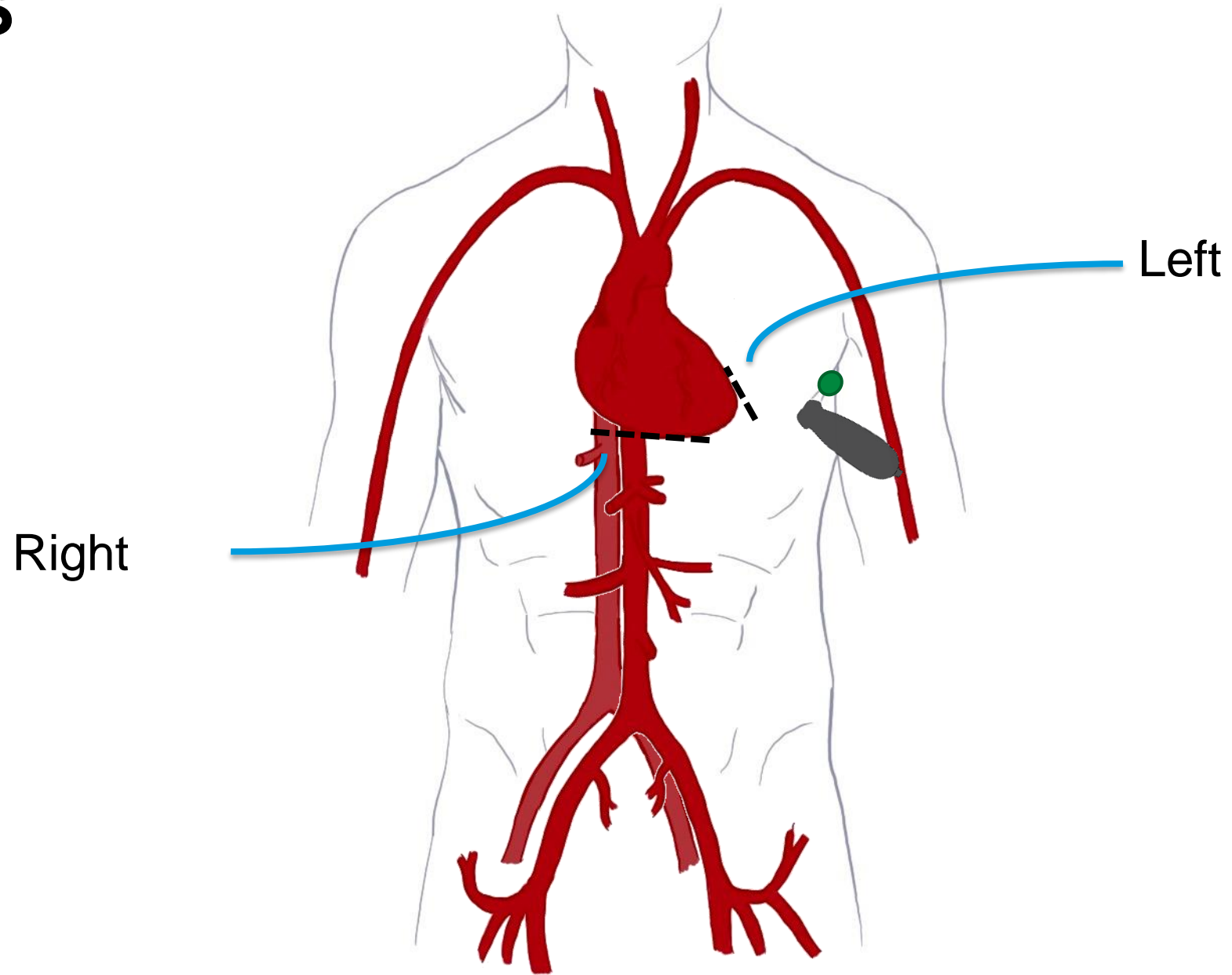


Normal

Reduced

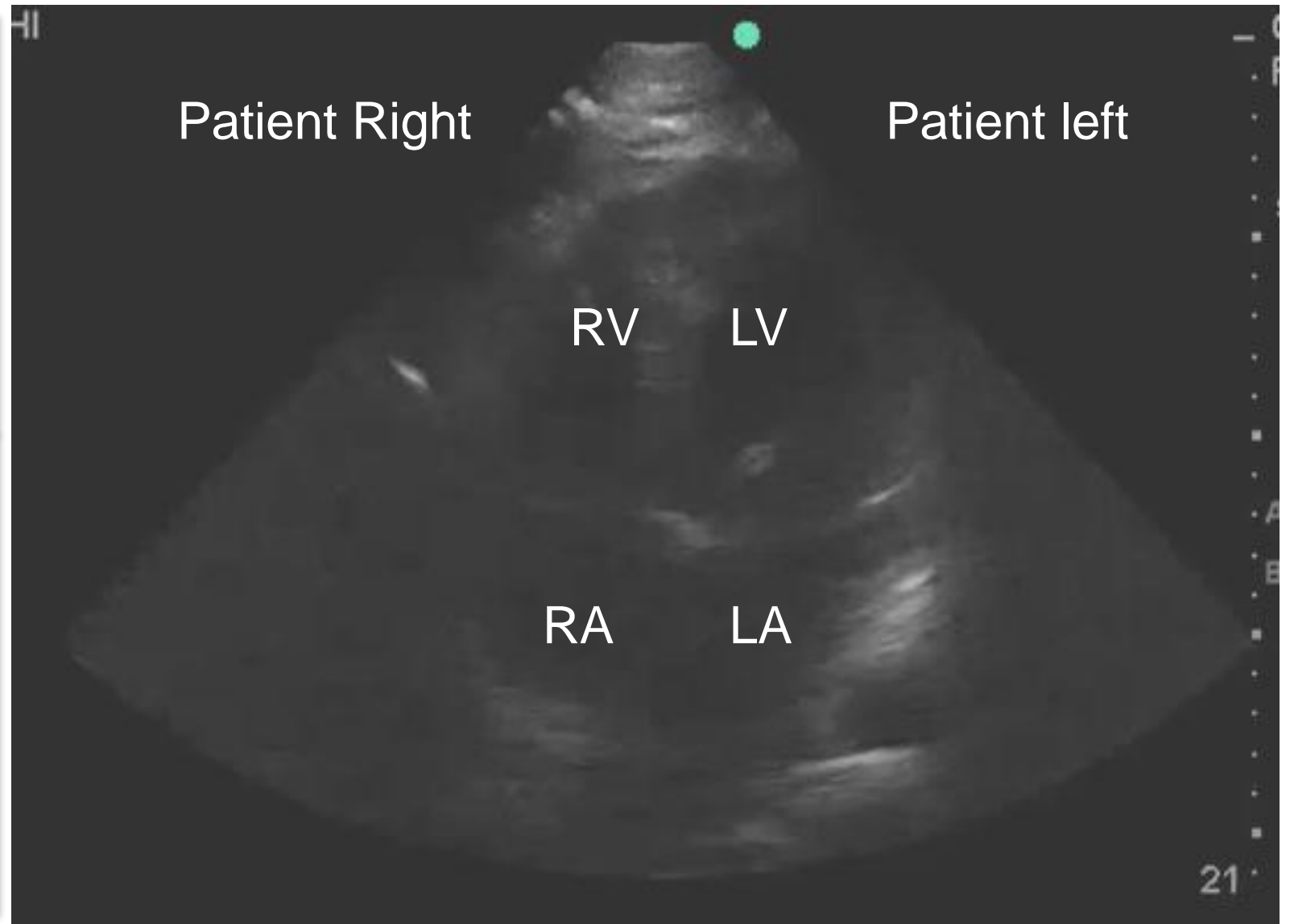
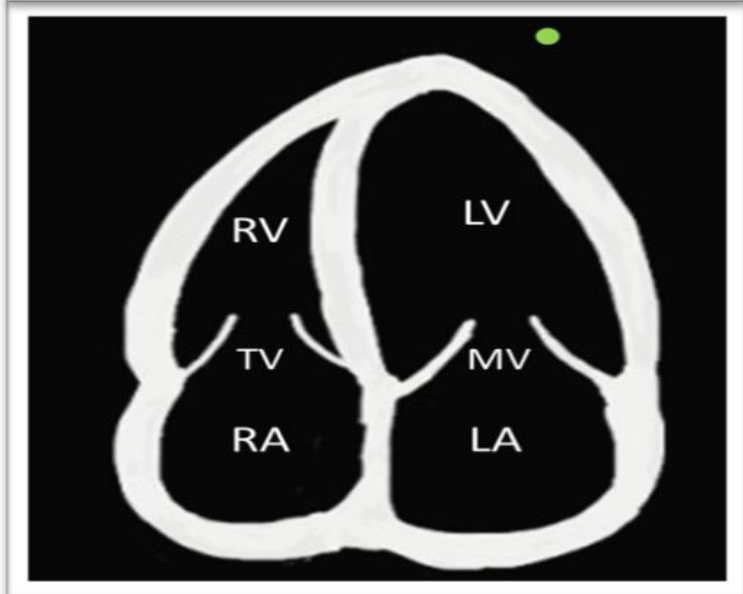
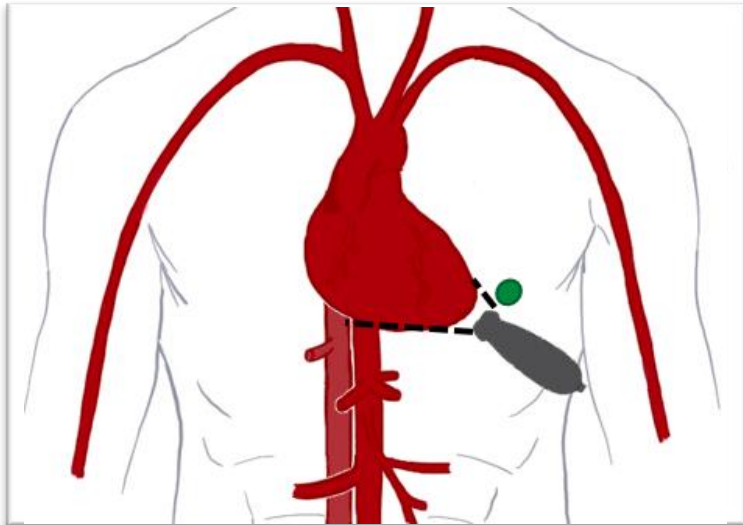
FoCUS

A4C



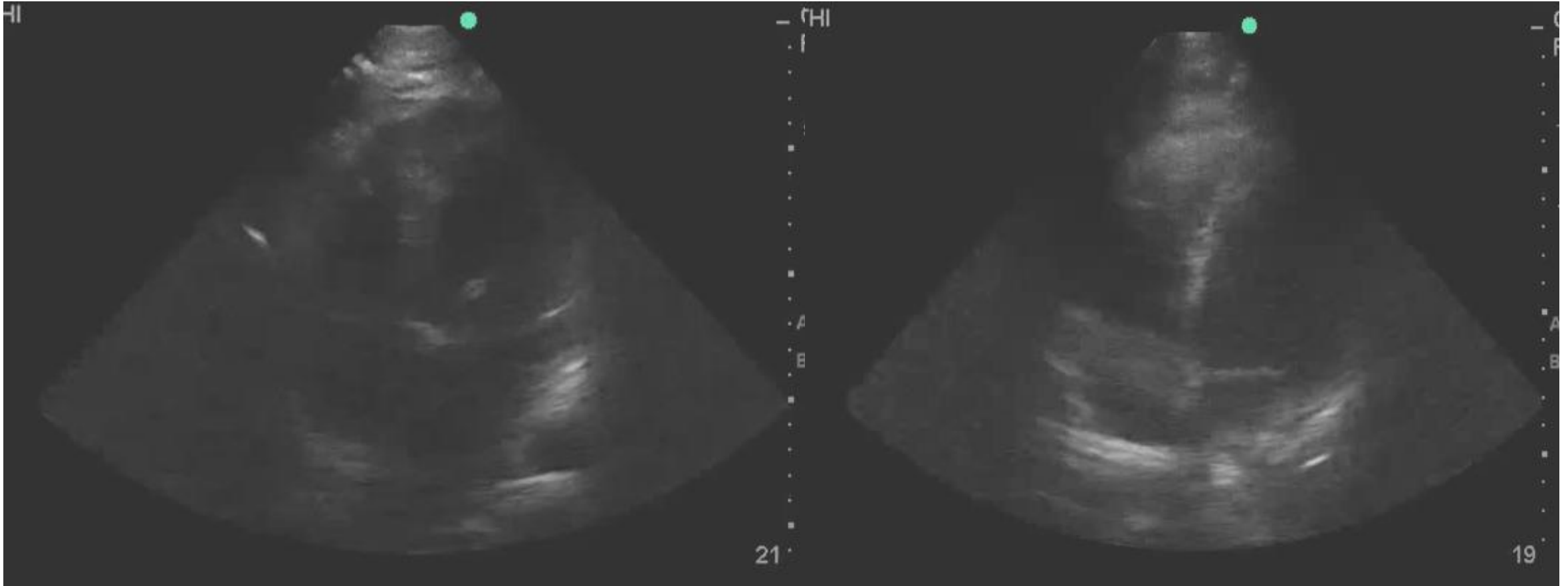
FoCUS

A4C



FoCUS

A4C

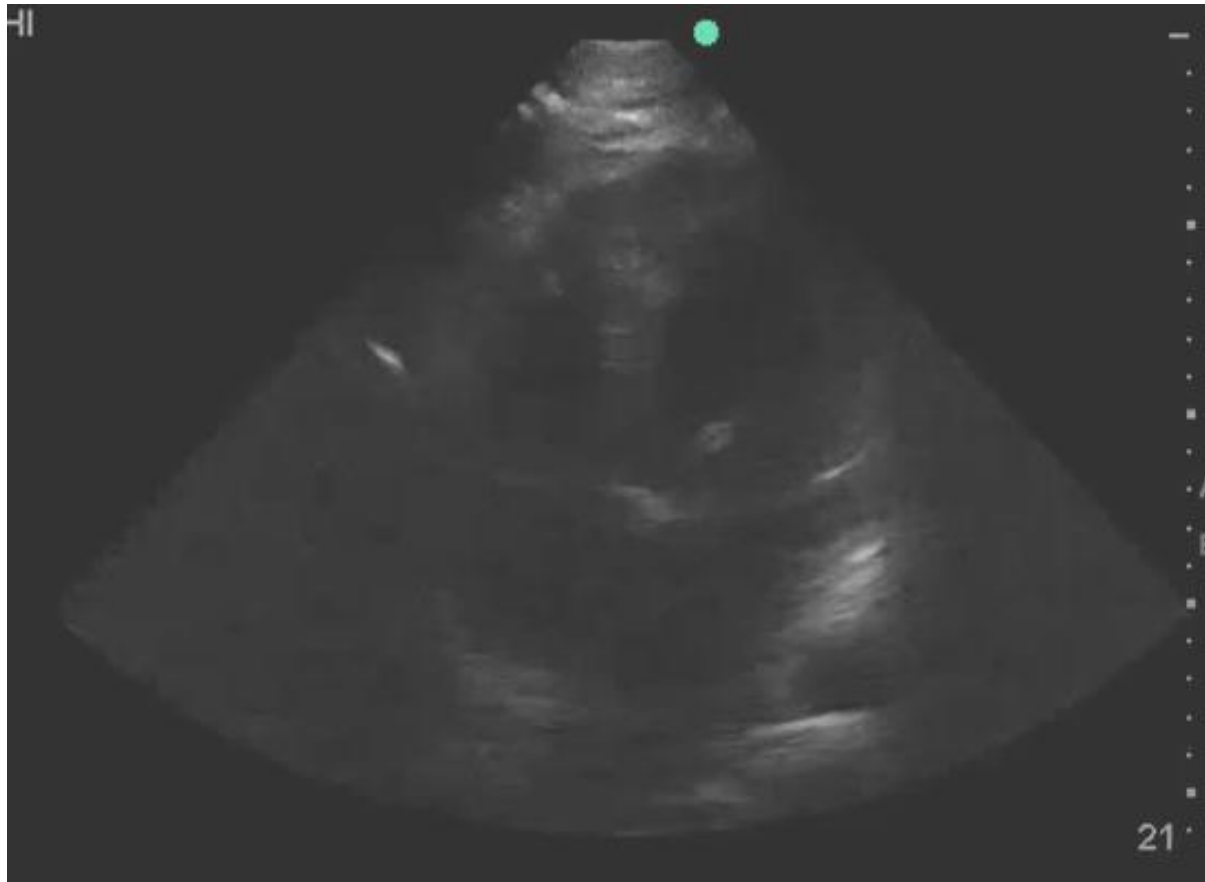


Normal

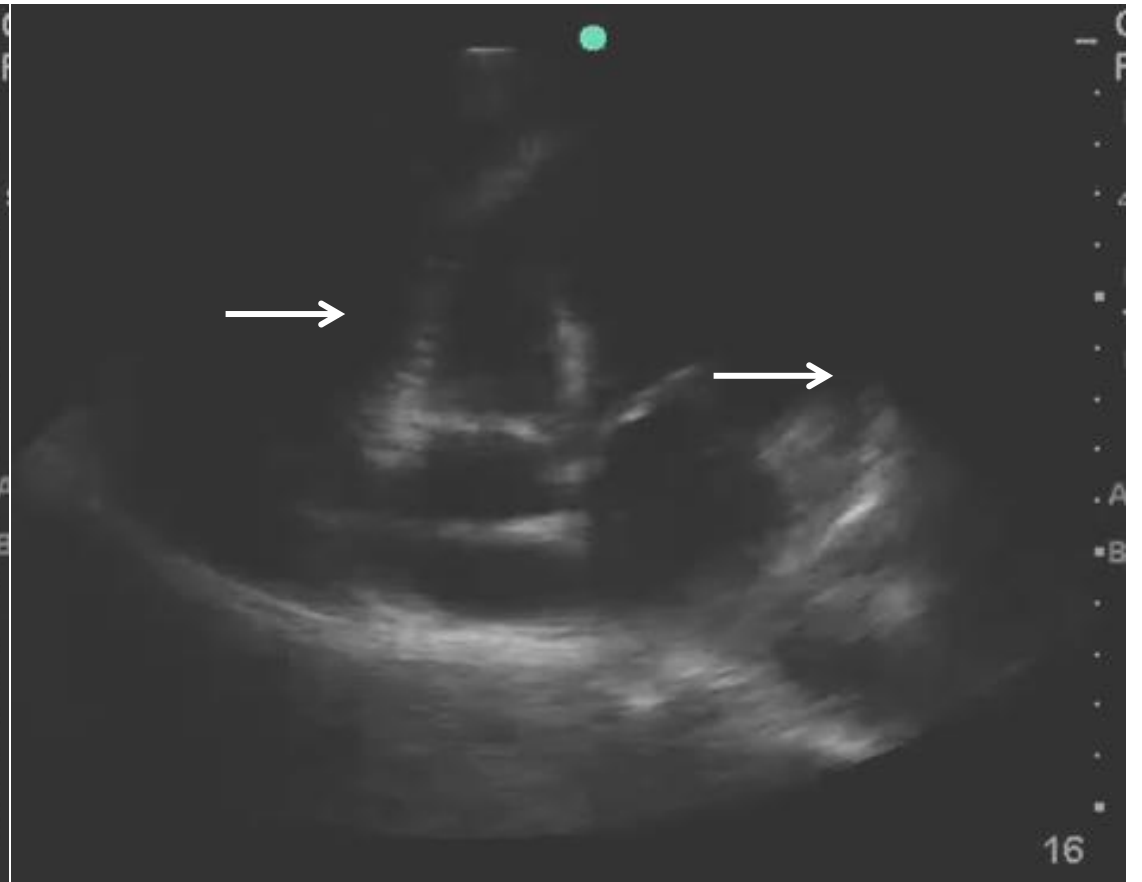
RV Enlargement

FoCUS

A4C



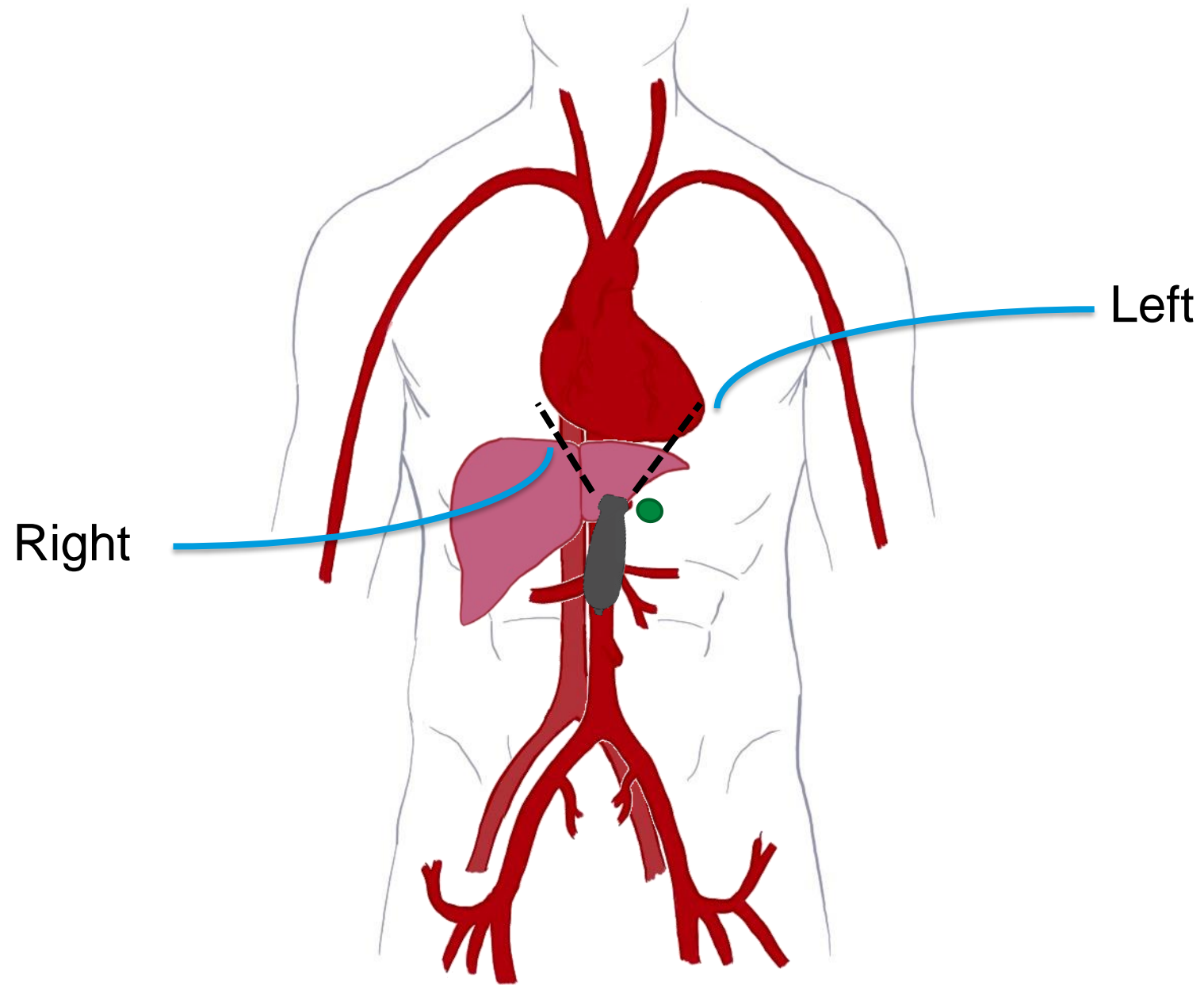
Normal



Pericardial Effusion

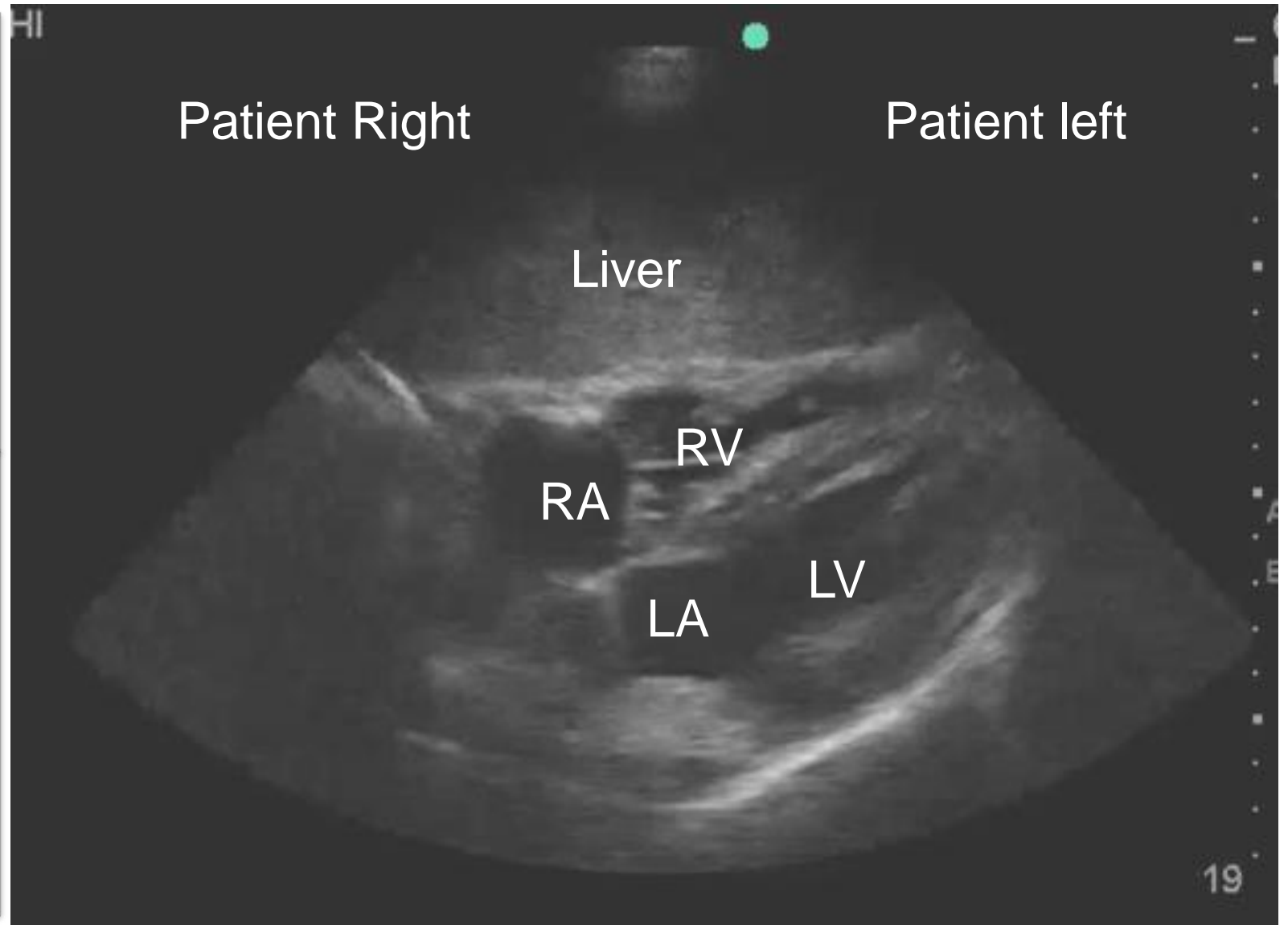
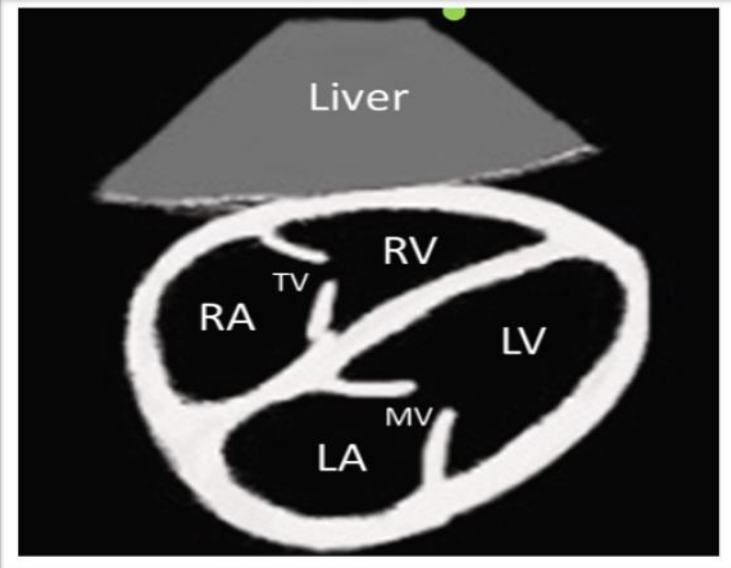
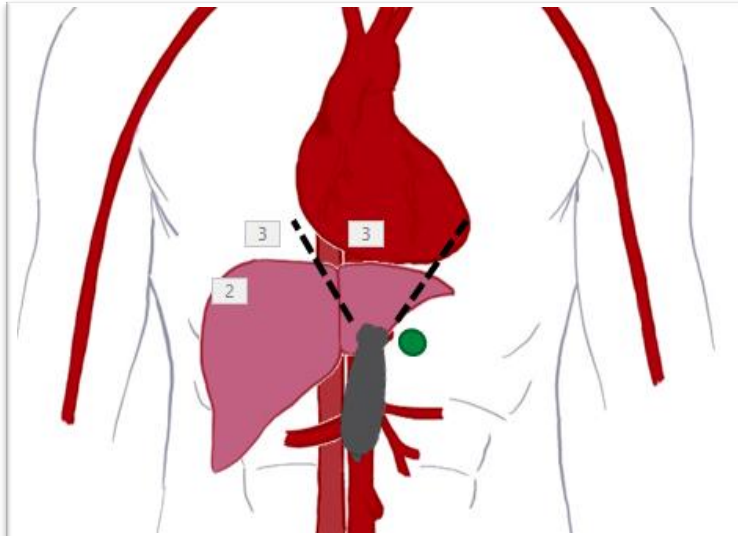
FoCUS

S4C



FoCUS

S4C

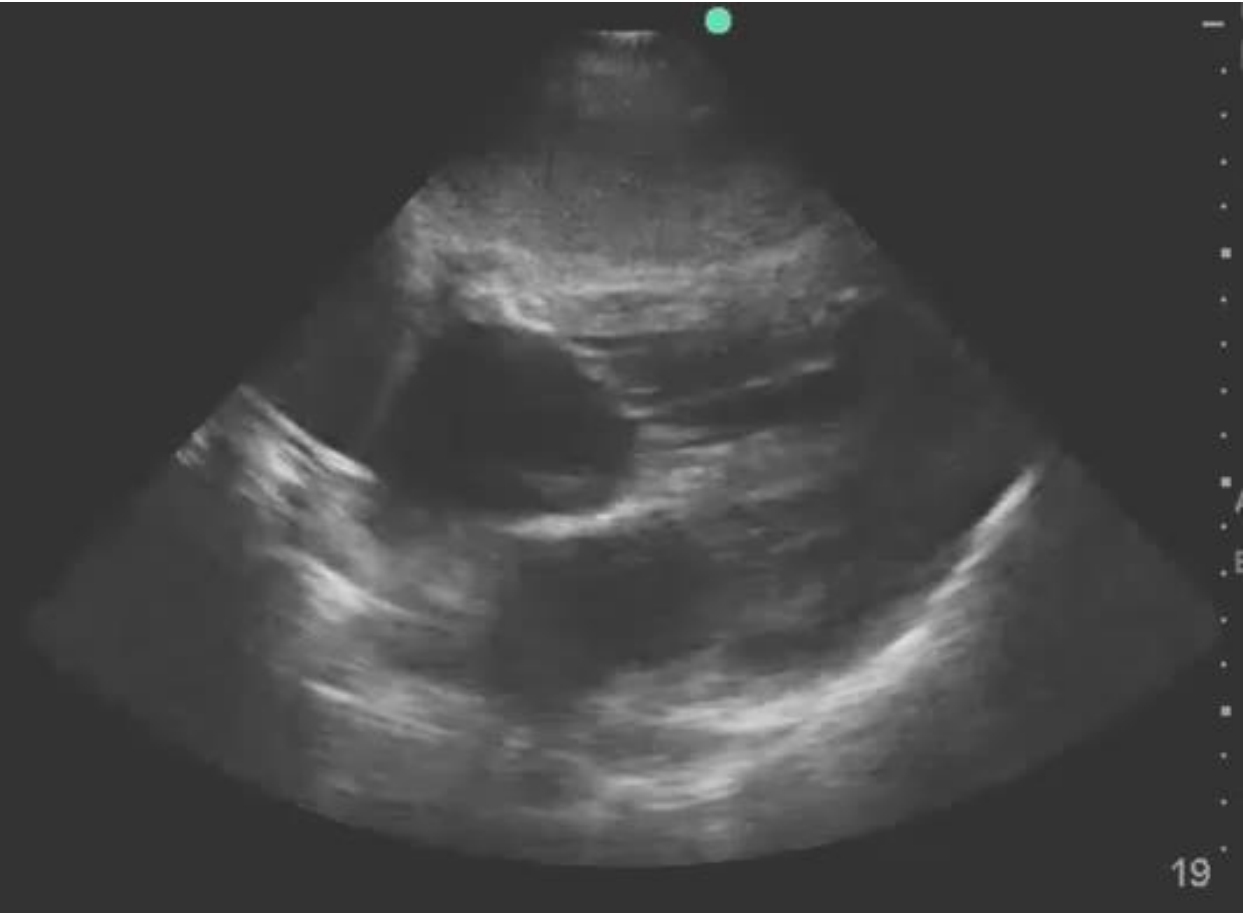


FoCUS

S4C

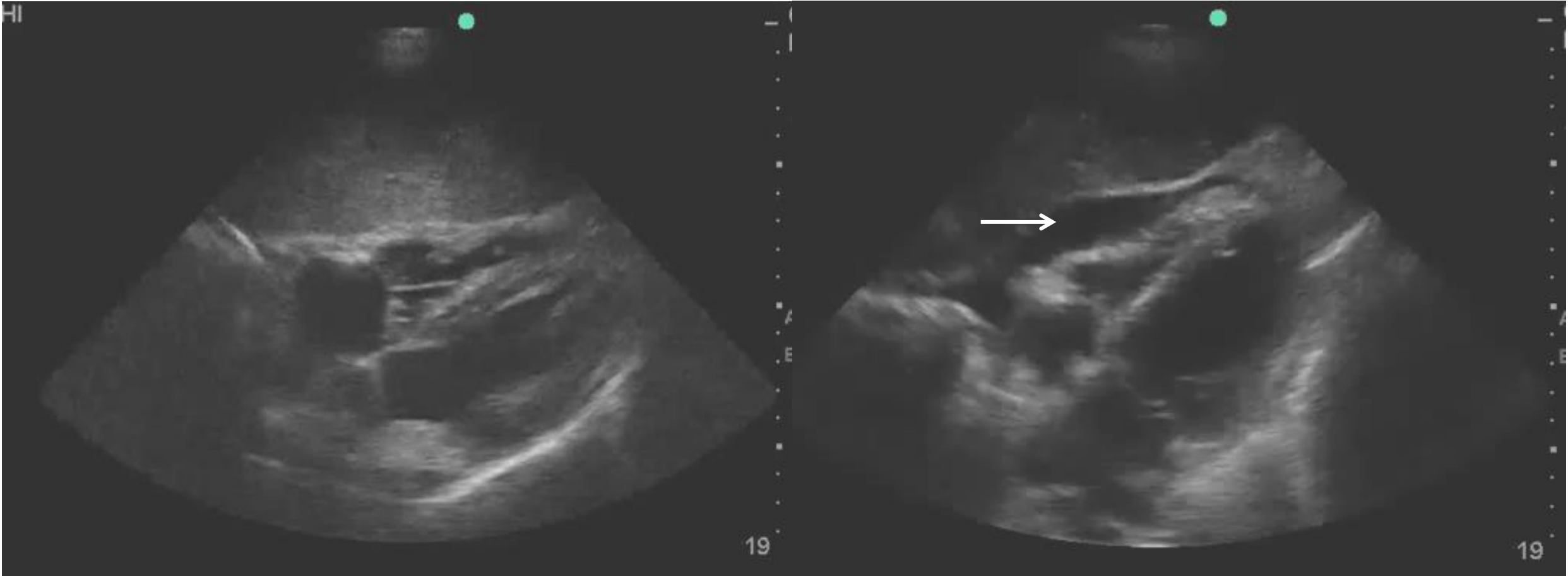


Normal



RV Enlargement

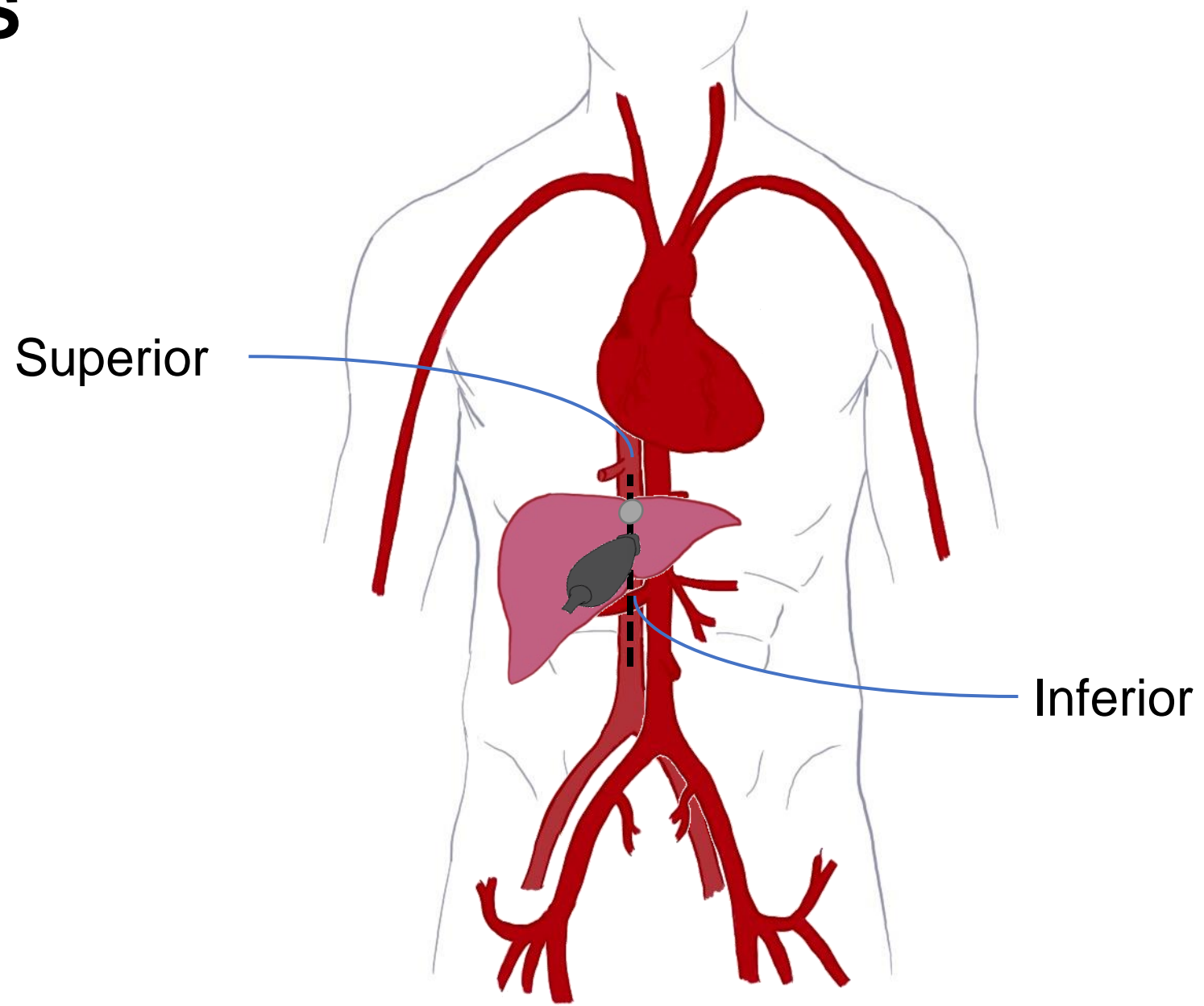
FoCUS S4C



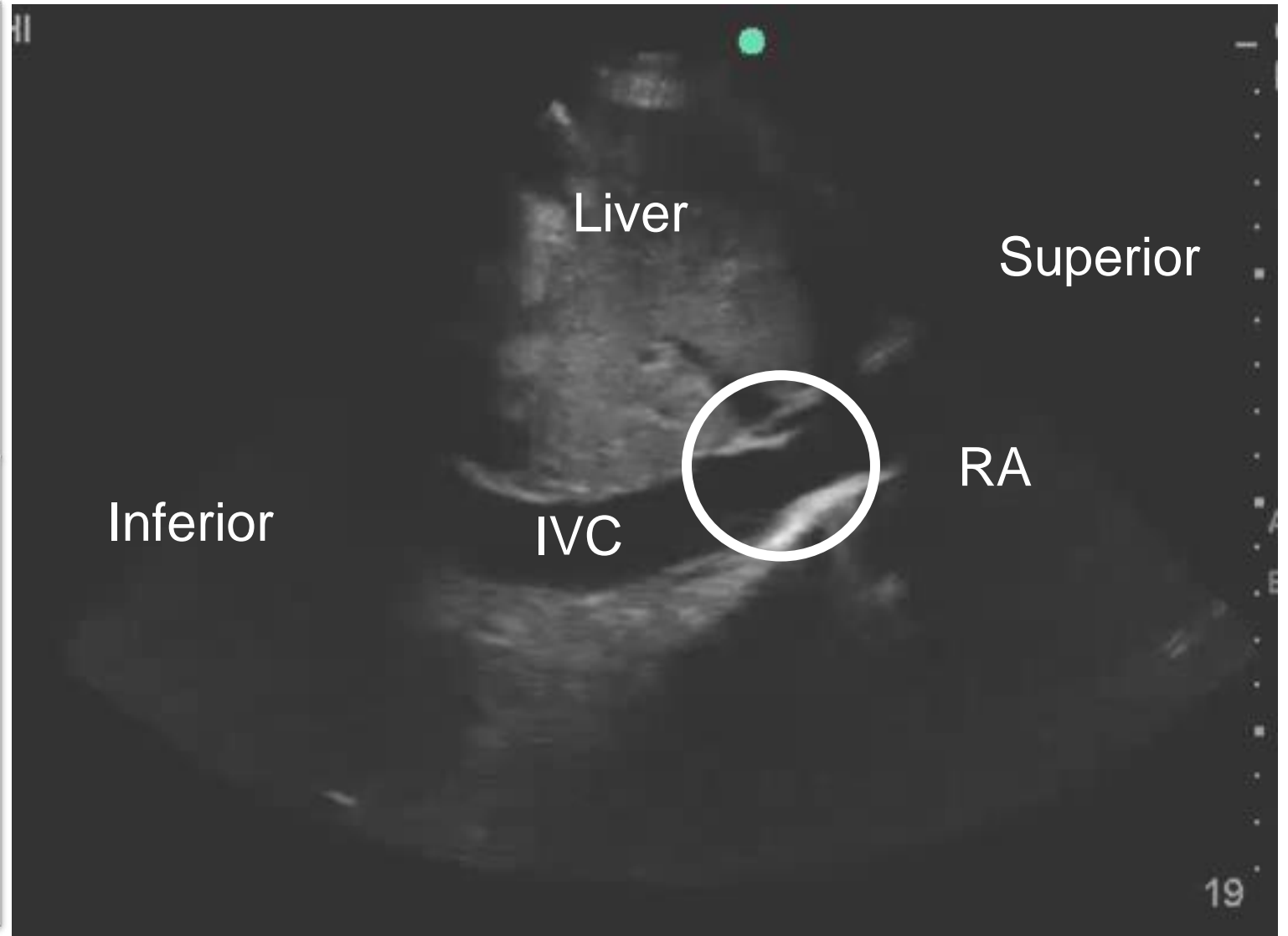
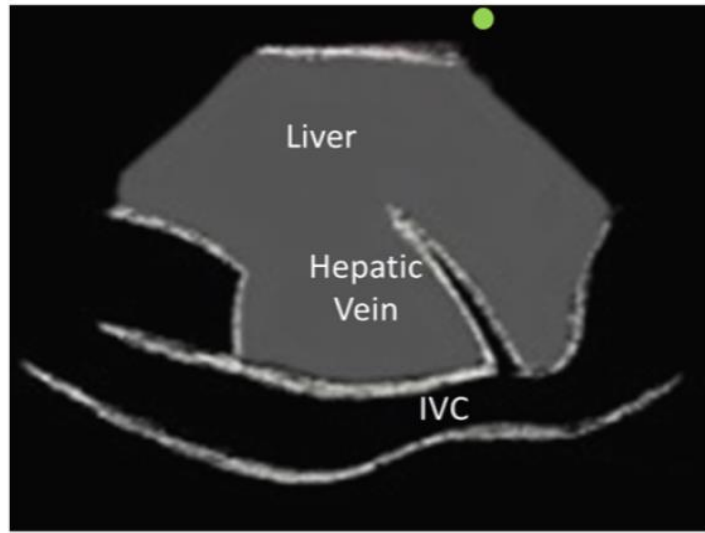
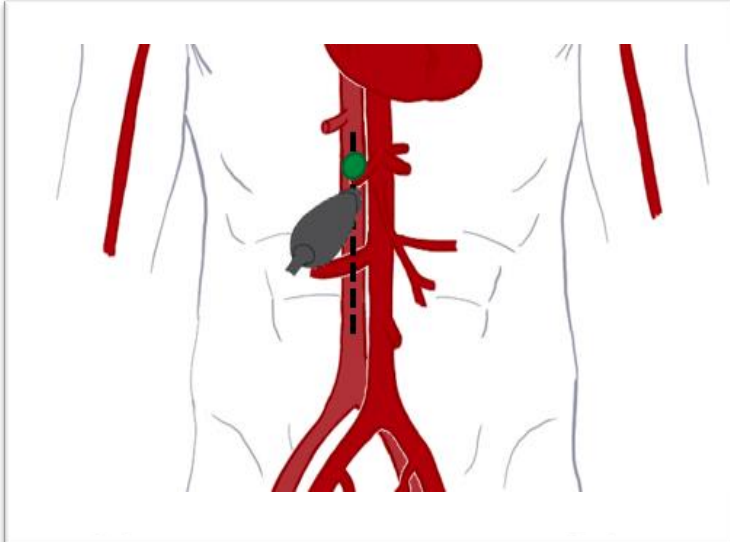
Normal

Pericardial Effusion

FoCUS IVC



FoCUS IVC



FoCUS

- Surrogate marker for RA Pressure / Central Venous Pressure
- JVP \approx IVC

IVC Findings	CVP (mm Hg)	Clinical Correlation
IVC < 2.1 cm, with > 50% collapse	3 (range 0 – 5)	Probable hypovolemia
IVC < 2.1 cm, with < 50% collapse IVC > 2.1 cm, with > 50% collapse	8 (range 5 – 10)	
IVC < 2.1, with < 50% collapse	15 (range 10 – 20)	Possible hypervolemia

FoCUS IVC



Normal



Small, Exaggerated Collapse

FoCUS IVC



Normal



Enlarged, Reduced collapse

QUESTIONS AND DISCUSSION

Breunig.Michael@mayo.edu

