MAYO CLINIC

FOCUSED CARDIAC ULTRASOUND

MIKE BREUNIG, PA-C

AAPA 2022
Indianapolis, IN

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DISCLOSURES

None

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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

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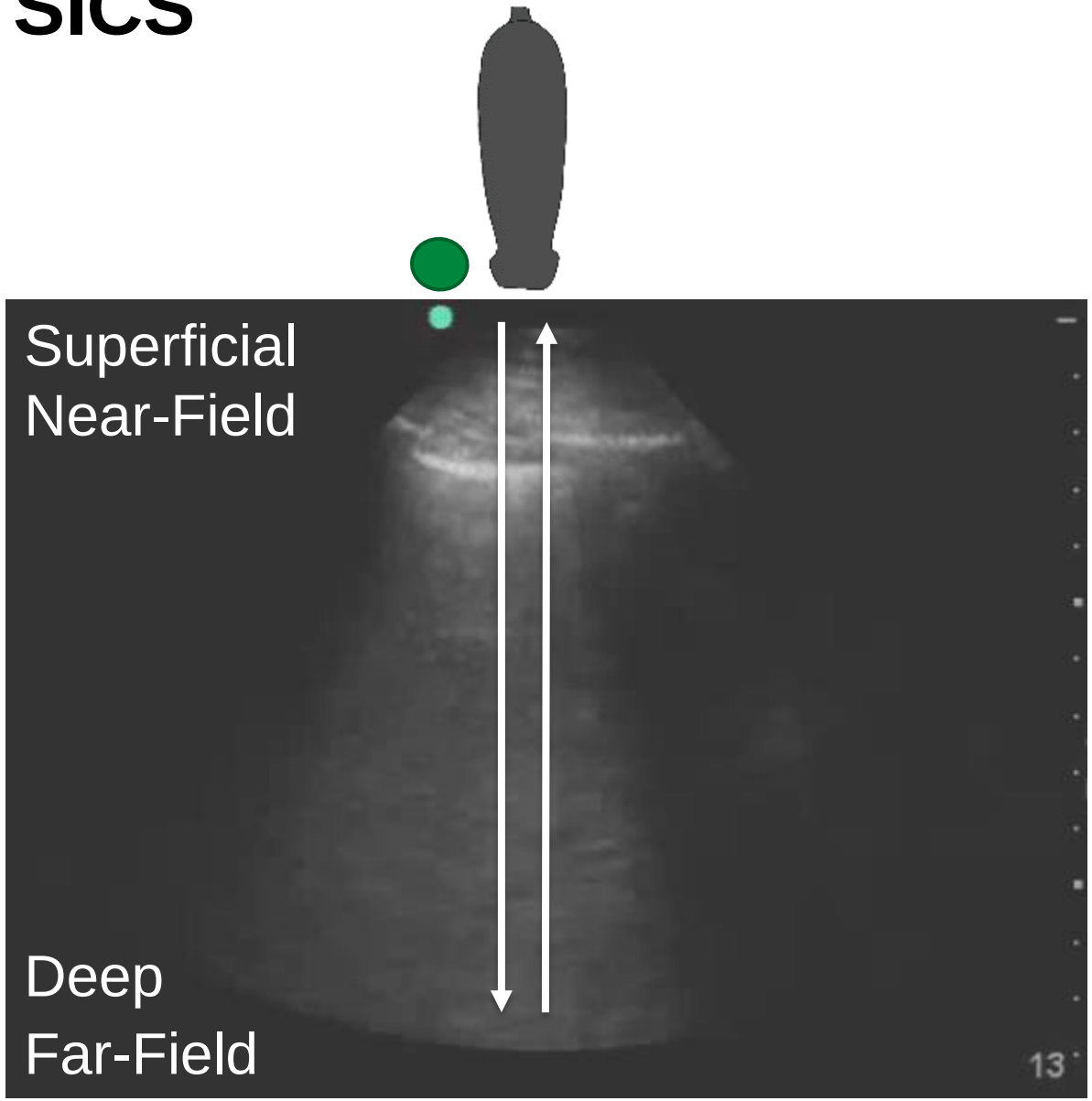
POCUS PHYSICS



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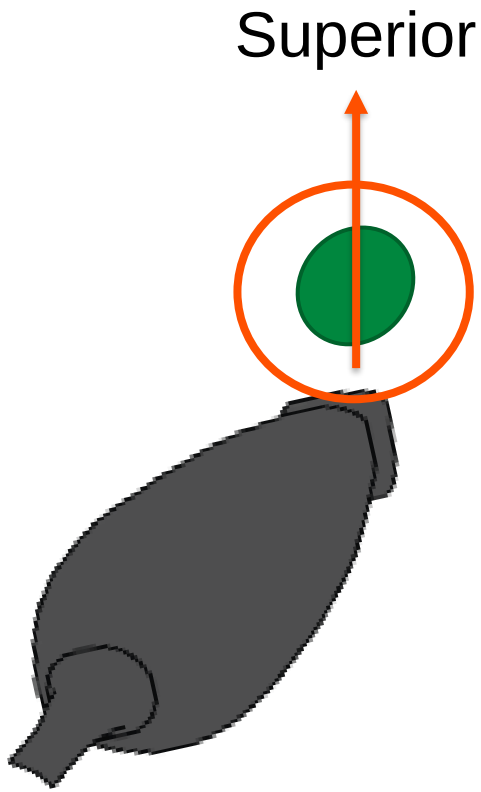
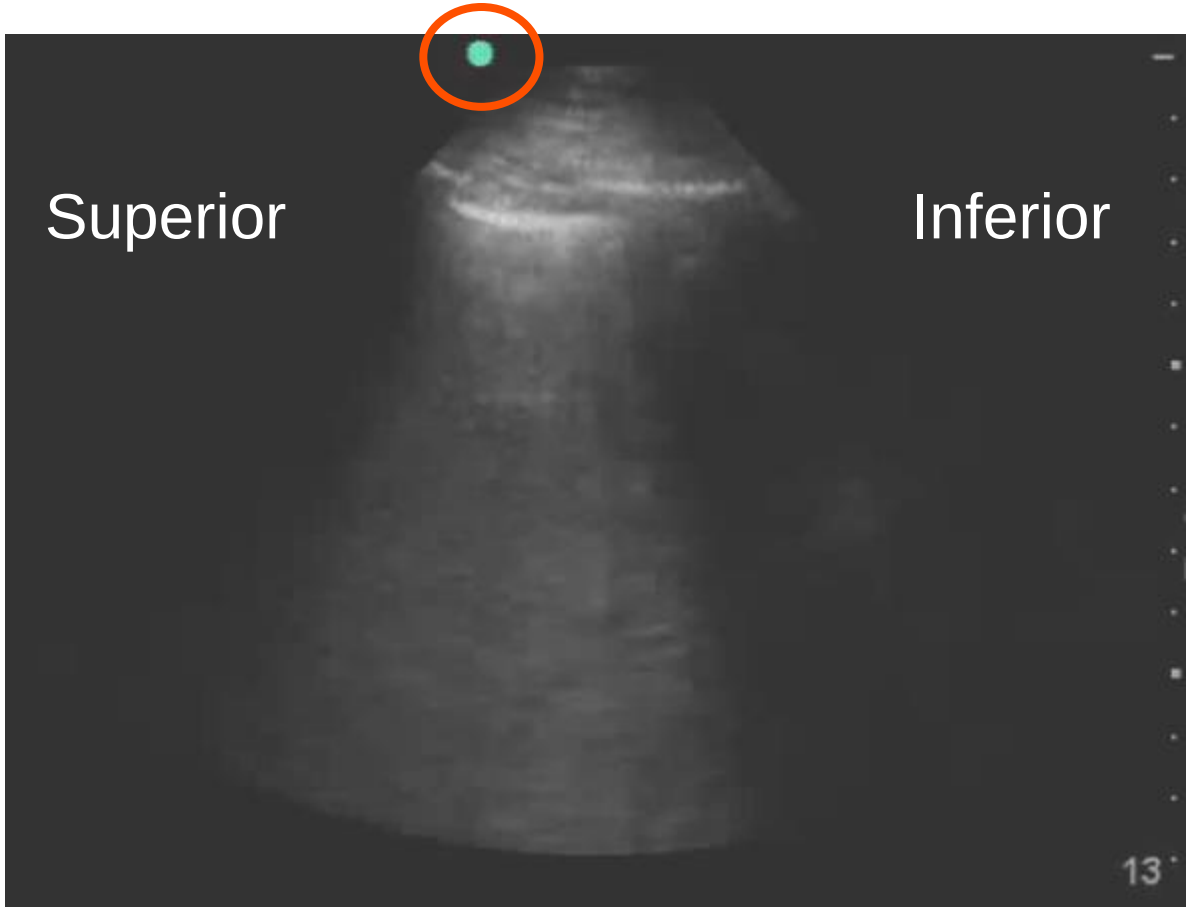
INDICATOR MARKERS





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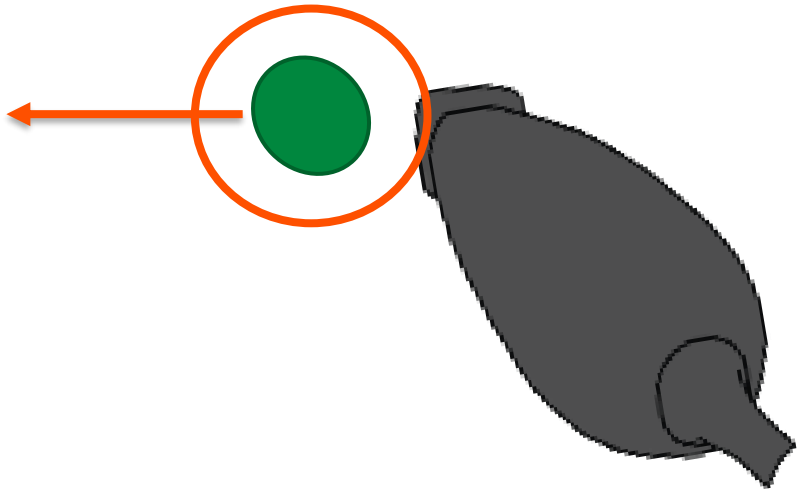
INDICATOR MARKERS

Patient's Right



Patient's Right

Patient's Left

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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)

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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

Qualitative
(not Quantitative)

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FOCUSED CARDIAC ULTRASOUND

	LV Systolic Function	RV Size/Function	Pericardial Effusion
PLAX	++		
PSAX	+		
A4C		++	+
S4C		+	++

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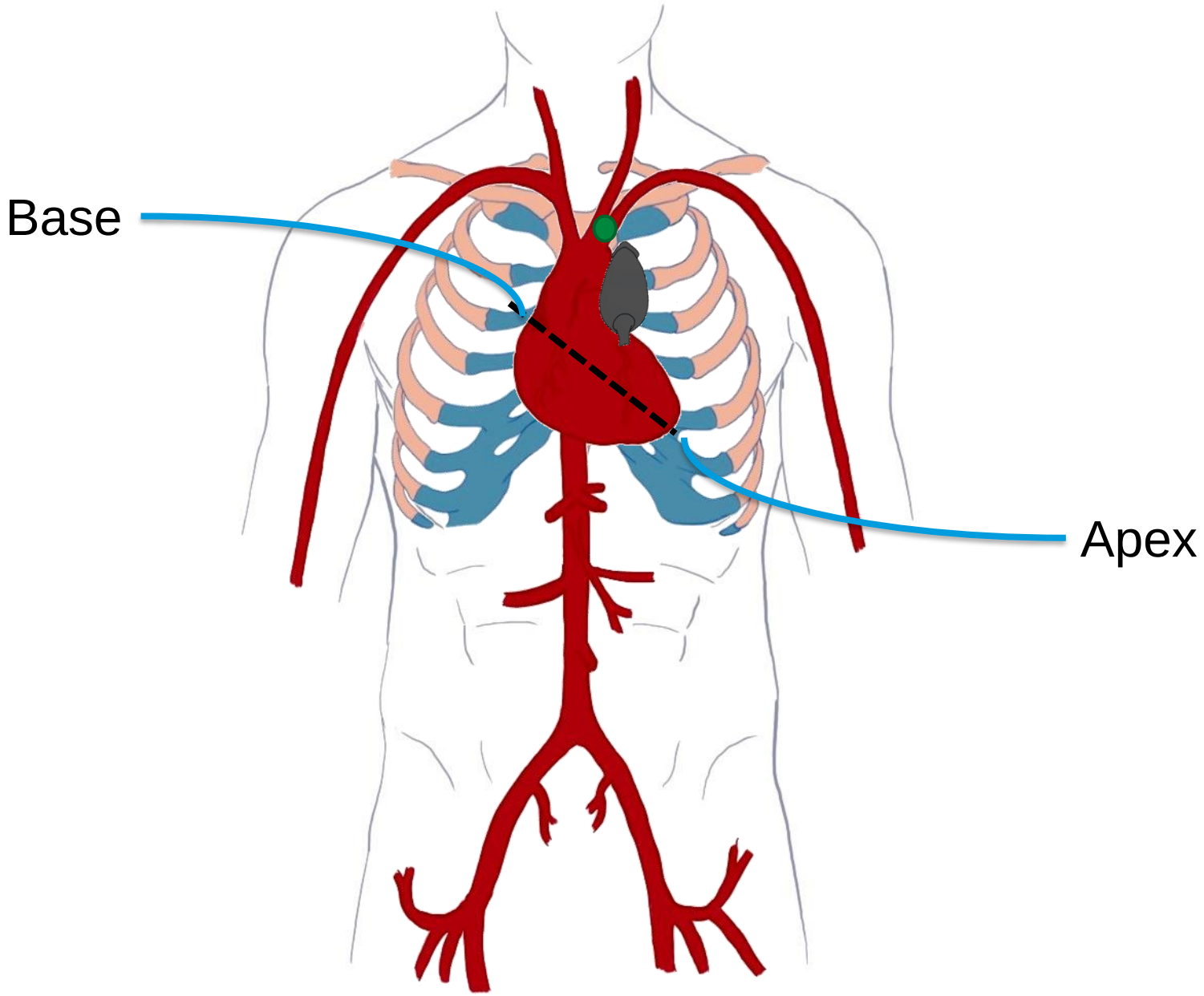
FoCUS
PLAX



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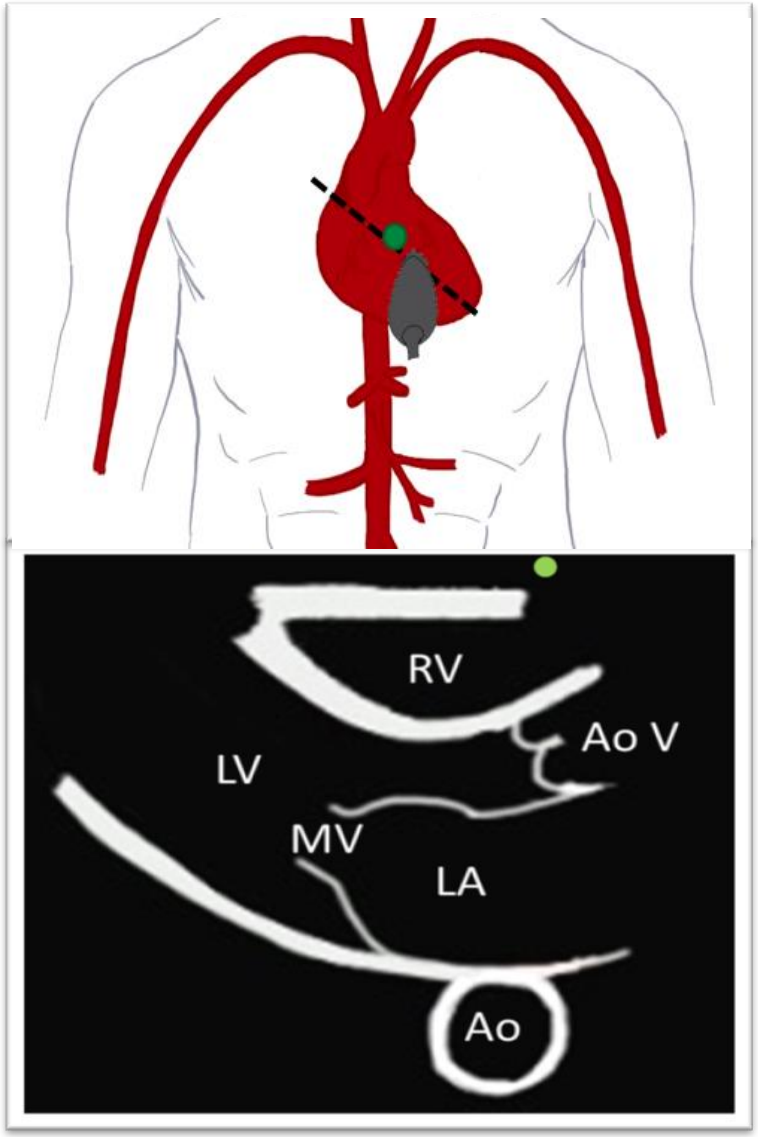
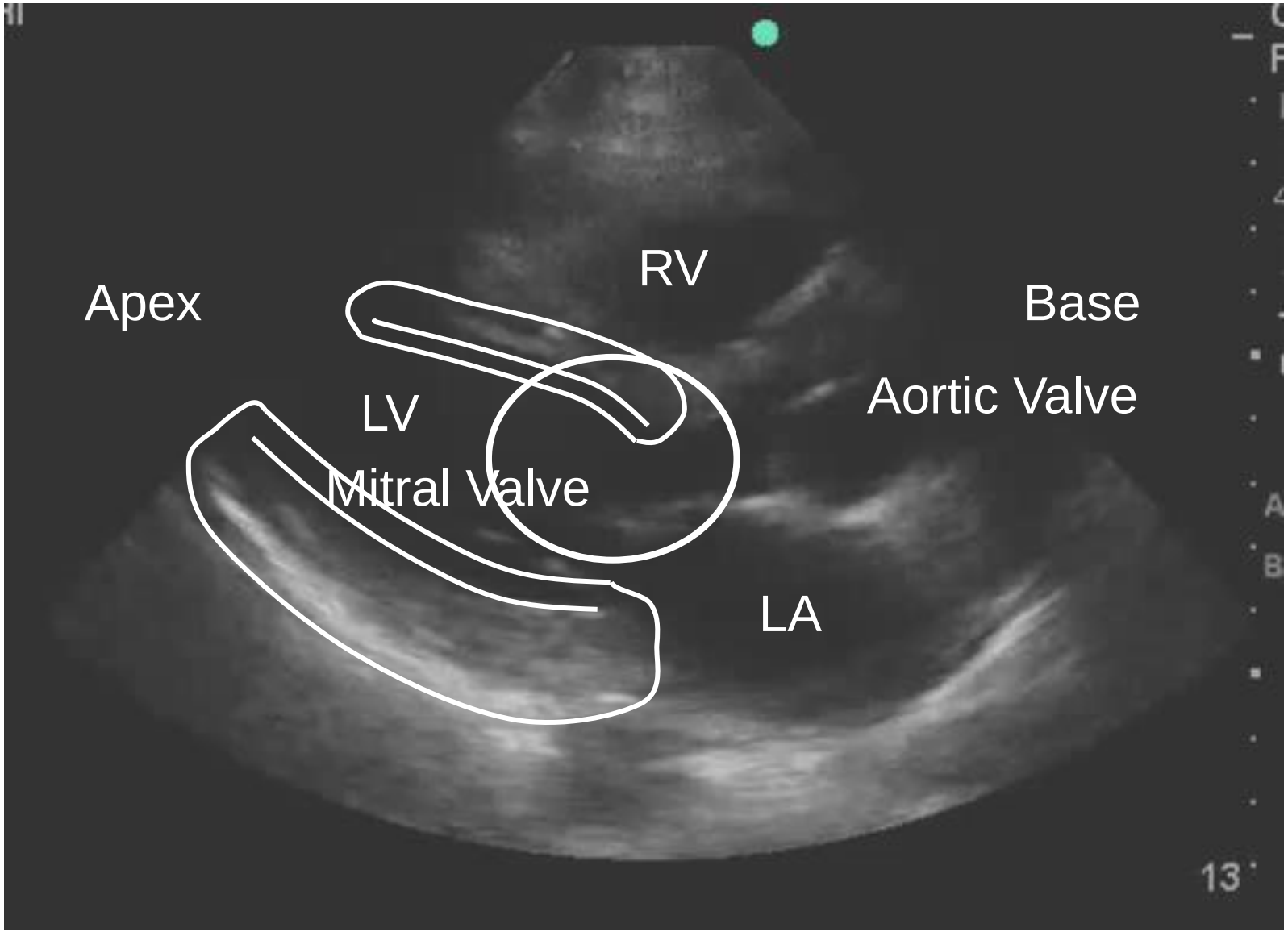
FoCUS
PLAX

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





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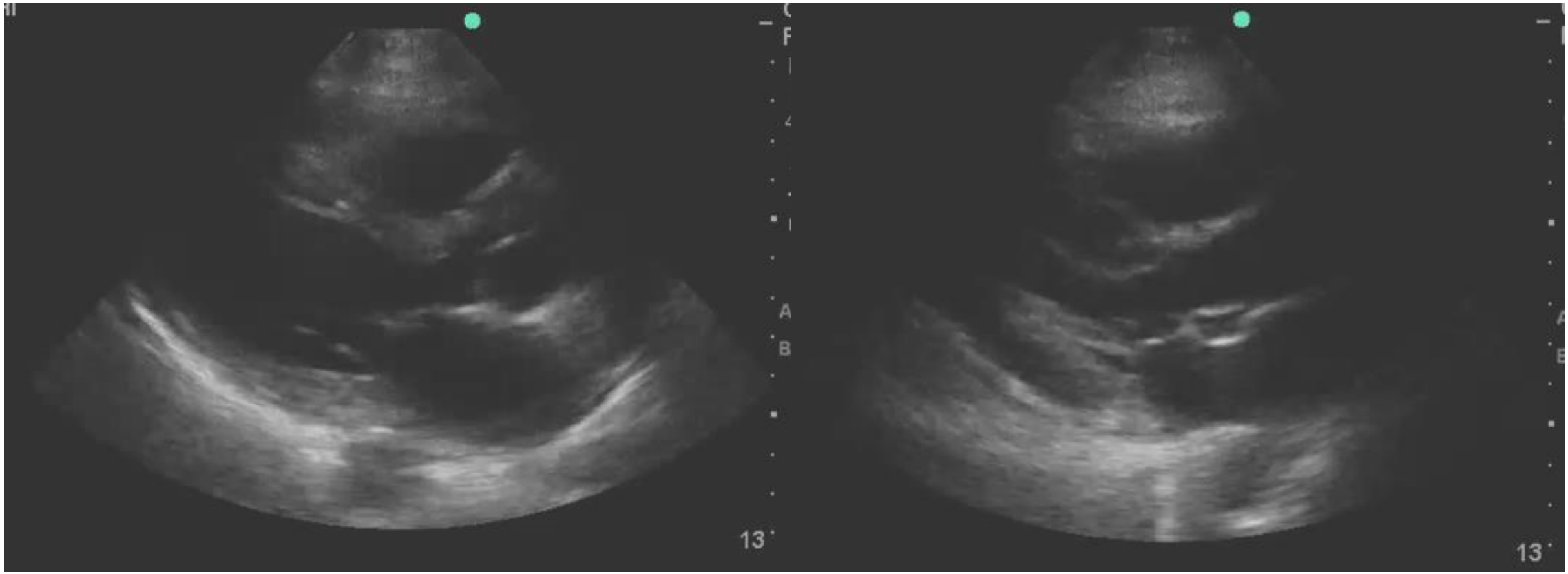
FoCUS
PLAX



Normal

Hyperdynamic

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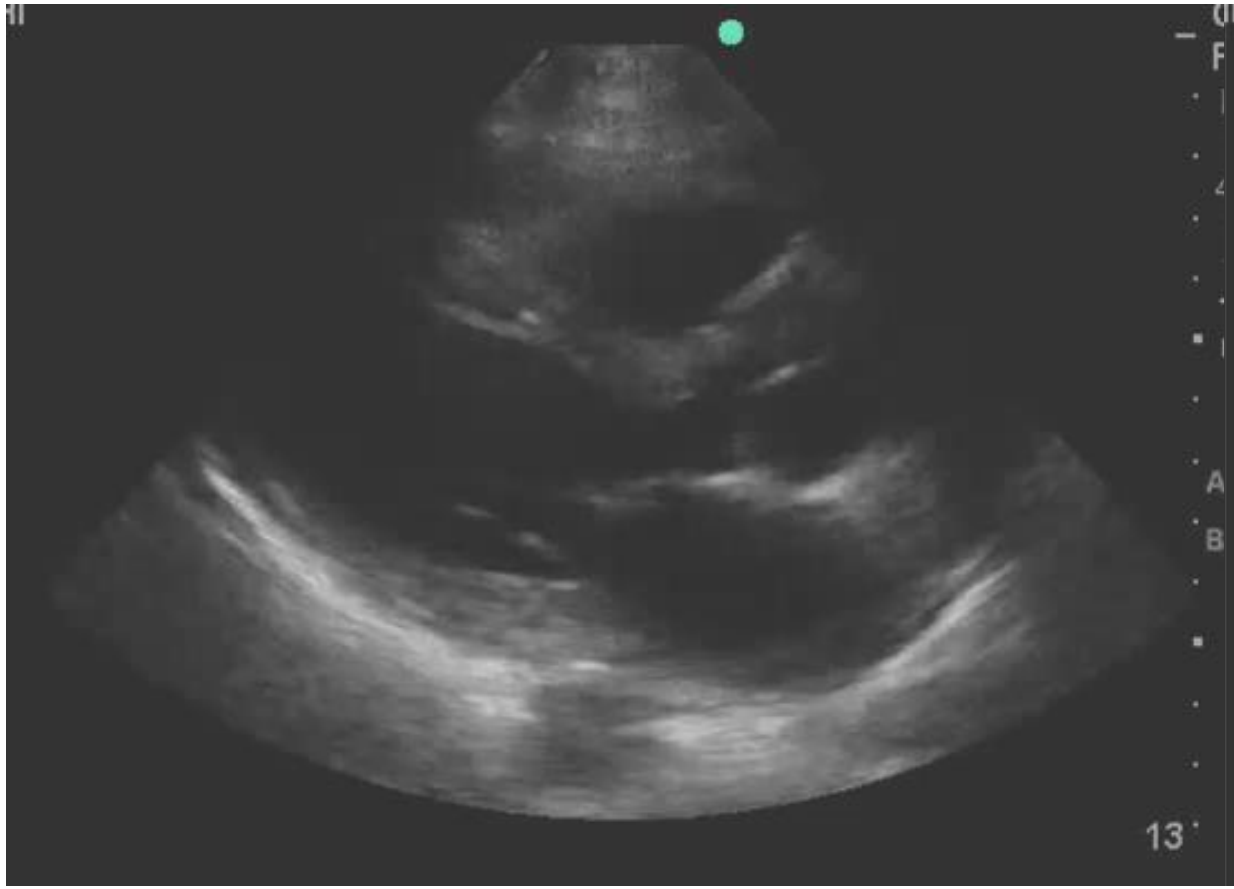
FoCUS
PLAX



Normal

Reduced

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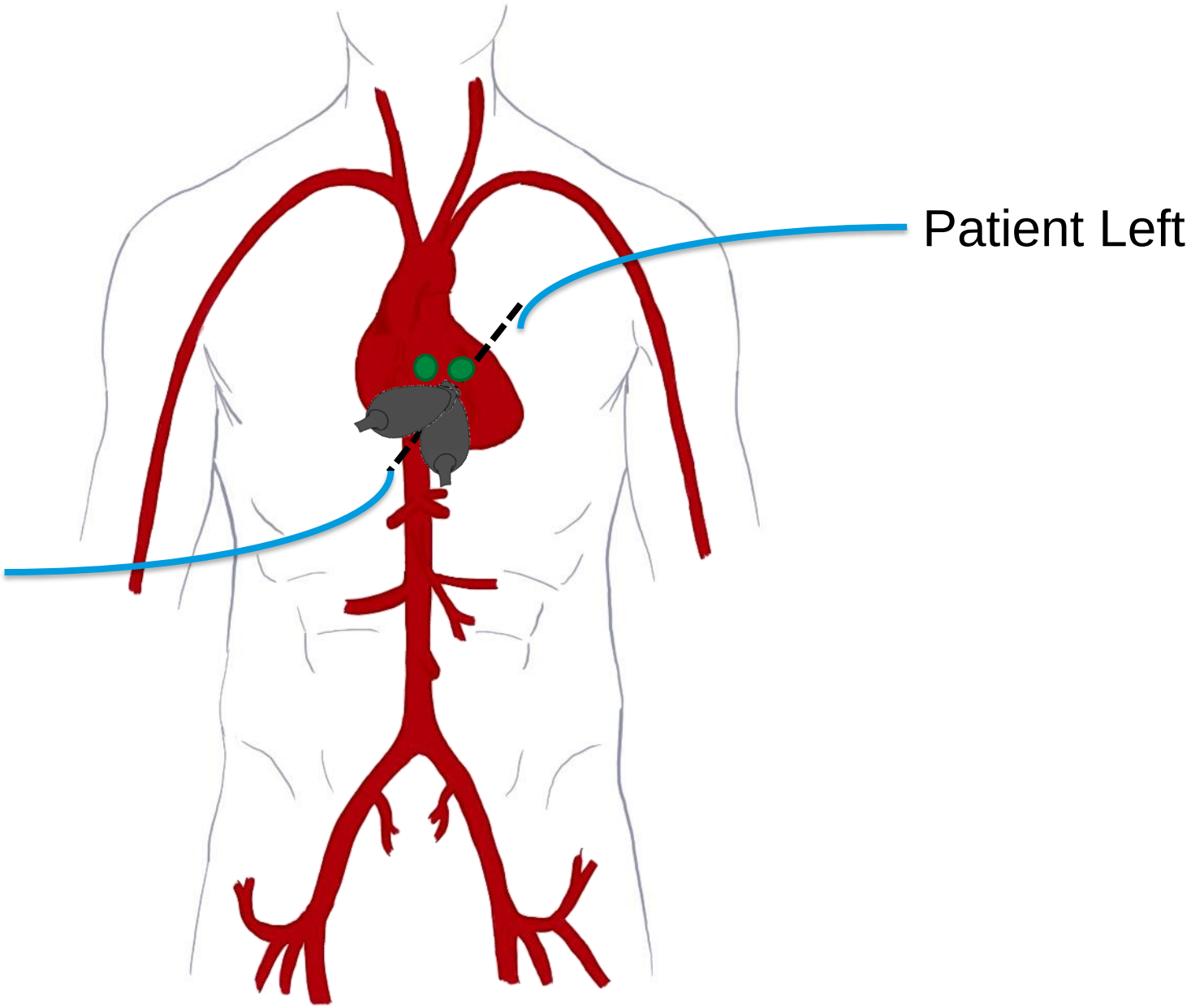
FoCUS
PSAX



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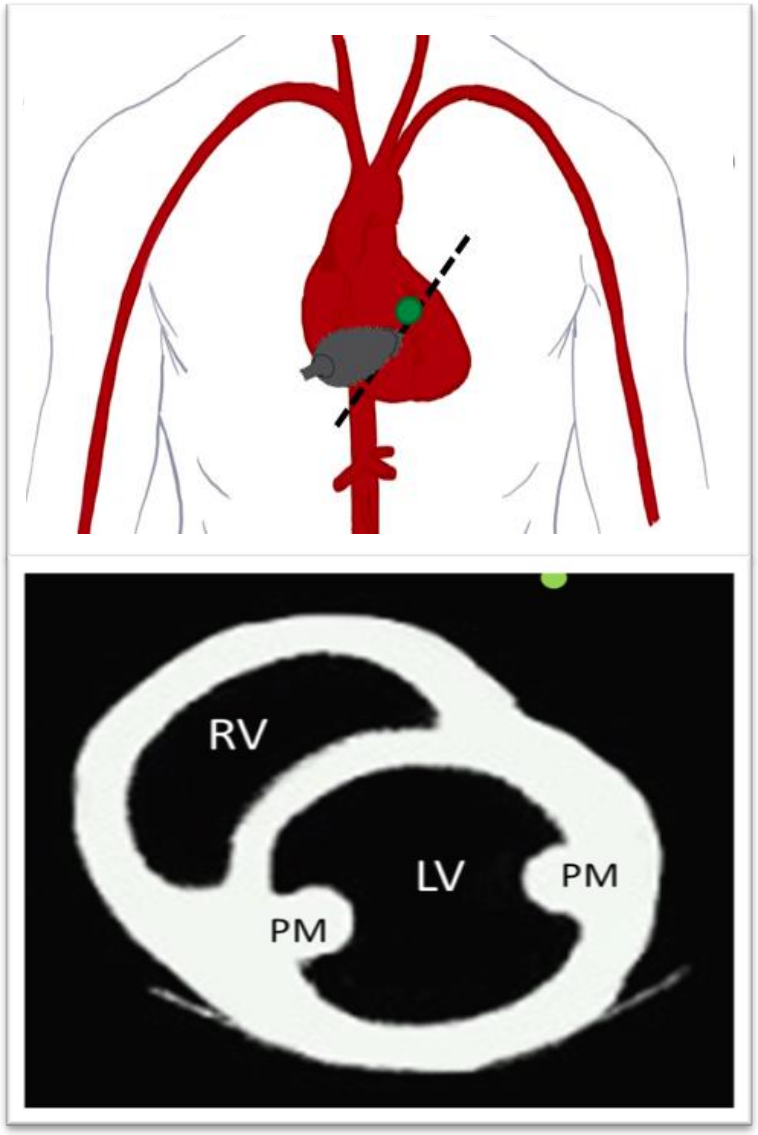

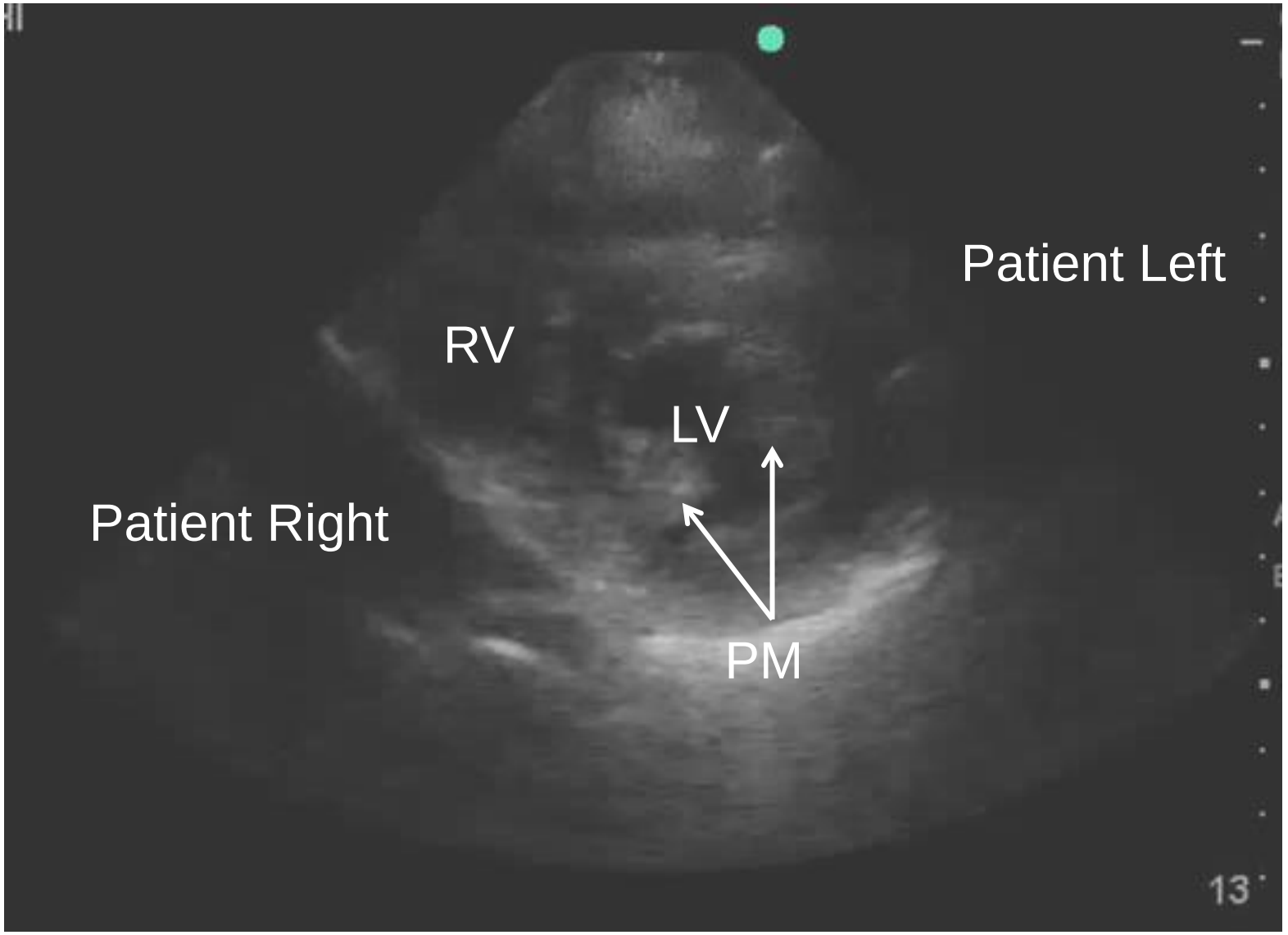

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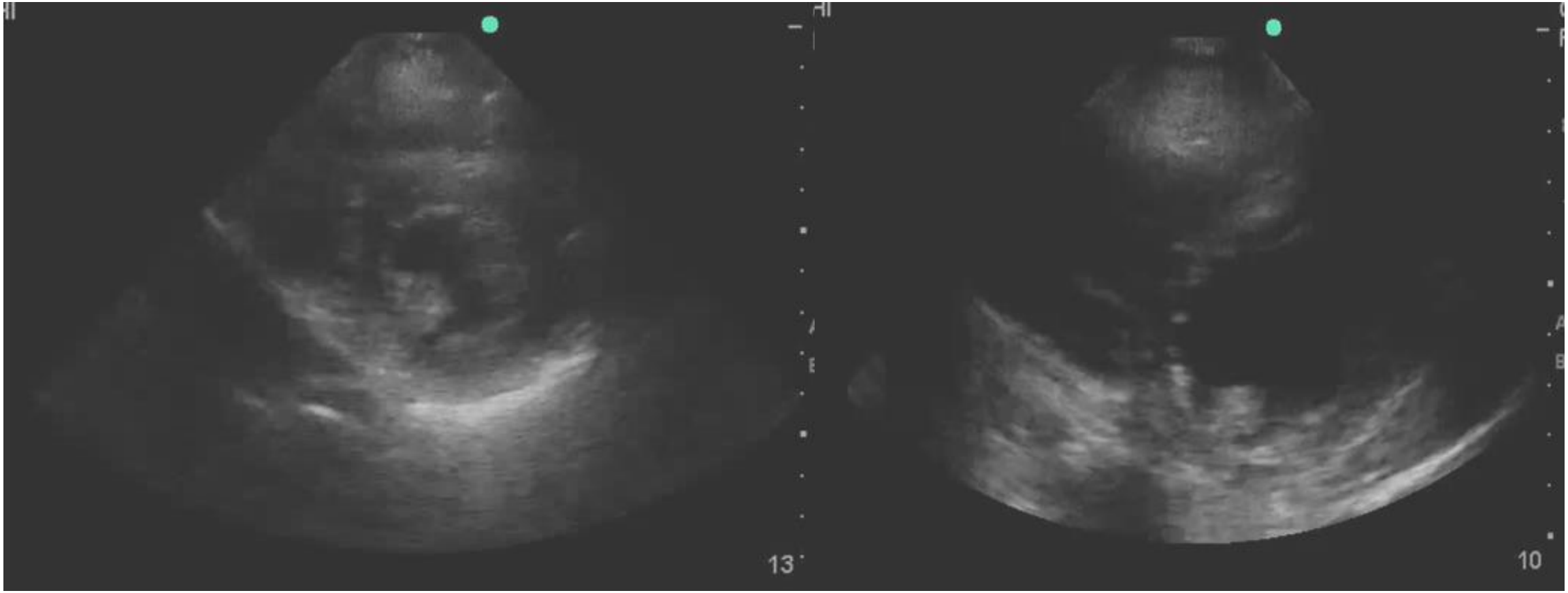
FoCUS
PSAX



Normal

Hyperdynamic

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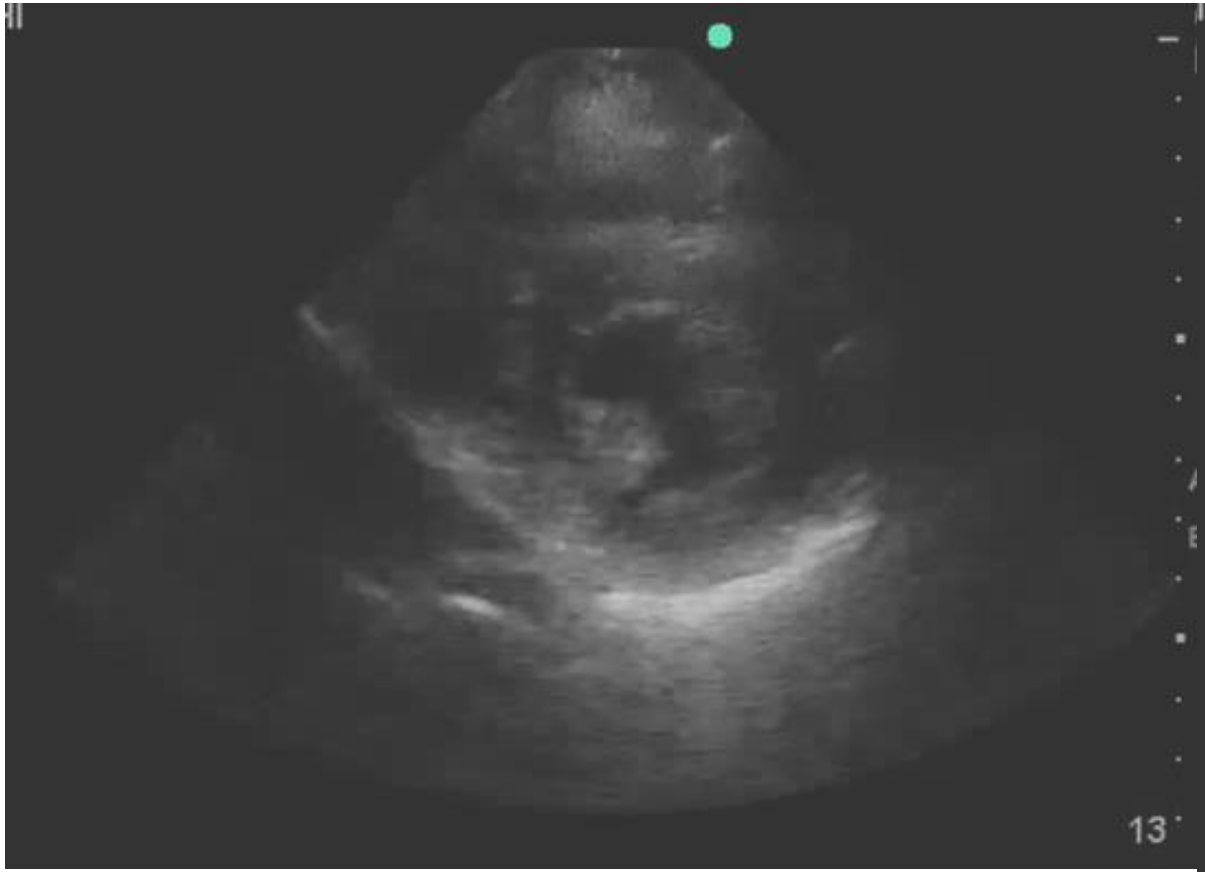
FoCUS
PSAX



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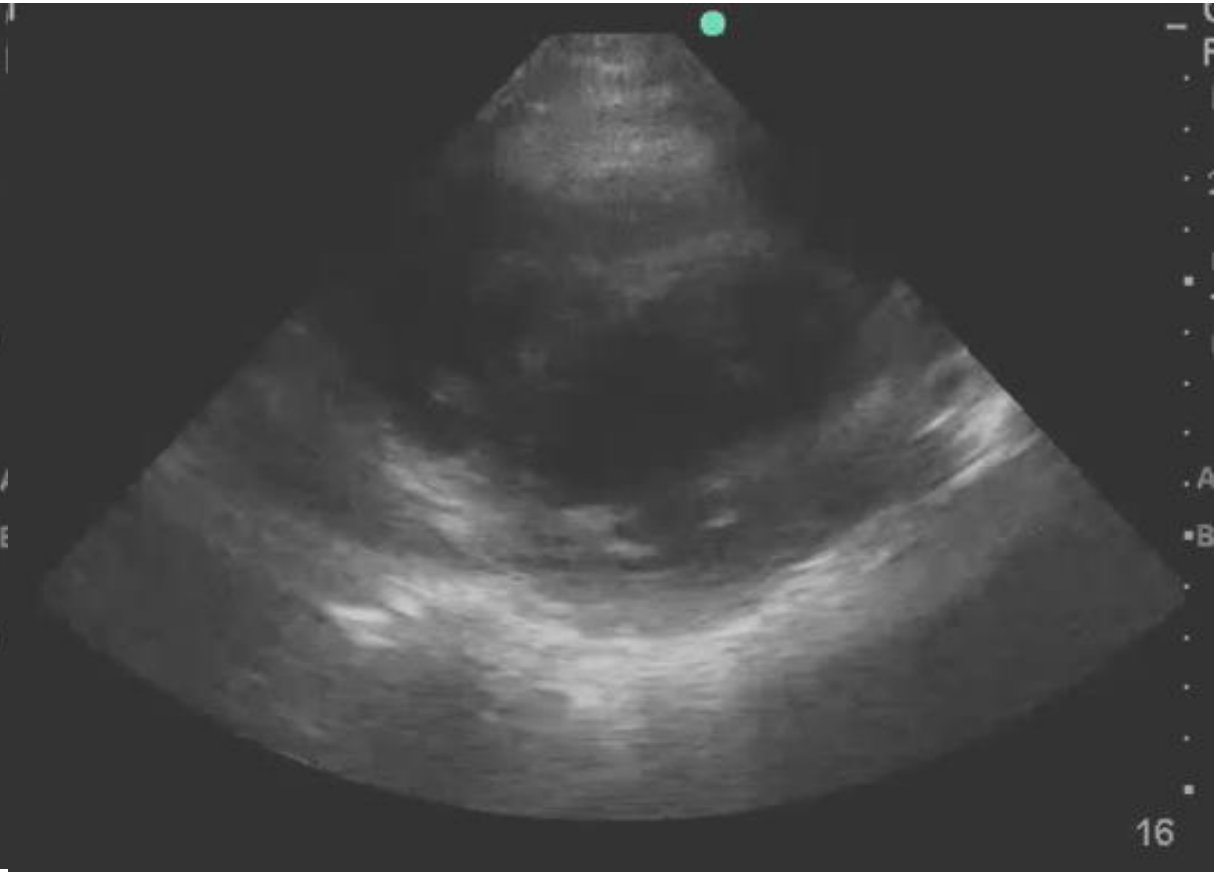

Reduced

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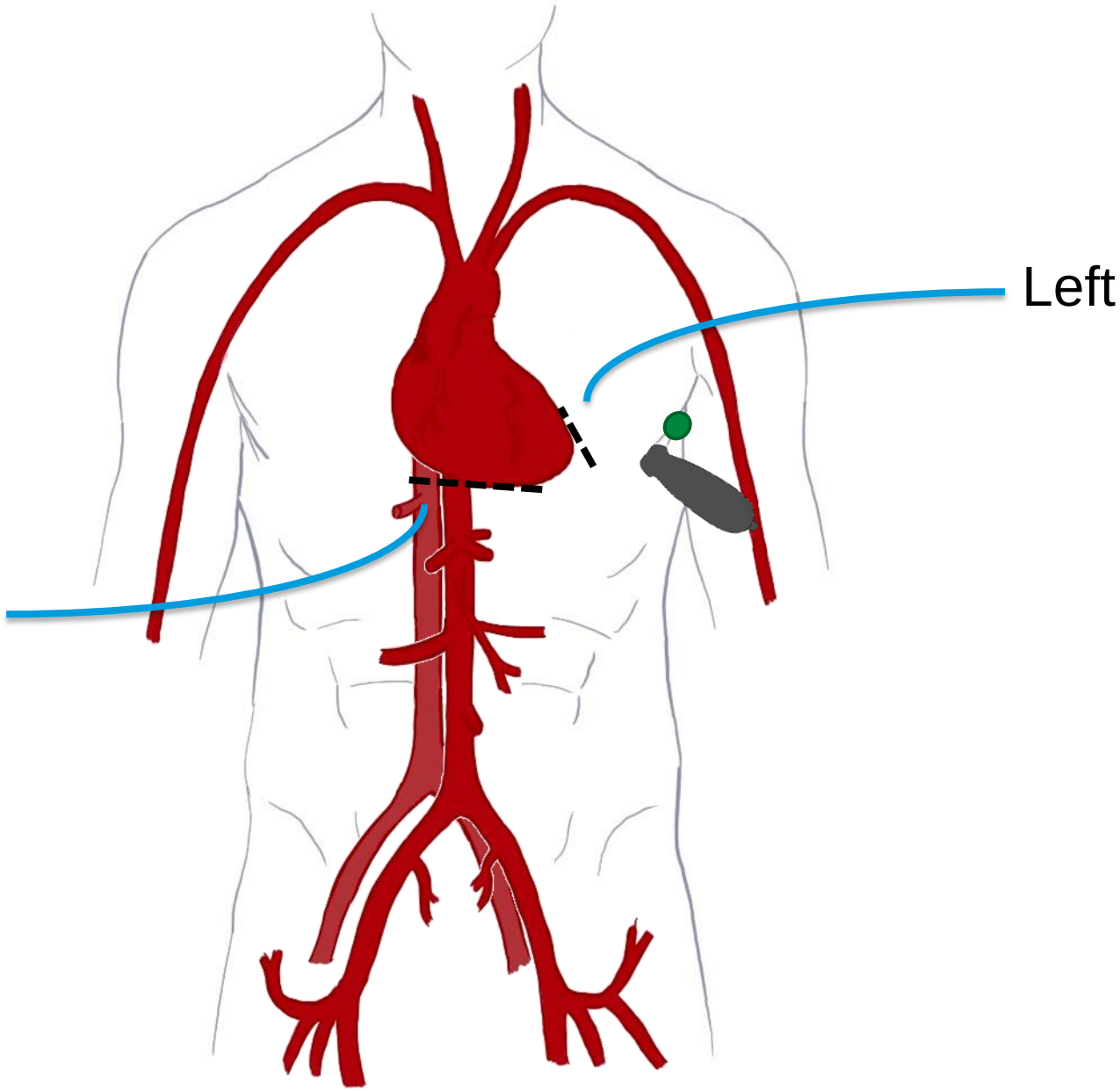
FoCUS
A4C



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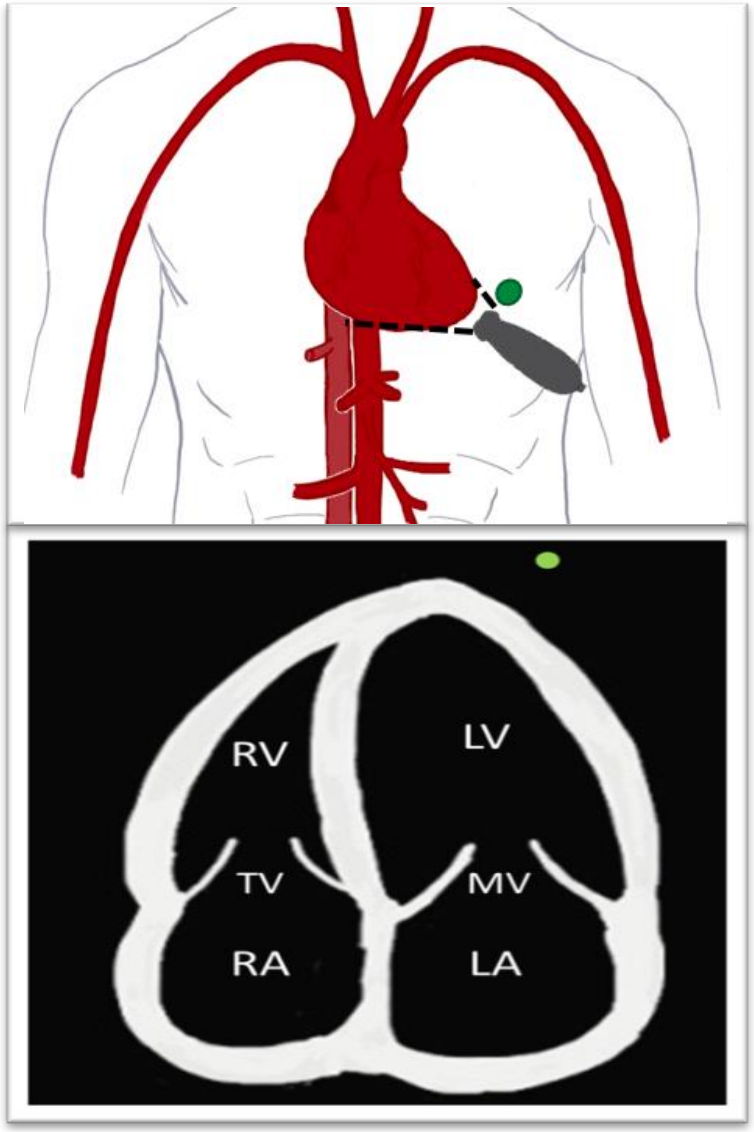
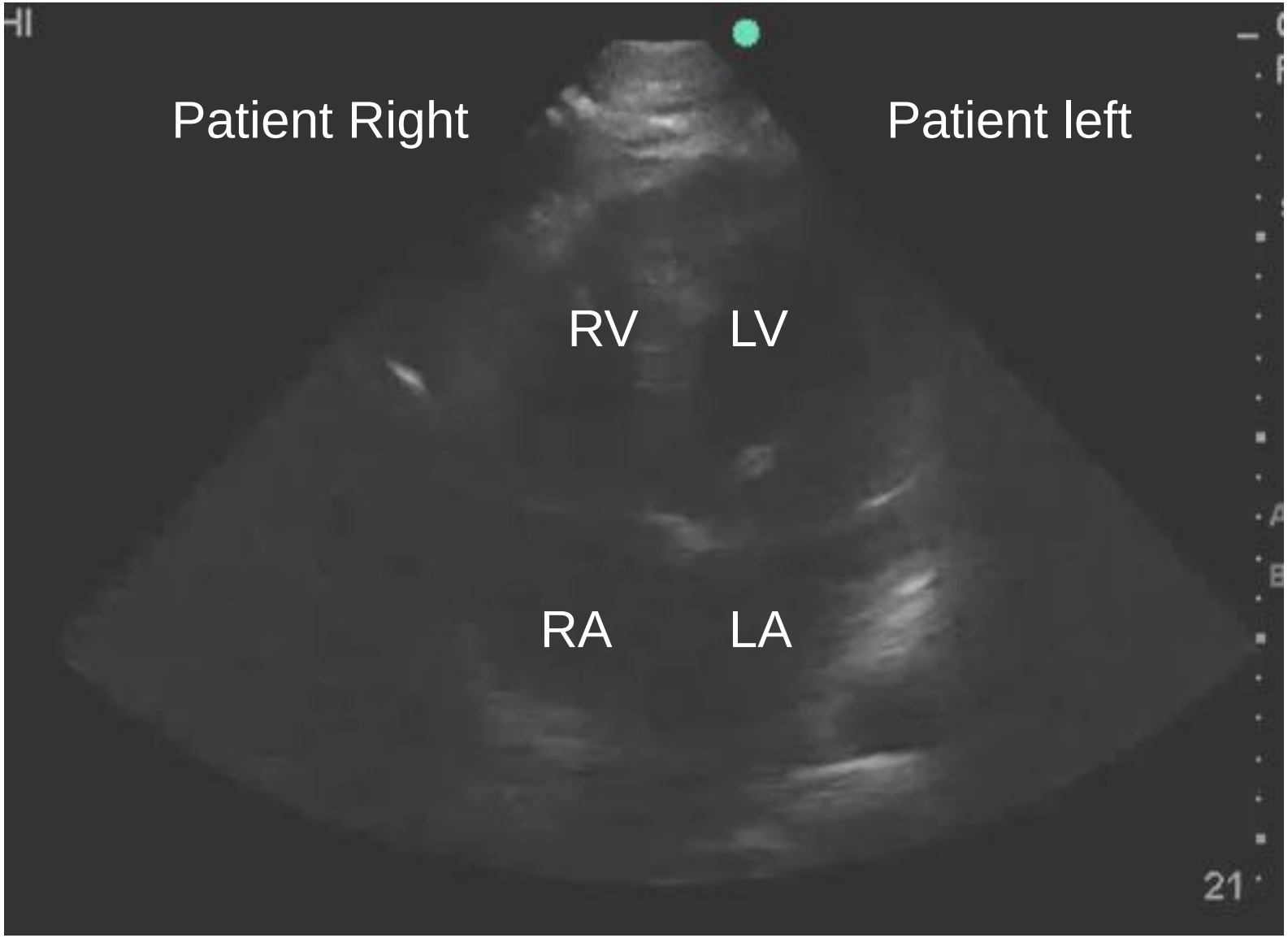
FoCUS
A4C





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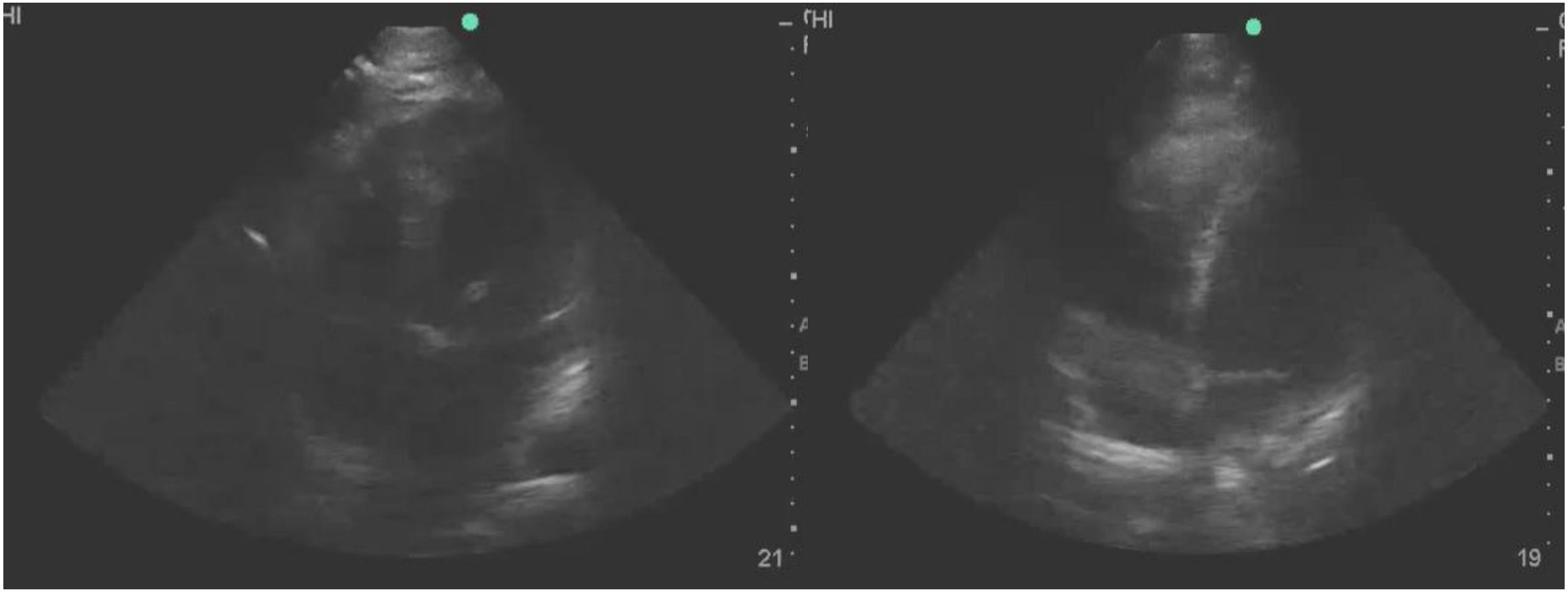

Normal

RV Enlargement

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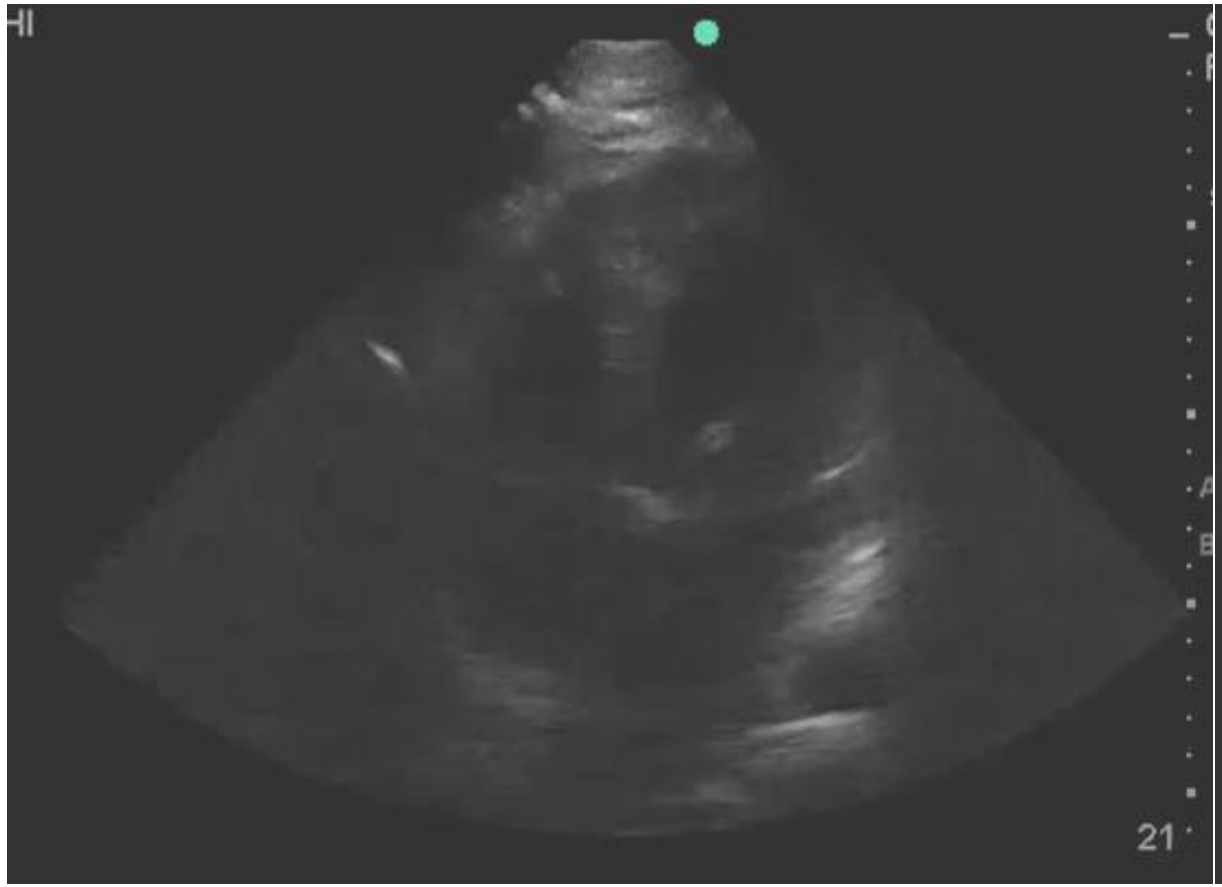
FoCUS
A4C



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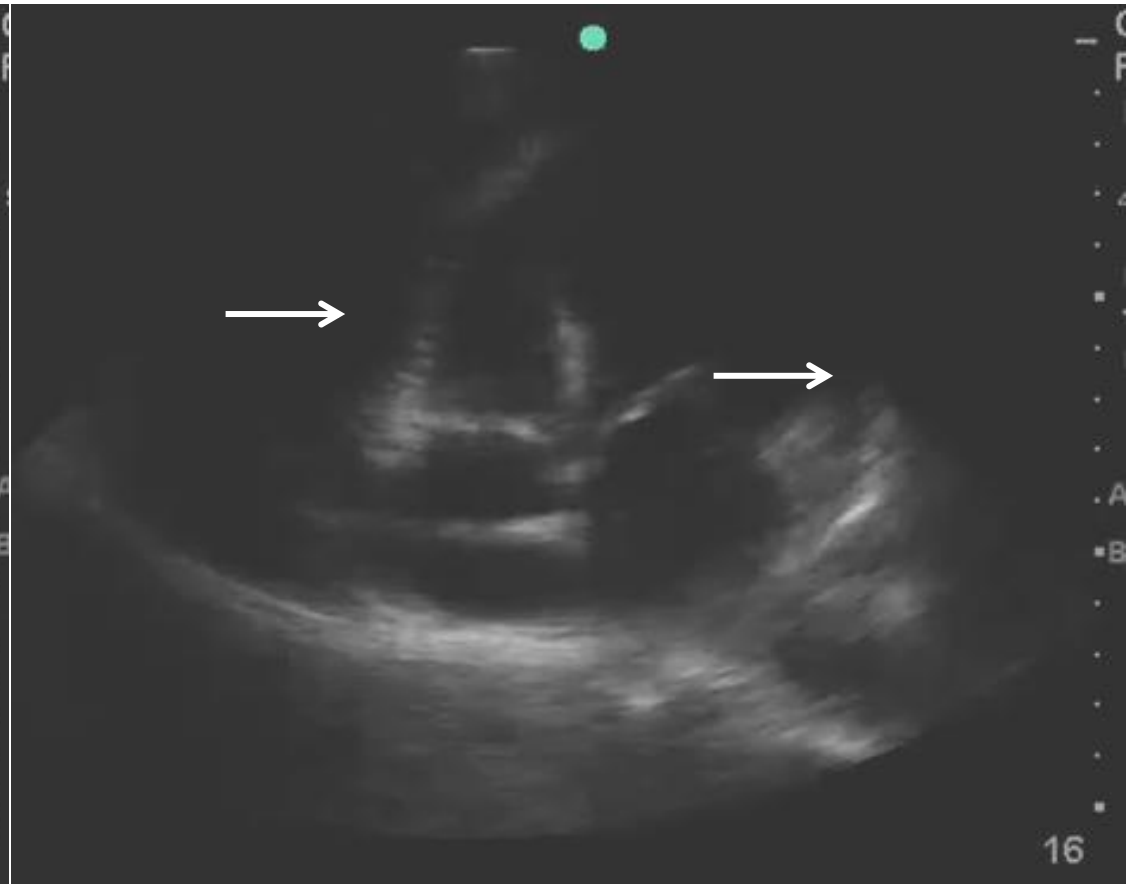

Pericardial Effusion

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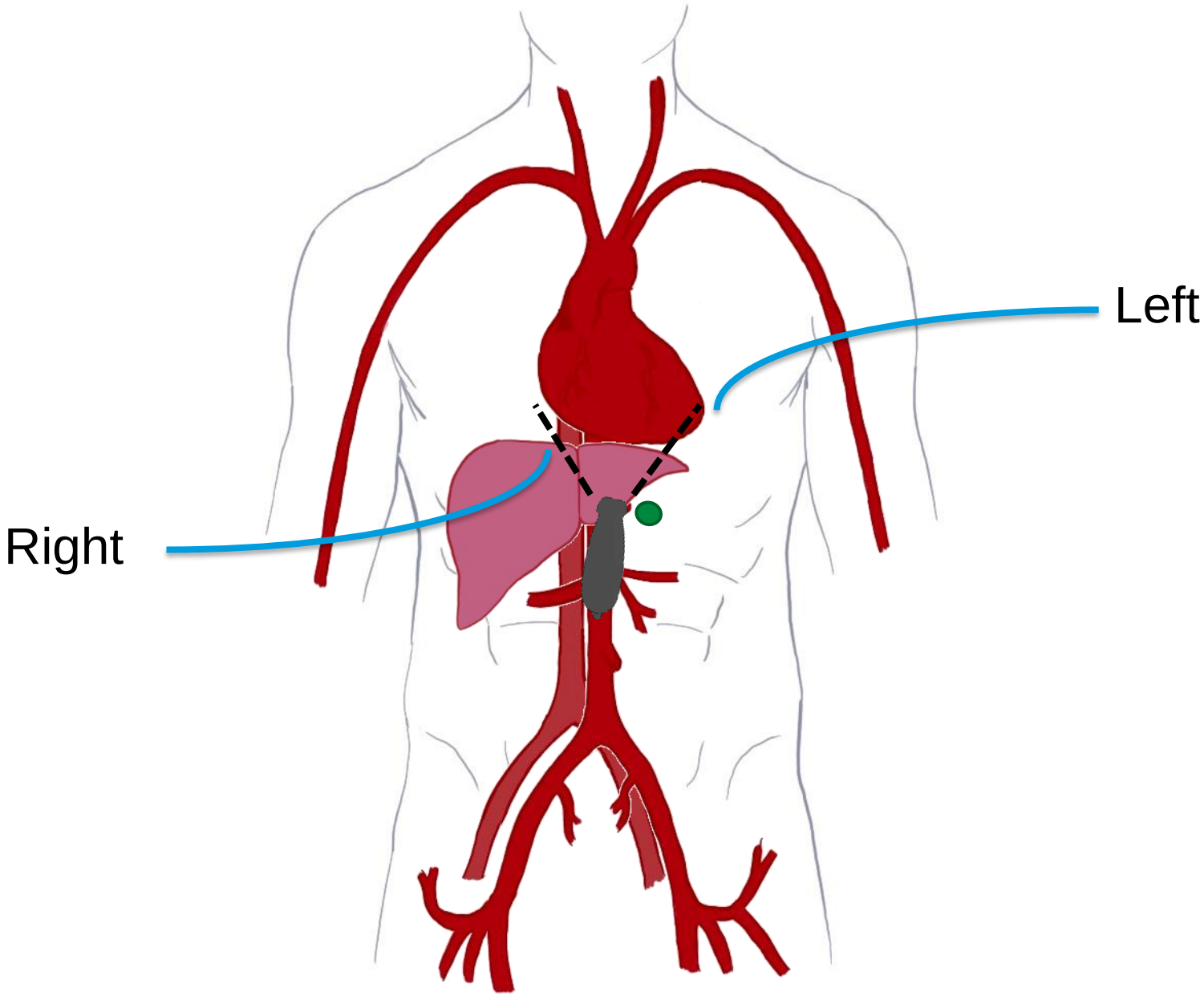
FoCUS
S4C



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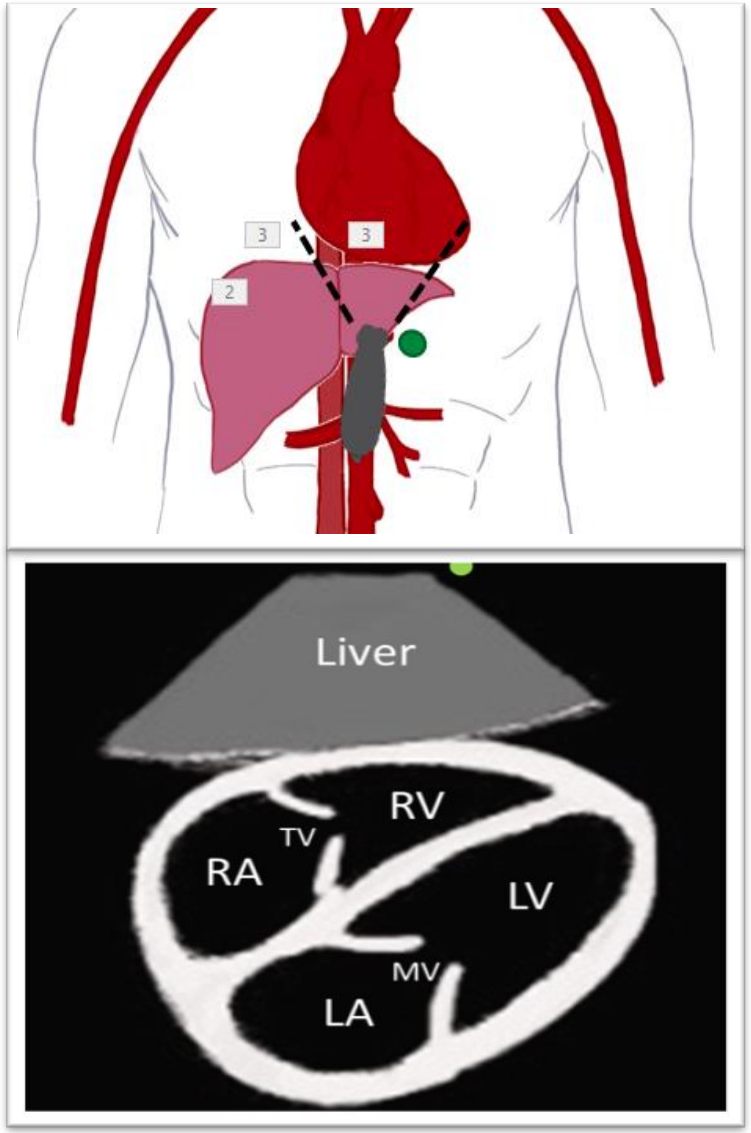

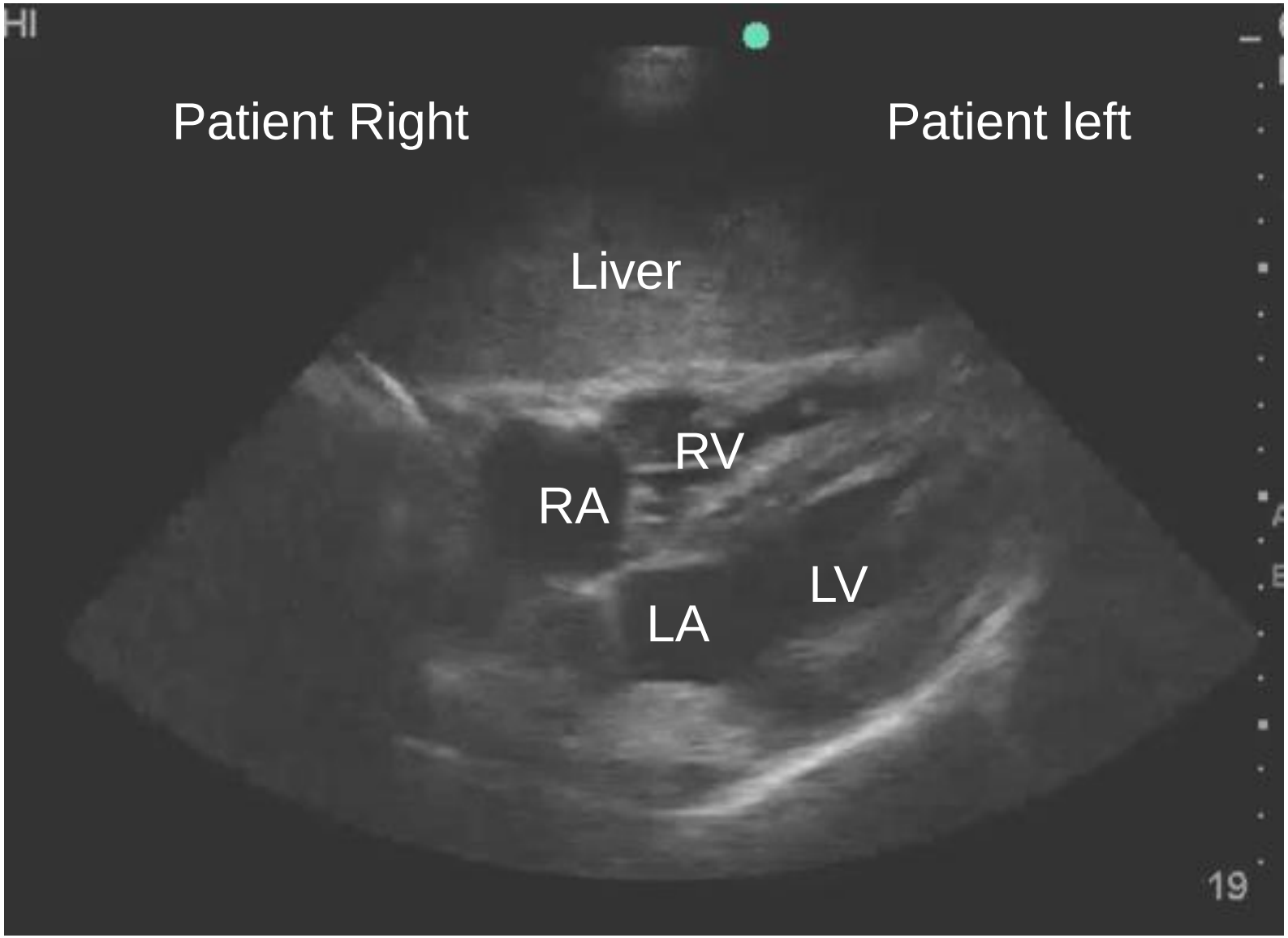

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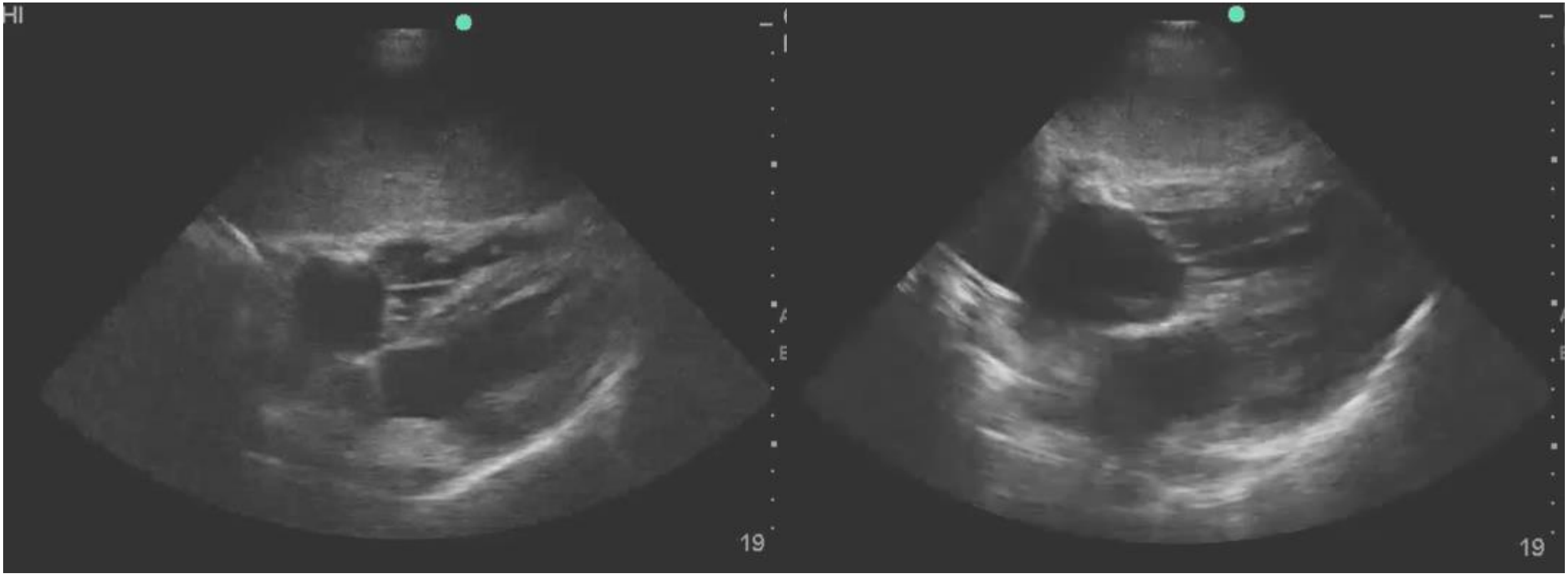
FoCUS
S4C



Normal

RV Enlargement

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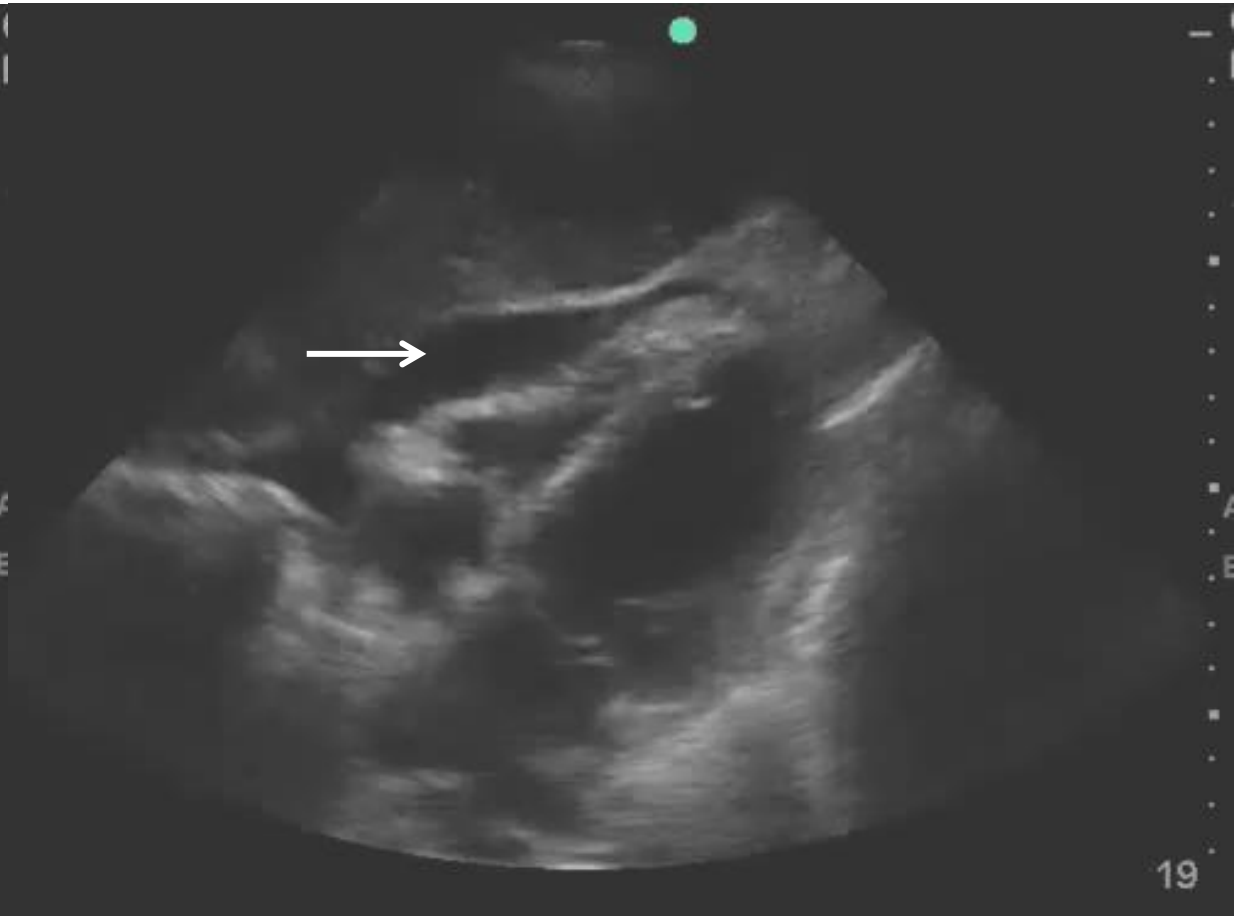
FoCUS
S4C

Normal



Pericardial Effusion

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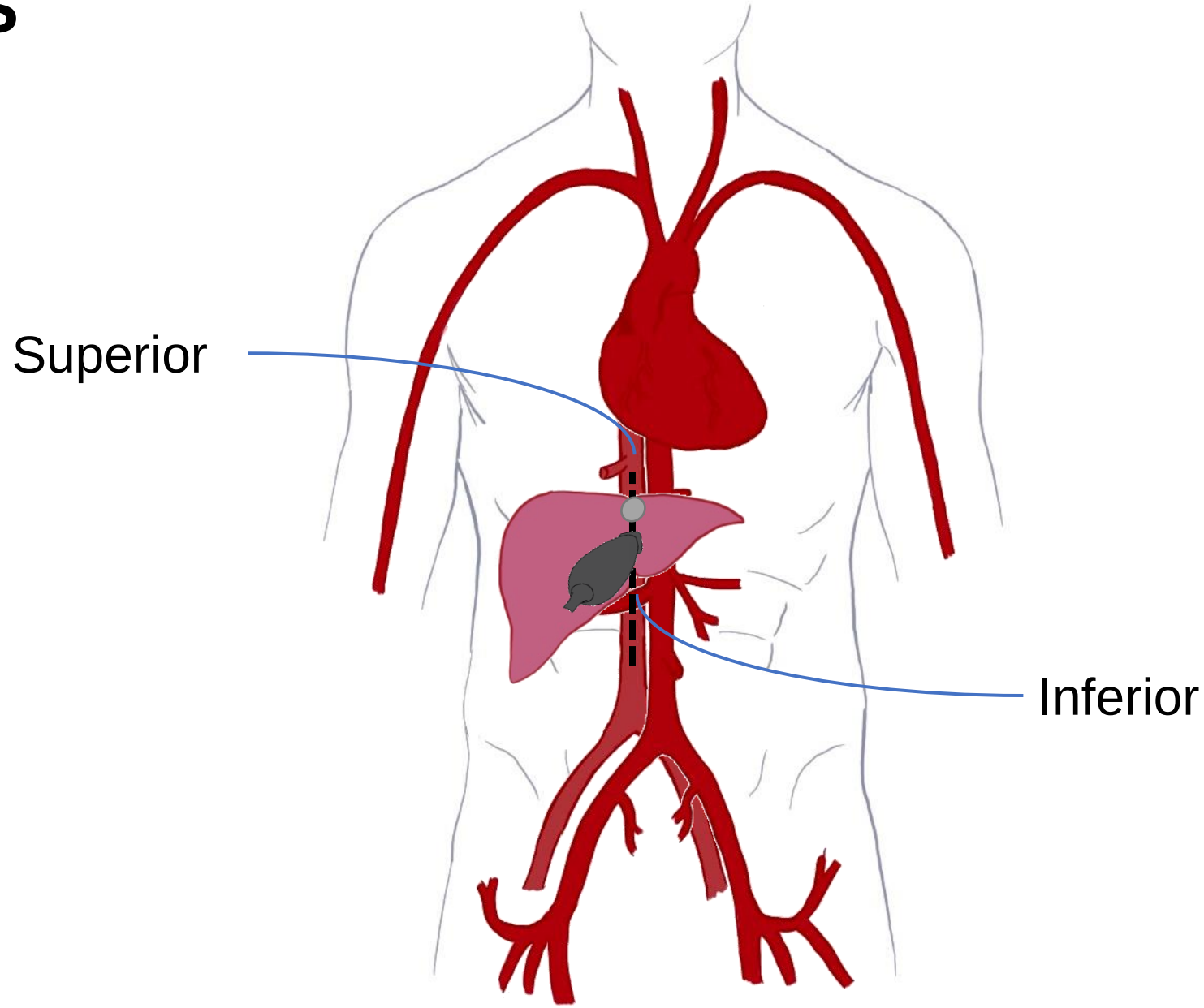
FoCUS
IVC



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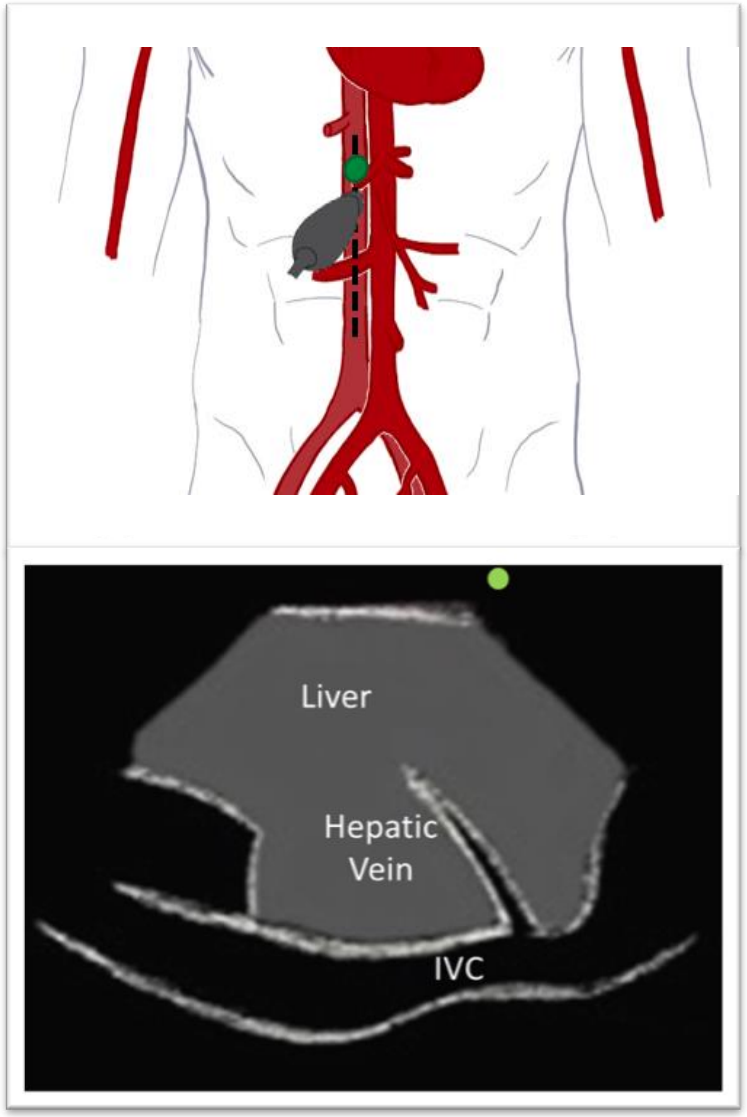
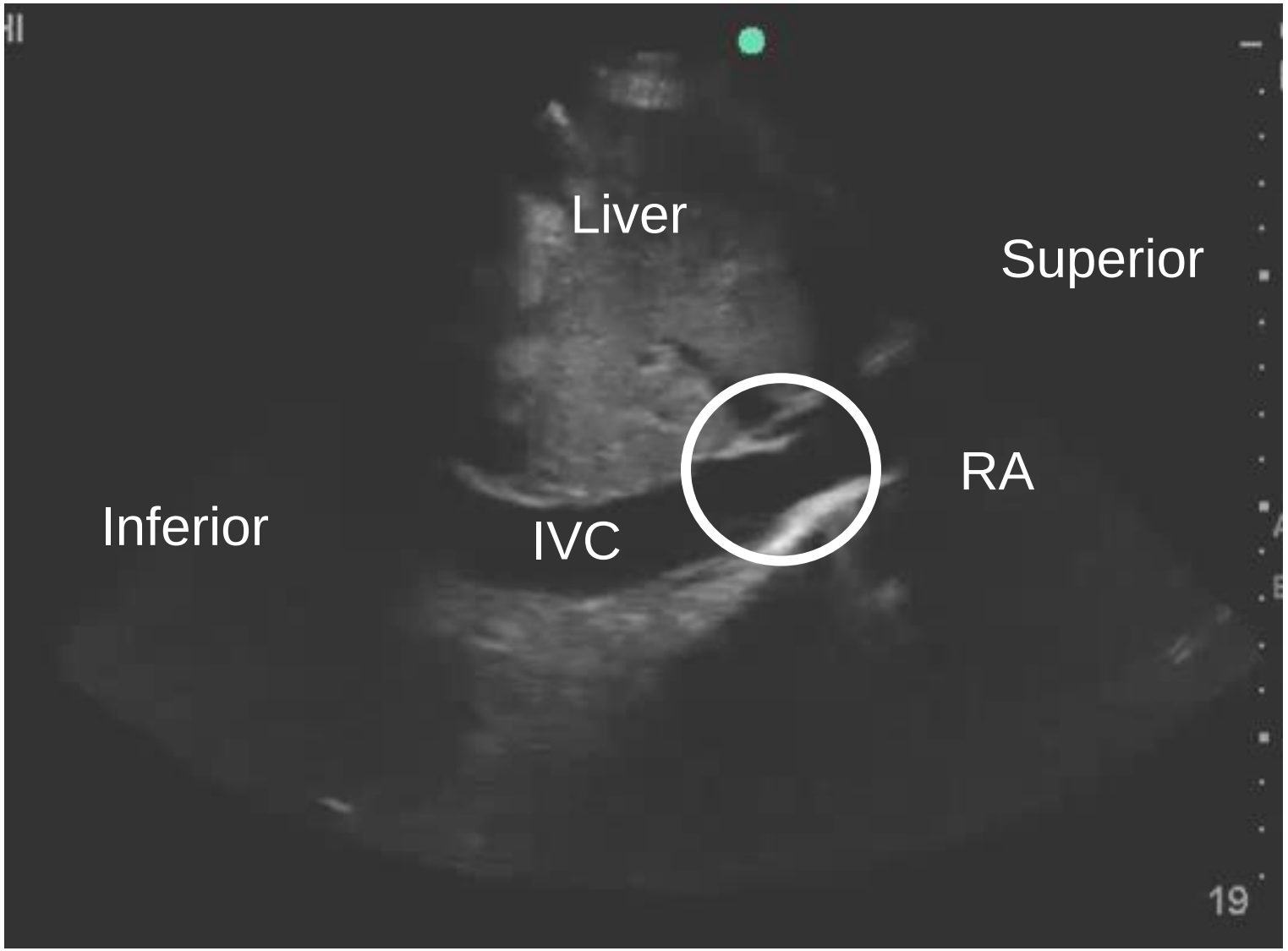
IVC





FoCUS

- Surrogate marker for RA Pressure / Central Venous Pressure
- JVP ≈ 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

Soni NJ, Arntfiled R, Kory P (2015). Point of Care Ultrasound, Oxford: Elsevier Saunders.

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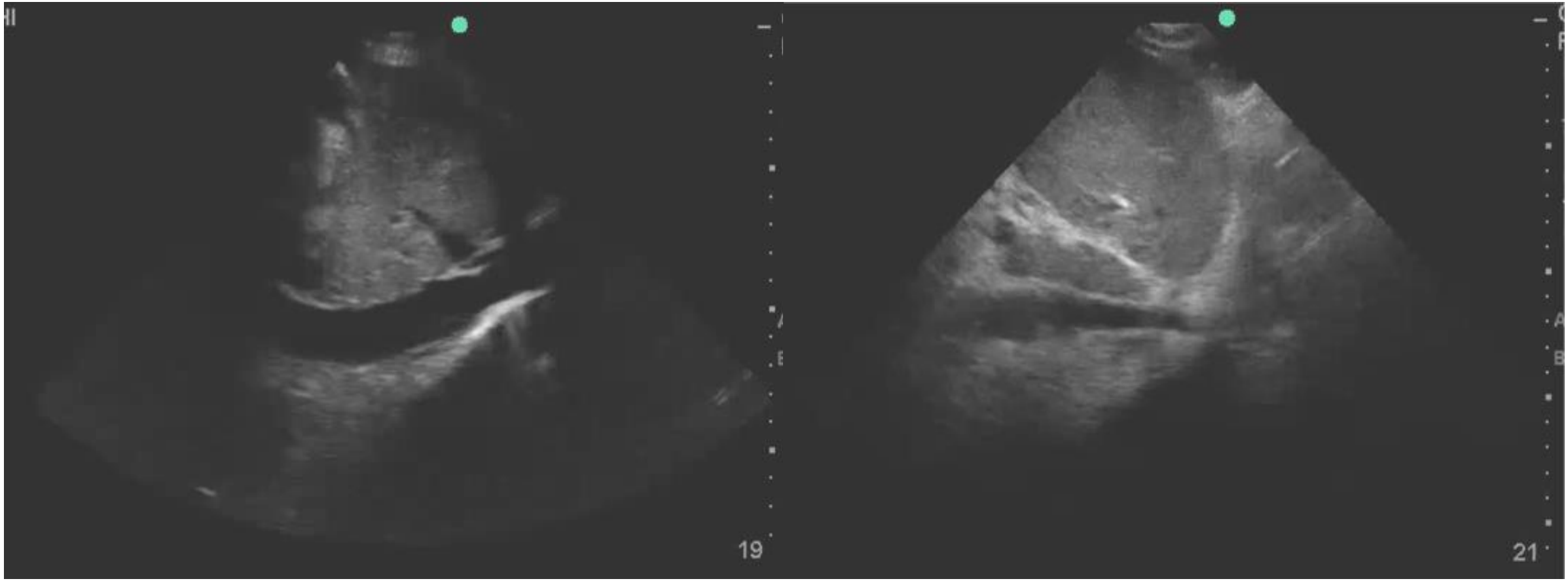
IVC



Normal

Small, Exaggerated Collapse

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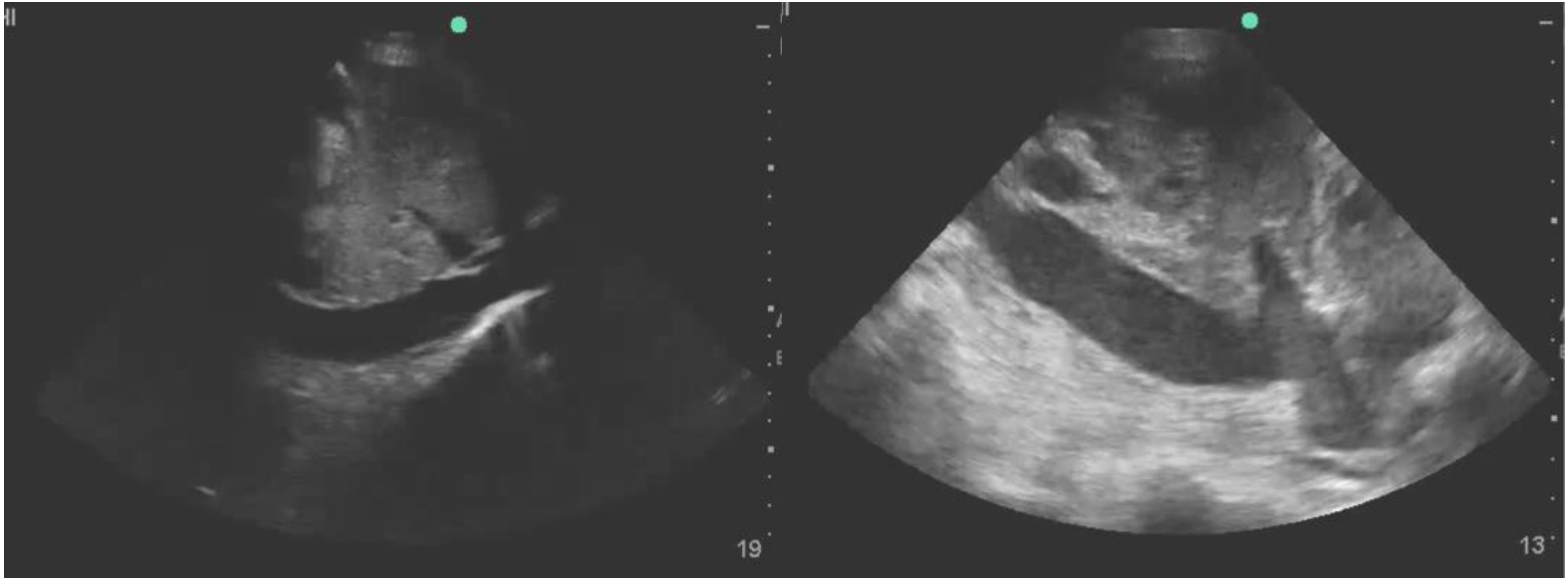
IVC



Normal

Enlarged, Reduced collapse

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QUESTIONS AND DISCUSSION

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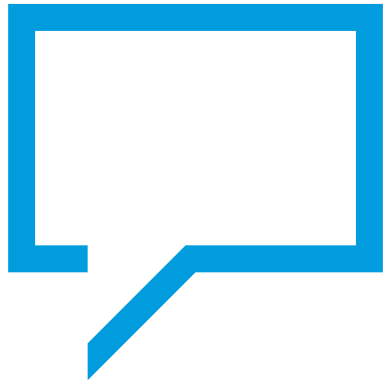

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