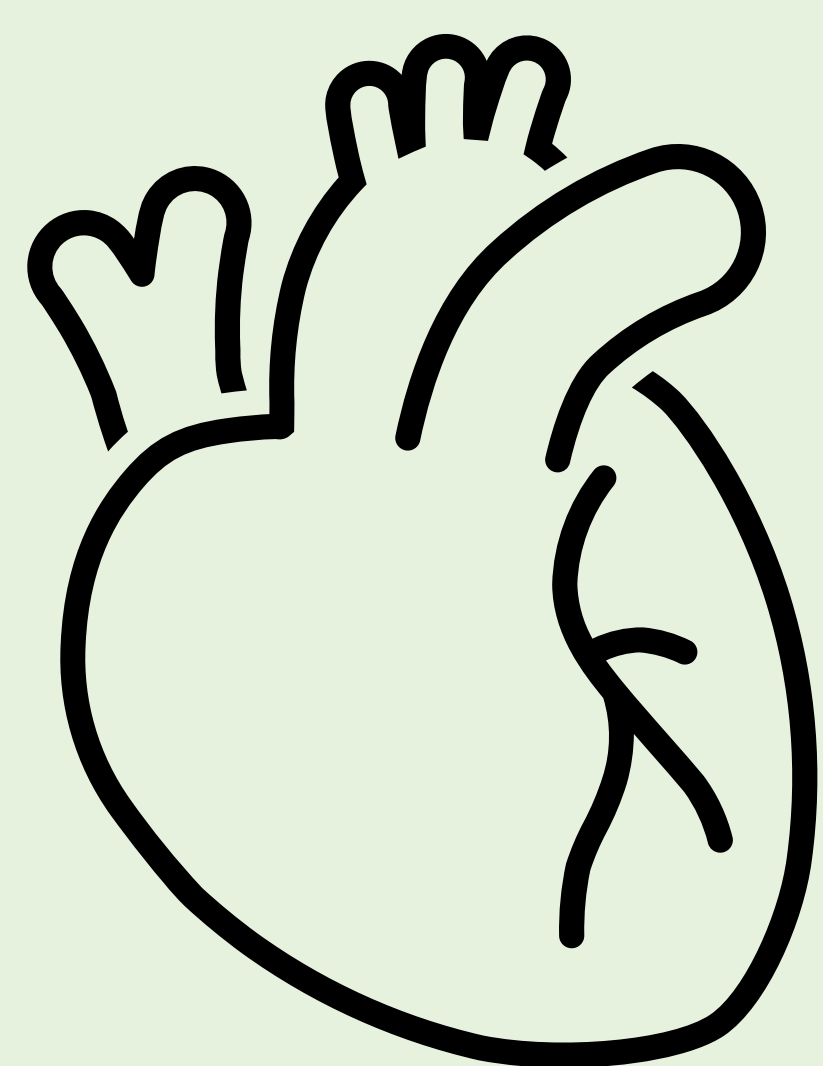




Peripartum Management of Patient with Remote Orthotopic Heart Transplant and Severe Diastolic Dysfunction

Daniel Conti, MD, Hayley Miller, MD, Brendan Carvalho, MBBCh, FRCA, MDCH, Pervez Sultan, MBChB, FRCA, MD, Cesar Padilla, MD

39 year old G2P1 at 37+3 with new onset **lower extremity edema refractory to outpatient diuresis**. No shortness of breath or orthopnea. NYHA Class 1.

Medical History:

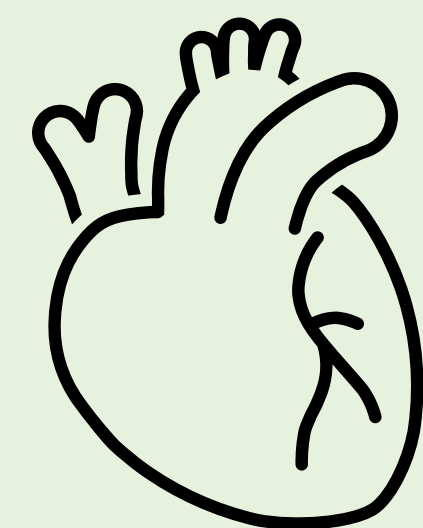
- **Heart Transplant 25 years** prior for restrictive cardiomyopathy
- Pulmonary embolus at 23w on therapeutic Enoxaparin.
- Chronic Hypertension
- Type II Diabetes
- IUGR, pre-eclampsia, pulmonary edema with prior delivery

Transthoracic Echocardiography Trends

Gestation	23+3	32+2	35+1
RVSP	48	32	50
RAP	8	3	3
Right Ventricle	Borderline RVE with low normal RV function.	Normal RV size with low normal function.	Normal RV size with normal EF
Tricuspid Valve	mild-moderate tricuspid regurgitation (1-2+)	mild-moderate tricuspid regurgitation (1-2+)	moderate TR (2+) Systolic flow reversal seen in the hepatic veins
NT-proBNP	805	190	2184



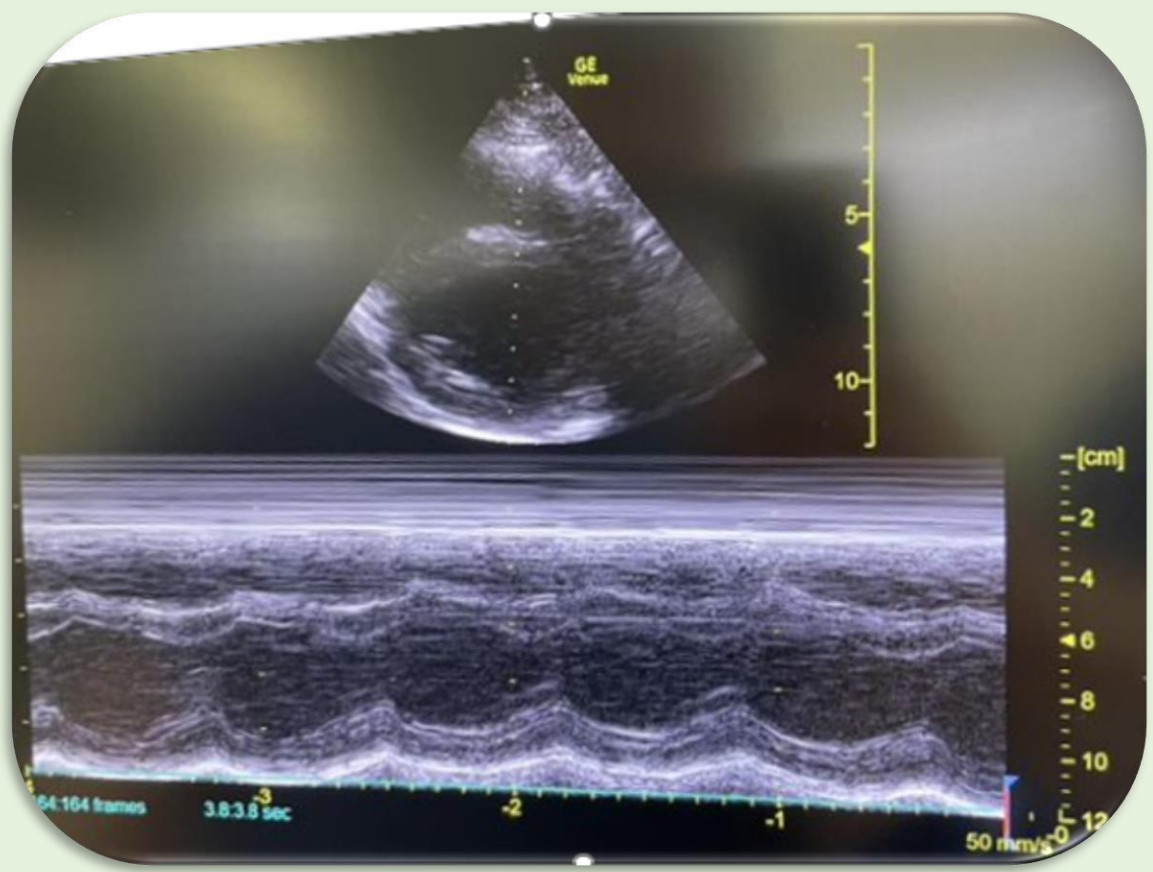
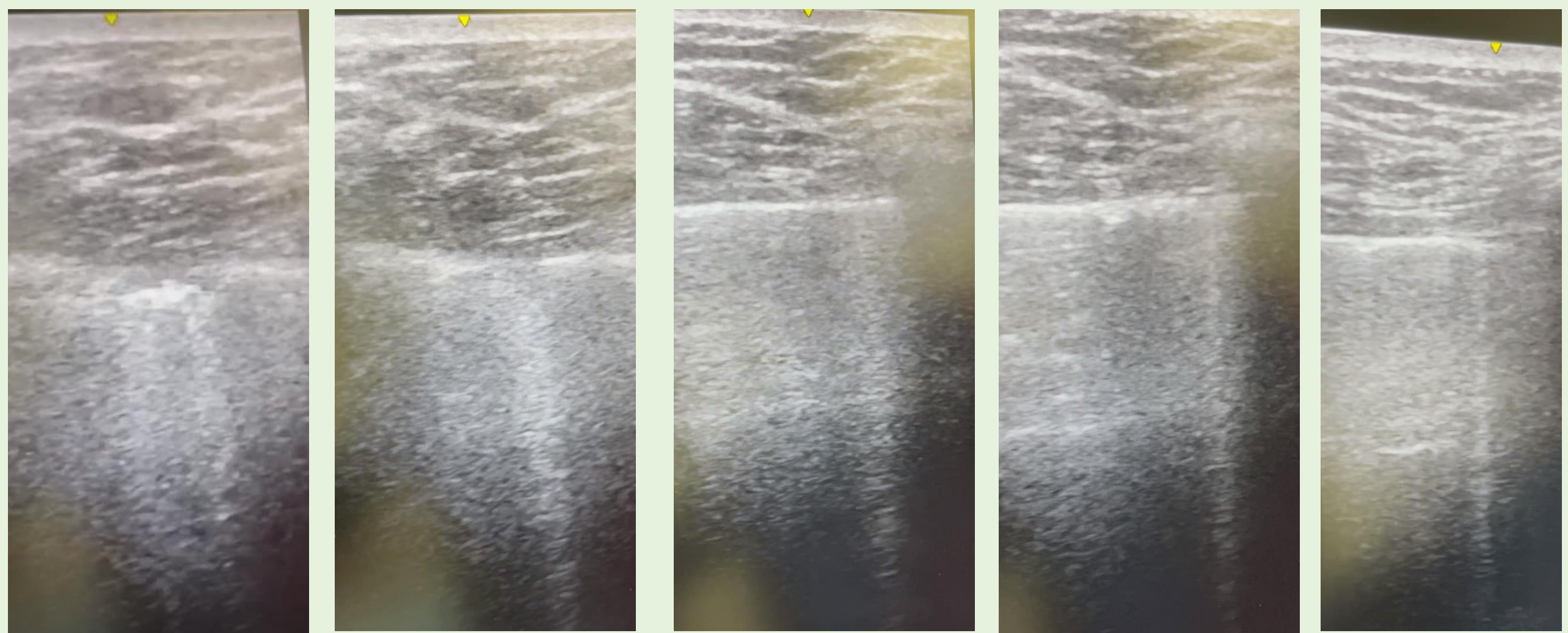
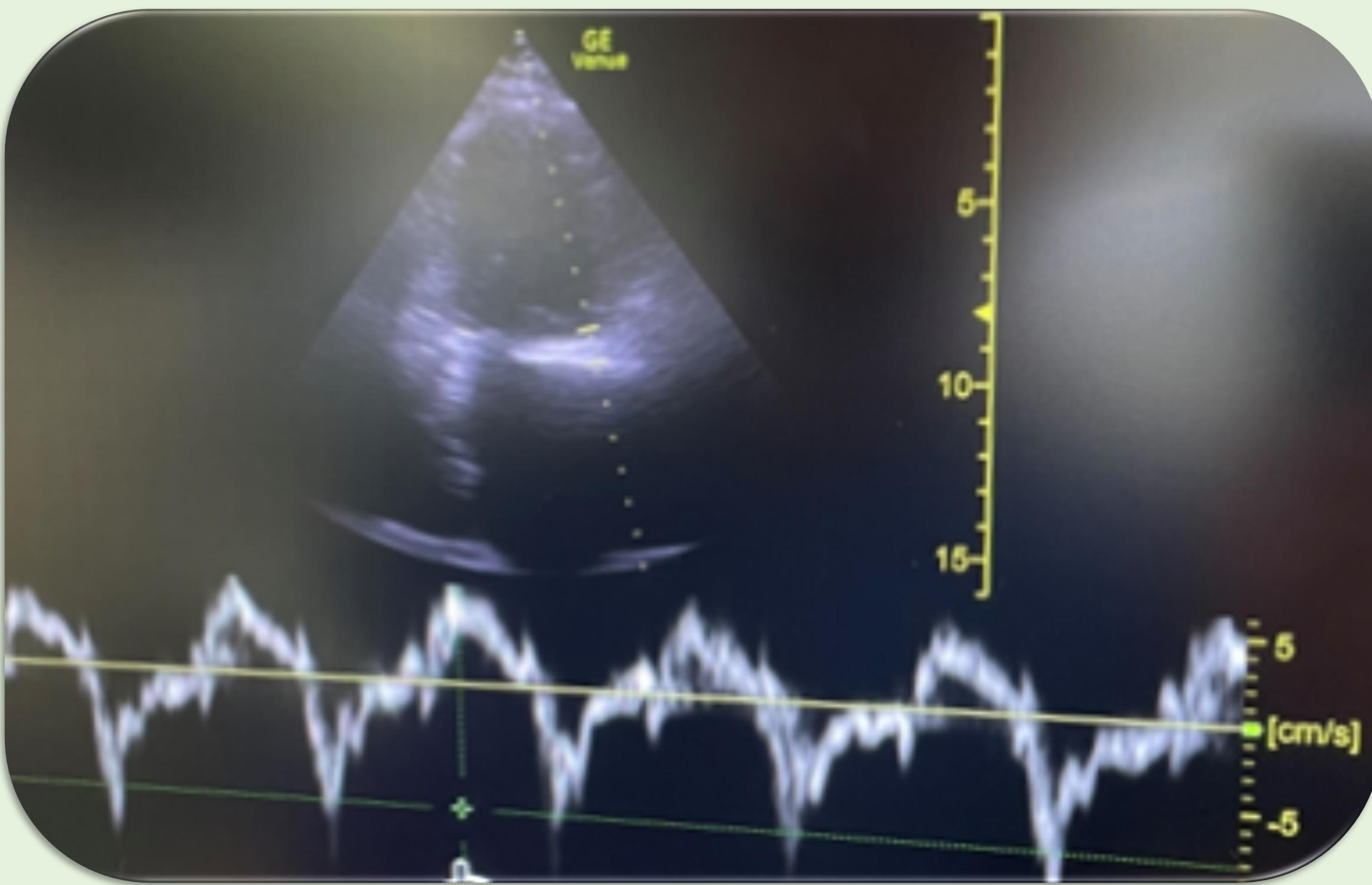
Peripartum Management of Patient with Remote Orthotopic Heart Transplant and Severe Diastolic Dysfunction



Week+Days Gestation	37+3
RVSP	36
RAP	3
Right Ventricle	Normal RV size and function
Tricuspid Valve	Mild-moderate TR (1-2+)
NT-proBNP	998

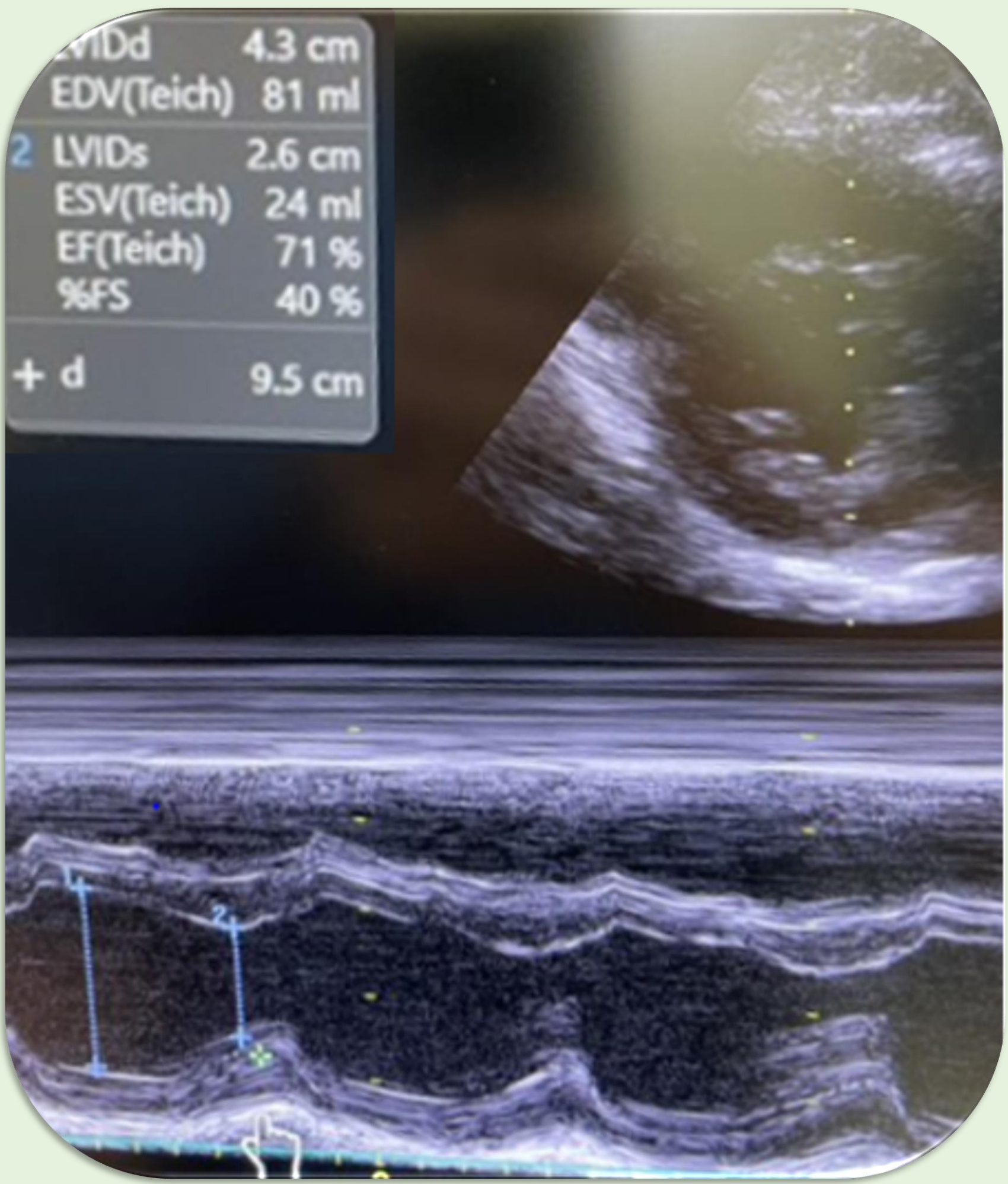
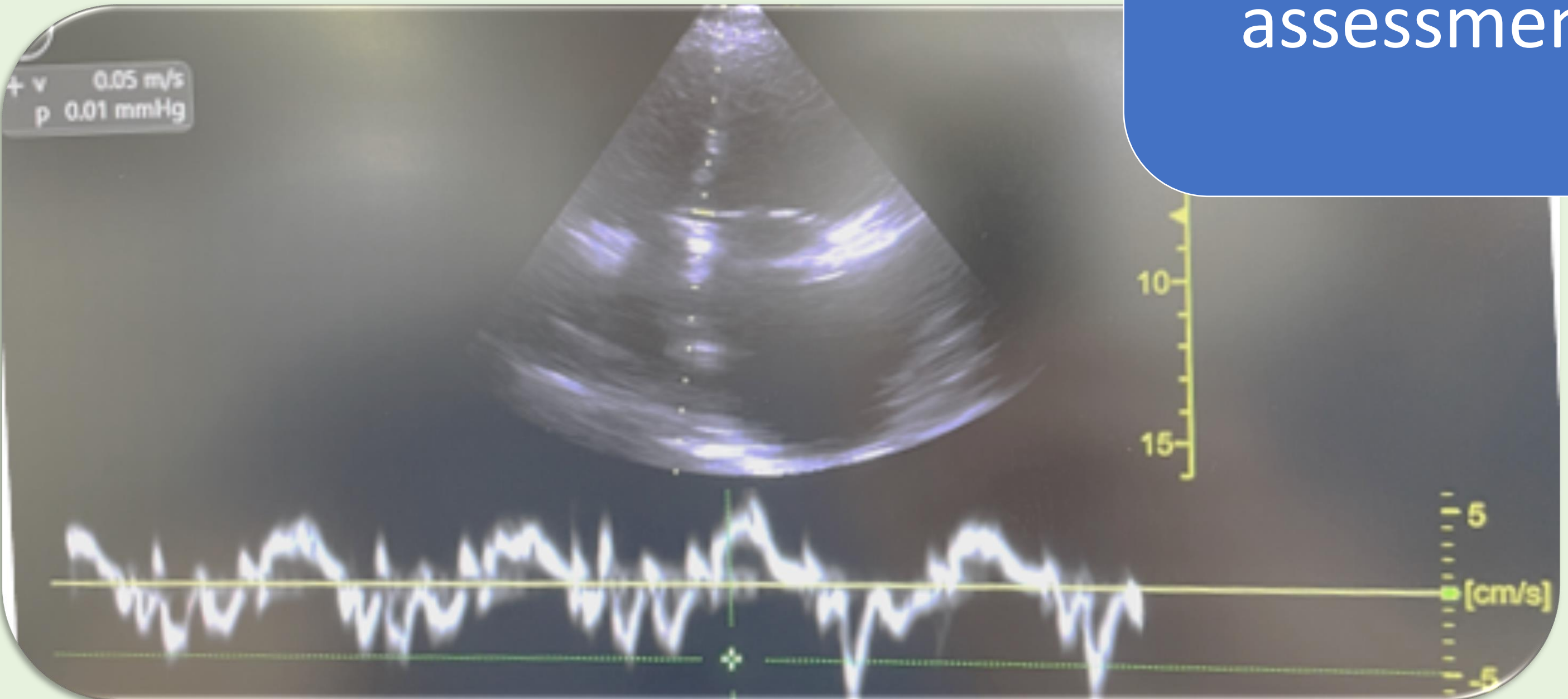
Cesarean Delivery

- at 37w4d for maternal cardiac disease and breech presentation
- CSE
 - low dose spinal
 - Slow 2% Lido + Epi
- EBL 500 mL
- 700 mL Crystalloid



Intraop POCUS TTE

- normal biventricular function
- IVC dilated >2cm with minimal respiratory variation
- Persistent severe diastolic dysfunction.



Postop Hypoxia

- PACU POCUS:
- increased B-lines throughout bilateral lung fields
- stable cardiac assessment



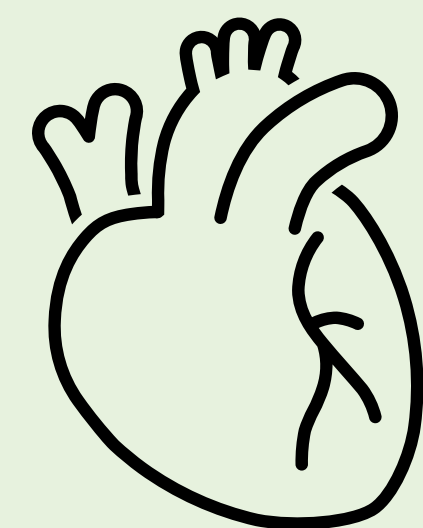
Admitted to Cardiology

- POD 0: 40 mg furosemide, Weaned from O2
- POD 1: transferred to postpartum unit
- POD 3: Discharged home

Formal TTE at 37+3 demonstrated:

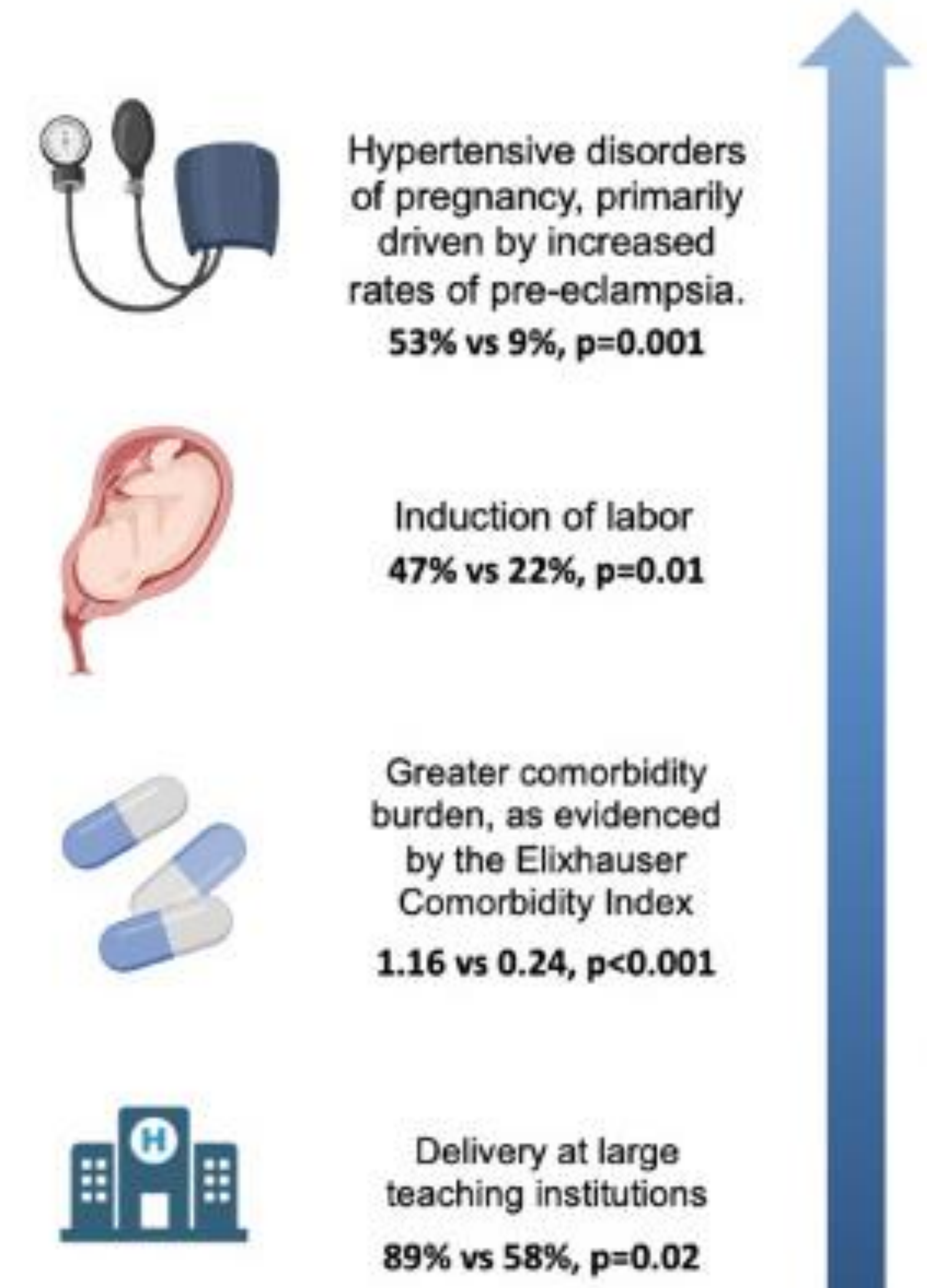
- diastolic dysfunction with
 - Lateral e' of 6.3
 - E/e' of 30.

Peripartum Management of Patient with Remote Orthotopic Heart Transplant and Severe Diastolic Dysfunction



Analysis of the 2010-2015 National Inpatient Sample
Including > 21 million hospitalizations for delivery (94 admissions in HT recipients)

Compared to pregnant women *without HT or HF*, women *with history of HT* are more likely to have:



DeFilippis, Ersilia M., et al. "In-Hospital Outcomes in Pregnancy After Heart Transplantation." *The American Journal of Cardiology* 172 (2022): 68-72.

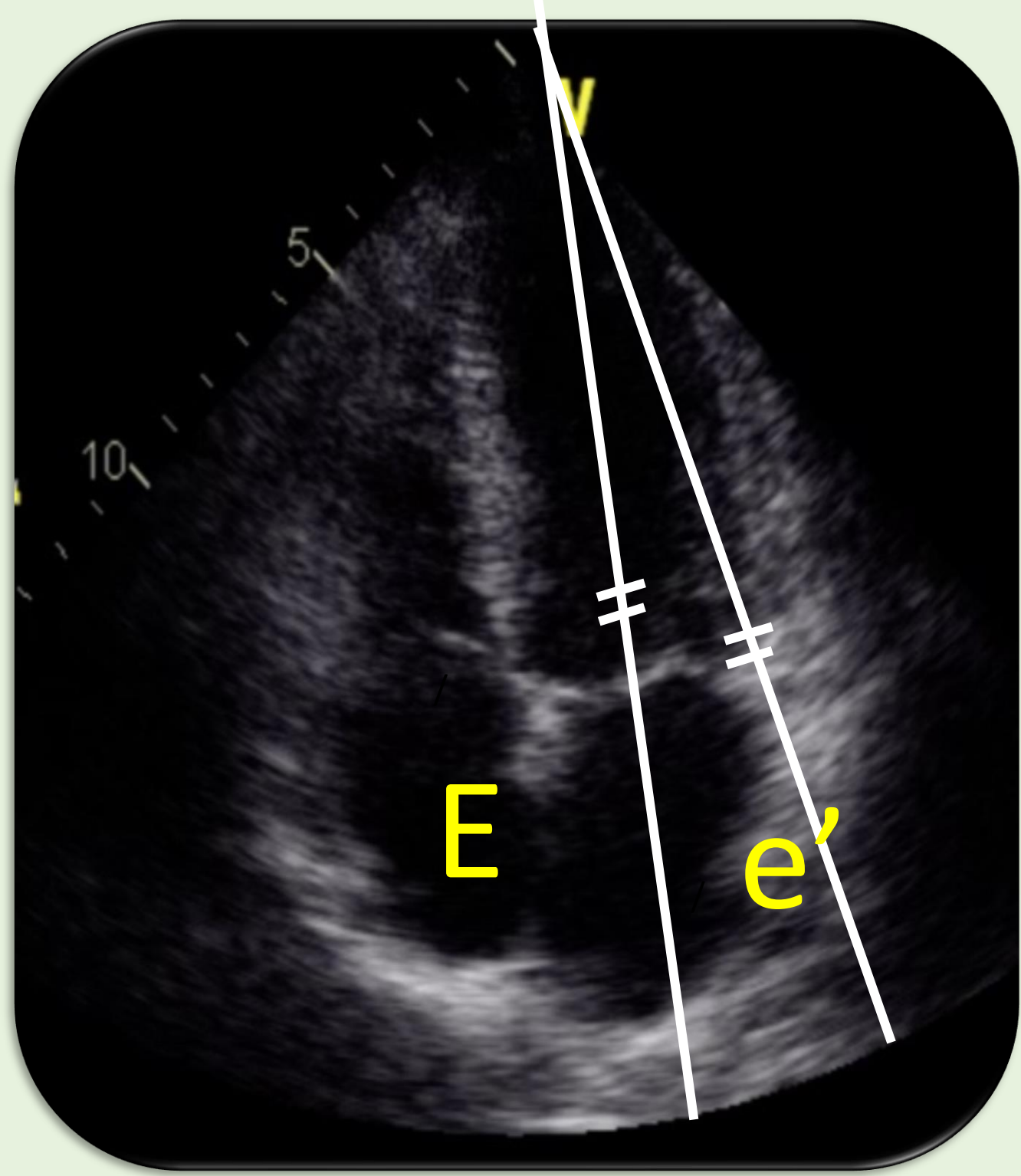
- Diastolic dysfunction is common in transplanted hearts ¹
- Pre-eclampsia is also associated with diastolic dysfunction²

	Septal E/e'	Lateral E/e'	Age	Normal e'
Normal	< 8	< 8	< 55yo	<8 cm/s
Indeterminate	8-15	8-12	55-65	< 9 cm/s
Elevated	>15	>12	>65yo	< 10 cm/s

Mitter, Sumeet S., Sanjiv J. Shah, and James D. Thomas. "A test in context: E/A and E/e' to assess diastolic dysfunction and LV filling pressure." *Journal of the American College of Cardiology* 69.11 (2017): 1451-1464.

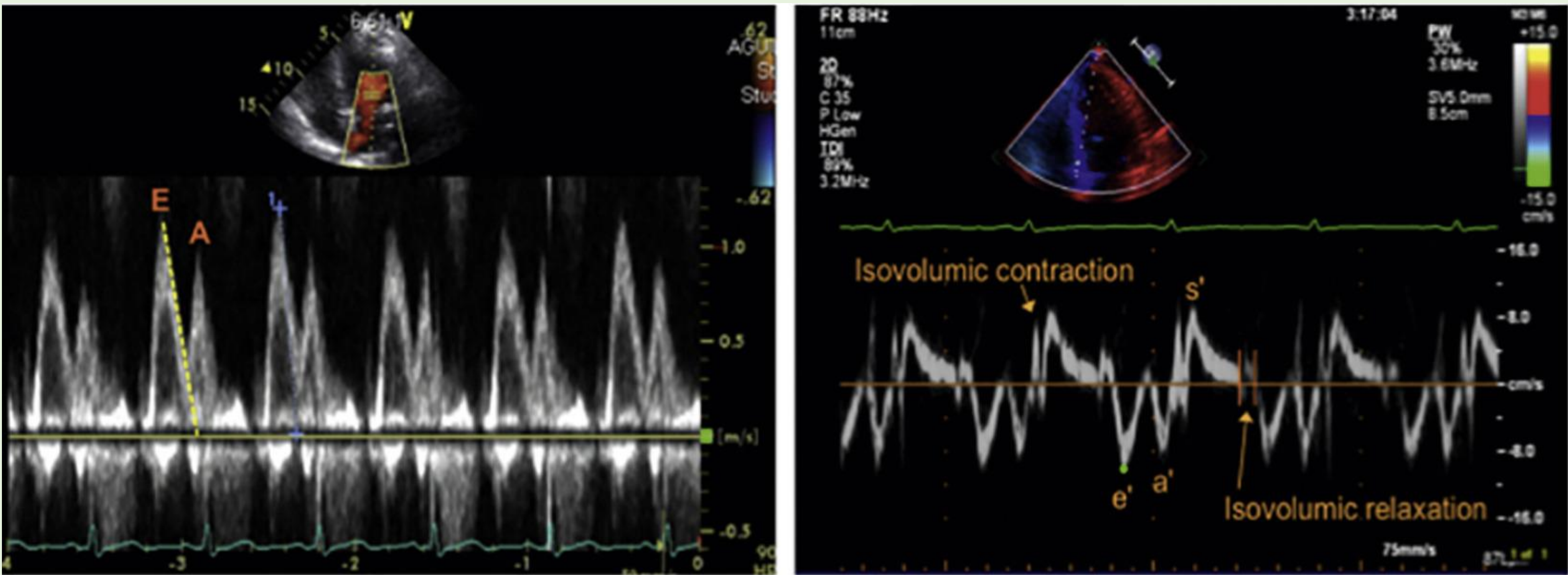


Ultrasound Indices of Diastolic Dysfunction: E/e' ratio



E = Peak Early Diastolic Mitral Inflow into the LV [measured with pulse wave doppler]

e' = Negative Peak of Early Diastolic Tissue Velocity of mitral valve annulus [measured with Tissue Doppler]



Mitter, Sumeet S., Sanjiv J. Shah, and James D. Thomas. "A test in context: E/A and E/e' to assess diastolic dysfunction and LV filling pressure." *Journal of the American College of Cardiology* 69.11 (2017): 1451-1464.

(1).Meluzina, et al. Biomed Papers Medical Faculty of Palacky University in Olomouc, 158(2).
(2) Ortnr, Clemens M., et al. *Anesthesia & Analgesia* 128.6 (2019): 1208-1216.