To cannulate or not – that is the question:

A multidisciplinary team approach to prophylactic ECMO cannulation in a morbidly obese patient with cardiomyopathy

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Background:

- In developed countries the leading cause of maternal death is cardiovascular disease.
- Close antepartum follow up allows for optimization and improved outcomes for patients with cardiac disease.
- Cardiomyopathy may be exacerbated by pregnancy; patients may have higher risk of complications due to increases in heart rate and blood volume.
- Patients with cardiac disease demand a multidisciplinary approach, especially as urgent situations arise.

Case:

- 35 year old G8P1243 presented at 25 weeks' gestation with fatigue and dyspnea, as well as severe intrauterine growth restriction and intermittent reversal of umbilical artery end-diastolic flow. Urgent cesarean delivery was recommended. Past medical history included:
  - Morbid Obesity (BMI ~50)
  - Obstructive Sleep Apnea
  - ~21 weeks gestational age size
  - Cardiomyopathy (EF 20%)
  - SVT s/p ICD in prior pregnancy
  - Hypertension
  - Prior DVT/PE (Lifelong Anticoagulation)
  - H/O Classical Cesarean x2
  - Suspected accreta on imaging

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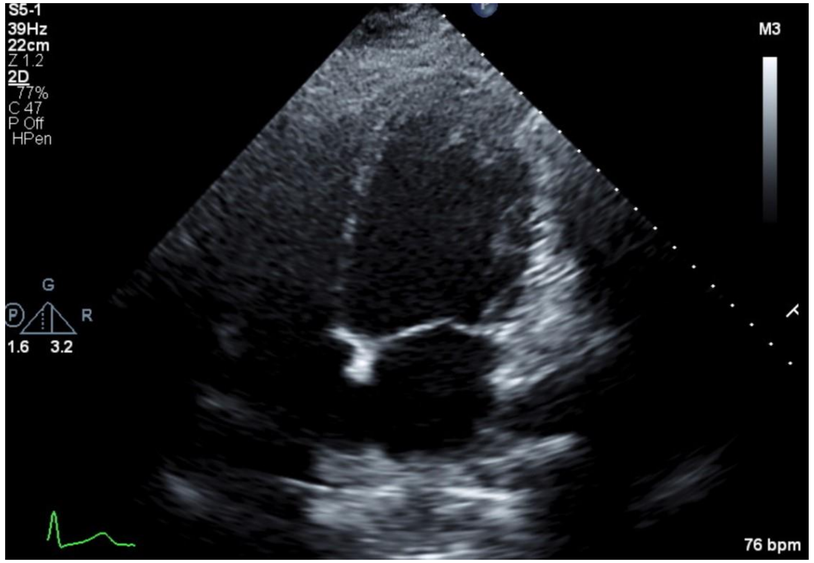
Plan:

- Multidisciplinary meeting:
  - Obstetrics
  - Maternal-Fetal Medicine
  - Gynecologic Surgery
  - Cardiothoracic Surgery
  - Obstetric Anesthesia
  - Cardiac Anesthesia
  - Cardiac Critical Care
  - Neonatal Intensive Care
  - Hematology
  - Nursing
  - Transfusion Medicine
- A pre-induction arterial line was placed, followed by induction of general anesthesia.
- Prophylactic ECMO cannulation was obtained to ensure successful catheter placement for potential cardiopulmonary emergency.
- Transesophageal ECHO and pulmonary artery catheter used to monitor cardiac function, with cardiothoracic surgery on stand-by throughout.
- The newborn was delivered without event, and the placenta separated easily.
- The patient remained hemodynamically stable, and was extubated at procedure finish.
- She was transferred to the cardiac intensive care unit in stable condition.
- Her postpartum course was uncomplicated, and she was discharged home on postop day #8.



Formal TTE: Global hypokinesis, dilated left ventricle, severely reduced function, estimated ejection fraction 20%

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Discussion/Key Points:

- A multidisciplinary team model can ensure safe delivery, especially in high-risk obstetric patients.
- Optimal planning and clear communication are essential for good outcomes.
- Prophylactic ECMO cannulation was well tolerated, and led to good maternal outcomes in a cesarean delivery with high risk of complication.
- The number of parturients with complex cardiovascular disease is anticipated to increase, demanding a multidisciplinary team approach.

References:

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- Golia, Enrica et al. Future Cardiology 2017
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