

Anesthetic Challenges in a Parturient with History of Peripartum Cardiomyopathy Status Post AICD Implantation and Morbid Obesity

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Peripartum Cardiomyopathy

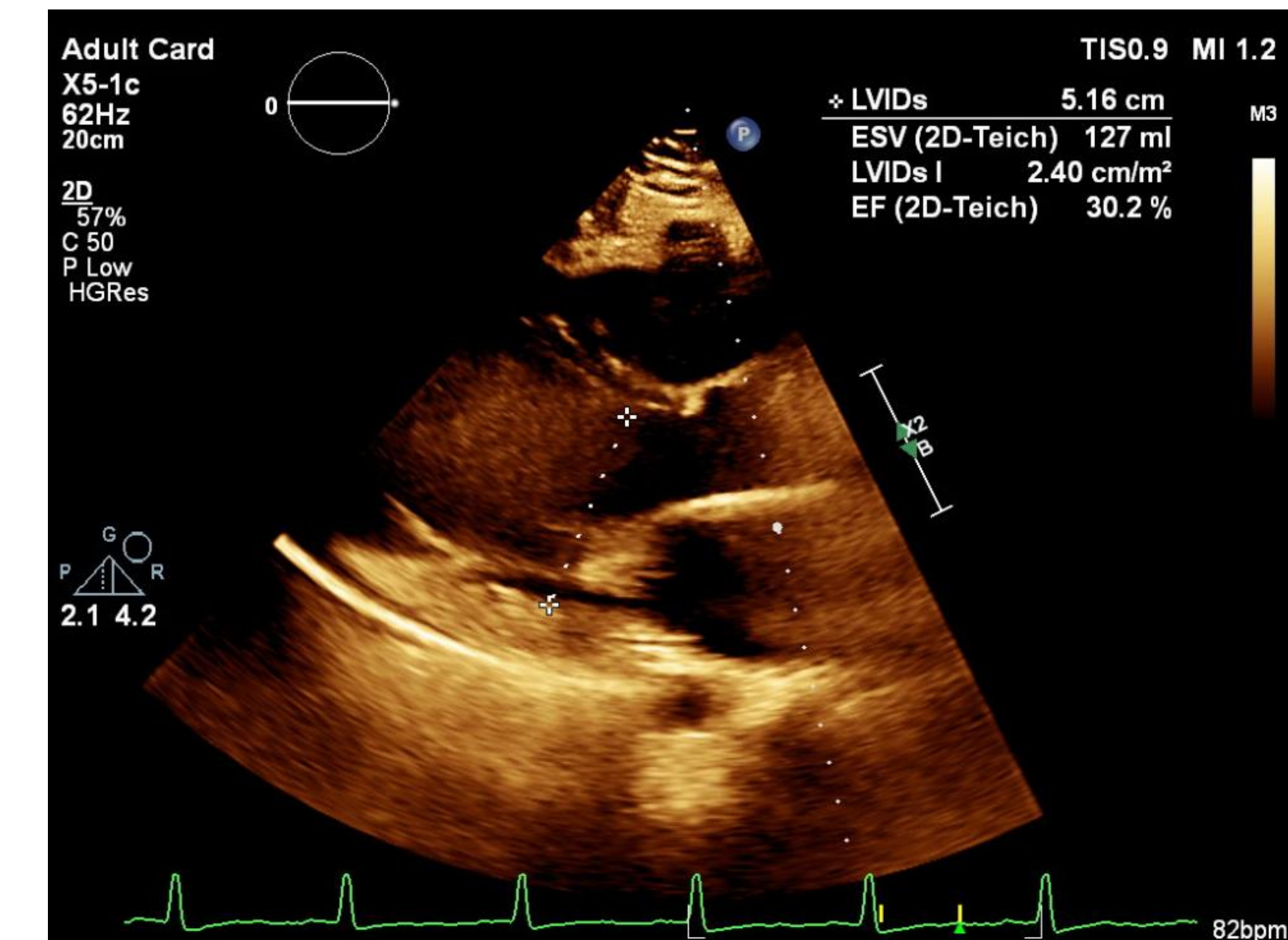
- **PPCM:** rare, life-threatening cardiomyopathy of unknown etiology.
- Occurs in the peripartum period in previously healthy women.
- **Leading cause of maternal mortality** in the USA and the UK.
- Hallmark: reduced ejection fraction → heart failure.
- **Physiologic pregnancy changes** (↑ blood volume, ↑ CO, ↓ SVR) precipitate decompensation.

Morbid Obesity Compounds Risk

- **BMI ≥ 40:** independently elevates cardiovascular and anesthetic risk.
- ↑ Risk of VTE, cardiac decompensation, and perioperative complications.
- **Anesthetic challenges:** difficult neuraxial access, high-risk airway.
- **Obesity + heart disease** = markedly increased risk of maternal cardiovascular events.

AICD in the Parturient

- Prior PPCM → recurrence risk in subsequent pregnancies.
- **H/o of AICD implantation** in prior pregnancy signals severe cardiomyopathy with arrhythmia risk.
- **Perioperative AICD considerations:** Electromagnetic interference, magnetic use protocols.
- Requires dedicated cardiac anesthesia and electrophysiology planning.



TTE showing LV mass.

Case Presentation: 29 y/o, G2P1, 37w2d

Patient Profile and Findings

Age / Gravidity: 29-year-old female, G2P1

Gestational Age: 37 weeks 2 days

Planned Procedure: Repeat cesarean section

Morbid Obesity: BMI 53

Chronic Hypertension: documented

OB Hx: PPCM in Prior Pregnancy s/p AICD placement

Pre-op TTE Findings

LV: Mildly dilated, moderately reduced systolic function

Ejection Fraction: 35%

RV: Normal size and function

ICD Lead: Visualized on echo

RVSP: 48 mmHg (elevated)

Anesthetic and Perioperative Management

1. **Multidisciplinary team:** MFM, Cardiology, OB Anesthesia, Cardiac Anesthesia
2. **FloTrac arterial line:** for monitoring advanced hemodynamic parameters, such as MAP, SV, SVV, CO, CI, and SVR
3. **Neuraxial anesthesia- Epidural L3-L4:** gradual titration of 0.5% Bupivacaine + 2% Lidocaine with epinephrine
4. **Phenylephrine infusion:** to maintain BP and avoid sudden hemodynamic shifts
5. **ECMO sheaths:** placed in the OR prophylactically, after neuraxial placement but before surgery
6. **Epinephrine infusion on standby:** ready for inotropic (contractility) support
7. **Uneventful intraoperative course → Cardiac ICU** postoperatively

Post-op: ECMO sheaths removed
POD 1 & discharged **POD 4**

Teaching Points & Key Takeaways

Preconception Counseling

Obesity is a modifiable risk factor and prior h/o PPCM is concerning. Both BMI optimization and cardiac workup should begin before subsequent pregnancies.

Multidisciplinary Planning is Essential

Early involvement of MFM, cardiology, OB anesthesia, and cardiac anesthesia improves preparedness and maternal outcomes.

Anticipate the Worst, Plan for Rescue

ECMO sheath pre-placement enables rapid escalation if circulatory collapse occurs post-delivery due to auto-transfusion with ↑↑ CO.

Postoperative ICU Monitoring is Critical

Hemodynamic instability risk persists beyond delivery. Cardiac ICU monitoring is essential in the immediate postoperative period.

Titrated Epidural > Single-Shot Spinal

In reduced-EF patients, gradual titration avoids precipitous preload/afterload shifts that can cause decompensation.

Neuraxial Anesthesia is Preferred

Reduces 30-day mortality, avoids high-risk airway manipulation, decreases catecholamine release, and provides superior analgesia vs. general anesthesia.

References

1. Sumikura H, Hamada T, Idei M. Anesthetic management of parturients with peripartum cardiomyopathy. *Masui*. 2014 Jan;63(1):31-38
2. Pfaller B, Siu SC, D'Souza R, Wichert-Schmitt B, Nair GKK, Haberer K, Maxwell C, Silversides CK. Impact of obesity on outcomes of pregnancy in women with heart disease. *J Am Coll Cardiol*. 2021 Mar 16;77(10):1317-1326
3. Taylor CR, Dominguez JE, Habib AS. Obesity and obstetric anesthesia: current insights. *Local Reg Anesth*. 2019 Nov 18;12:111-124