



Successful Cesarean Section in a Patient with a HeartMate3 Left Ventricular Assist Device

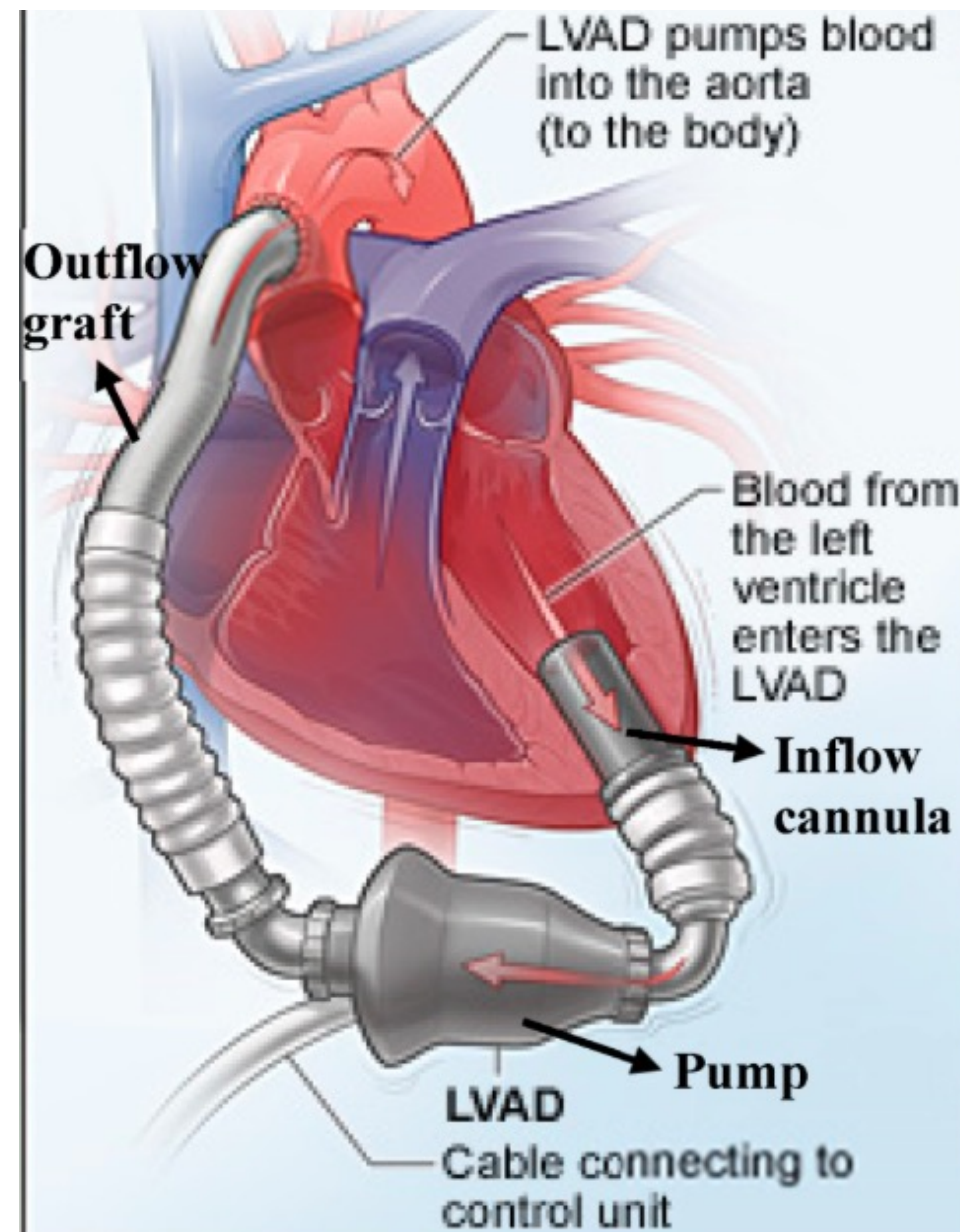
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Introduction

- Left ventricular assist devices (LVADs) are implanted cardiac support pumps used to treat patients with end-stage heart failure
- Women of reproductive age with LVADs are counseled to avoid getting pregnant as the maternal-fetal implications are unclear

Clinical Presentation

- 29-year-old G3P2002 with a history of 2 prior SVDs, dilated non-ischemic cardiomyopathy s/p HeartMate3 LVAD placement 1.5 years prior, previous embolic stroke, and hypertension presented at 8 weeks gestation. She was counseled on pregnancy termination, but declined.
- Modified WHO Class IV, CARPREG II Risk Score 5, NYHA Class I



Singhvi A, Trachtenberg B. Left Ventricular Assist Devices 101: Shared Care for General Cardiologists and Primary Care. *Journal of Clinical Medicine*. 2019.

Prenatal Management

- Anticoagulation was switched from Warfarin to Enoxaparin during the 1st trimester
- HeartMate3 LVADs have a lower risk of thrombosis than previous types of LVADs
- Started on Digoxin for right ventricular support
- Seen regularly throughout pregnancy by MFM and cardiology
- Underwent regular TTE checks to see if LVAD speed needed adjustments and anti-Xa monitoring
- LVAD speed adjusted 3 weeks prior to delivery and 1 week prior to delivery



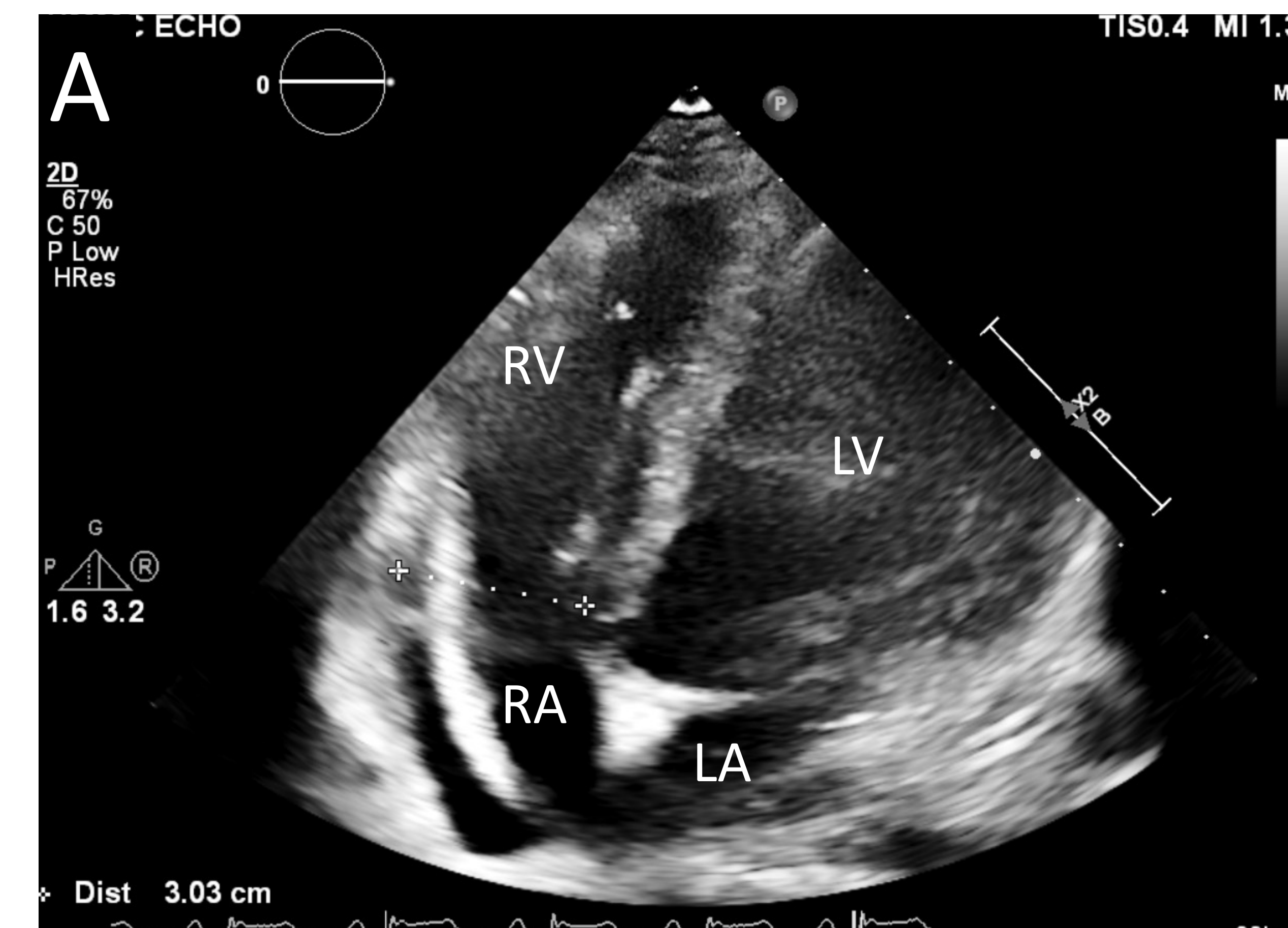
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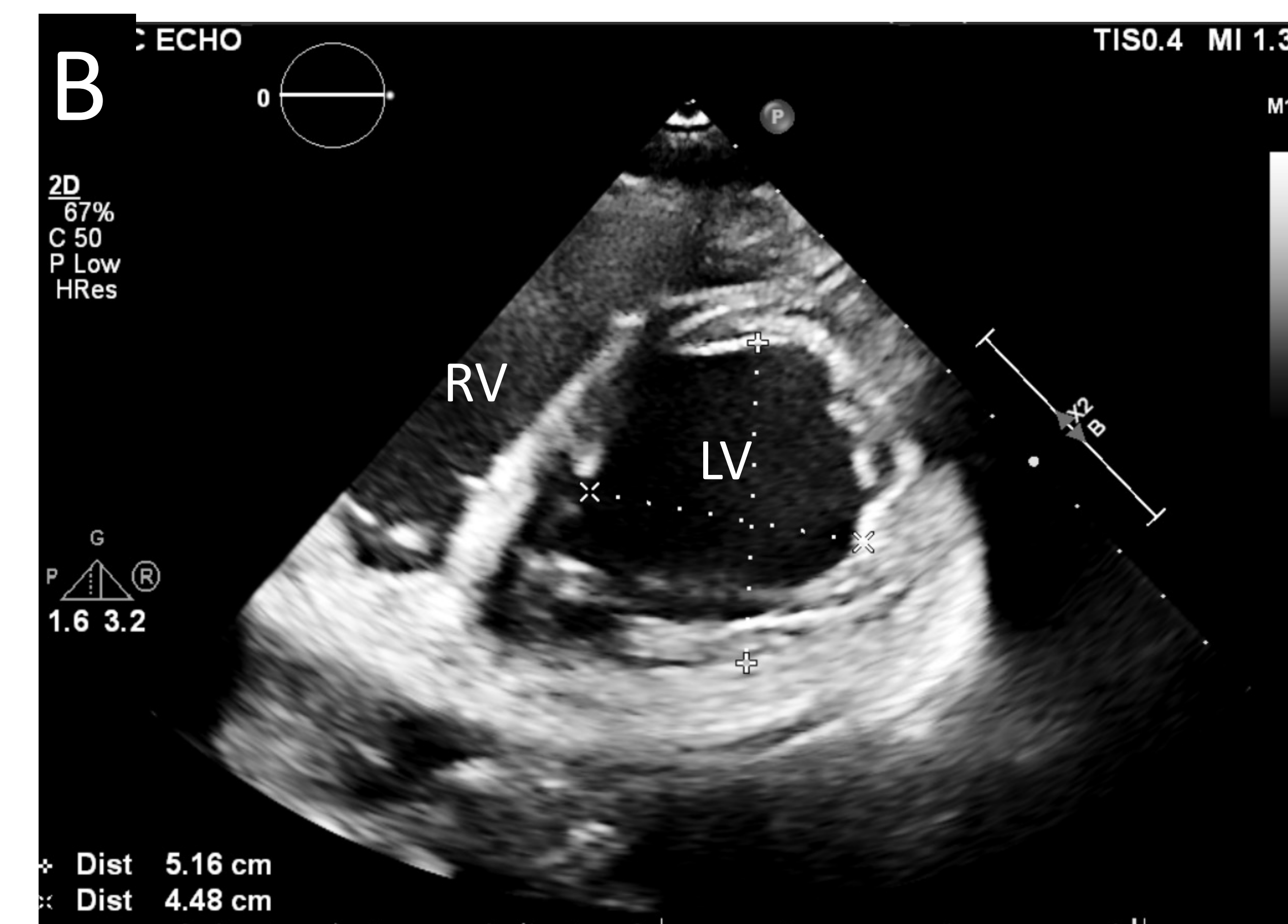
Delivery Planning

- Multidisciplinary team meetings with organized care plan documentation in EMR (MFM, cardiology, cardiac surgery, NICU, CSICU, OB anesthesia, cardiac anesthesia, L&D nursing)
- Planned primary low transverse CD at 36w3d
- Admitted at 35w to complete a betamethasone course and medical optimization
- Transitioned to a heparin drip, which was stopped 10 hours prior to CD
- CD took place in cardiothoracic OR with cardiac surgery available
- Lines placed: A-line, CVC, Swan-Ganz catheter, percutaneous access in the right femoral artery and vein in the event that VA ECMO cannulation would be needed
- Available vasopressors: norepinephrine and vasopressin
- Available inotropes: epinephrine and milrinone
- Available inhaled epoprostenol via HFNC

Intraoperative TTE



A. Apical 4 chamber view showing LV dilatation. Normal LV wall thickness.



B. Parasternal short axis view showing LV dilatation. Normal LV wall thickness.



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OR Management

- Co-loaded with albumin
- CSE with intrathecal narcotics and slow titration of epidural local anesthetics to avoid a precipitous drop in SVR
- Uterotonics: 10 units of oxytocin diluted in 10 mL of saline over 10 minutes, prophylactic buccal misoprostol
- QBL 475 mL
- No vasopressors required
- After delivery, MAP ↓ to 60 mmHg, resolved with crystalloid and albumin
- Apgar scores 6, 8, and 10 at 1, 5 and 10 minutes
- Recovered in CSICU, invasive lines removed POD1
- Heparin infusion started on POD1 and transitioned to therapeutic Enoxaparin on POD1
- Discharged home on POD3
- Returned to OR for drainage of incisional hematoma on POD4 under GETA

Discussion

- Case reports have shown parturients with LVADs having successful vaginal deliveries and C-sections; however, this is only the 2nd case report with a HeartMate3 LVAD
- The longest gestational age was 34 weeks, and our patient is the first report of a patient being delivered after 36 weeks with overall good maternal and neonatal outcomes

References

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