

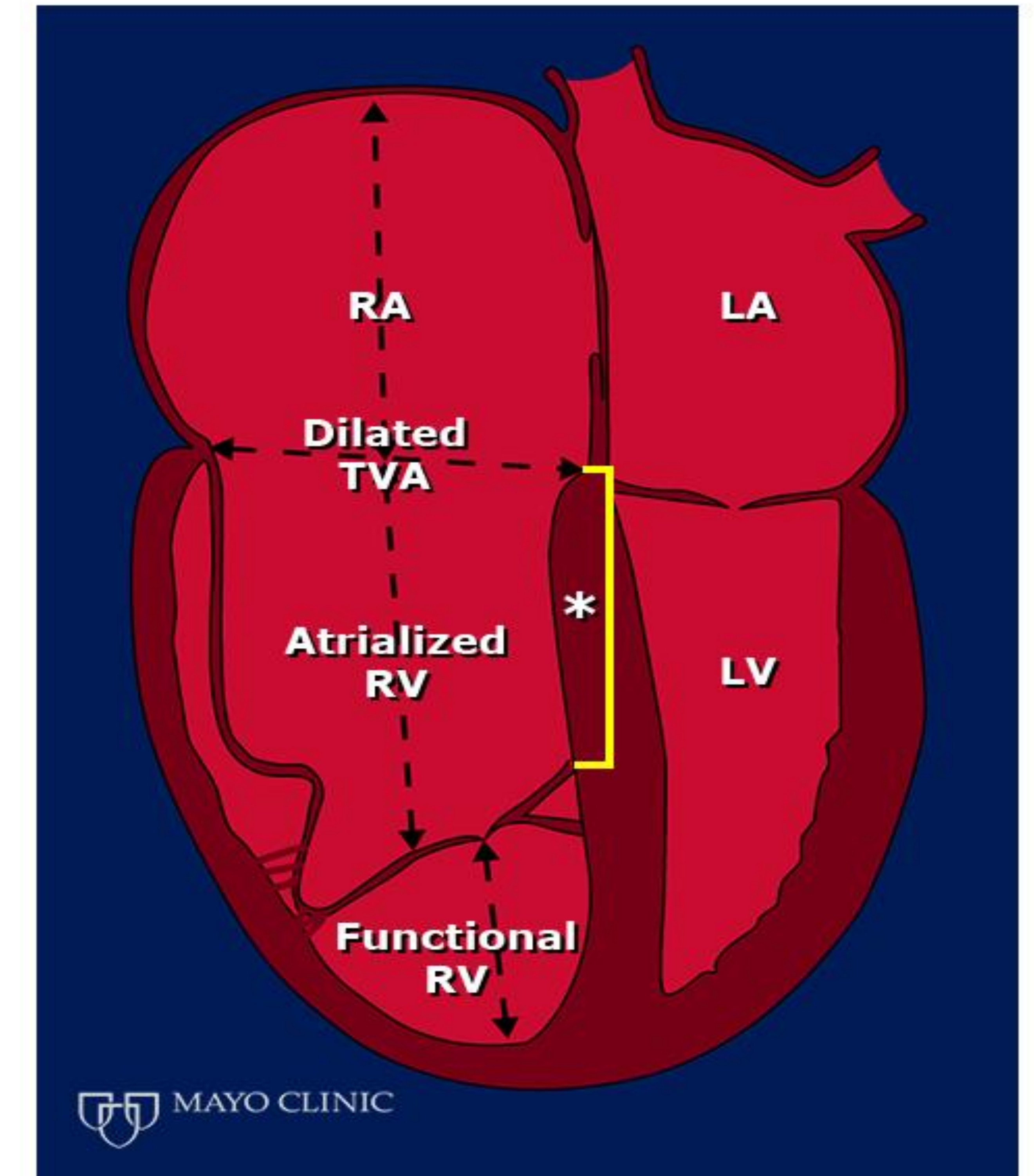
Managing Labor in the Cardiac Intensive Care Unit; a Patient with Congenital Ebstein Anomaly

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Introduction:

- Ebstein anomaly is a congenital malformation that primarily affects the tricuspid valve and right ventricle
- Tricuspid stenosis and pregnancy
 - Important to maintain preload and sinus rhythm
 - Avoid major changes in hemodynamics
 - Dangers include:
 - *Valsalva during stage 2 of labor*
 - *Volume overload from auto-transfusion immediately postpartum*
 - *Tachycardia from painful labor*
- Many factors contribute to caring for these patients safely including:
 - arranging for delivery in an appropriate location
 - planning with multiple teams
 - preparing for all possible scenarios related to the patient's delivery

Schematic of Ebstein anomaly



The schematic demonstrates apical displacement (*) of the septal leaflet of the tricuspid valve and the displaced, long (sail-like) anterior leaflet. Note the large atrialized portion of the RV and dilated TVA.

RA: right atrium; LA: left atrium; TVA: tricuspid valve annulus;
RV: right ventricle; LV: left ventricle.

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Case description:

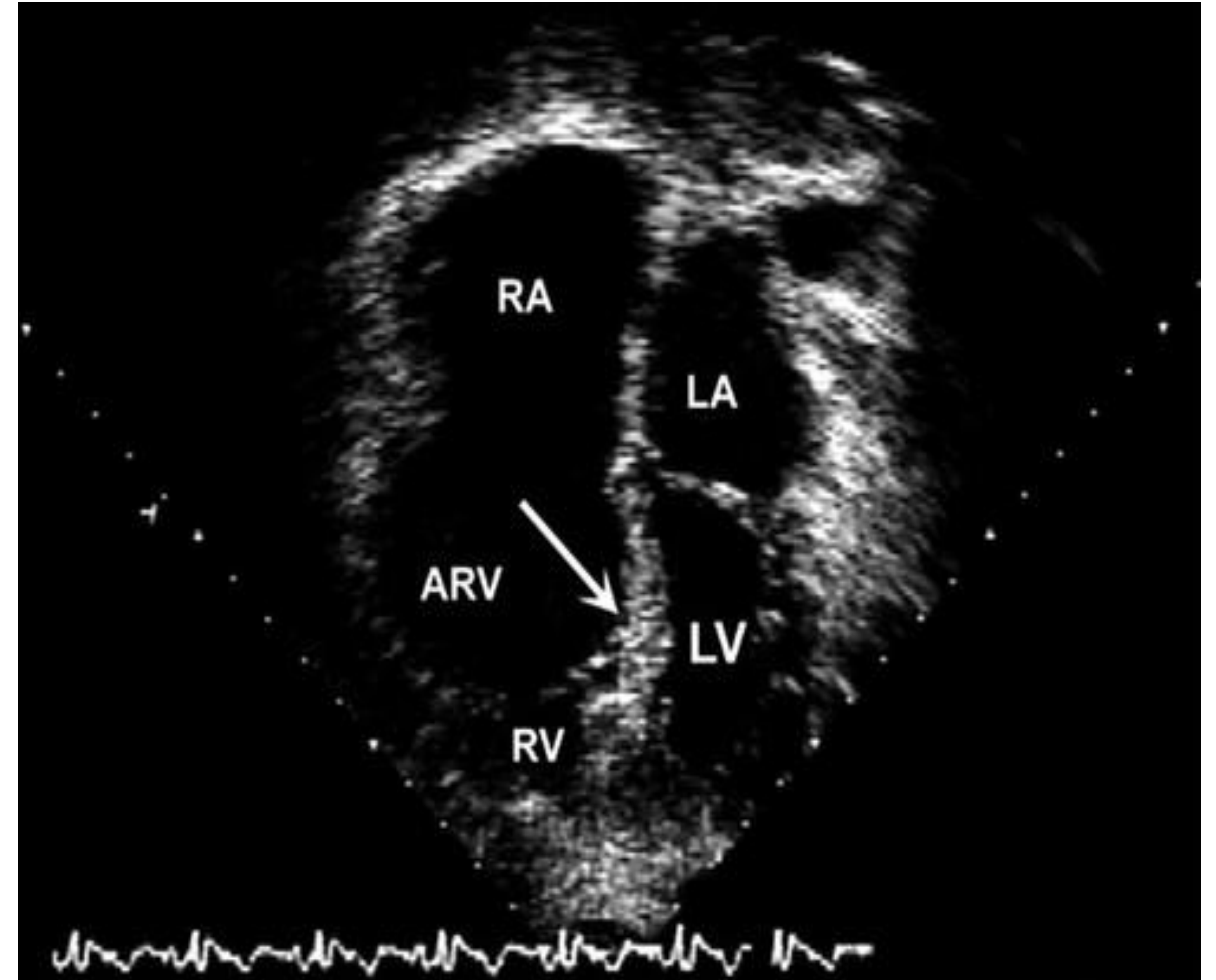
- 36 year old female G2P1001 at 34 weeks 5 days gestation presents with PPRROM and intermittent contractions
- **Medical history**: Ebstein anomaly with multiple prior surgeries including tricuspid valve repair then replacement, atrial flutter with MAZE procedure, and insertion of a PPM; METs <4
- **Echo**: moderate to severe tricuspid valve stenosis with an average gradient of 16 mmHg and right ventricular dysfunction
- Immediately transferred to cardiac intensive care unit (CCU) for continuous telemetry monitoring and induction of labor
- **Prior to induction**: an arterial line, defibrillation pads, and an epidural were placed
- Labor induced with oxytocin and maternal heart rate controlled to <85 bpm with metoprolol PRN
- During stage 2, maternal heart rate was maintained <85 bpm with an esmolol infusion and boluses
- Baby boy delivered after 30 minutes of pushing
- **Postpartum**: metoprolol continued and furosemide started; two episodes of asymptomatic NSVT on postpartum days 2 and 3; pacemaker was interrogated; discharged home on postpartum day 5 with obstetric and cardiology follow up

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Learning points:

- This patient required a hospital with emergency cardiac intervention capability and a delivery location with adequate monitoring
- A dedicated anesthesiology team was deployed to the CCU given the CCU's distance from the labor suite and complexity of the case
- Key points:
 - Early planning is essential
 - Multi-disciplinary team
 - Roles clearly defined between team members
 - Contingency planning



Christine H. Attenhofer Jost. Circulation. Ebstein's Anomaly, Volume: 115, Issue: 2, Pages: 277-285, DOI: (10.1161/CIRCULATIONAHA.106.619338)