

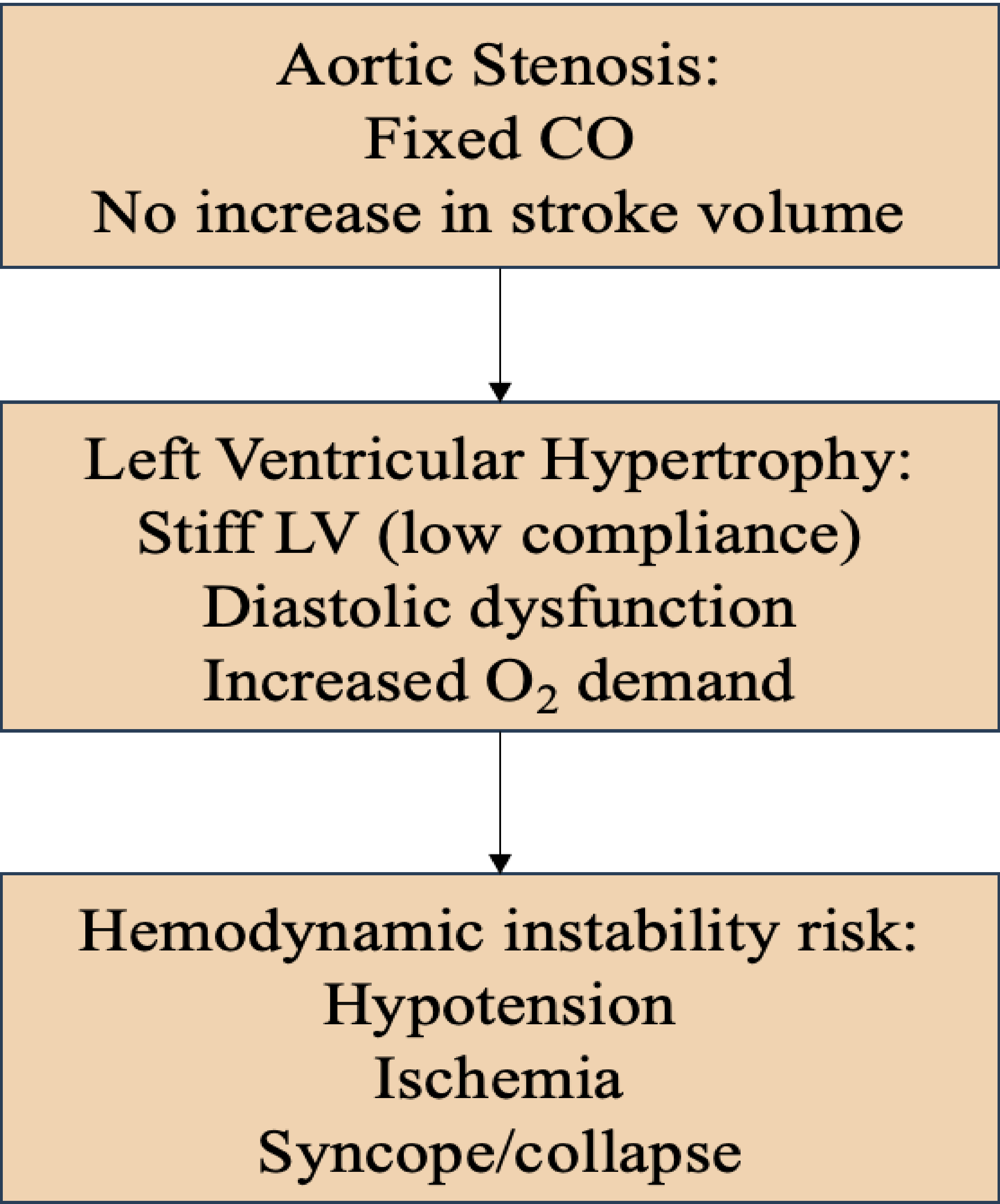
Anesthetic Management for Cesarean Delivery in a Parturient with Severe Bicuspid Aortic Stenosis and Left Ventricular Hypertrophy: A Case Report

Soujanya Tirupati, MBBS, MD; Melika Hajykarim, BS; Kristin Falce, MD; Barbara Orlando, MD, PhD; David Hundley, DO
Department of Anesthesiology, Critical Care, and Pain Medicine; UTHealth Houston McGovern Medical School

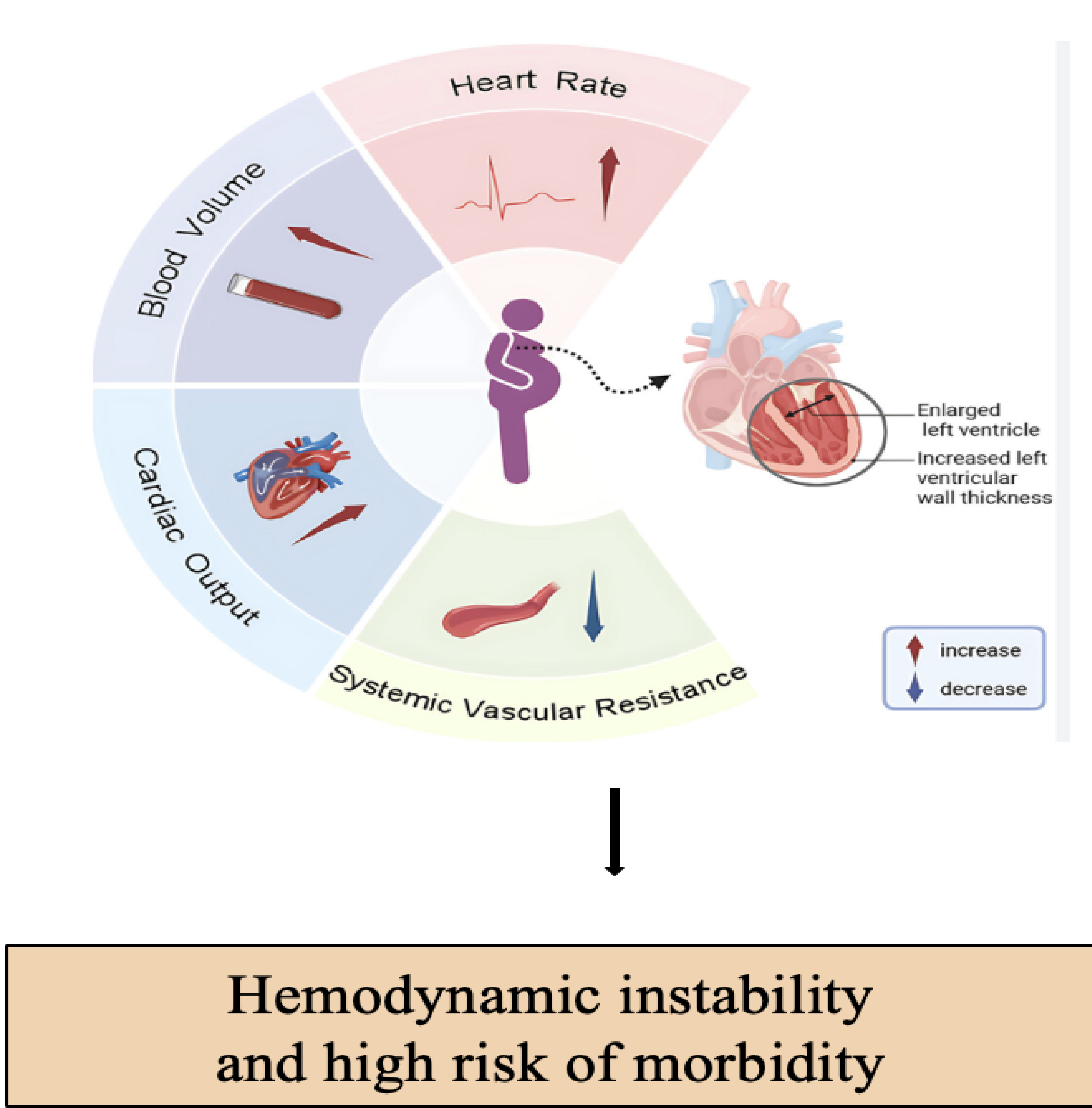
Bicuspid aortic valve (BAV)

- Most common congenital cardiac anomaly.
- Most women with BAV remain undiagnosed until pregnancy unmasks their disease.
- Aortic stenosis and left ventricular hypertrophy are commonly associated with high morbidity in pregnancy
- The anesthetic management of cesarean delivery in parturients with severe AS requires careful balancing of competing hemodynamic goals.

Pathophysiology of AS



Pregnancy and aortic stenosis



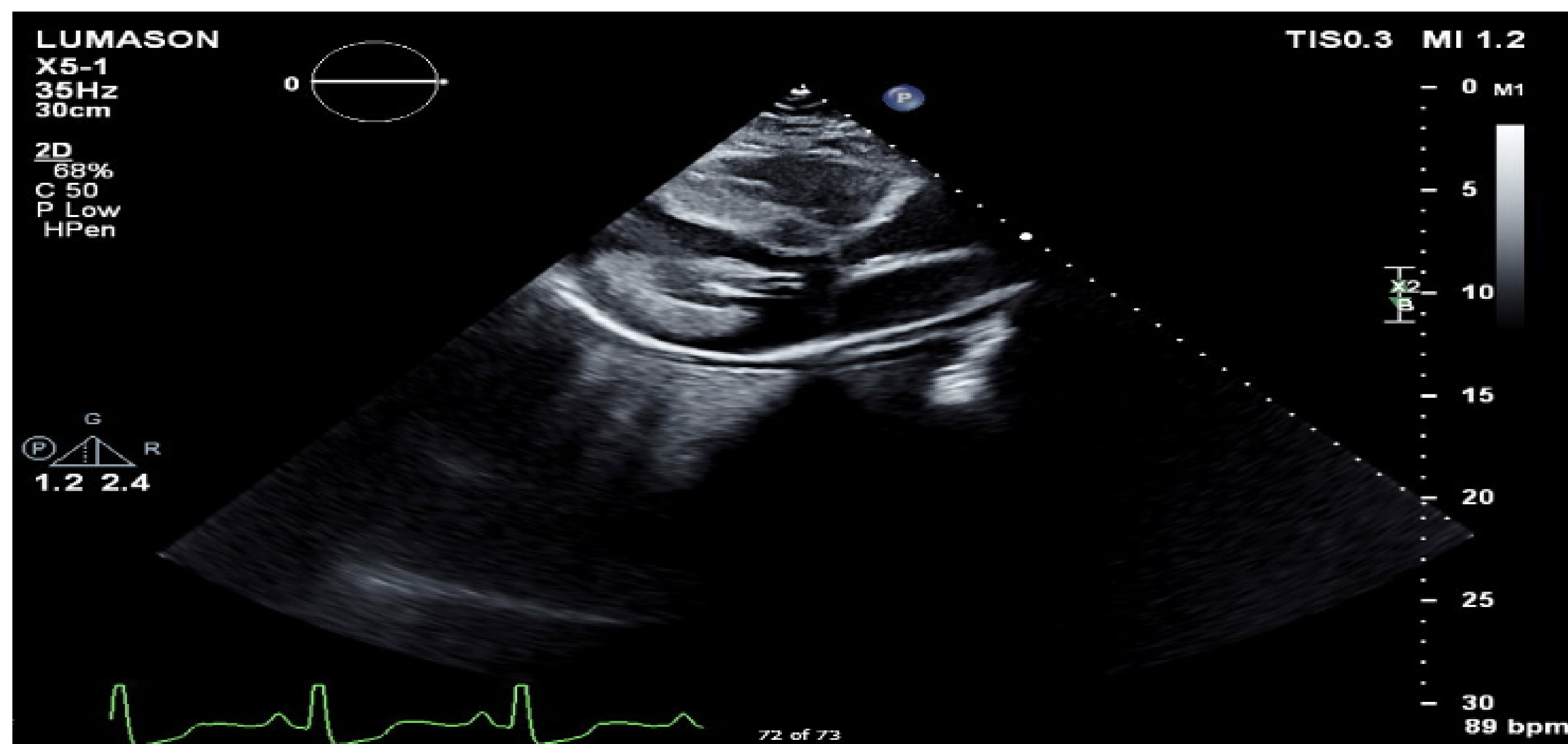
Case Presentation

Patient profile and findings

- 31-year-old female, G3P2 at 33 weeks 5 days
- Planned Procedure: Cesarean section
- PMHx: severe AS secondary to a congenital bicuspid valve

Pre-Op TTE

- Severe aortic stenosis - **AVA 0.8 cm², peak velocity 5.4 m/s, mean gradient 72 mmHg**
- Severe concentric LVH with septum and posterior wall thickness.
- EF of 70–75%



Anesthetic and perioperative management

- **Multidisciplinary team:** MFM, OB Anesthesia, Cardiac Anesthesia, & Cardiology.
- **FloTrac with arterial line:** for advanced hemodynamic monitoring.
- **Anesthesia:** L3-L4 Epidural, 2% lidocaine with epinephrine administered in 5-mL increments, total of 20 mL over 20 minutes.
- **Phenylephrine infusion:** to maintain BP and avoid sudden hemodynamic shifts.
- **ECMO sheaths:** prophylactically placed in the OR after neuraxial placement.
- **Intraoperative event:** a significant episode of hypotension occurred immediately after the delivery of the baby, associated with chest pain.
- **Management:** Aggressive fluid boluses, phenylephrine infusion and a total of 30-mcg intermittent boluses of norepinephrine - Stabilization of the patient with likely restoration of the coronary perfusion pressure
- **Postpartum:** Cardiac ICU for close monitoring; remained HD stable and D/C 4 days postoperative.

Key Takeaways

Early involvement of a multidisciplinary team

MFM, Cardiology, OB anesthesia and Cardiac anesthesia

Hemodynamic goals oppose pregnancy physiology

Maintain preload, preserve SVR and avoid tachycardia - risk increases every trimester

Neuraxial anesthesia preferred

Low-dose CSE/graded epidural - avoids laryngoscopy surge and volatile agent depression

The postpartum period is crucial

300-500 mL autologous blood return - acute pulmonary edema in stiff, non-compliant LV

Refer for elective AVR after delivery

Severe AS and future pregnancy must not be planned without definitive valve intervention

References:

1. Journal of Cardiothoracic and Vascular Anesthesia, Volume 29, Issue 6, 1632 - 1635
2. J Clin Anesth. 2006 Mar;18(2):142-4.
3. Lan, L., Zhang, C., Geng, J. and Li, Q. (2025), Echocardiographic Assessment of the Maternal Heart: A Review of the Structural and Functional Changes During Pregnancy. Echocardiography, 42: e70220.