Anesthetic Considerations for Cesarean Delivery and Type A Aortic Dissection Repair in a patient with Marfan Syndrome

Catherine E. Lyons BS, BA; Kelley A. Smith MD; Karen E. Singh MD; Jessica Sheeran MD

Department of Anesthesiology, University of Virginia Health System, Charlottesville, Virginia

Background

Type A Aortic Dissection in Pregnancy

- Rare but **life-threatening obstetric emergency**
- Associated with **high maternal and fetal mortality**
- Increased risk in **connective tissue disorders (e.g., Marfan syndrome)**

Physiologic Challenges in Pregnancy

- ↑ Blood volume and cardiac output
- ↑ Aortic wall stress → risk of dissection progression
- Need to maintain **uteroplacental perfusion**

Key Management Principles

- Reduce **aortic shear stress (↓ HR, ↓ dP/dt)**
- Avoid **hypotension compromising fetal perfusion**
- Requires **multidisciplinary coordination** (OB, anesthesia, cardiothoracic surgery, NICU)

Clinical Dilemma

- Timing of:
  - **Cesarean delivery**
  - **Aortic repair**
- Balancing:
  - Maternal hemodynamic stability
  - Fetal viability

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Writing Committee Members; Isselbacher EM, Preventza O, Hamilton Black Iii J, Augoustides JG, Beck AW, Bolen MA, Braverman AC, Bray BE, Brown-Zimmerman MM, Chen EP, Collins TJ, DeAnda A Jr, Fanola CL, Girardi LN, Hicks CW, Hui DS, Jones WS, Kalahasti V, Kim KM, Milewicz DM, Oderich GS, Ogbechie L, Promes SB, Ross EG, Schermerhorn ML, Times SS, Tseng EE, Wang GJ, Woo YJ. 2022 ACC/AHA Guideline for the Diagnosis and Management of Aortic Disease: A Report of the American Heart Association/American College of Cardiology Joint Committee on Clinical Practice Guidelines. J Am Coll Cardiol. 2022 Dec 13;80(24):e223-e393. doi: 10.1016/j.jacc.2022.08.004. Epub 2022 Nov 2. PMID: 36334952; PMCID: PMC9860464.

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The Case

Patient Presentation

- 23-year-old G1P0 at 35 weeks
- Past medical history of Marfan syndrome
- Acute chest pain
- CTA: **Extensive Type A dissection (ascending → abdominal aorta)**

Preoperative Management

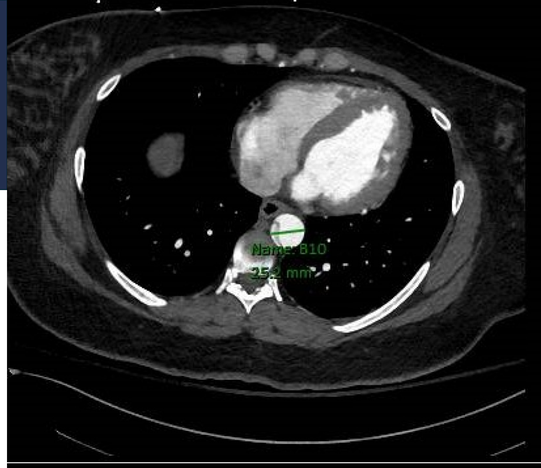
- **Goals**
  - SBP < 110 mmHg
  - Strict HR control
  - Maintain uteroplacental perfusion
- **Medications**
  - Esmolol infusion → HR control
  - Nicardipine infusion → afterload reduction
  - Labetalol boluses

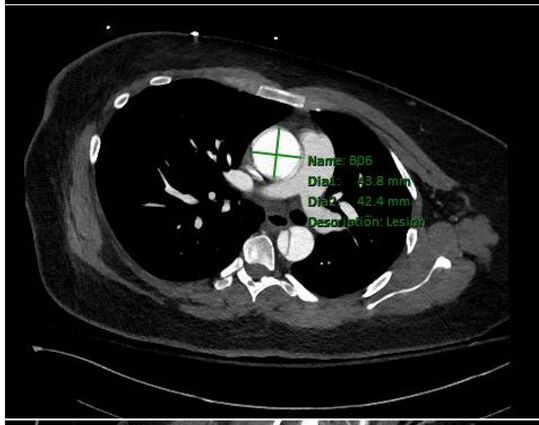
Intraoperative Strategy

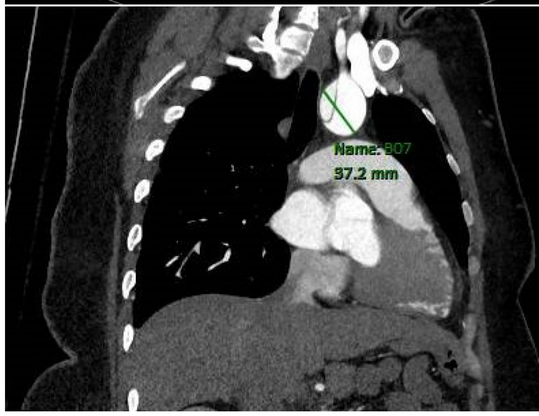
- **Monitoring**
  - Arterial line (pre-induction)
  - Central line, TEE
  - BIS, cerebral oximetry
- **Induction**
  - Rapid sequence
  - Ketamine, lidocaine, rocuronium
  - Avoid high-dose opioids
- **Anesthetic Choice**
- **General anesthesia**
  - Enables TEE
  - Allows rapid transition to cardiopulmonary bypass
  - Tighter hemodynamic control

Clinical Challenges

- High risk of **hemodynamic collapse at induction**
- Need for **strict impulse control**
- Simultaneous maternal + fetal management
- Anticipation of **cardiopulmonary bypass complications (coagulopathy)**







Teaching Points

Hemodynamic Priorities

- Prioritize **heart rate control > aggressive afterload reduction**

Avoid:

- Tachycardia
- Sudden increases in afterload (intubation, stimulation)

Anesthetic Strategy

General anesthesia preferred for:

- Hemodynamic control
- TEE use
- Rapid CPB initiation

Prepare for:

- **Vasopressor requirement post-induction**
- Real-time decision-making with TEE

Coagulopathy & CPB

Expect:

- Hypothermia
- Platelet dysfunction
- Hemodilution

Management:

- Early factor replacement
- Goal-directed transfusion
- Point-of-care coagulation testing

Obstetric Considerations

Cesarean delivery before CPB:

- ↓ fetal exposure to hypothermia & nonpulsatile flow

Oxytocin:

- Can cause **vasodilation → hypotension**
- Requires careful titration

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