



Western
UNIVERSITY • CANADA

Anesthetic Management for Cesarean Delivery in a Patient with Congenital Truncus Arteriosus and Severe Valvular Disease

Khader Zimmo, Dan Szoke

Department of Anesthesiology, Western University, London, ON, Canada



Introduction

- With advancements in medicine and surgery, more women with congenital heart disease reach childbearing age. Pregnancy poses significant challenges due to physiological changes conflicting with cardiac physiology
- Corrected truncus arteriosus (TA) in pregnancy is extremely rare, with an incidence of <1 in 10,000 pregnancies
- Balancing the physiological changes of pregnancy with underlying cardiac physiology poses significant challenges

Case Presentation

ID 24 F G3P1 - Repaired TA with complex valvular lesions

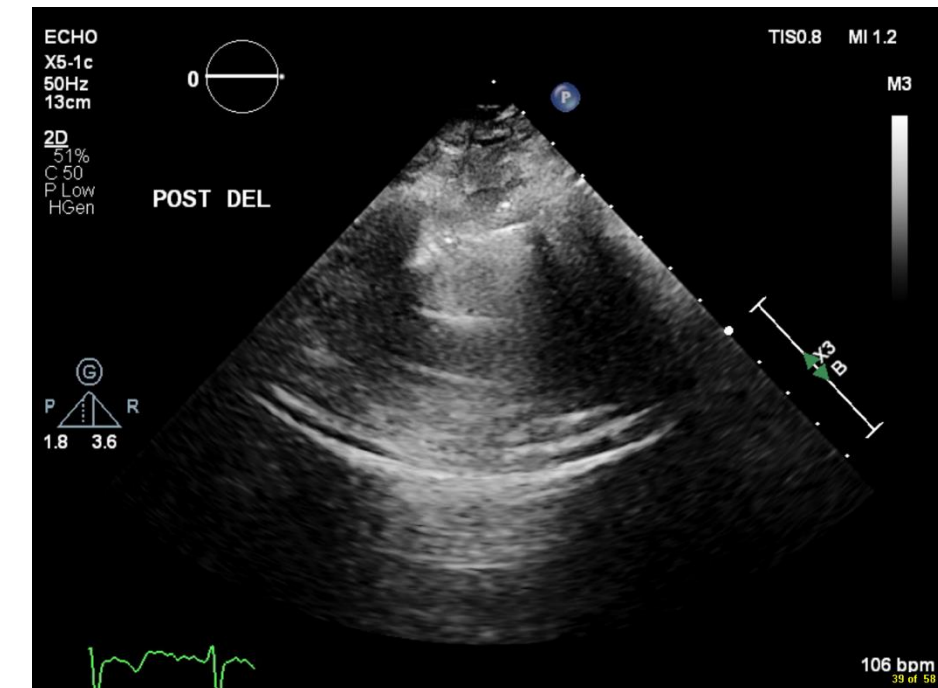
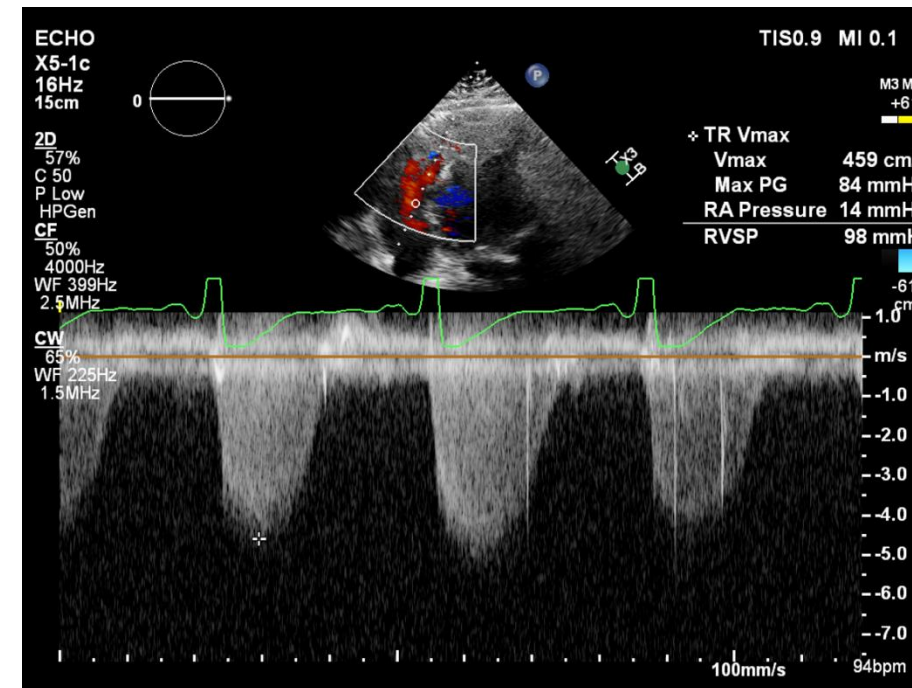
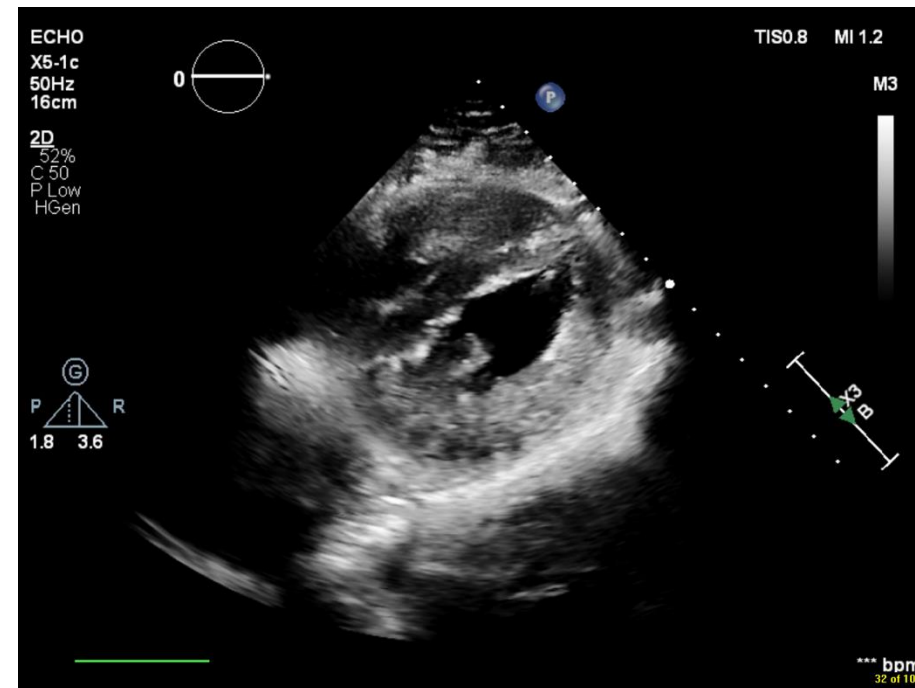
Echo Severe stenosis of RV-PA conduit (PG 56 mmHg)
Conceptually her pulmonary valve
Severe regurgitation of pulmonary graft
RV dilation with low systolic function (RVSP 85-90)
Severe tricuspid regurgitation
Moderate to severe truncal valve regurgitation
Conceptually her aortic valve
LVEF was 45-50%

Presented in labour at 35+5 GA

L3-4 epidural placed: 2% Lidocaine 15 mL + 100 mcg Fentanyl
BP 134/88, HR 83 bpm, SpO2 96% on room air, CVP of 14

Post Delivery:

- SOB and \uparrow FiO2, 2LNP \rightarrow 8LNP over next 10 minutes.
- \downarrow BP and narrow pulse pressure (80's/60's), CVP 16-20
- TTE distended RV + septal flattening/D-shaped
- Tx: Epinephrine infusion + Lasix 40 + 40 mg IV
Gradual improvement over next 30 minutes



Take Home Points

- Balancing Hemodynamic goals of cardiac lesions with the physiologic changes of pregnancy and delivery
- Conflicts
 - Competing goals for valvular lesions present
 - Autotransfusion after delivery
 - Sympathetic stimulation of surgery
- Carbetocin dose
 - Khan et al. (2014): ED90 of 14.8 mcg for elective cesarean delivery, suggesting that lower doses can be effective.
 - Anandakrishnan et al. (2013): Doses as low as 20–50 mcg demonstrated similar efficacy with fewer hemodynamic effects.
- Importance of interdisciplinary approach and risk stratification with use of mWHO classification for pregnant woman with heart disease

Condition	Preload	Afterload	Contractility	Heart Rate	Rhythm	Other Considerations
Pulmonary Stenosis	↑ / ↔	↔ PVR	↔	↓	SR	Avoid increased RV pressures/PVR
Pulmonary Regurgitation	↑ / ↔	↓ / ↔ PVR	↔	↑	SR	minimize PVR
Aortic Regurgitation	↑	↓ SVR	↑ / ↔	↑	SR	
Right Ventricular Dysfunction	↑ / ↔	↓ PVR	↑ / ↔	↔ (Slightly ↑)	SR	Avoid increase in PVR and high PEEP Optimize RV preload but avoid overload
Tricuspid Regurgitation	↑ / ↔	↓ PVR	↔	↔	SR	Maintain adequate preload for forward flow

1. Koziol KJ et al. Cyanotic Congenital Heart Disease in Pregnancy: A Review of Pathophysiology and Management. *Cardiol Rev.* 2024;32(4):348-355.
2. Regitz-Zagrosek V et al. 2018 ESC Guidelines for the management of cardiovascular diseases during pregnancy. *Eur Heart J.* 2018;39(34):3165-3241.
3. Khan M et al. Carbetocin at elective Cesarean delivery: a sequential allocation trial to determine the minimum effective dose. *Can J Anaesth.* 2014 Mar;61(3):242-8.
4. Anandakrishnan S et al. Carbetocin at elective Cesarean delivery: a randomized controlled trial to determine the effective dose, part 2. *Can J Anaesth.* 2013 Nov;60(11):1054-60.

