

Combined Spinal-Epidural for Cesarean Delivery in Complex Congenital Heart Disease (CHD) and Recent Stroke (CVA): A Case Report

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Background

- Increased number of women with CHD reaching child-bearing age due to advances in pediatric cardiac surgery [1]
- Modified World Health Organization (mWHO) classification helps assess risk of cardiovascular issues during pregnancy [2]
- Requires careful attention to mother’s heart function, stress tolerance, and fluid shifts

1. Lindley KJ, et al. Management of Women With Congenital or Inherited Cardiovascular Disease From Pre-Conception Through Pregnancy and Postpartum. *JACC*. 2021;77(14):1778-1798.
2. Davis MB, et al. Team-Based Care of Women With Cardiovascular Disease From Pre-Conception Through Pregnancy and Postpartum. *JACC*. 2021;77(14):1763-1777.

Modified WHO Class	Conditions	Predicted Risk, %
I—No higher risk than the general population	Uncomplicated, small or mild lesions including pulmonary stenosis, VSD, PDA, and mitral valve prolapse with no more than trivial mitral regurgitation Successfully repaired simple lesions including ostium secundum ASD, VSD, PDA, and TAPVD Isolated PVCs and PACs	2.5–5
II—Small increased risk of maternal morbidity and mortality	Unoperated ASD Repaired tetralogy of Fallot Most arrhythmias Coarctation of the aorta without significant gradient or aneurysm (repaired or unrepaired) Long QT syndrome	5.7–10.5
II to III	Mild LV impairment Hypertrophic cardiomyopathy Marfan syndrome without aortic dilation Heart transplant Native or tissue valve disease not considered WHO class IV Bicuspid aortic valve without aortic dilatation	10–19
III—Significant risk of maternal morbidity and mortality	Mechanical valve Systemic RV Post-Fontan operation Cyanotic heart disease Other complex congenital heart repair Aortic dilation without known fibrinogen disease Coarctation of the aorta with residual gradient or aneurysm (repaired or unrepaired) Marfan syndrome with aortic root dilation <45 mm or following aortic replacement Bicuspid aortic valve with aortic root dilation 45 to 50 mm	19–27
IV—Pregnancy contraindicated	Pulmonary arterial hypertension of any cause Severe left ventricular dysfunction (LVEF <30% or NYHA functional class III to IV) Previous peripartum cardiomyopathy with any residual impairment of LV function Severe left heart obstruction (AVA <1 cm2 or peak gradient >50 mm Hg; MVA <1.5 cm2) Marfan syndrome with aortic dilation >45 mm Bicuspid aortic valve with aortic dilation >50 mm	40–100

Case

- 30-y/o G2P1 term F presented for rC/S; PMHx: congenital critical PS + ASD requiring pediatric pulmonic valve-ectomy with patch enlargement of main PA complicated by R parietal CVA, migraines, gHTN, syncope, anemia
- Prior C/S: spinal with pre-procedure radial A-line, RIJ sheath + PA catheter, PPH QBL 1.6L, CV ICU admission for 2 days post-op
- Current gestation complicated by R insular CVA at 5 weeks pregnancy → enoxaparin 120 mg daily
- TTE: severe PS, mod/severe PR, mod dilated RV, normal RV function, mild TR, PAS 36 mmHg, mild MR, small ASD with L-R shunt, normal LV function, EF 60%. EKG: RBBB + LPFB
 - mWHO score II to III → 20% predicted risk of CV event in present pregnancy
- Currently, no signs of decompensated HF but reports DOE
- Multidisciplinary plan with obstetrics, cardiology, neurology, anesthesiology (CSE, without invasive monitoring)
 - CV stability, no HF → NO invasive monitoring
 - Prior CVAs → NO TXA, hold enoxaparin for anesthetic/procedure
 - CSE → prior C/S with PPH (? prolonged duration)
- Uncomplicated C/S, QBL 337mL, epidural dosing not required, enoxaparin restart PPD#1, d/c home PPD#2

Teaching points

- Tailored care based on current physiology; don't rely on past practices → avoid invasive monitoring with necessary critical supplies; life-saving meds available
- Delivery at III or IV care center with multidisciplinary team, schedule during routine working hours with appropriate staffing for patient acuity
- Planned rC/S: no TOLAC b/o DOE with strenuous activity and prior C/S with PPH
- CSE: possible prolonged surgery, prior PPH → minimize GA conversion
- Anticoagulation guidelines for neuraxial procedures: hold therapeutic enoxaparin for 24 hours prior to CSE, restart 4 hours post epidural removal
- Omit TXA despite prior PPH: recent CVA and uncertain benefits of prophylactic TXA based on 2024 Cochrane review [3]