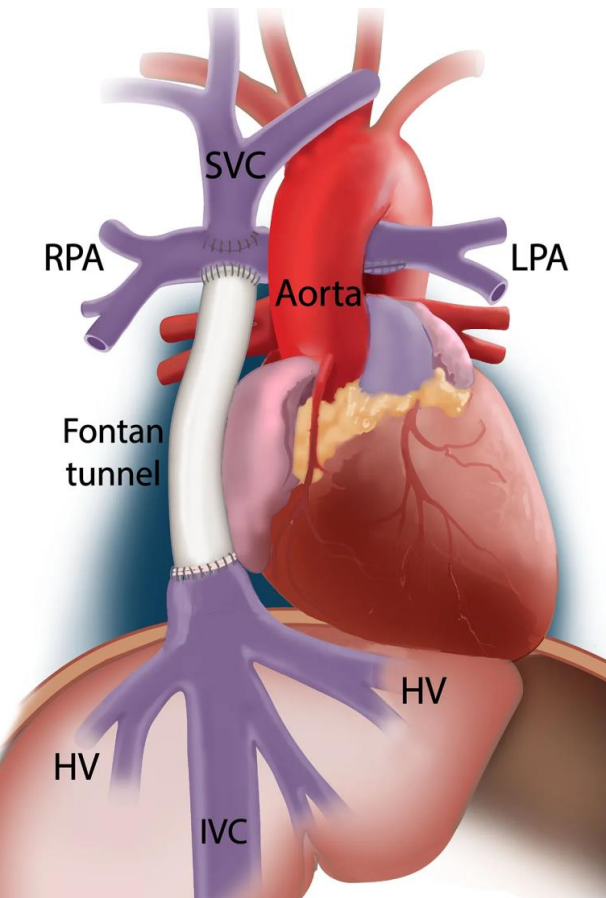


Navigating the Hemodynamic Stress Test: Successful Pregnancy in a Paced Fontan Patient with Situs Inversus

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Fontan Physiology

- Staged correction culminating in Fontan circuit and single ventricle as L ventricle
- Single ventricle with passive pulmonary flow(no RV)
- Cardiac output is preload dependent
 - Requires
 - Low PVR
 - Adequate preload
 - Preserved SVR
 - Limited ability to increase CO; CO is fixed
 - Dextrocardia: tenuous repair, difficult TEE + longer extra cardiac conduit

Pregnancy Changes and Impact

- Increase in blood volume without sub-pulmonary pump
 - Increases in CVP, worsening congestion
 - Risk of pulmonary hypertensive crisis/ R sided HF
- Increase in cardiac output demand
 - 'Fixed' physiology; Fontan physiology has no ability to compensate
 - Decreased placental perfusion
 - Inability to meet metabolic demand
- Decrease in SVR intrapartum
 - ↓ pulmonary flow → ↓ preload → ↓ CO
- Hypercoagulable
 - 'Sluggish' Fontan flow--> increased thrombosis risk

Takeaway: A preload-dependent, passive Fontan circulation cannot meet the increased cardiac demands of pregnancy. Cardiac output is fixed and preload dependent

Case Overview

• Patient

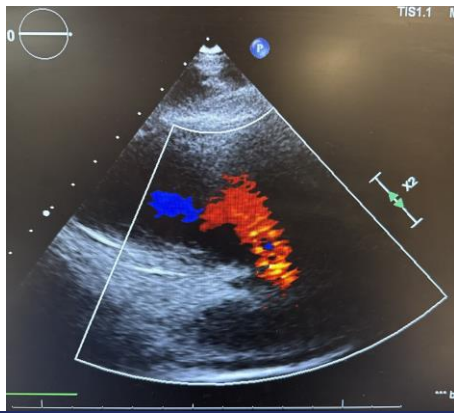
- 24 y/o G4P0030 at 36 weeks
- Complex single ventricle → extracardiac Fontan procedure
- Dextrocardia + permanent pacemaker

• Baseline Status

- SpO₂: 85–88%
- Functional capacity: >4 METs pre-pregnancy → declined
- Ventricular paced rhythm

• Presentation

- PPRM at 34w6d



Planned Management

Intrapartum:

- Early, slow titrated epidural
- Invasive hemodynamic monitoring
- Hopeful vaginal delivery
- Avoidance of GA

Postpartum:

- ICU monitoring, telemetry
- Multidisciplinary approach

Actual Management

Intrapartum:

- Patient wishing for 'natural birth'
- Late epidural, test dose avoided
- Vaginal delivery, without invasive monitoring

Postpartum:

- Refusal of ICU monitoring
- Refusal of anticoagulation
- AMA sign out

Takeaway: Planned management does not equal reality

Teaching Points

Hemodynamic Goals	Anesthetic management	Labor and Delivery strategy	Postpartum Considerations
Maintain preload and afterload Preserve SVR Avoid $\uparrow$ PVR	Early, slow epidural titration Avoid abrupt sympathectomy Neuraxial > GA	Vaginal delivery preferred Careful fluid management Oxytocin titration (avoid $\downarrow$ SVR)	<u>Autotransfusion</u> $\rightarrow$ risk of <u>decompensation</u> Monitor for: - Arrhythmia - Volume overload - Thrombosis ICU-level monitoring when possible

