

Management of Cesarean Delivery in a Patient with Fontan Physiology

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Introduction

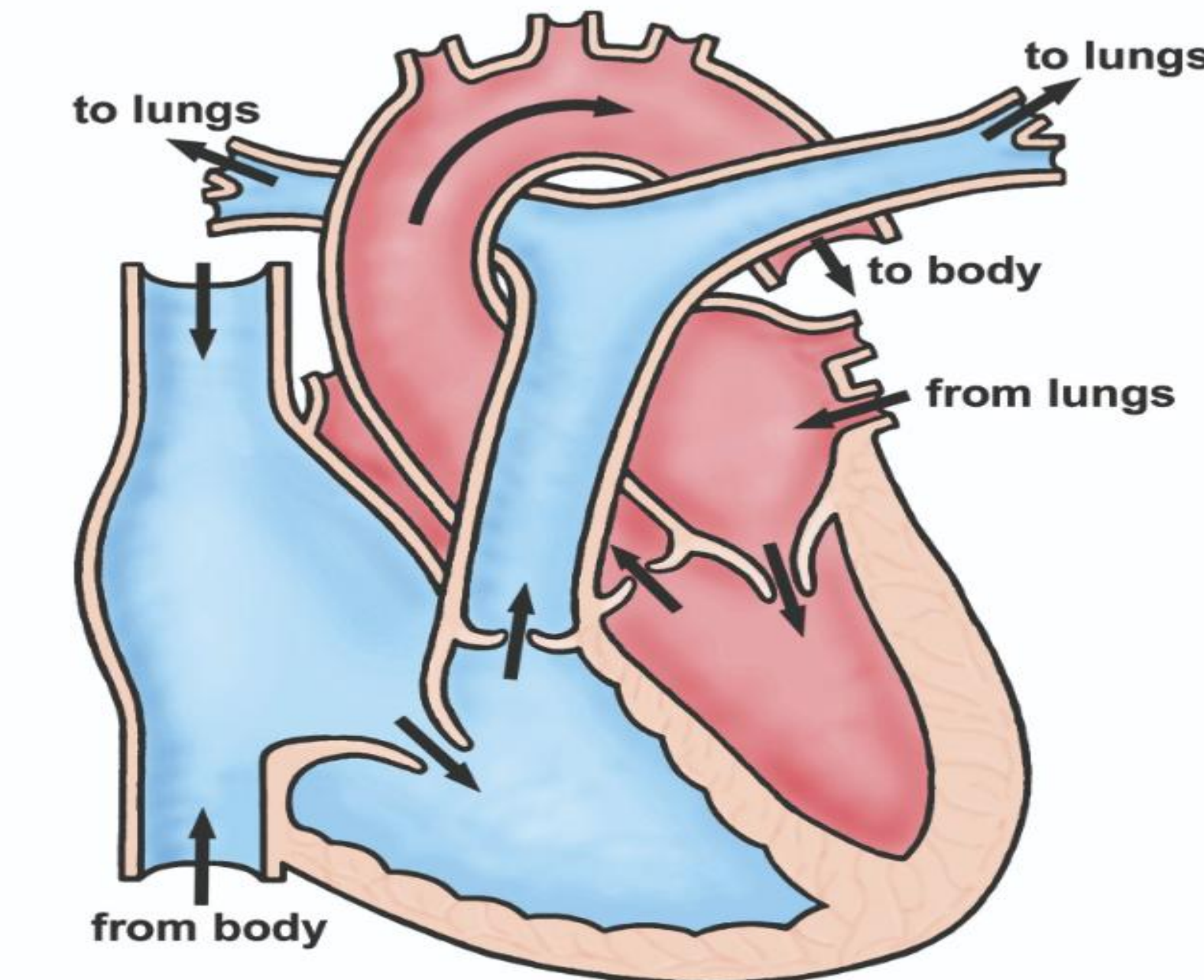
Fontan physiology: No sub-pulmonary ventricle, relies on non-cardiac forces for pulmonary blood flow to provide preload to the systemic ventricle

Low cardiac output and systemic venous hypertension.

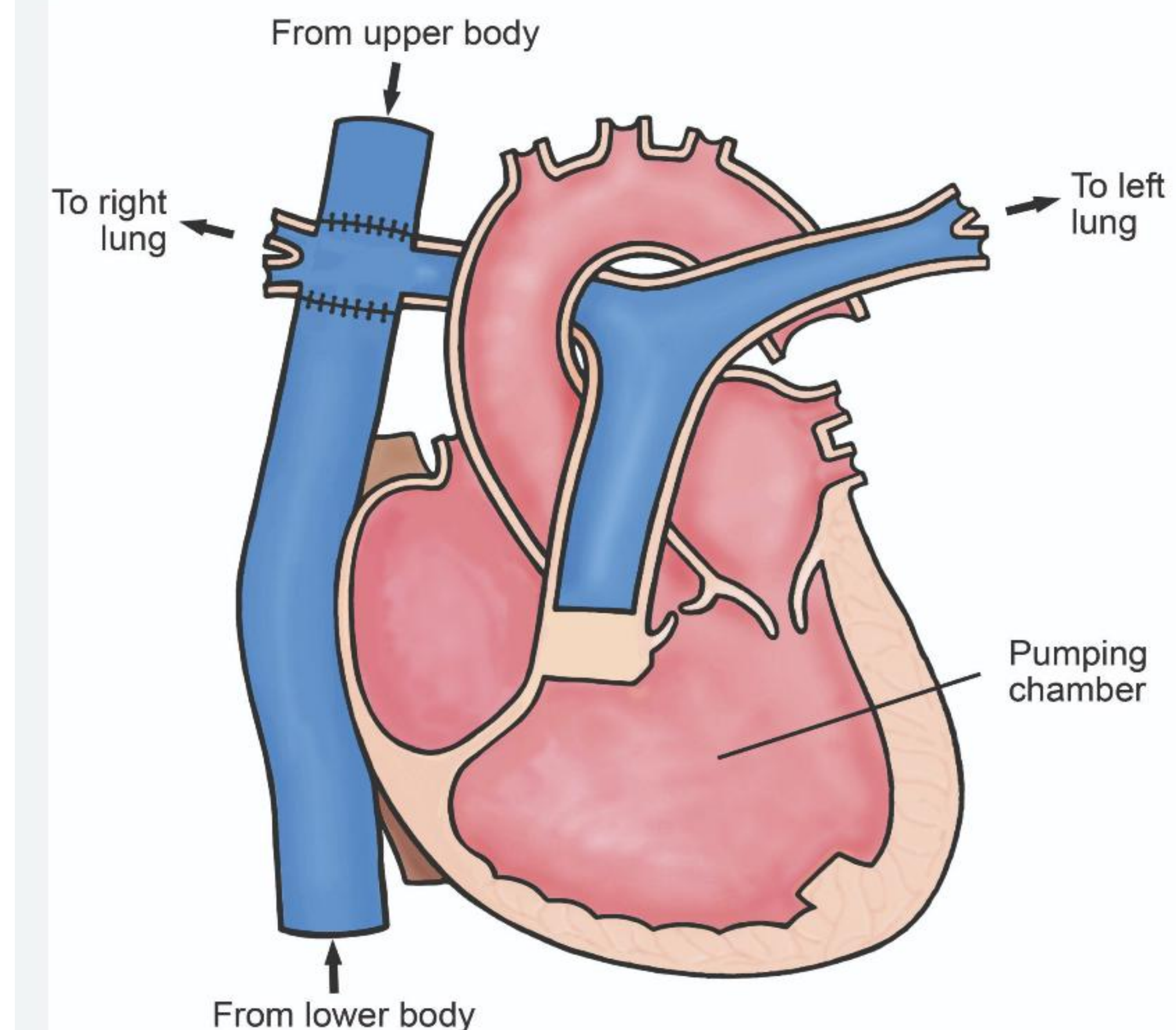
Obstetric patients with Fontan physiology have an increased risk of pregnancy complications

Elevated systemic venous pressure and chronically decreased cardiac output impairs obstetric outcomes

Limited literature due to rarity



1. Normal Heart



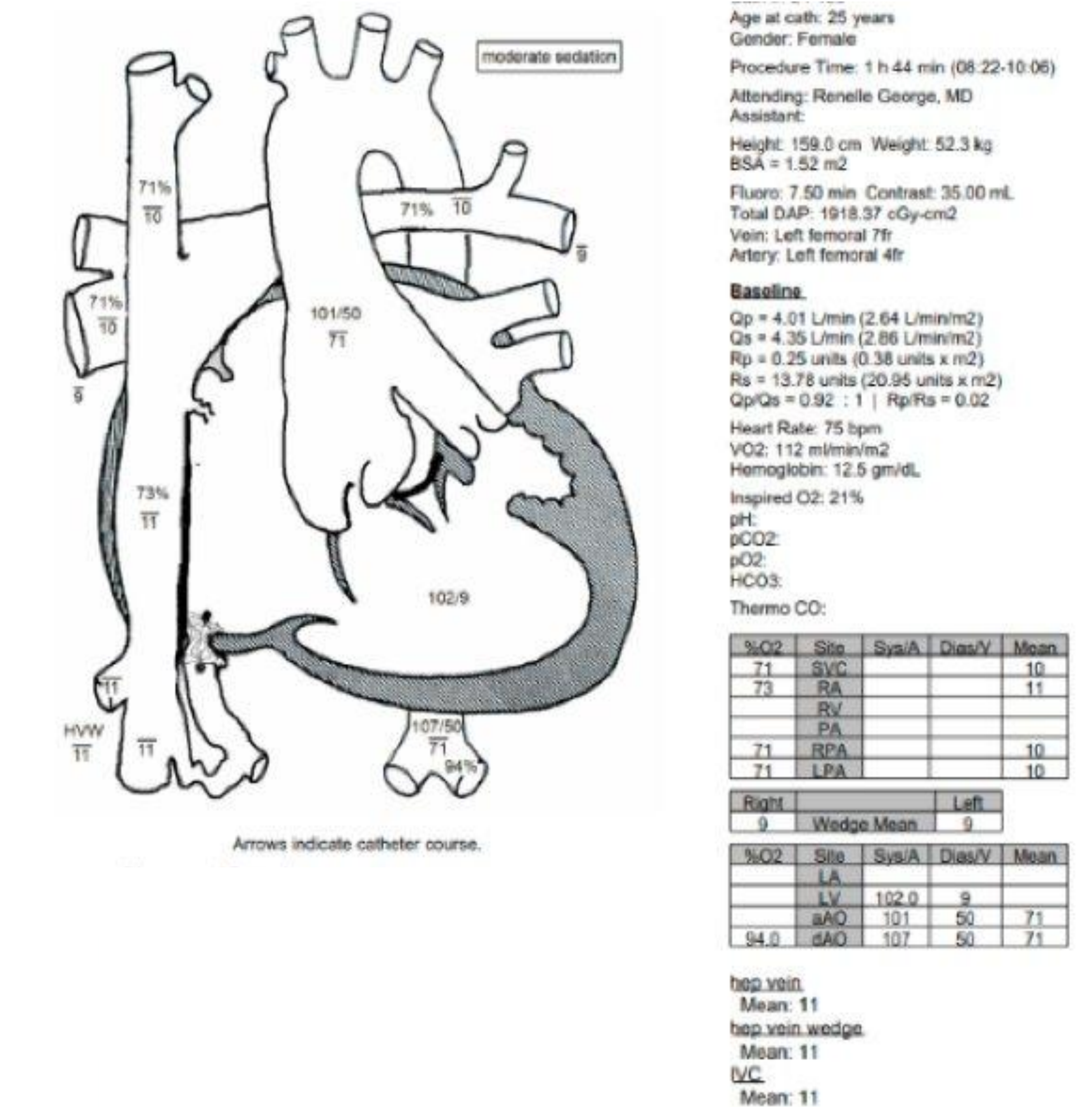
2. Fontan Circulation

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Case

- 26yo G1P0 with a h/o double inlet left ventricle status post Fontan procedure in infancy
- Admitted for intermittent vaginal bleeding and subchorionic hematoma with stable maternal and fetal status
- Multi-D Cardio-Obstetric team plan for scheduled IOL under neuraxial anesthesia to avoid significant increase in PVR and SVR
- Emergent c/b at 30_5 weeks due to NRFHR, fibrinogen consumption and placental abruption
- Preinduction A-line, Induction with Etomidate, Fentanyl, Succinylcholine. Central Line with precaution for anticipated hemorrhage and use of cardiac medications.
- Multi-D ECMO discussion concluded patient was not an ECMO candidate for acute decompensation given severe AI.
- Uncomplicated c/s; APGAR scores: 7,8; EBL 800ml, 40% abruption
- One episode of NSVT in ICU postop, otherwise unremarkable recovery. Discharged home on PPD 5.



- EF 35%
- Liver fibrosis secondary to hepatic congestion
- Permanent Pacemaker
- Moderate to severe aortic regurgitation
- Baseline SpO₂ -92-94%,
- Thrombocytopenia

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Vaginal delivery: gradual hemodynamic changes, better tolerated in the context of the limited preload reserve and inability to augment cardiac output that characterize Fontan physiology.

Cesarean delivery is reserved for standard obstetric indications or for patients at risk of maternal decompensation, such as acute heart failure, refractory arrhythmias, or the need for coordinated cardiovascular interventions.

Multidisciplinary planning with obstetric, cardiology, and anesthesiology teams is critical for the care of these patients.

Neuraxial analgesia is strongly recommended for labor as it provides effective pain control, reduces catecholamine surges, and allows for rapid conversion to surgical anesthesia if emergent cesarean delivery is required.

Maintaining preload and avoiding increases in pulmonary vascular resistance are critical in Fontan patients. Excessive fluid administration can precipitate heart failure and pulmonary edema.

Sources

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