

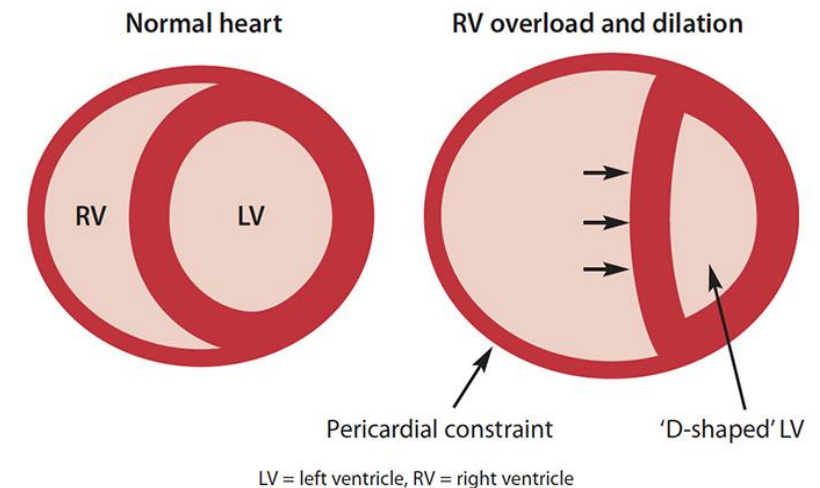
Prolonged Hospital Course Complicated by Pulmonary Hypertension, Congestive Heart Failure, and Tracheostomy during Pregnancy

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BACKGROUND

- Pulmonary Hypertension (PH) is defined as a mean pulmonary arterial pressure of ≥ 20 mmHg at rest; can be further characterized by the values of a patient's PCWP (>15 mmHg) and PVR (≥ 3 Wood Units), and workup often includes RHC (1)
- Pregnant women with PH often face both maternal and neonatal complications, with some data suggesting mortality risks can elevate to 30-56% if left untreated (1)
- Risks are related to the inability of the strained right heart to compensate for physiologic changes that occur in pregnancy and during delivery such as increases in plasma volume and cardiac output, decreased SVR, and the effects of autotransfusion. (2)
- PH can be subclassified into 5 sub groups: (1)
 - Group 1: pulmonary arterial HTN
 - Group 2: PH secondary to left-sided heart disease
 - Group 3: PH secondary to lung disease
 - Group 4: PH secondary to obstruction of pulmonary arteries
 - Group 5: PH of unknown etiology



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1. Afify H, Kong A, Bernal J, Elgendy IY. Pulmonary Hypertension in Pregnancy: Challenges and Solutions. Integr Blood Press Control. 2022 Apr 2;15:33-41. doi: 10.2147/IBPC.S242242. PMID: 35401013; PMCID: PMC8985908
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CASE REPORT: PRE-OPERATION

- Patient is a 33 yo F, 25 weeks and 2 days gestational age with a PMHx of previous c-section x3, obesity, OSA, medication noncompliance, PH, CHF with an EF of 40-50%, chronically present tracheostomy placed 1 year prior to presentation due to inability to be weaned from respiratory support after intubation in the setting of acute decompensated heart failure
- Initially presented the ED complaining of abdominal trauma after colliding with her stove, and SOB that she attributed to clogged tracheostomy
 - Of note, the patient was lost to follow up for 1 year after tracheostomy placement, and she had not seen any physician during this pregnancy
- During the extended hospital stay, the cardiology team completed a PH work up including a RHC with PA pressures peaking at 120/52 with a MAP of 72
- Diagnosis at this time was severe group 1 PH, prompting the initiation of IV epoprostenil with the plan to remain with inpatient treatment until delivery at 32 wga
 - After epoprostenil initiation, patient developed worsening pulmonary edema, it was determined that she was unable to tolerate this medication and it was discontinued. PH at this time was deemed not type 1 but multifactorial
- Patient underwent continued diuresis and symptomatic improvement, multidisciplinary teams planned for repeat section and BTL on 7/22, 50 days after admission
 - Per ENT: there was a high suspicion of subglottic stenosis, plan would include trach exchange for ventilation purposes during general anesthesia for delivery
 - Per conjunction of adult cardiac and obstetric anesthesiology team: severity of PH questioned as clinical picture suggested PH was less severe. The cardiology team refuted these concerns
 - Patient refused preoperative RHC and central line placement



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CASE REPORT: SURGERY AND POST-OPERATION

- Patient underwent controlled IV induction of general anesthesia followed by tracheostomy exchange with ENT
 - Trach exchange demonstrated significant airway stenosis followed by a desaturation event. Following blunt forceful exchange, saturations improved and mechanical ventilation was initiated
- TEE probe was inserted, vasoactive and inotropic infusions initiated to support the presumed strained right heart
 - TEE report demonstrated dilated RV, low normal RV function, D shaped LV in systole, indicative of some pressure overload and pulmonary artery systolic pressure ~50
- Delivery and BTL proceeded; echo remained grossly unchanged with delivery of baby and autotransfusion
- Vasoactive support was weaned as appropriate throughout the case. Upon completion of the case, the patient was transported to the surgical ICU where she remained mechanically ventilated until administration of paralytic reversal

DISCUSSION

- In the PH patient special consideration should be given for the change in blood volume that occurs during pregnancy and the effects of autotransfusion after delivery
- Plans for approaching cases such as these can include but are not limited to TEE utilization, inotropic support during and after delivery, central venous access, and multidisciplinary discussions
- For a case such as this with a complex cardiac history and a compromised airway, multidisciplinary discussions from cardiology, OBGYN, anesthesiology, and ENT teams became extremely important