

Beating the Odds: Peripartum Strategies in a Patient with Pulmonary Hypertension and Atrial Septal Defect

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BACKGROUND

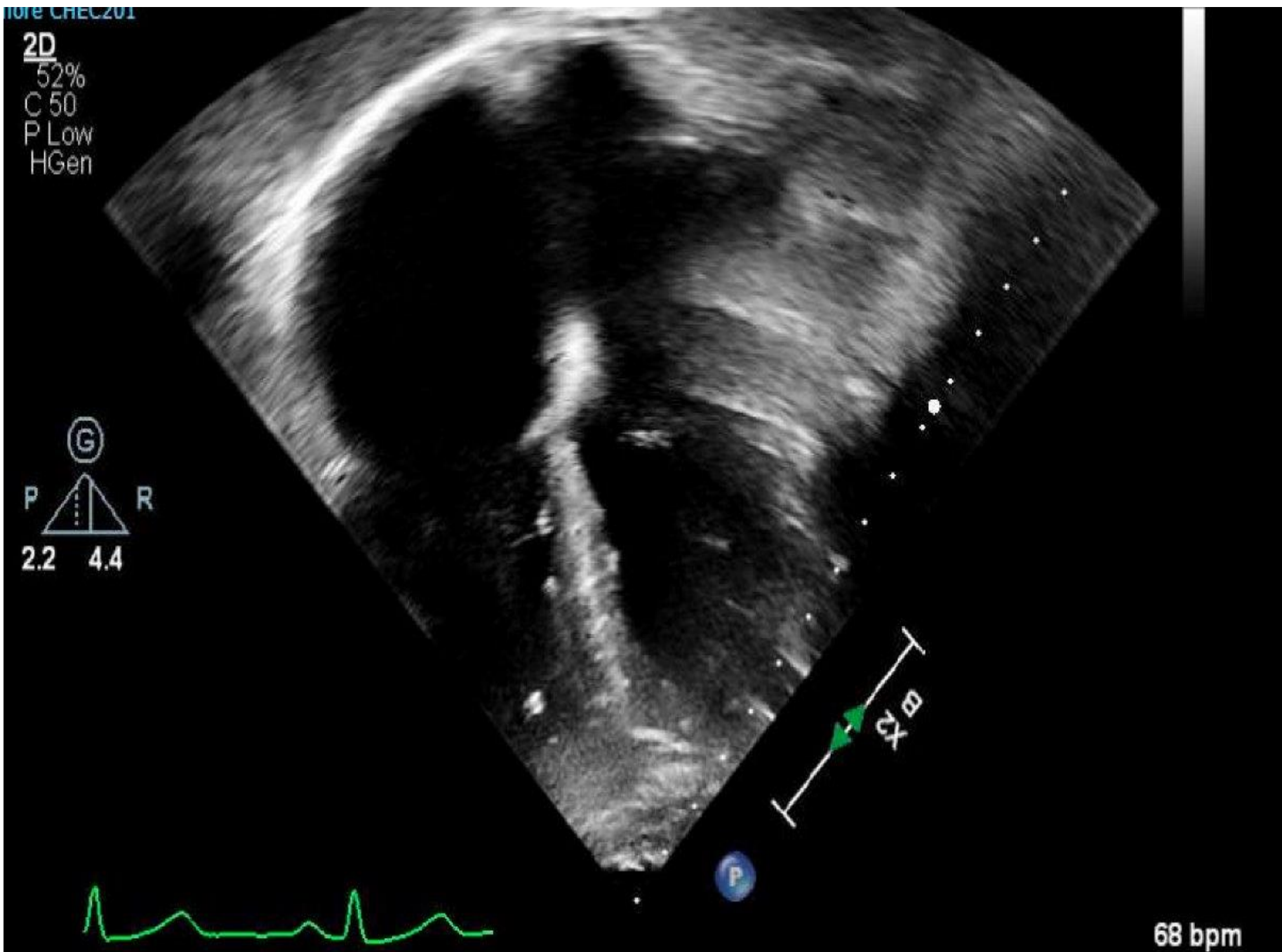
Atrial septal defects (ASDs) chronically overload the right ventricle (RV) potentially leading to pulmonary hypertension (PH). Pregnancy intensifies this physiology via increased blood volume, compounding risk of RV dysfunction, arrhythmias, and paradoxical embolism. Managing gestational hypertension requires precise systemic vascular resistance (SVR) control to prevent right-to-left shunting.

OBJECTIVE

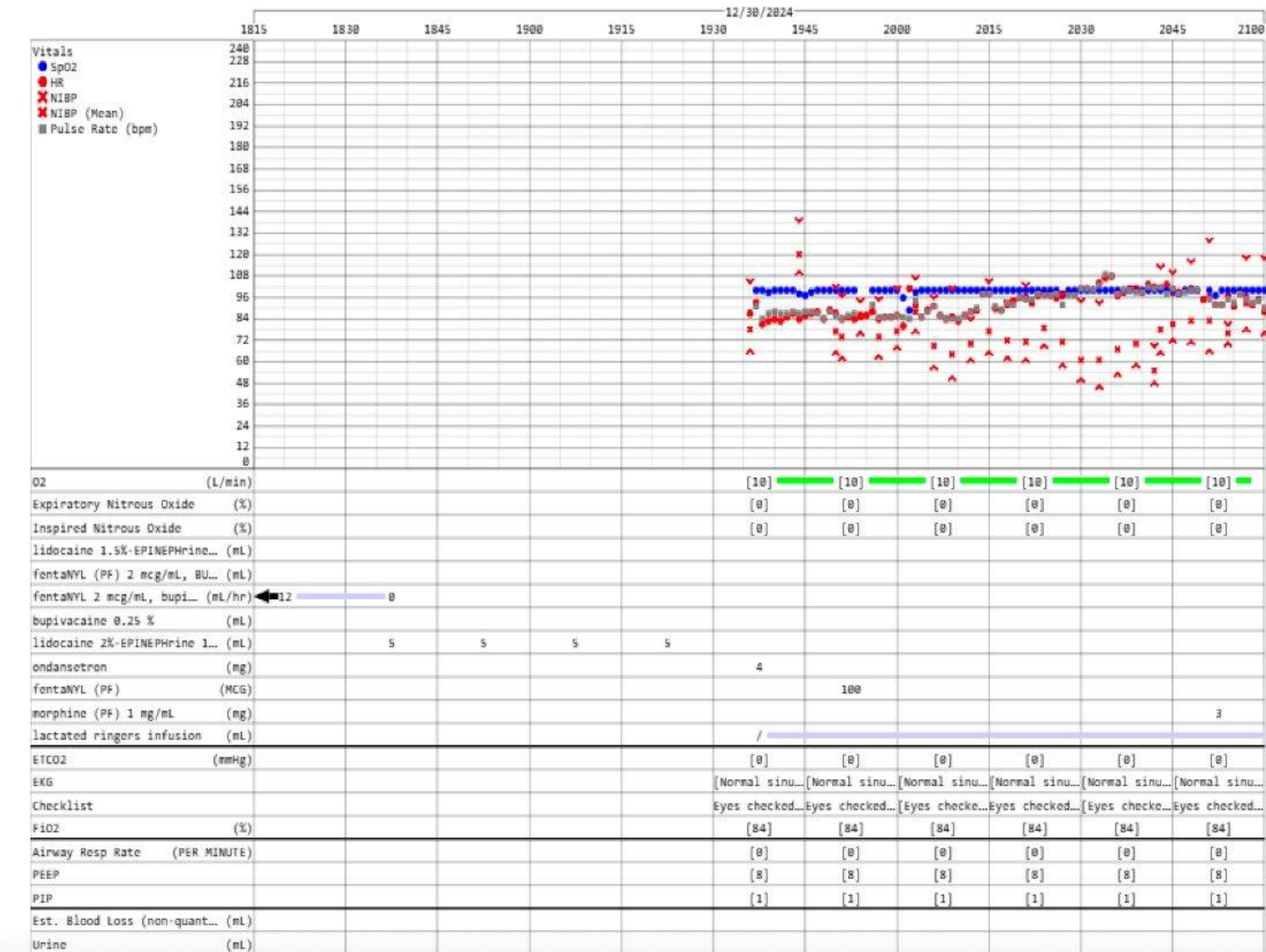
Identify risks associated with ASD and shunting
Recognizing hemodynamic risks associated with ASD and PH and management of SVR
Formulating patient-centered anesthetic plans for complex patients

PATIENT PRESENTATION

29-year-old primigravida with large secundum ASD, moderate-to-severe dilation, and tricuspid regurgitation presented at term with gestational hypertension. RV systolic pressure of 51mmHg indicating pulmonary hypertension. Multidisciplinary discussion between OB anesthesiologist and cardiac anesthesiologists regarding labor induction and cesarean delivery management.



4 chamber view on adult congenital transthoracic echocardiogram 1 month prior to labor. Moderately dilated right atrium. Moderately dilated right ventricle. Qualitatively normal right ventricular systolic function. Normal left ventricular systolic function. No significant pericardial effusion. The right ventricular systolic pressure is at least 36 mm Hg plus the right atrial pressure.



Cesarean anesthetic record within hemodynamic parameters

ANESTHETIC COURSE

Discussion with obstetrician, cardiology, cardiac anesthesiologist, and obstetric anesthesiologist regarding blood pressure management in patient. Initial decision made to induce labor.

Initially patient had dural puncture epidural (DPE)
-Successful on first attempt
-To avoid paradoxical embolus, saline used instead of loss of air syringe for confirmation
-All intravenous access with air filters

After ~22 hours, due to arrest of labor, decision for cesarean section made
-With working epidural, patient adequate anesthetic level achieved with lidocaine bolus

General anesthesia was reserved as backup

Patient and fetus tolerated without complications

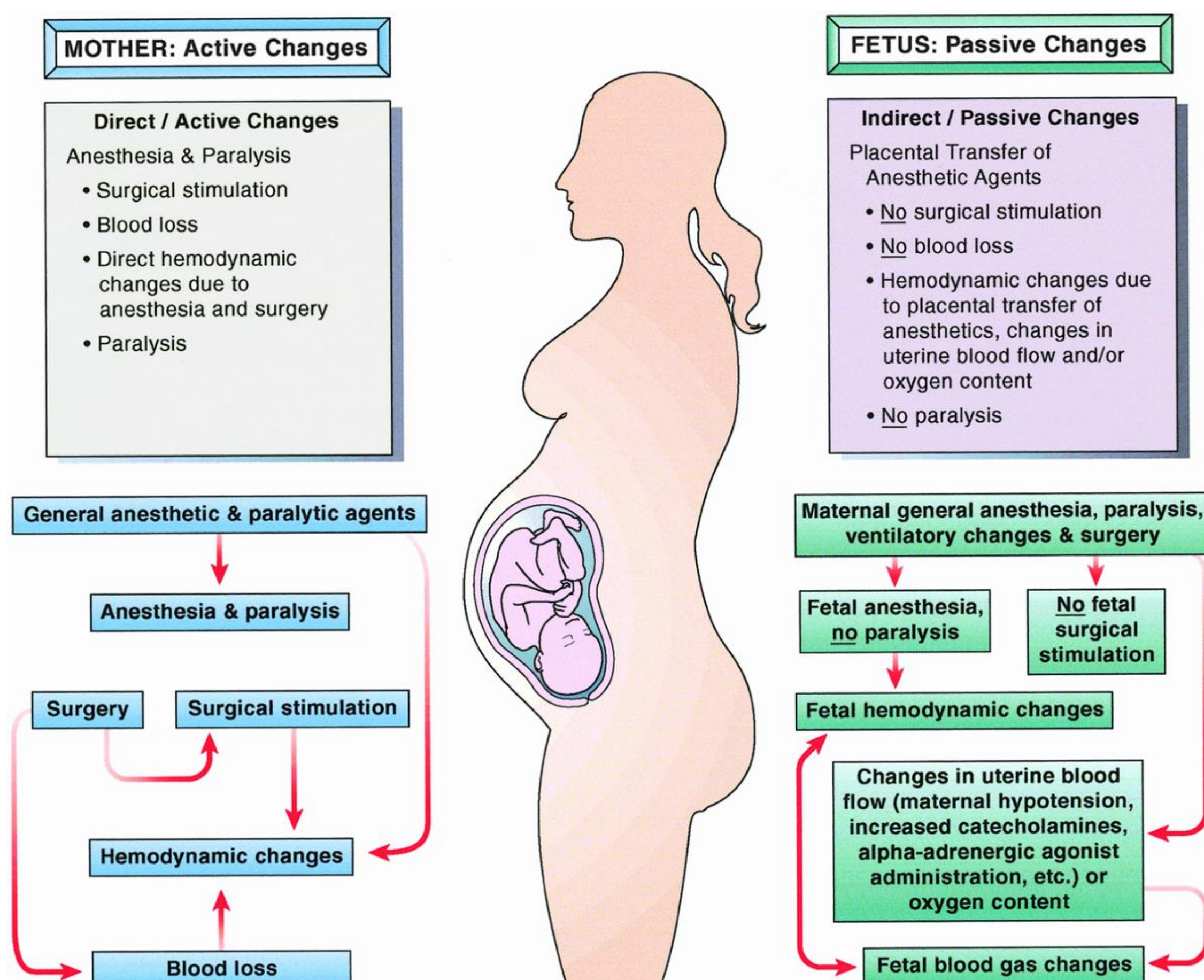
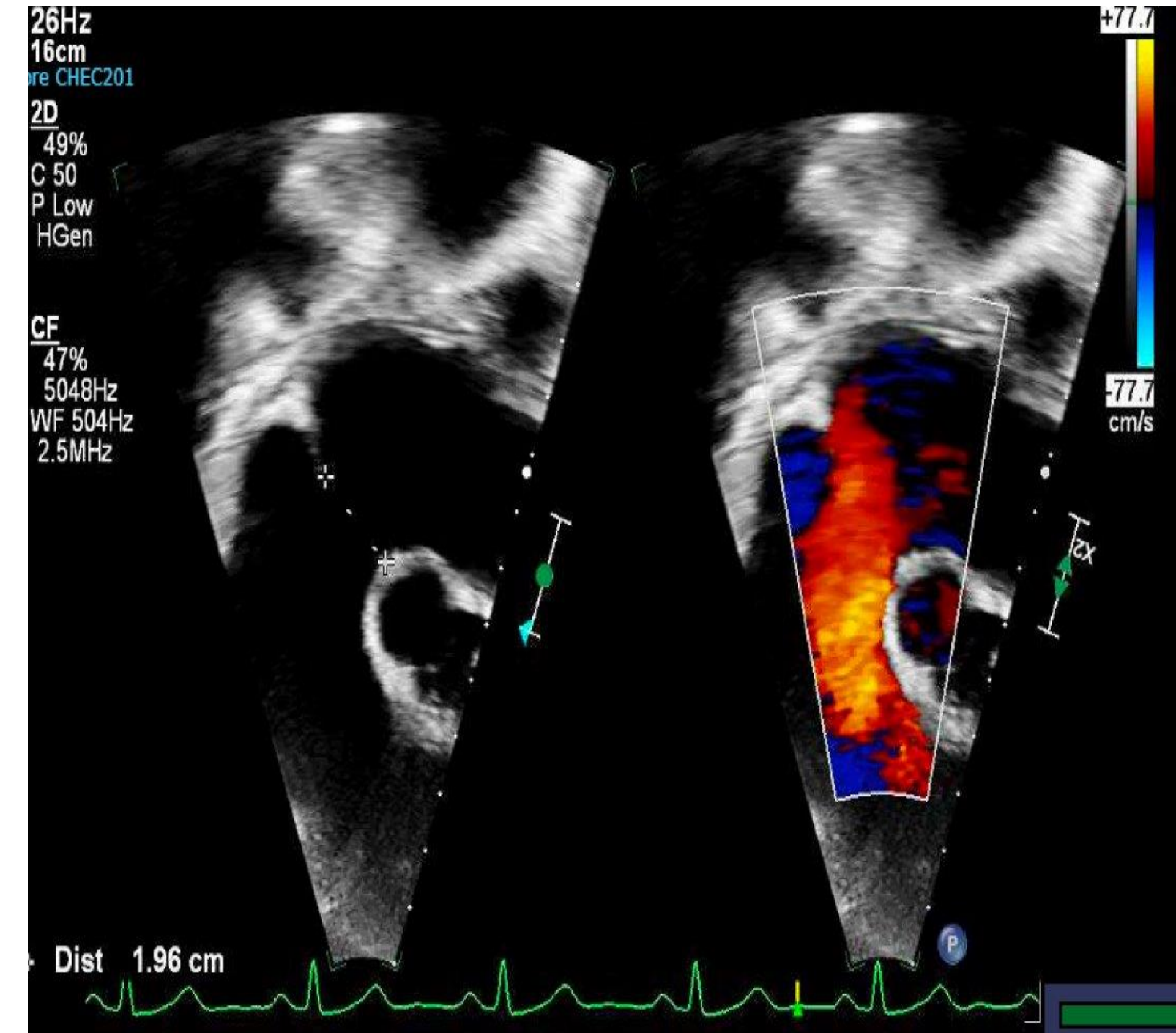
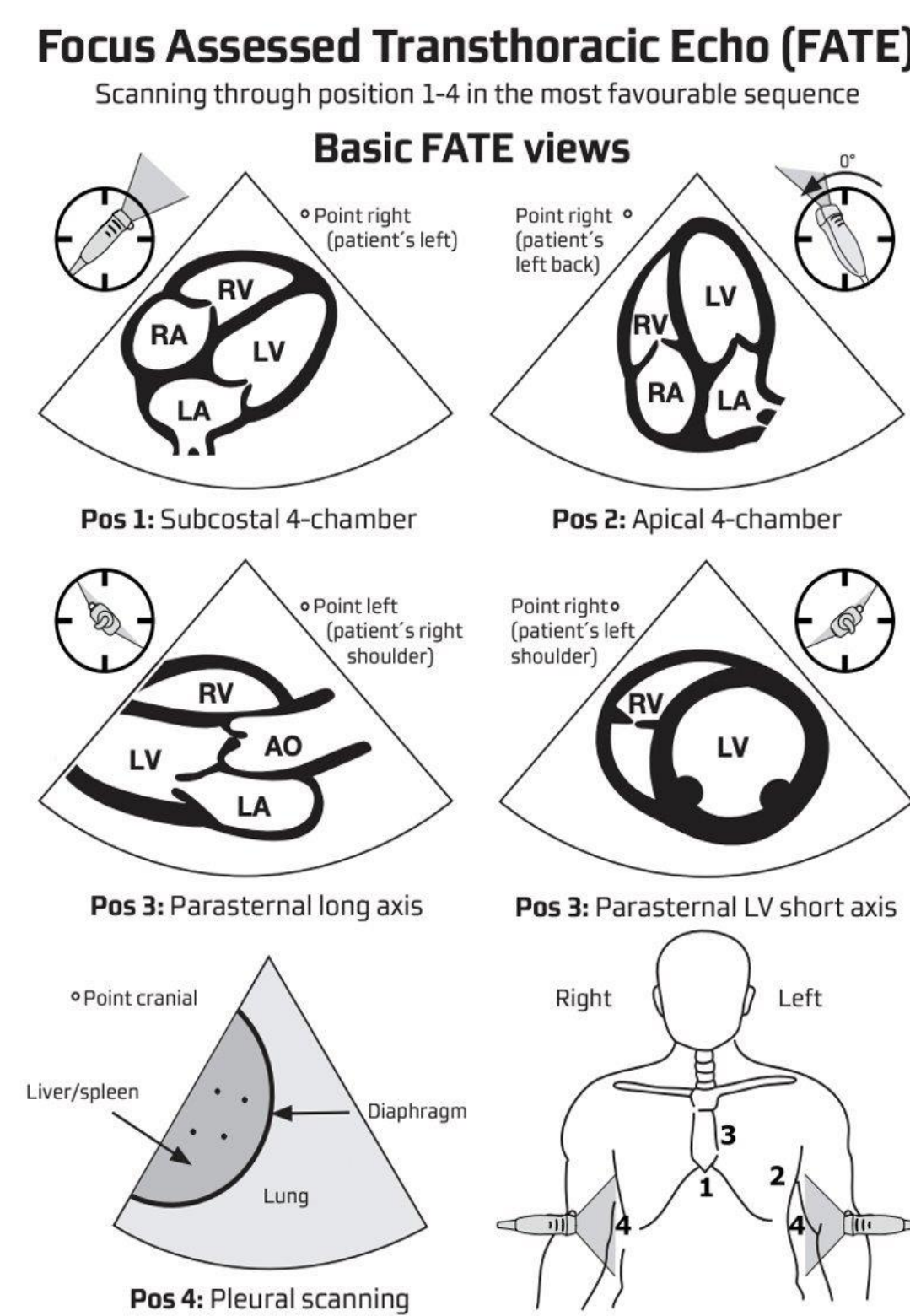


Image taken from: Mark A. Rosen, Richard B. Weiskopf; *Management of Anesthesia for the Pregnant Surgical Patient*. Anesthesiology



Adult congenital transthoracic echocardiogram 1 month prior to labor
Right atrium dilated; left atrium normal function and size
Demonstrating left to right shunt between left and right atria
Defect measuring 1.96cm



DISCUSSION/CONCLUSIONS

Multidisciplinary approach necessary to safely treat patient including cardiac anesthesiologist, obstetric anesthesiology, obstetrician, and cardiology. Key strategies to maintain SVR: -Early epidural analgesia can stabilize hemodynamics by reducing pain driven sympathetic activation. -Phenylephrine selective alpha-1 mediated action without compromising pulmonary pressures.

Complex patient populations require specialized patient-centered anesthesia plans to prioritize safety and best care. Anesthesia has evolved from just providing general anesthesia; consider specialized fields in anesthesia such as OB, regional, chronic pain, cardiac, etc.

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