Introduction:
We present a case of a carinal resection with pneumonectomy in a pregnant patient on cardiopulmonary bypass in which it was necessary to balance the goals of minimizing IV fluid while also minimizing vasopressors that might compromise placental perfusion.

Case Presentation:
A 35 year old woman at 13 weeks gestation presented for carinal resection with left pneumonectomy and right lung nodulectomy due to adenoid cystic carcinoma involving the left main bronchus, carina, and several small nodules bilaterally. Preoperative planning focused on perioperative fetal heart tone monitoring and managing a potential cardiopulmonary bypass (CPB) run. After establishing peripheral and central IV access as well as a radial arterial line, general anesthesia was induced with fentanyl, propofol, and vecuronium, and maintained with infusions of propofol and remifentanil. Phenylephrine up to 1.5mcg/kg/min was used for hemodynamic support. Surgical dissection revealed tumor involving the proximal right main bronchus across from the right upper lobe takeoff. Oxygenation relying only on the right middle and lower lobes would have been inadequate. Also, retraction on the heart needed to mobilize the left main bronchus caused SVT and hemodynamic instability. Thus to optimize oxygenation and perfusion for the patient and fetus, the surgery was performed on CPB. In accordance with the evidence regarding CPB during pregnancy, the patient was kept warm with a beating heart to reduce the risk of uterine contractions. Circuit flow was increased as needed to minimize use of vasopressors. No antifibrinolytic agent was used. Ultrafiltration was used to minimize the amount of crystalloid administered. Upon completion of the resection, the patient was weaned from CPB with small amounts of phenylephrine. Eventually it became necessary to administer blood products, as well as an infusion of norepinephrine. At case conclusion we extubated the patient in the OR but respiratory failure ensued and she was reintubated prior to transport to the ICU. She was extubated on postoperative day 1. It became apparent that her left recurrent laryngeal nerve had been injured during surgery and she underwent an injection medialization of the left vocal cord. She was discharged on postoperative day 8 with pregnancy intact; postoperative fetal heart tones were reassuring.

Discussion:
Traditional anesthetic management of the pregnant patient undergoing non-obstetric surgery involves performing surgery during the second trimester, avoiding teratogens, and minimizing vasopressors due to concerns they may reduce blood flow to the fetus. In contrast, the anesthetic management of a pneumonectomy typically involves minimizing IV fluid administration to reduce the risk of postoperative pulmonary edema. The use of vasopressors is often unavoidable. This case adds to the body of evidence suggesting vasopressors with predominantly alpha-1 activity are not contraindicated in pregnancy as suggested by earlier ovine studies.

References: