

Neuraxial anesthesia for ex utero intrapartum treatment of a patient with twin gestation and blood product refusal

Claire Rhee MD, Zachary Janik MD, Anna Gitterman MD

- Ex utero intrapartum treatment (EXIT) procedures maintain uteroplacental perfusion and fetal oxygenation to allow for fetal therapeutic intervention but confer significant maternal risk
- Maternal morbidity and mortality is increased in multiple gestation pregnancies
- 1.2 million Jehovah's Witnesses in the United States, 8 million worldwide; refuse major components of blood (pRBCs, FFP, platelets)
 - Maternal mortality of Jehovah's Witnesses estimated 44-fold higher (Singla et al. *AJOG* 2001)
 - Guided by ethical principles of autonomy, beneficence, non-maleficence, justice

34 year-old G2P0010 with dichorionic-diamniotic twins

Prior to referral:

- Fetal MRI showed a large mass spanning the nasopharynx, oropharynx, and larynx, with tracheal compression
- Sirolimus trial without improvement

At high-risk OB center:

- Consults with pediatric ENT, NICU, general surgery, OB anesthesia, maternal fetal medicine, bloodless medicine
- Serial amnioreductions planned for symptomatic polyhydramnios

At 32wk amnioreduction:

- Persistent contractions despite terbutaline, magnesium
- Coordinated controlled delivery with EXIT procedure planned
- Confirmed patient refusal of RBCs, FFP, platelets; accepting of albumin, intraoperative blood salvage, Hemopure
- Pre-operative labs with Hgb 12.8g/dL, platelet 197K/mm³
- Radial arterial line and large bore intravenous access placed

Intraoperatively:

- Standard CSE at L3-L4
- Phenylephrine for hemodynamic support
- Nitroglycerin infusion at 75-100mcg/min started after incision to provide uterine relaxation
- Affected fetus delivered first, intubated by ENT, and passed to NICU
- Oxytocin infusion, methylergonovine, misoprostol used to achieve adequate uterine tone after second twin delivered
- Quantitative blood loss: 960mL

Teaching Points

- Neuraxial anesthesia can be used successfully to facilitate an EXIT procedure, minimize intraoperative blood loss, and allow ongoing conversations about transfusion wishes
 - Studies have demonstrated decreased blood loss and transfusion need with neuraxial vs general anesthesia (Richman et al., JCA 2006)
 - Legal precedents have reaffirmed the importance of confirming, documenting, and respecting blood product refusal
- Nitroglycerin can be used for uterine relaxation without increased blood loss