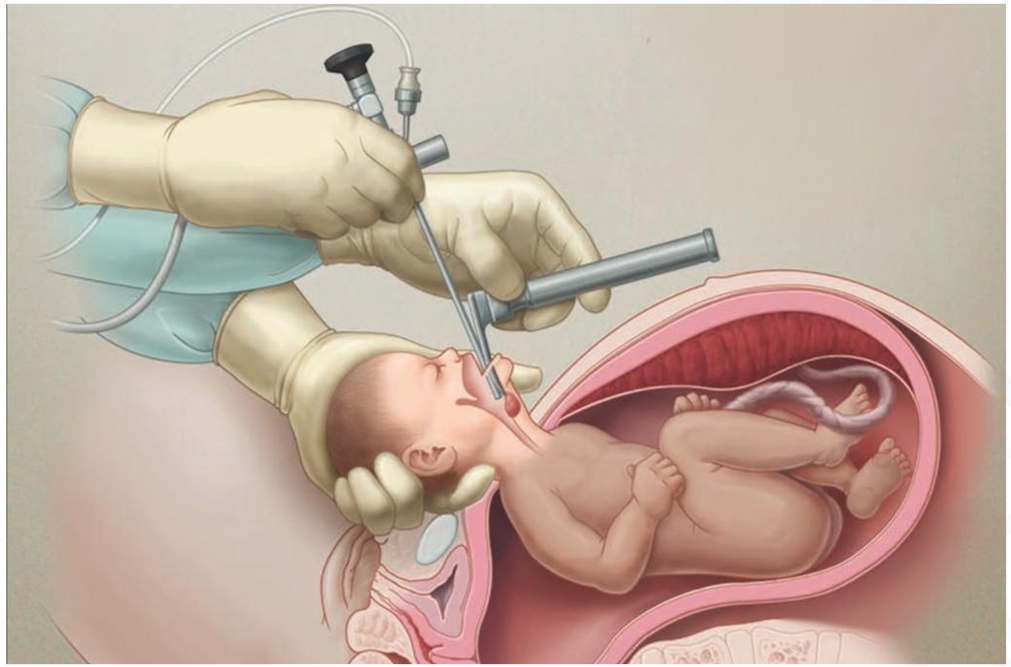
Ex-Utero Intrapartum Treatment (EXIT) for Parturient with Maternal Hyperthyroidism and Goiter Complicated by Fetal Goiter and Potential Fetal Airway

Sayo E. McCowin MD PhD, Kelley Smith MD, Sunny S. Chiao MD, Jessica Sheeran MD



Adapted from: Hartnick CJ et al. N Engl J Med. 2009 Feb 26;360(9):913-21. doi: 10.1056/NEJMcpc0809061

- EXIT is a specialized intervention where securing the fetal airway is performed prior to complete delivery of the fetus
- Historically performed for fetuses with congenital airway obstructions or cardiopulmonary malformations that would otherwise result in fetal demise post-delivery (1)
- EXIT procedures allow for neonatal cardiopulmonary stability through partial delivery of the fetus while maintaining placental circulation
- Anesthetic management is challenging requiring profound uterine relaxation, maintenance of uteroplacental blood flow, and fetal anesthesia

1. Diawtipsukon S et al. Cesarean section with operation on placental support as an adapted EXIT procedure for fetal thyroid goiter: A case report and literature review. Int J Gynaecol Obstet. 2025 May;169(2):474-484.

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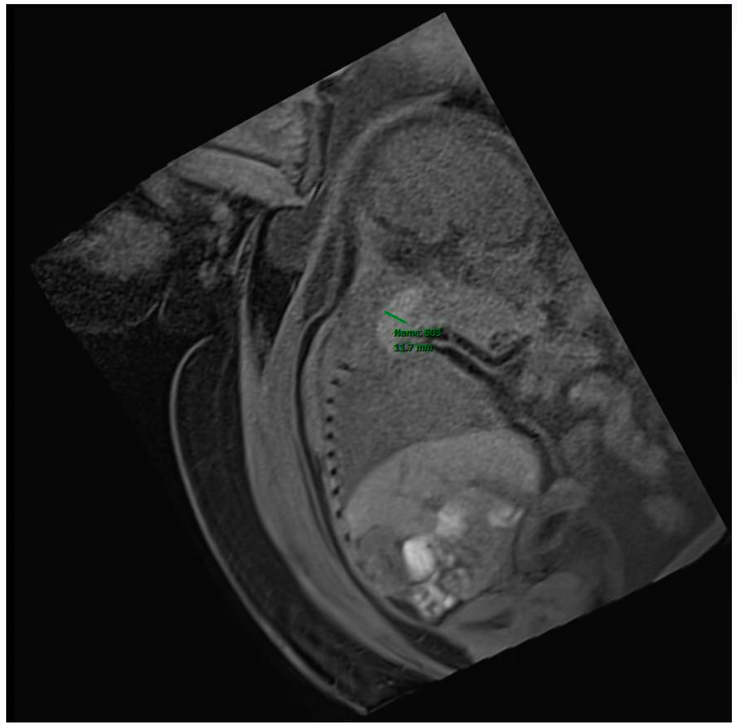

MRI of gravid uterus/abdomen. Marked area (green) denotes diffuse homogenous enlargement of fetal thyroid gland measuring (3.0 x 1.4 x 3.2 cm)

- Case: 27-year-old G2P10001 female at 36w0d
- PMH of toxic multinodular goiter (multiple 3-4 cm nodules)
- Pregnancy complicated by worsening maternal hyperthyroidism requiring up-titration of PTU
- Prenatal ultrasound at 32 weeks with evidence of a fetal goiter; MRI shows thyroid gland encasing fetal airway and cervical trachea

- Pre-delivery weekly intraamniotic injections of 400 mcg levothyroxine for 4 weeks resulting in a slight decrease in size of fetal goiter
- Preoperative laryngoscopy reassuring for maternal airway patency
- Plan: EXIT procedure to establish neonatal airway immediately postpartum with contingency for ECMO cannulation

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- Rapid sequence induction and intubation using video laryngoscopy
- GA with 3% sevoflurane to promote uterine relaxation while providing adequate maternal and fetal anesthesia. Phenylephrine infusion to avoid maternal hypotension
- Partial delivery of neonate and intubation by pediatric ENT using a Parson's laryngoscope. Apgar scores 8 and 9.
- Sevoflurane reduced to 1%, 50% nitrous oxide, and infusion of oxytocin to enhance uterine tonicity
- Parturient extubated following completion of the surgery. Quantitative blood loss of 1121 mL
- Neonate admitted to NICU and extubated postpartum day 0 (hour of life 10)

- GA with ETT for EXIT in a pregnancy complicated by both maternal and fetal goiters
- Balancing parturient and fetal hemodynamics, uterine tone, and placental perfusion to perform fetal intubation on placental bypass necessitates a calculated preoperative approach
- Collaboration of multi-disciplinary teams with diverse expertise can improve care and outcomes in patients undergoing EXIT procedures

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