Anesthetic Management of High-Risk EXIT for Fetal CHAOS in Preterm Labor With Suspected Concealed Abruption

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CHAOS & EXIT: Background

- Congenital High Airway Obstruction Syndrome (CHAOS) carries high perinatal mortality without airway establishment at delivery
- Ex-utero Intrapartum Treatment (EXIT) enables fetal airway intervention under continued placental support
- EXIT requires uterine relaxation, maintained uteroplacental perfusion, and rapid transition to uterotonics after cord clamping
- Multidisciplinary coordination essential: MFM, obstetric + pediatric anesthesia, ENT, surgery, neonatology, blood bank

Clinical Gaps & Objective

- Limited guidance exists for EXIT during preterm labor with concurrent concealed placental abruption
- Abruption may compromise placental support, necessitate emergent delivery and narrows EXIT window
- Objective: Describe perioperative planning and intraoperative anesthetic management for EXIT in preterm labor with suspected abruption

– Primary challenge: balancing fetal airway intervention with maternal safety and hemorrhagic risk

Successful EXIT depends on multidisciplinary planning, hemorrhage preparedness, and anesthetic flexibility

The Case

Patient

30-year-old G4P3003 at 33+3 weeks

- Fetal CHAOS with polyhydramnios
- Preterm contractions
- Low fibrinogen — concern for concealed abruption
- MDT consensus: expedited delivery

EXIT feasibility depended on timely intervention
before further maternal deterioration

Preoperative Setup

- Large-bore IV × 2 and arterial line placed
- Blood products prepared: pRBCs, FFP, platelets, cryoprecipitate
- Full MDT briefing: role assignments + contingency plans
- Single-shot intrathecal morphine for postoperative analgesia
- Volatile agent ≥2 MAC
- Contingency plan for emergent delivery and hemorrhage

Intraoperative Course

- GA induced; volatile anesthetic at 2 MAC
- Controlled hysterotomy using Harrison staplers
- Partial fetal delivery — placental circulation maintained
- Laryngoscopy + bronchoscopy: severe infraglottic obstruction
- Fetal bradycardia → atropine + epinephrine IM
- Emergent tracheostomy on placental support → immediate lung aeration + recovery
- Cord clamped → TIVA; uterotonics; uterine tone restored
- Maternal hemodynamics stable throughout the case

Outcomes

- Successful EXIT with tracheostomy on placental support
- Immediate neonatal hemodynamic recovery
- Uterine tone restored; no major hemorrhage

– Demonstrates feasibility of EXIT in preterm labor with concurrent abruption risk

Teaching Points

Anesthetic Goals for EXIT

- High-dose volatile anesthetic used for uterine relaxation during EXIT
- **Intrathecal morphine provides postoperative analgesia without epidural**
- **Rapid transition: volatile → TIVA at cord clamping**
- **Simultaneous uterotonics to restore uterine tone**

Hemorrhage Preparedness

- Low fibrinogen increased concern for hemorrhage risk
- **Prepare pRBCs, FFP, platelets, and cryoprecipitate preoperatively**
- **Large-bore IV × 2 + arterial line before induction**
- Suspected abruption shortens EXIT window

MDT Coordination

- **MFM, OB anesthesia, peds anesthesia, ENT/surgery, neonatology, blood bank, nursing, radiology**
- Joint decision-making when maternal risk conflicts with fetal intervention window

Maternal Safety First

- **Evolving maternal instability must drive EXIT timing not fetal status alone**
- EXIT feasibility highly dependent on maternal hemodynamic stability

1. Nolan HR et al. J Pediatr Surg. 2019;54(6):1153-1158. 2. Sabra R et al. Fetal Diagn Ther. 2022;49(9-10):385-393. 3. Li C, Noble AR. Curr Opin Otolaryngol Head Neck Surg. 2025.