

BACKGROUND

Ex utero intrapartum treatment (EXIT) procedures are rare but can provide the optimal chance of survival for a fetus with life threatening abnormalities.

- Performed to allow for a controlled neonatal procedure (intubation, tracheostomy, mass excision) while establishing airway control and maintaining placental bypass
- Fetus is partially delivered via hysterotomy while relaxing the uterus for cardiopulmonary stability and to maintain normothermia
- Fetal teratomas are rare (1:35,000) and can be life threatening depending on the location

PATIENT DESCRIPTION

- During her first trimester, 33 year old Pt.D underwent an ultrasound and a large neck mass was noted that continued to grow exponentially over the course of her pregnancy
- Consistent with a teratoma, the complex mass continued to grow from the fetal face and neck with an estimated mass twice that of the fetal weight
- In the following months, the fetus was monitored and the teratoma continued to grow
- At 29 weeks gestation, the team decided to schedule an EXIT procedure to optimize survival for the fetus
- The teratoma measured 20 x 18 x 21 cm with a volume of 4072 cc's; almost 2x larger than the fetus.

PREPARATION & SURGERY

RISKS	AIRWAY INSTABILITY	<ul style="list-style-type: none"> • Use of 3-D models for surgery planning • Prepare for a variety of airway instability scenarios; laryngoscopes, ET tubes with stylets, flexible scope and video laryngoscope machine, rigid neonatal bronchoscope and a trach set
	HEMMORHAGING	<ul style="list-style-type: none"> • Surgery in the L&D OR with ultrasound to identifying the placenta • Relaxation of uterus • Blood prepared for mom & baby
	FETAL HYPOTHERMIA	<ul style="list-style-type: none"> • Partial delivery until airway stable • Fluid was removed from a cyst to reduce the size and aid in delivery of the fetus • Immediate transport to neonatal recovery area

SURGICAL INTERVENTION

Preparation
OR Set-up in L&D

Partial Delivery
Prepped for all airway scenarios

Establish airway
Opening the uterus

Delivery
Partial delivery

NICU
Transporting intubated baby to resuscitation room

Day 3: Excision of Teratoma
NICU: Post-op Cervical Teratoma

Recovery/Rehabilitation
3 months Post-Op

3D Models
UCSF Center for Advanced 3D+ Technologies

Post-op Day 2: Surgical Site

PATIENT OUTCOME

- After birth, there was hemodynamic instability due to the large size of the mass and it became increasingly necrotic
- The mass was increasing in size requiring manual compressions with the baby needing blood transfusions
- A CT scan revealed the blood supply to the teratoma originating from the left external carotid branch
- At 3 days old, the baby was brought back to the OR for removal of the cervical teratoma
- Excision of the mass was performed successfully with most of the facial features including the ear canal preserved
- The teratoma was found with old blood, cystic fluid, neural tissue, bone and cartilage.
- One adverse outcome was a stage III pressure injury on the occiput developed likely due to the massive weight of the teratoma compared to the weight of the baby
- Due to the hemodynamic instability of the mass, the care team agreed that performing pressure injury prevention interventions were not likely possible

DISCUSSION

- Success of high risk and rare procedure is dependent on careful team planning, collaboration & communication
- Planning for surgery months in advance is crucial to ensure that all team members prepare for all potential scenarios in the OR and have well defined responsibilities
- Using technological advances in imaging and 3D modeling can assist in planning for possible scenarios, lowest risk surgical approach to obtain the best outcome
- The EXIT procedure is one example of how advances in diagnostic testing and imaging have improved the survival rates of patients with previously life-threatening conditions

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