

AMSER Case of the Month

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21-year-old G1P0 at 21 weeks 3 days presents for
routine anatomy ultrasound

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Patient Presentation

The patient is a 21 year old G1P0 with no significant past medical history at 21w3d who is presenting to an outside facility for a routine anatomy ultrasound.

- Her pregnancy has been largely uncomplicated.
- She is endorsing good fetal movement.

Pertinent Labs

- Negative cfDNA at 10 weeks

What Imaging Should Be Ordered?

ACR Appropriateness Criteria

Variant: 1 Second and third trimester screening for fetal anomaly. Low-risk pregnancy. Initial imaging.

Procedure	Appropriateness Category	Relative Radiation Level
US pregnant uterus transabdominal anatomy scan	Usually Appropriate	0
US echocardiography fetal	Usually Not Appropriate	0
US pregnant uterus transabdominal detailed scan	Usually Not Appropriate	0
MRI fetal without and with IV contrast	Usually Not Appropriate	0
MRI fetal without IV contrast	Usually Not Appropriate	0

This imaging modality was ordered by the obstetrician at an outside facility

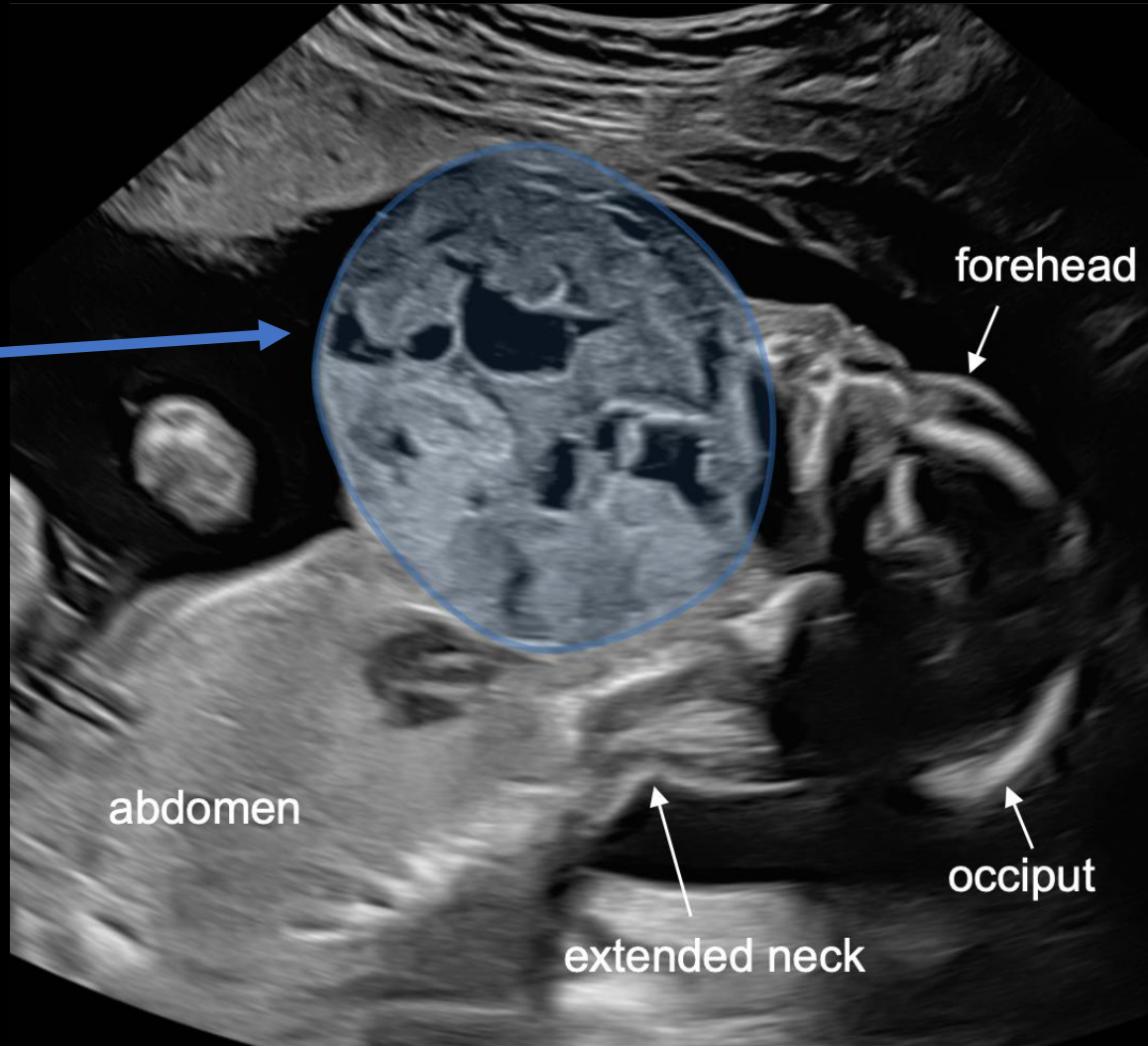
Findings (unlabeled)



21w3d

Findings: (labeled)

Large mixed cystic and solid mass extending from the fetal maxilla to the top of the thoracic inlet



21w3d

Patient Presentation cont.

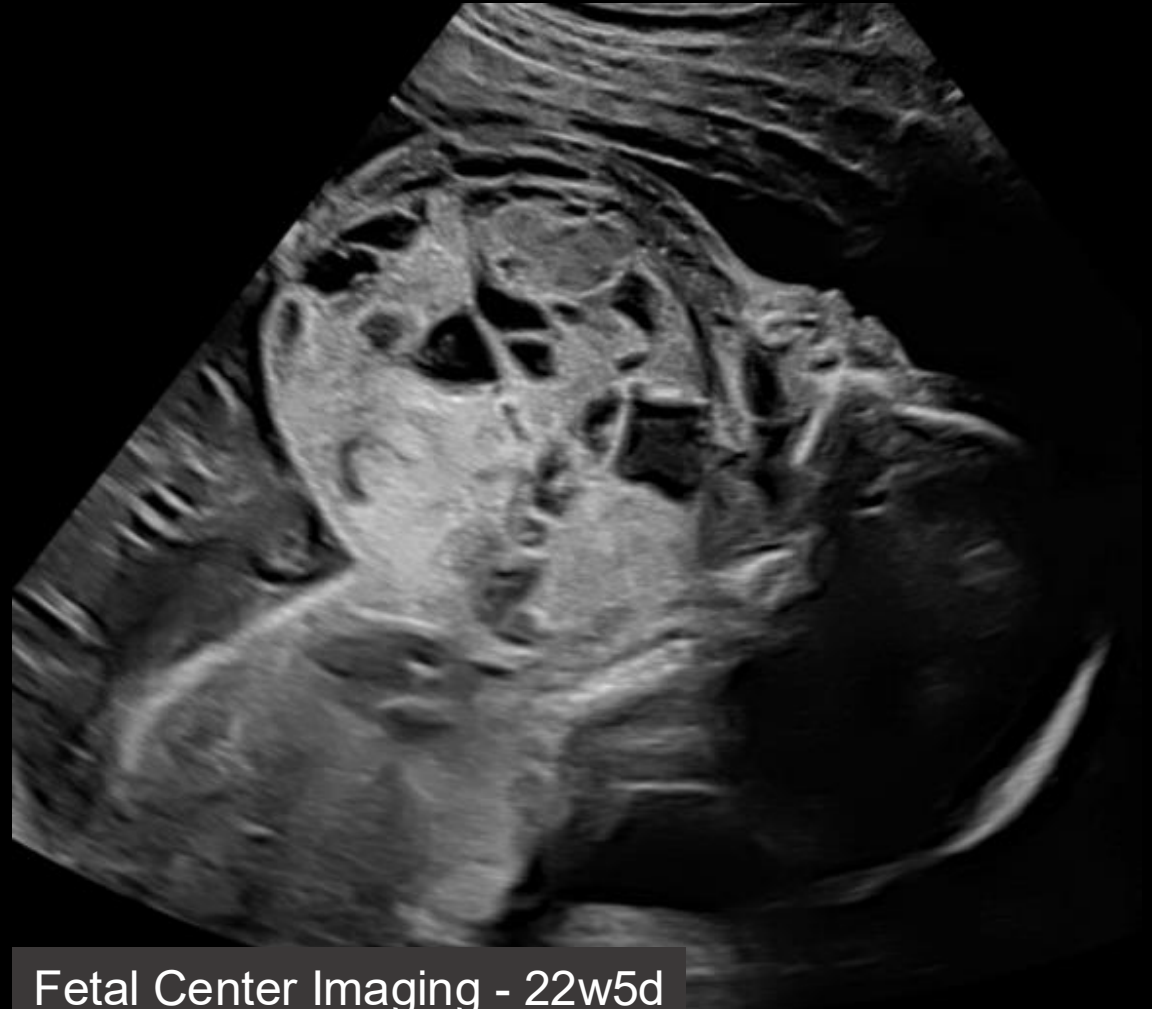
On initial imaging at an outside facility, the fetus was found to have a mixed cystic and solid cervical mass measuring 6.2 x 7.1 x 6.0 cm; 137cc. All other anatomy was normal.

The patient was subsequently referred to our multidisciplinary Fetal Center for further imaging evaluation as well as Maternal and Fetal Medicine and pediatric subspecialty consultation.

Findings (unlabeled)



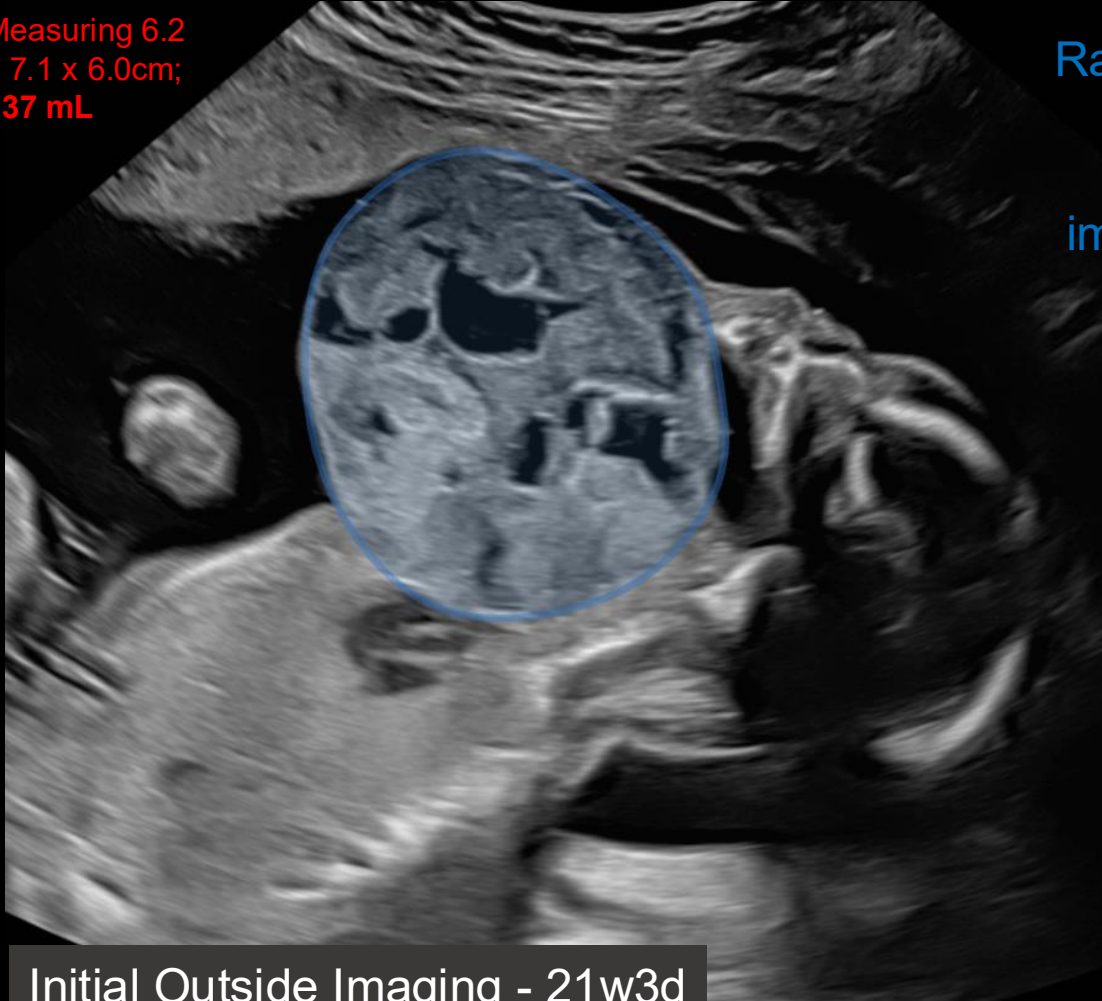
Initial Outside Imaging - 21w3d



Fetal Center Imaging - 22w5d

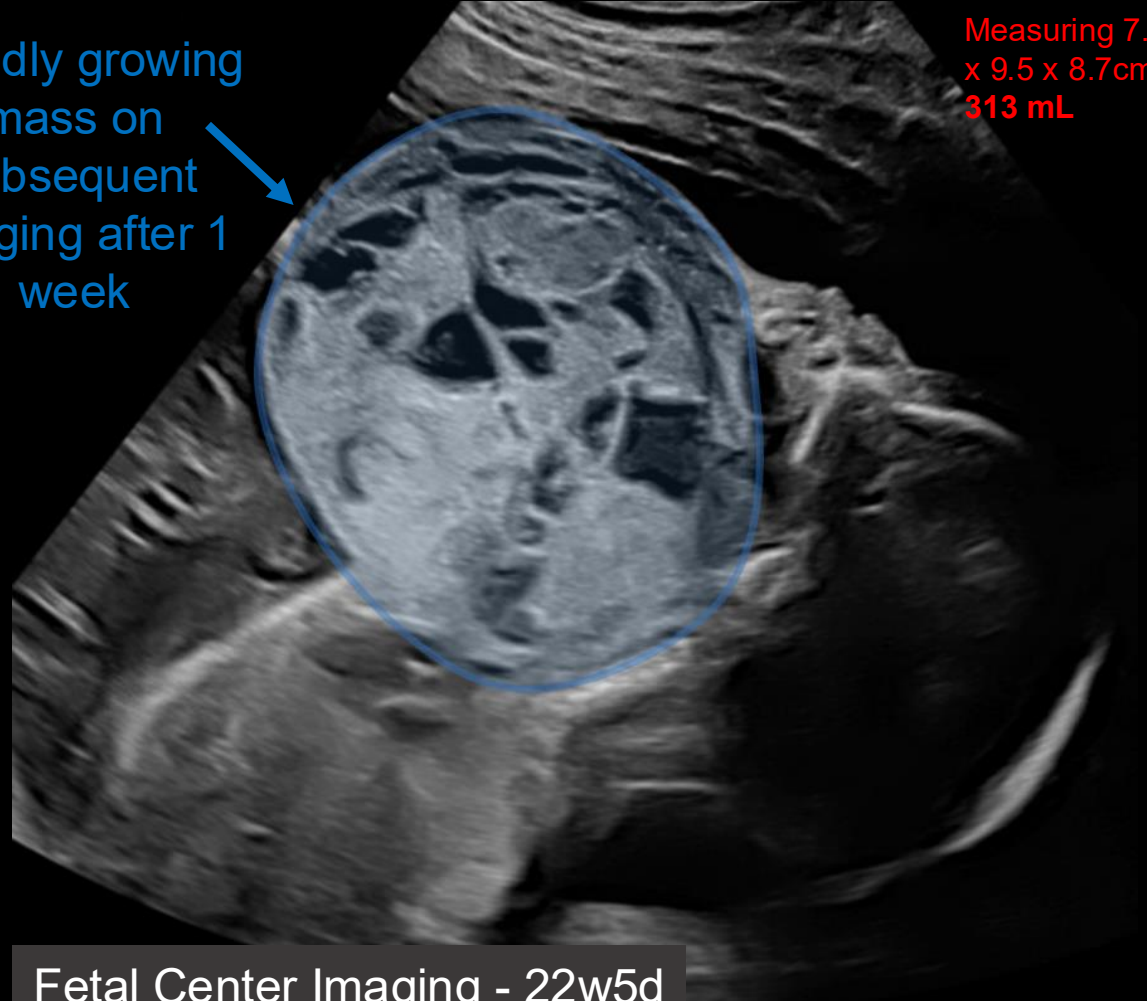
Findings (labeled)

Measuring 6.2
x 7.1 x 6.0cm;
137 mL



Initial Outside Imaging - 21w3d

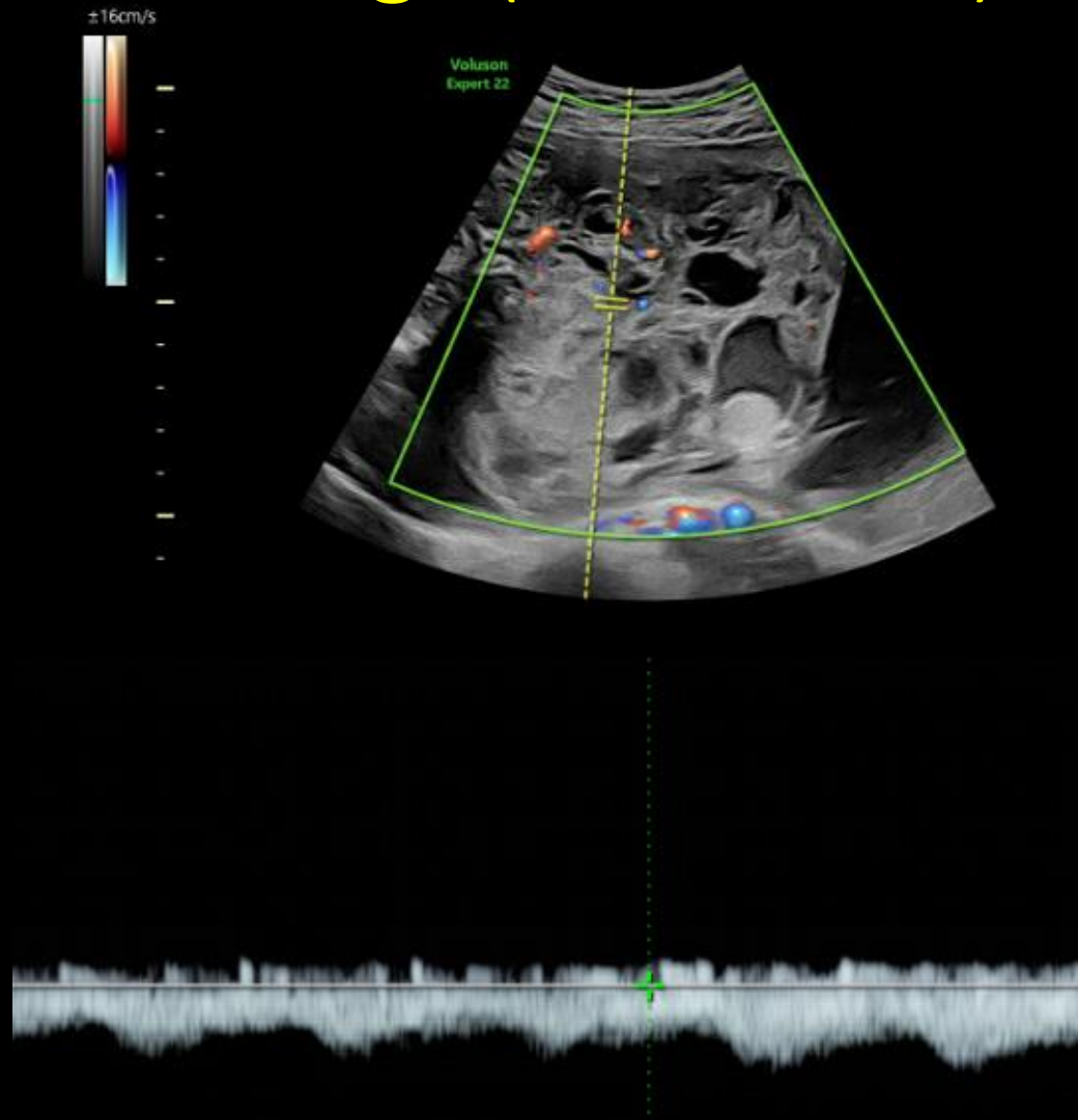
Rapidly growing
mass on
subsequent
imaging after 1
week



Fetal Center Imaging - 22w5d

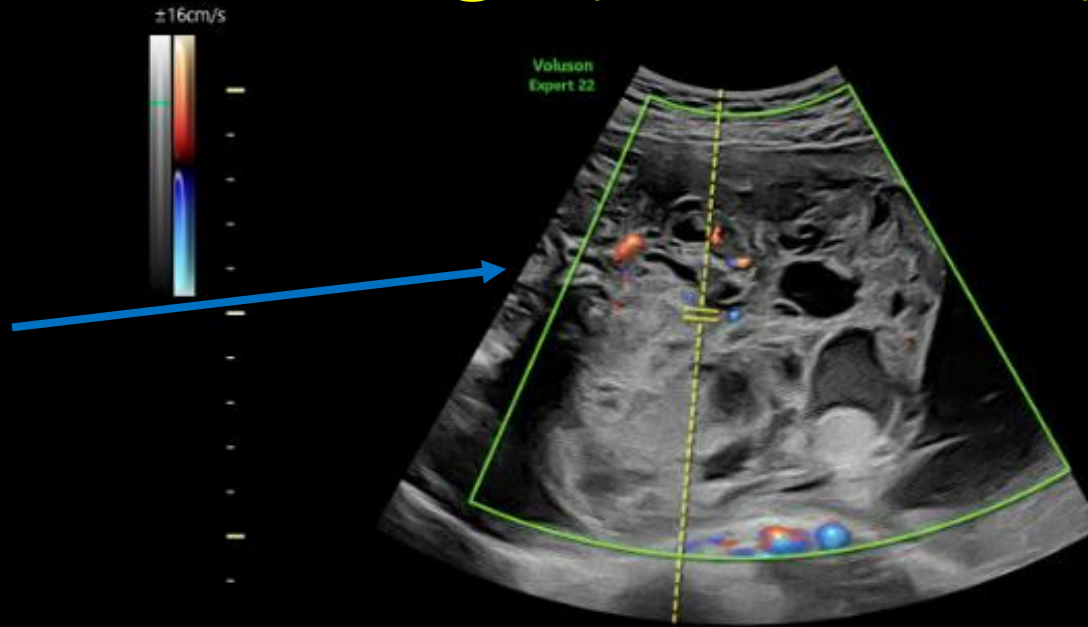
Measuring 7.3
x 9.5 x 8.7cm;
313 mL

Findings (unlabeled)



Findings (unlabeled)

Doppler ultrasound demonstrates vascularity throughout the mass



Pulsatile waveform indicating active blood flow



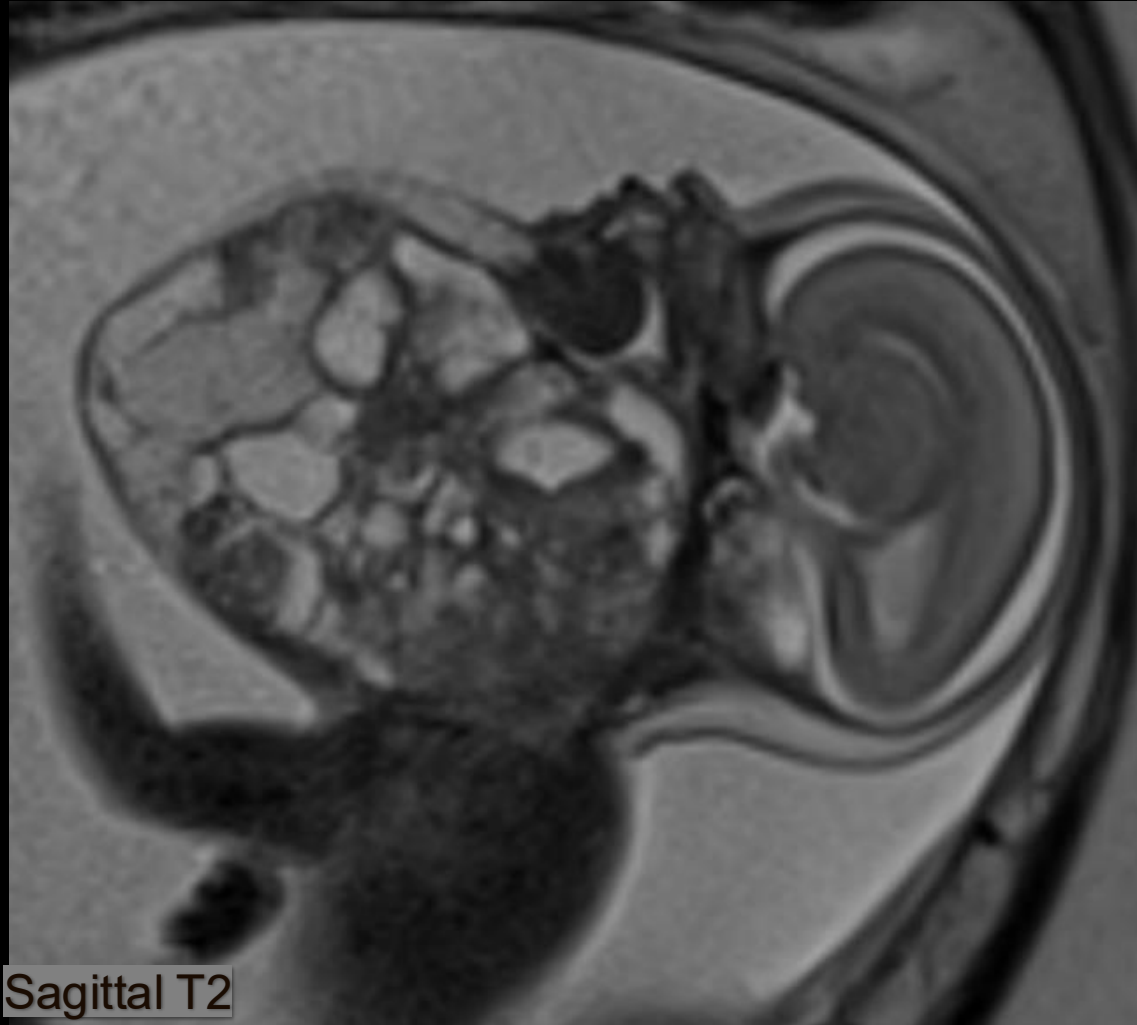
What Subsequent Imaging Should Be Ordered
for a Fetal Neck Mass seen on US?

ACR Appropriateness Criteria

Variant: 4 Second and third trimester screening for abnormal finding on ultrasound: **major anomalies**. Next imaging study.

Procedure	Appropriateness Category	Relative Radiation Level
US echocardiography fetal	Usually Appropriate	0
US pregnant uterus transabdominal detailed scan	Usually Appropriate	0
US pregnant uterus transabdominal follow-up	Usually Appropriate	0
MRI fetal without IV contrast	Usually Appropriate	0
MRI fetal without and with IV contrast	Usually Not Appropriate	0

Findings (unlabeled)

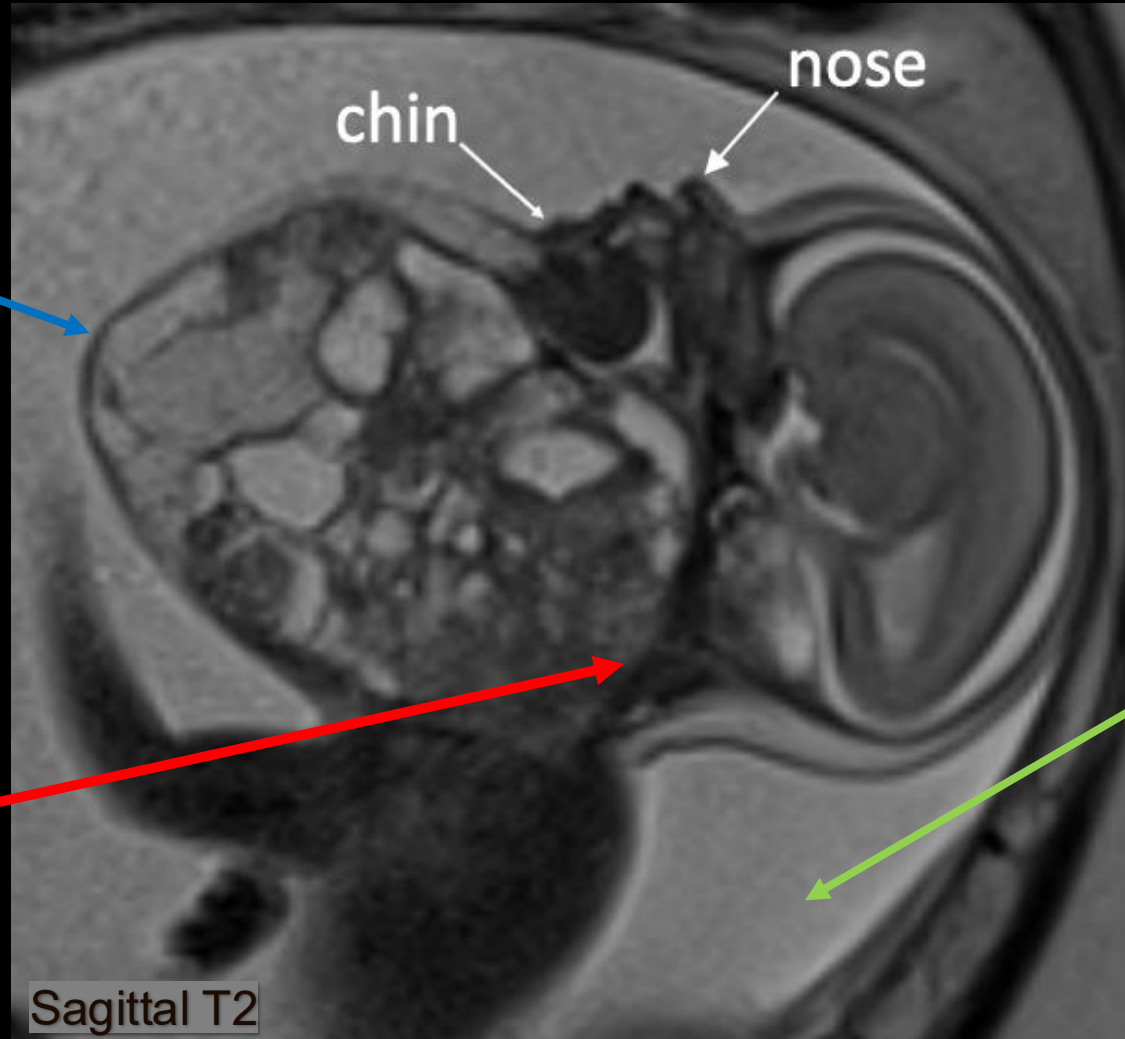


Sagittal T2

Findings: (labeled)

Mixed solid and cystic mass occupying the fetal neck extending into the oral cavity and downwards into the superior mediastinum

Trachea and esophagus not visualized on any sequence



Polyhydramnios – suggests the mass impedes swallowing

Differential Diagnosis

Differential for fetal neck mass:

- ❖ Cystic hygroma
- ❖ Lymphatic malformation
- ❖ Cervical teratoma
- ❖ Goiter
- ❖ Other soft tissue tumors (e.g. hemangioma, fibrosarcoma, neuroblastoma, etc.)

Final Dx:

Cervical Teratoma

Case Discussion

- Fetal cervical teratoma is a rare congenital germ cell tumor that represents about 20% of fetal teratomas^{1,2}
- They are generally benign and are composed of tissues from all three embryologic germ layers^{1,2}
- Fetal teratomas typically occur along the midline or paraxial regions and thus can have complications such as polyhydramnios and airway obstruction in the neck region^{1,2}

Case Discussion

- Diagnosis is typically made on ultrasound after 15-16 weeks of gestation demonstrating a heterogenous solid and cystic mass with vascularity^{1,2}
- MRI can be a useful adjunct study to assess for tumor extent and involvement of surrounding structures^{1,2}
- Management can include cesarean delivery along with ex utero intrapartum treatment (EXIT) procedure with airway access via laryngoscopy/bronchoscopy or tracheostomy if airway obstruction is suspected^{1,3}
- Major causes of death in cervical teratomas include respiratory failure from airway obstruction, stillbirth from hydrops fetalis, and esophageal compression leading to polyhydramnios and pulmonary hypoplasia^{2,4}

Case Discussion – Patient Outcome

- For this patient, due to the size and location extending from the floor of the mouth into the superior mediastinum with associated polyhydramnios, it was determined that the fetal airway and esophagus were obstructed and therefore this anomaly was incompatible with life.
- The decision was made to proceed with planned palliative delivery at 23w1d via Cesarean section. Comfort measures were provided and the neonate passed away at 2 hours after delivery.

References

1. Tonni G, De Felice C, Centini G, Ginanneschi C. Cervical and Oral Teratoma in the Fetus: A Systematic Review of Etiology, Pathology, Diagnosis, Treatment and Prognosis. Arch Gynecol Obstet. 2010;282(4):355-361. doi:10.1007/s00404-010-1500-7
2. Simonini C, Strizek B, Berg C, et al. Fetal Teratomas - A Retrospective Observational Single-Center Study. Prenat Diagn. 2021;41(3):301-307. doi:10.1002/pd.5872
3. Laje P, Johnson MP, Howell LJ, et al. Ex Utero Intrapartum Treatment in the Management of Giant Cervical Teratomas. J Pediatr Surg. 2012;47(6):1208-1216. doi:10.1016/j.jpedsurg.2012.03.027
4. De Backer A, Madern GC, van de Ven CP, Tibboel D, Hazebroek FW. Strategy for Management of Newborns With Cervical Teratoma. J Perinat Med. 2004;32(6):500-508. doi:10.1515/JPM.2004.122