

Fetal Imaging

During your introduction to fetal imaging, you will get to work one on one with the fetal attending and gets some hands-on experience in both advanced fetal ultrasound and fetal MRI. You will also get a chance to work with the other fetal team members, including the fetal surgeons, MFM docs, sonographers, etc. Through the rotation, you will be able to gain valuable experience in the different imaging techniques and understand the complexities of the discussions and the decision-making with complex fetal abnormalities.

Rotation Days: Monday – Friday

Start time: 8:00AM or earlier, if there is fetal conference or MR starting earlier.

Location: Fetal Center (5th floor). There is a reading room that you can ask the front desk to guide you to.

Logistics: Most days of the week, there will be a fetal radiologist (Dr. Aw, Halabi, or Ranginwala) assigned to the service. There maybe one or two days during the week that they are not assigned. Those days, the MR fetal neuro cases are read by the MR neuro attending and the MR fetal body cases are by the Body CT/MR attending. You are still expected to read the MR fetal cases with those respective attendings.

A good portion of your workday will be spent shadowing the sonographers when they scan the fetal ultrasounds. Find the sonographers first thing in the morning (especially Monday) and let them know you will be in the reading room so they can call you when they are ready to scan. **You can understand that these scans are very high stress for both the patients and the sonographers, so you are NOT allowed to practice scanning on these patients. Reserve most of your scanning questions for the sonographers for after you leave the room. Do not talk to the patients about the scans either.** You will review the fetal ultrasounds with the fetal radiologist. If there are no radiologists assigned for the day, you will review the ultrasounds with the MFM attendings for the day.

There are family meetings that occur with the fetal surgeon, MFMs, and patients throughout the week. While you will only be observing during these meetings, they are amazing opportunities for you to understand how imaging directly impacts patient care.

Fetal days will be quieter than other days of the rotation. There are numerous articles, videos and other educational resources that have been collected for you **so that you can learn during downtime.** You are expected to utilize these.

If on any day, there are no fetal MR or US cases for that day and there is no fetal radiologist assigned, you are expected to contact Oralia or Dr. Kappil and we will guide you on what to do for the workday.

*Please note that there are cardiologists who are assigned to fetal echo and will you not be working with these attendings.

Educational Goals and Objectives for Fetal:

You will see a wide range of cases during your rotation.

During your rotation, you will:

1. Become familiar with normal fetal anatomy in both US and MRI
2. Understand the appropriate use of fetal MRI in the evaluation of abnormal prenatal ultrasounds.
3. Gain some understanding of advanced prenatal ultrasound

Fetal Imaging

Educational Resources:

The AIUM (American Institute of Ultrasound in Medicine) has a [OBGYN Lecture Series](#) that is online and free (!) and covers many of the important topics for Ob/Gyn US. I have highlighted certain lectures in this series which would be most relevant to the fetal rotation at Lurie, but you may want to review other lectures for your education/board review.

General Fetal Ultrasound:

[Detection of Fetal Structural Abnormalities with US during Early Pregnancy](#) *RadioGraphics* 2004; 24:157–174`

Watch: [First Trimester Fetal Anatomic Assessment](#) by *Reem S. Abu-Rustum, MD @ the AIUM*

[A pictorial guide for the second trimester ultrasound](#) *AJUM August 2013 16 (3)*

Watch [Fetal Doppler Velocimetry](#) by *Giancarlo Mari, MD MBA @ the AIUM*

[A Radiologist's Guide to the Performance and Interpretation of Obstetric Doppler US](#) *RadioGraphics* 2019; 39:893–910

General Fetal MRI:

[How to read a fetal magnetic resonance image 101](#) *Pediatric Radiology (2020) 50:1810–1829*

Imaging of the Placenta:

Watch: [Placenta and Umbilical Cord](#) by *Thomas D. Shipp, MD, RDMS @the AIUM*

[Placental Imaging: Normal Appearance with Review of Pathologic Findings](#) *RadioGraphics* 2017; 37:979–998

Twins:

Watch: [Ultrasound in Twins](#) by *Jodi S. Dashe, MD @ the AIUM*

[Guidelines for scanning twins and triplets with US and MRI](#) *Pediatr Radiol (2016) 46:155–166*

[US Evaluation of Twin Pregnancies: Importance of Chorionicity and Amnionicity](#) *RadioGraphics* 2019; 39:2146–2166

[Twin Reversed Arterial Perfusion Sequence](#) *RadioGraphics* 2014; 34:1385–1390

[Twin–twin transfusion syndrome: cerebral ischemia is not the only fetal MR imaging finding](#) *Pediatr Radiol (2007) 37:47–56*

CNS abnormalities:

Watch [Fetal Central Nervous System](#) by *Beth M.Kline-Fath, MD @the AIUM*

[Abnormalities of the Fetal Central Nervous System: Prenatal US Diagnosis with Postnatal Correlation](#) *RadioGraphics* 2020; 40:1458–1472

[Fetal neuroimaging: US and MRI](#) *Pediatr Radiol (2009) 39 (Suppl 3):S422–S435*

[MR Imaging of the Fetal Face: Comprehensive Review](#) *RadioGraphics* 2018; 38:962–980

Watch [Fetal Face, Neck and Head](#) by *Dolores H. Pretorius, MD and Michael E. Hahn MD, PhD @the AIUM*

Thoracic Abnormalities:

Watch [Fetal Chest](#) by *Christopher Cassady, MD @ the AIUM*

[Congenital Chest Malformations: A Multimodality Approach with Emphasis on Fetal MR Imaging](#) *RadioGraphics* 2010; 30:385–395

[Fetal MR Imaging of Congenital Diaphragmatic Hernia](#) *RadioGraphics* 2012; 32:1067–1084

Cardiac Abnormalities:

Watch: [Sonographic Screening Examination of the Fetal Heart](#) by *Lami Yeo, MD and Roberto Romero, MD @ the AIUM*

[Fetal Cardiac Screening Sonography: Methodology with supplemental materials](#)

Fetal Imaging

[Fetal Cardiac US: Techniques and Normal Anatomy Correlated with Adult CT and MR Imaging](#) *RadioGraphics* 2017; 37:1290–1303

Watch: [Common Cardiac Abnormalities](#) by Alfred Abuhamad, MD @ the AIUM

Abdominal Abnormalities:

[Complex Abdominal Wall Defects: Appearances at Prenatal Imaging](#) *RadioGraphics* 2015; 35:636–649

Watch: [Anomalies of the Fetal Gastrointestinal Tract](#) by Carol B. Benson, MD @ the AIUM

[Fetal MR Imaging of Gastrointestinal Abnormalities](#) *RadioGraphics* 2016; 36:904–917

[Fetal Hepatomegaly: Causes and Associations](#) *RadioGraphics* 2020; 40:589–604

Watch: [The Fetal Genitourinary Tract](#) by Beverly G. Coleman, MD @ the AIUM

[Fetal Urinary Tract Anomalies: Review of Pathophysiology, Imaging, and Management](#) *AJR* 2018; 210:1010–1021

[Fetal MRI of cloacal exstrophy](#) *Pediatr Radiol* (2013) 43:593–604

Skeletal and Limb Abnormalities:

Watch: [Prenatal Diagnosis of Skeletal Dysplasias](#) by Luis F. Goncalves @the AIUM

[Fetal Skeletal Dysplasia: An Approach to Diagnosis with Illustrative Cases](#) *RadioGraphics* 2008; 28:1061–1077

[Obstetric US: Watch the Fetal Hands](#) *RadioGraphics* 2006; 26:811–832

Additional articles and videos: (may be of educational benefit in other rotations/ ED situations)

Watch: [AIUM Practice Parameter for the Performance of Obstetrical Ultrasound Examinations](#) from the AIUM Bryann Bromley, MD

[Normal and Abnormal US Findings in Early First-Trimester Pregnancy: Review of the Society of Radiologists in Ultrasound 2012 Consensus Panel Recommendations](#) *RadioGraphics* 2015; 35:2135–2148

[Ultrasound Evaluation of the First Trimester](#) *Radiol Clin N Am* 52 (2014) 1191–1199 *about early pregnancy