OBSTETRICAL ULTRASOUND UMBILICAL ARTERY DOPPLER AND AFI LIMITED PROTOCOL

BILLING CODES: UOBUA and UOBL (or UOBAI)

Anatomy not cleared on prior will be evaluated at next growth ultrasound.

PATIENT PREP: None

**** Requisitions should be read carefully to ensure the proper exam is performed.**

**** See specialized protocol for TTTS (Twin to Twin Transfusion Syndrome) and TAPS (Twin Anemia Polycythemia Sequence) for all mono-di and mono-mono pregnancies.**

IMAGES TO OBTAIN:

- Fetal Heart Rate
- Fetal Position
- AFI as described below
- UA Dopplers as described below
- If AFI is low, also include: Stomach and bladder

AMNIOTIC FLUID VOLUME:

- 20-24 weeks: AFI evaluation should be done using MVP. If abnormal, obtain a four quadrant AFI.
- After 24 weeks, or if appears abnormal before 24 weeks: Evaluation should be done using a four quadrant AFI
- For multiple gestations (twins, triplets, etc): Always measure the MVP unless Mono/mono gestation, then use four quadrant measurements.
- Fluid pockets measured should be greater than 1cm in width.

AFI LEVELS (FOUR QUADRANTS)

<5cm	Oligohydramnios
5-8 cm	Borderline Low
8-20cm	Normal
20-24cm	Borderline High
>24cm	Polyhydramnios

SINGLE MVP AMNIOTIC FLUID LEVELS

<2cm	Oligohydramnios
2-8cm	Normal
>8cm	Polyhydramnios

UMBILICAL ARTERY DOPPLER: : Perform UA Doppler as requested, or if either of the following is determined- AC or EFW is <10% . For multiple, regardless of chorionicity, UA Doppler should be taken for BOTH twins if one is FGR.

TECHNIQUE:

- 3 spectral Doppler samples of the umbilical artery are taken at the middle section of the umbilical cord.
- The sample with the highest S/D ratio is documented in the OB report.
- Avoid being close to the fetus or placental cord insertions.
- For multiples, if necessary, the cord can be traced from fetal cord insertion to ensure the proper fetal cord is documented in cases where it is challenging to determine which cord corresponds to a certain fetus. In this case, it should be clearly stated on the report that the Doppler was obtain at the fetal end to accurately compare to prior and future measurements.
- If a dramatic difference is seen in S/D ratios between exams, BOTH umbilical arteries should be sampled and compared. There are cases where one artery has normal flow, and the other is abnormal. Describe this in the report if this is the case.

INTERPRETATION:

- An umbilical artery S/D ratio of > 95th percentile is considered abnormal.
- If absent end diastolic flow (or reversed diastolic flow) is seen, this needs to be reported urgently via a phone call to the clinical team before the patient leaves. The patient may be admitted.
- If absent or end diastolic flow is present additional imaging of ductus venosus is indicated.
- Absent or reversed diastolic flow does not mean that the S/D is = 1. For these cases, only include the peak systolic velocity and report these as “Absent diastolic flow,” or “Reversed diastolic flow.”

UMBILICAL ARTERY OB EXAM IMAGE LIST

IMAGE	MODE
FHR	M-Mode
Position	2D
4 quadrant AFI	2D
UA Doppler x 3	Spectral
If AFI is low, include stomach and bladder	

UA DOPPLER AND AFI LIMITED PROTOCOL HISTORY

	Date	Changes made	By whom
Created	5/3/2022		Renee Betit Fitzgerald
Updated	5/19/20322	Added to Doppler section – -Do both twins if either is ordered -Ok to follow cord from abdomen to ensure correct fetus in multiples -Sample both arteries if big discrepancy between exams	Renee Betit Fitz
Change	9/29/2022	UA dopplers for Di-Di Twins only to be done on FGR twin. Mono-di/Mono-Mono will remain both twins	Manjiri Dighe and Edith Cheng
Added	5/1/2023	Added anatomy not cleared on prior will be evaluated at next growth ultrasound.	OB Protocol Meeting 4/27 Dighe, Cheng, Ma, Hitti, Shaun, Renee, Dalene
Change	7/25/2024	Di-Di Twins: UA Doppler should be obtained for BOTH twins when one is FGR	Combined Protocol Meeting MFM/RAD Attendees: M. Dighe, E. Cheng, J. Hitti, M. Richley, S Bornemeier, B. Marion, R. Betit Fitzgerald