Ultrasound – OB Second/Third Trimester Limited Evaluation

PURPOSE:
Targeted evaluation to confirm fetal number, cardiac activity, presentation, amniotic fluid volume, placental position, fetal biometry and adnexa, generally in the emergent setting.

SCOPE:
Applies to OB ultrasound pelvis studies performed in:

- UT Southwestern University Hospitals and Clinics, Imaging Services (UTSW)

INDICATIONS:

- Signs or symptoms (pain, cramping, bleeding, etc) referred to the pelvis
- Premature rupture of membranes, premature labor and/or amniotic fluid abnormalities
- Evaluate for fetal well-being in the setting of trauma or acute maternal medical issue that may affect the pregnancy
- Significant discrepancy between uterine size and dates
- Evaluate for suspected gestational trophoblastic disease

CONTRAINDICATIONS:

- No absolute contraindications
- Request for a complete fetal anatomic survey should be directed to OB/Maternal Fetal Medicine (MFM) on an outpatient basis
- Fetal anomalies or critical obstetric conditions (such as cervical length/incompetence, placenta accreta spectrum) should also be directed to OB/MFM for further evaluation

EQUIPMENT:
Curvilinear transducer with a frequency of 2-5 MHz or greater that allows for appropriate penetration and resolution depending on patient's body habitus for transabdominal approach.

PATIENT PREPARATION:

- Review any prior imaging, making note of abnormalities requiring further evaluation
- For transabdominal approach, bladder should be distended with urine

EXAMINATION:

GENERAL GUIDELINES:

- This targeted examination includes evaluation of the cervix, placenta, amniotic fluid, and limited fetal anatomy performed in the acute clinical setting. Each pregnancy should have a complete second/third trimester ultrasound including complete fetal anatomic survey on an outpatient basis.

EXAM INITIATION:

- Introduce yourself to the patient
- Verify patient identity using patient name and DOB
- Explain test
- Obtain patient history including symptoms and LMP. Enter and store data page
- For transabdominal approach, bladder should be distended

- Place patient in supine position if the patient can tolerate. Later in gestation, decubitus positioning may be required.

TECHNICAL CONSIDERATIONS:

- Always review any prior imaging, making note of abnormalities requiring further evaluation.
- Evaluation of the maternal uterus and adnexal structures should be performed when appropriate. Normal maternal ovaries are frequently not visualized during late pregnancy
- Evaluate cervical configuration (open/closed). Do not provide cervical length (specific certification required). Overdistended bladder may exaggerate cervical length. Adjacent uterine contraction may underestimate cervical length.
- Evaluate placental location, appearance, and relationship to internal os. Evaluate for subchorionic or retroplacental bleed, especially in symptomatic patients.
- Transperineal or transvaginal approach with radiologist approval/supervision may be considered in visualizing the internal os and its relationship to the placenta if suboptimally visualized by transabdominal approach.
- Measure the amniotic fluid deepest vertical pocket (DVP). If DVP is <2 cm or >8 cm, Amniotic Fluid Index (AFI) should be performed for oligo- and polyhydramnios, respectively.
- DVP should not include fetal parts or the umbilical cord. Color Doppler can be used to verify that the umbilical cord is not within the measurement.
- Fetal survey: Fetal anatomy may be adequately assessed after approximately 18 weeks gestational age. Some structures may be documented before this time. Due to the targeted nature of this exam, anatomic fetal surveys are NOT performed.
- Evaluate fetal lie/presentation (cephalic, breech, transverse, variable)
- Measure fetal heart rate (FHR) from M-mode Doppler tracing. Note abnormal heart rate and/or rhythm. Do <u>not</u> obtain FHR cine.
- Fetal biometry (see APPENDIX):
    - At 14 weeks, 0 days, BPD, HC, AC, and FL (instead of CRL) should be used for dating.
    - Biparietal Diameter (BPD) is measured at the level of the thalami and cavum septum pellucidum. Cerebellar hemispheres should not be visible in this plane. Measurement is taken from outer edge of proximal skull to inner edge of distal skull
    - Head circumference (HC) is measured at the same level as BPD around the outer perimeter of the calvarium excluding subcutaneous tissues of the skull
    - Femoral Length (FL) can be reliably used after 14 weeks gestational age. Long axis of femoral shaft is most accurately measured with beam of insonation perpendicular to shaft, excluding distal femoral epiphysis.
    - Abdominal Circumference (AC) should be measured along the skin surface on a true transverse view at the level of the junction of the umbilical vein, portal sinus, and fetal stomach when visible.
- Fetal weight and percentiles will be calculated based on biometric data and published nomograms
- First trimester crown-rump length (CRL) measurement is the most accurate means for initial dating a pregnancy (if < 14 weeks, 0 days), and should be used as baseline for gestational age and subsequent growth. Pregnancy should not be re-dated if an accurate earlier scan has been performed and is available for comparison.
- Variability of gestational age estimations increases with advancing pregnancy. Appropriate growth should be reported if current biometric data estimates gestational age within 2 weeks of established gestational age in the second trimester and within 3 weeks of

established gestational age in the third trimester. Assessment of growth should be done if prior study is >3 weeks prior. Significant discrepancies between established gestational age and fetal measurements may indicate growth restriction or macrosomia.

- Evaluate for multiple gestations documenting chorionicity, amnionicity, comparison of fetal sizes, and estimation of amniotic fluid volume (increased, decreased, normal) on each side of the membrane.

DOCUMENTATION:

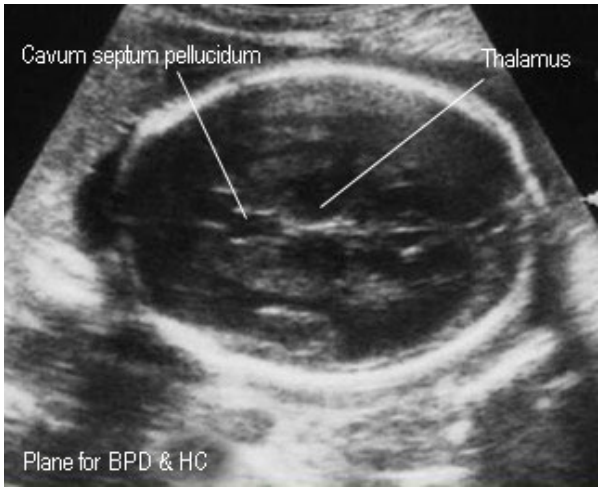
- Transabdominal approach:
  - Uterus and Cervix
    - Grayscale images
      - Longitudinal
        - Cervix and lower uterine segment
        - Right of midline, midline, left of midline
        - Annotate placental location and demonstrate inferior placenta tip relative to cervix-static image only unless placental abnormality detected
        - Demonstrate fetal lie-static image only
        - Deepest vertical fluid pocket (DVP). If DVP is <2 cm or >8 cm, Amniotic Fluid Index (AFI) should be calculated.
      - Transverse
        - Cervix and cul-de-sac
        - Lower uterine segment
        - Mid body
        - Fundus
        - Annotate placental location and fetal lie-static image only unless placental abnormality detected
    - Focal uterine or placental cine sweep only for suspected abnormalities. Do not obtain cine sweep of entire uterus and placenta
  - Ovaries and Adnexa
    - Longitudinal and transverse images through each ovary with measurement in 3 orthogonal planes, if ovary well visualized
      - Obtain transverse only "adnexa" static image with and without color, if ovary not visualized
        - Include in image the ipsilateral iliac vessels
    - Obtain ovarian color and spectral Doppler of arterial and venous waveform, if seen, only for indication of "pain"
    - Obtain cine sweeps of the ovaries or adnexa only in the setting of abnormality
  - Other Images:
    - Confirm cardiac activity with M-mode
      - Measure FHR in M-mode
    - Fetal biometry with measurements (see APPENDIX)--single image only
      - BPD
      - HC
      - AC
      - FL

- (CRL not needed for gestations >13 weeks, 6 days)
- Data page(s)

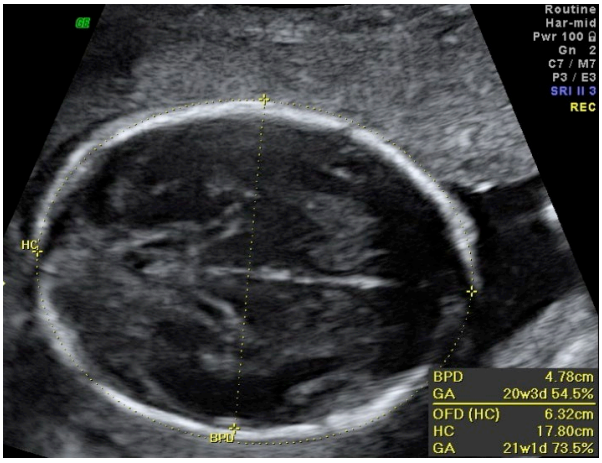
PROCESSING:

- Review examination data
- Export all images to PACS. Include OB report page.
- UTSW: Confirm data in Imorgon
- Document relevant history and any study limitations

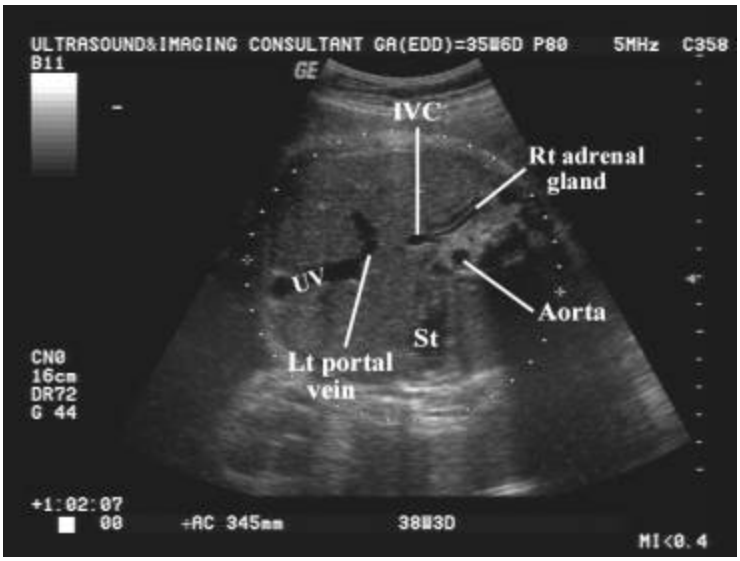
APPENDIX:



Plane for BPD and HC



BPD and HC



AC

FL

REFERENCES:

ACR-ACOG-AIUM-SMFM-SRU Practice Guideline (Revised 2018)

REVISION HISTORY:

SUBMITTED BY:	David T. Fetzer, MD	**Title**	Medical Director
APPROVED BY:	David T. Fetzer, MD	**Title**	Medical Director
APPROVAL DATE:	11-09-2015		
REVIEW DATE(S):	10-30-2018		Theresa Huang, MD
REVISION DATE(S):	02-13-2019	**Brief Summary**	Clarified when and how to use CRL as opposed to BPD/HC/AC/FL for dating
	02-11-2022 Approved by Drs. Eric Zeikus; Theresa Huang	**Brief Summary**	Highlighted the targeted nature of this exam, generally performed in the emergent setting. Removed requirement to obtain images of cord/insertion
	06-10-2022 Approved by Drs. Eric Zeikus; Theresa Huang	**Brief Summary**	Removed wording and pictures pertaining to umbilical cord insert, 3vc, and fetal genitalia, Removed measurements of uterus, revised uterus/placenta cine sweeps to "focal abnormalities only", add color/spectral Doppler of ovaries for indication of "pain" only and only if visualized, added emphasis for static images only
	07-01-2022 Approved by Dr. Huang	**Brief Summary**	Edited statement about measuring amniotic fluid to not include umbilical vein