Unexpected findings on routine exams

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I have no conflicts to disclose
1st trimester sonogram

- Confirmation of IUP
- Determination of viability
- Estimation of gestational age
- Fetal anatomy and nuchal translucency
- Diagnosis and characterization of multiple pregnancies
  - Amnionicity and chorionicity
- Identification & evaluation of ectopic gestations
- Evaluation of cause of bleeding
- Evaluation of source of pelvic pain
1<sup>st</sup> trimester sonogram

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Diagnostic Criteria for Nonviable Pregnancy Early in the First Trimester

Peter M. Doubilet, M.D., Ph.D., Carol B. Benson, M.D., Tom Bourne, M.B., B.S., Ph.D., and Michael Blaivas, M.D., for the Society of Radiologists in Ultrasound Multispecialty Panel on Early First Trimester Diagnosis of Miscarriage and Exclusion of a Viable Intrauterine Pregnancy*
Criteria for determination of non-viability

- CRL of greater/equal to 7 mm with no cardiac activity
- Mean Sac Diameter of greater than 25 mm with no embryo
- No embryo with cardiac activity 2 weeks after a scan showed a gestational sac without a yolk sac
- No embryo with cardiac activity 11 days after a scan showed a gestation sac with a yolk sac
Failed IUP
Diagnostic Criteria for Nonviable pregnancy in 1st trimester
Septate uterus
There is a strong association between a septate uterus and an adverse pregnancy outcome:

- Considerably higher incidence of recurrent 1st trimester loss
  - Particularly in patients with bleeding
- Even in those reaching viability, only a small number of patients deliver a normal sized baby at term
- The reproductive outcome has been largely reported to be improved after metroplasty
  - Should be considered in non-pregnant patients desiring later fertility
Scar ectopic
Ovarian neoplasm
1st trimester sonogram

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COMMITTEE OPINION

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Committee on Obstetric Practice
American Institute of Ultrasound in Medicine
Society for Maternal-Fetal Medicine

This Committee Opinion was developed by the American College of Obstetricians and Gynecologists’ Committee on Obstetric Practice, in collaboration with members Christian M. Petker, MD; James D. Goldberg, MD; and Yasser Y. El-Sayed, MD; the American Institute of Ultrasound in Medicine’s liaison member Joshua A. Copel, MD; and the Society for Maternal-Fetal Medicine.

This document reflects emerging clinical and scientific advances as of the date issued and is subject to change. The information should not be construed as dictating an exclusive course of treatment or procedure to be followed.

Methods for Estimating the Due Date
Determination of gestational age

- Ultrasound measurement of the embryo or fetus in the 1st trimester is the most accurate way to confirm or establish gestational age.

- If pregnancy resulted from assisted reproductive technology; ART derived gestational age should be used.

- CRL vs LMP
  - Prior to 9 weeks; a discrepancy of > 5 days ultrasound dating
  - 9-14 weeks; a discrepancy of > 7 days ultrasound dating
Determination of gestational age

- Accurate dating is important to improve outcomes
  - Particularly for elective inductions or C-sections
Early evaluation of CNS

9 weeks
Anencephalic
Early evaluation of the CNS

8 weeks 6 days
Ist trimester sonogram

- Main goal is to provide accurate information with the goal of optimizing outcomes for both mother & child

Early evaluation of fetal anatomy
detection of some anomalies
Fetal anomaly detection

- Which anomalies can we reasonably expect to detect prior to 14 weeks?
- Prominent rhombencephalic vesicle

- The fetal brain is constantly developing during gestation
Normal 12 week

- The choroid filled lateral ventricles dominate the intracranial image at 11-14 weeks
  - Thin brain mantle
- Hemispheres should appear symmetric
  - Separated by a clearly visible falx
Acrania
Early evaluation of CNS encephalocele
holoprosencephaly

Trisomy 13
Sonoembryology: Mid-gut herniation, 9w 1d
Physiologic mid-gut herniation

- Normal embryologic process
- Due to rapid growth of midgut during the 1st trimester
- Bowel returns to abdomen by 11-12 weeks
- Liver never herniates
omphalocele

10 weeks

Trisomy 18
omphalocele

14 weeks 3 days

Beckwith-Weidemann
Bowel TA vs TV
Early evaluation of GU tract

- Megacystis at 10-14 weeks
  - ~ 50% resolve
  - Association with aneuploidy
  - Increased incidence of obstructive uropathy

- Normal bladder length < 6 mm
  - Mild megacystis 7-11 mm (Grade 1)
  - Moderate megacystis 12-15 mm (Grade 2)
  - Severe megacystis > 15 mm (Grade 3)
megacystis

- Increased incidence of aneuploidy
  - Often increased Nuchal Translucency
  - Usually mild-moderate bladder size

- Early manifestation of lower urinary tract obstruction
  - Often severe increase in bladder length
megacystis + thickened NT
Megacystis + thickened NT
Body stalk anomaly
extremities
Incidental ovarian mass

- Usually found on routine sonogram
- May present with abdominal pain
  - Cyst rupture
  - Intracystic hemorrhage
  - Torsion
    - Risk is greatest during periods of rapid uterine growth or involution
- Most are functional
  - Corpus luteal cysts
- Most common neoplasm
  - Dermoid
  - Serous cystadenoma
Adnexal masses in pregnancy

- With the increased sonographic sophistication, observation is an acceptable option

- Surgery is warranted if
  - Malignancy is suspected
  - The mass is clinically symptomatic
  - There is a risk of torsion
  - Potential to obstruct labor
Hemorrhagic corpus luteal cyst

11 weeks 2 days

16 weeks
11 weeks 2 days

Mucinous cystadenoma
11 weeks; ? management

Mucinous cystadenocarcinoma

10 cm
26 yo; 8 weeks G1

Right ovary
Postpartum follow-up
? diagnosis
Decidualized endometrioma

- Under the influence of progesterone during pregnancy, the uterine endometrium transforms into decidua with vessels entering the decidual lining.

- This is paralleled in the inner wall of the endometrioma
  - This leads to sonographically evident mural excrescences with detectable flow (often abundant)
    - As a result of the recruitment of extensive blood supply by the endometrial cells and secondary stromal thickening
  - No ascites
  - No septations
  - CA-125 not helpful
Decidualized endometrioma
Endometrioma vs borderline

endometrioma

Borderline cystadenocarcinoma
Adnexal masses in pregnancy

- Reported incidence varies greatly
  - Most incidentally found on 1st trimester exam
- Overall incidence of malignancy is 1-8%

- Sonographic evaluation allows assessment of risk without compromising maternal or fetal safety
- MRI may be helpful if sonogram is inconclusive
  - Large masses
  - Confirmation of paraovarian vs ovarian origin
  - Tissue characterization
Adnexal masses in pregnancy

- Elective surgery should be performed in the early 2nd trimester
  - Allows time for functional cysts to resolve
  - Least teratogenic effects on the fetus
  - Lowest risk of preterm labor

- Emergency surgery is associated with higher risk of fetal compromise
  - Likely due to underlying etiology
transvaginal
“entrapped” uterus

- Uterine retroversion is a normal variant
  - 20%
- When a pathologic process distorts the uterine contour
  - Leiomyoma
  - Uterine anomaly
- Post-inflammatory
  - Endometriosis
  - Adhesions
- Uterus may become ‘fixed’ in a retroverted/retroflexed position with loss of its normal mobility
“entrapped” uterus

- Rare
  - 1 per 3000-6000 pregnancies
- Usually occurs after the 12th week
  - Earlier with multiple gestations
  - Uterine anomalies
  - Fibroid/adnexal mass
- As gestation advances, the incarceration worsens because the uterus cannot rotate anteriorly,
  - it becomes wedged into the hollow of the sacrum.
  - the cervix exerts increasing pressure on the urethra
“entrapped” uterus

**Clinical presentation**
- Abdominal pain or pelvic pressure
- Uterine contractions/cramping
- Paradoxical urinary symptoms
  - Incontinence
  - Frequency
  - Retention
- Bowel dysfunction
  - Tenesmus
  - Constipation
- Bleeding

**Treatment**
- Intermittent or indwelling catheter
- Manual uterine repositioning