A recent OB on-call case brought up issues which are important teaching points. It is not only valuable for on call but also for the occasional OB case which you will see in practice.

1. Always look to see if the patient had an earlier ultrasound in our system (even if the sonographer neglected to do so). This is now very feasible with PACS. It is wrong and potentially dangerous to date the pregnancy based upon the current ultrasound examination rather than by the earliest available exam. (Disregarding the earlier exam dating may lead one to Miss IUGR or a large for gestational age fetus. Not only is this bad for the patient, it is also difficult to defend in court in case of a bad outcome).

2. Review the earliest exam which could date the pregnancy. Decide if the images and biometric measures on that earlier exam were satisfactory for dating the pregnancy.

3. If so, find the EDC recorded on the earlier study based upon the ultrasound biometry (usually on the report page next to the AUA [average ultrasound age]) unless you believe the dating by LMP is more dependable (in which case, use the EDC based upon LMP).

4. Ask the sonographer (if this has not been done already), to reopen the case and to enter the EDC from the earlier exam into the patient information page. This results in current dating of the pregnancy based on the earlier assessment.

5. The sonographer will need to reopen the report page. At this time the current gestational age will be updated (based on the earlier exam).

6. At this point, it is the obligation of the physician to decide if interval growth has been satisfactory. Thus, if the AUA (average ultrasound age) lags the gestational age based upon the earlier study by 2 or more weeks, an alarm should be raised about the possibility of IUGR. The greater the lag, the more likely the possibility of IUGR. If the AUA is ahead by 2 or more weeks, the possibility of LGA (large for gestational age) fetus should be raised, along with the possibility of maternal diabetes. The degree of concern about IUGR and LGA varies according to the current gestational age. Two weeks of discrepancy is more worrisome earlier in the pregnancy than later (when there is more normal variation in growth).

7. If the fetus is at 22 or more weeks at the time of the current exam (dating based on earlier study as described above), a weight calculation will show up in the biometric report page along with a weight percentile. Weight percentiles between 11 and 89% are normal. Weight percentiles at 10% or lower are abnormal and raise great concern regarding IUGR and should be followed up with additional testing. Weight percentiles of 90% or greater are abnormal and raise concern for LGA fetus. Nevertheless, when weight percentiles fall to less than 25% or are greater than 80%, we should indicate to the referring physician that we may be witnessing the beginning of IUGR or the early stage of LGA fetus and should recommend a followup examination (typically within 2 weeks).

8. Also worth noting is whether any of the individual biometric measurements is lagging or ahead of the assigned gestational age.

9. A lag in femur growth may be an indication of a dwarf syndrome, trisomy 21, or may be due to genetic variation. A lag of 1.5 or more weeks between 13 and 24 weeks should be noted and follow-up ultrasound for growth recommended. A lag of 2 or more weeks, between 24 and 34 weeks should generate a follow-up exam. A lag of 2.5 weeks or more is a concern at greater than 34 weeks. A long femur is usually not a concern.

10. A lag or overgrowth in BPD may not be significant if the HC is within 2 weeks of the assigned gestational age. A small HC (lagging by more than 1.5 weeks up to 24 weeks and by more than 2 weeks at greater than 24 weeks) could indicate microcephaly, an encephalocele, spina bifida, or may be indicative of genetic variation. A large HC is usually not a significant problem as long as normal intracranial structures are seen (i.e., no masses and no hydrocephalus).

11. A lag in AC (abdominal circumference) may indicate IUGR or an abdominal wall defect (but this should be seen). Overgrowth of the AC, may mean a LGA fetus.

I hope this was not too overwhelming, but detailed attention to fetal growth seems to be an important issue that is all too often neglected, at great risk to patient and to us.

This is some feedback I'd like to give to the residents taking call, based on errors that I have identified on recent emergency ultrasound readings:

1. The basilic vein and the cephalic vein are NOT part of the deep venous system of the arm. Therefore, thrombus within these vessels should not be called DVT. Rather, this can be termed superficial venous thrombosis. (Similarly for the greater and lesser saphenous veins). (Conversely, the posterior tibial and peroneal veins are part of the deep venous system and are not superficial veins).

2. In a patient with a positive pregnancy test with NO sign of an intrauterine pregnancy, any adnexal mass must FIRST be suspected of being an ectopic pregnancy mass. Of course, one needs to find a corpus luteum in an ovary (often ipsilateral to the EP) in addition to the suspected mass to avoid misdiagnosing the corpus luteum as an ectopic pregnancy. And, other masses may need to be considered as well: pedunculated fibroid, broad ligament fibroid, ovarian tumor. But it is important to remember that in the reproductive age ANY adnexal mass not proven to be something else must be suspected FIRST of being an ectopic pregnancy mass (including solid masses).

3. In a patient with a positive pregnancy test and no sign of an intrauterine pregnancy or an adnexal mass, the conclusion must be the famed TRIPLE diagnosis of early IUP prior to demonstration of a sac, a failed or failing IUP, or an ectopic pregnancy. I have recently seen an on-call incorrect conclusion of failed IUP or EP in this clinical and imaging setting. The only time we can use this diagnosis of a failed IUP or EP in this setting is if we also have a known serum hCG level above the discriminatory zone (that is, above 1-2 thousand mIU/ml) when a gestational sac is always seen in a uterus using transvaginal ultrasound in a normal ongoing pregnancy. And, if the hCG level is below the discriminatory zone and no intrauterine sac is seen, all bets are off and we must revert to the TRIPLE diagnosis.

4. In a patient with a small intrauterine gestational sac BEFORE an embryo is yet identified, the presence of a clearly defined yolk sac indicates that this is a true gestational sac. Therefore, unless one is suspecting a heterotopic pregnancy because of additional evidence, the conclusion must be an intrauterine pregnancy. (However, until we see the embryo with cardiac activity we do not yet know that this is a normal ongoing intrauterine pregnancy. It could certainly be a failing intrauterine pregnancy. And, in fact, if the gestational sac [average of 3 orthogonal inner diameter measurements] is 16mm or greater and contains a yolk sac inside but no embryo, we can typically call it a failed intrauterine pregnancy.) Ectopic pregnancy should not be included in the differential once a yolk sac is seen.

Please let me know if you have further questions.
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