

CSG Ep 1 L&D

Welcome to Ultrasounds, a podcast by OBGYN Delivered. I'm Rachel, a fourth year medical student, and today's episode is the first in our new Clerkship Survival Guide series where I will be sharing some tips and tricks for various parts of an OBGYN clerkship. This series is not intended to be comprehensive, but rather clue you in to some key topics to review and helpful resources for important parts of the OBGYN clerkship. And one more quick disclaimer, this is based on my experience and other student experiences (shoutout to M3s Jenny and Sabrina for their help) at one medical school, but also based on some staple ACOG practice bulletins and basics of the field so what we share today should be applicable to other institutions.

One tip before we start - all students can make a free ACOG account, there are lots of awesome clinical guidelines and practice bulletins, many of which I will be referring to throughout this series so I highly recommend making an account for your clerkship.

To start off our series today we are going to chat about one of the hallmarks of any OBGYN clerkship, labor and delivery! Some key topics we are going to touch on today include normal labor, labor induction, fetal positioning, fetal heart tracings, and postpartum hemorrhage.

So let's jump into the basics of labor! Labor has 3 stages - the first is the onset of labor to dilation of the cervix to 10 cm. Patients on labor and delivery spend most of their time in stage 1 and we monitor their progress with cervical exams. There are three components to cervical exams:

- Dilation - Measured in centimeters, describes how widened the cervix has become, go up to 10 cm
- Effacement - Measured in percentage, effacement is a measurement of how thin and elongated the cervix is, 100% would be as thin as possible
- Station - Station is the measurement of the baby relative to the ischial spines, we refer to this on a scale from -3 to +3, with -3 referring to 3cm above the ischial spines and +3 would be 3 cm below the ischial spines (and essentially crowning!)

You will see cervical exams reported as a string of 3 numbers which are referring to these components. For example, a cervical exam could be 3/80/-2 which would mean 3cm dilated, 80% effaced, and -2 station.

The second stage of labor is from 10cm of dilation to delivery of the baby. And the third stage is from delivery of the neonate to delivery of the placenta.

We touched on what's happening with the birthing patient but now I want to touch on the baby's role and position. Ideally, a baby will be head down or cephalic, with their head closest to the cervix. If they are feet or bottom first, that is referred to as breech. Breech babies are often delivered by c section. If baby is laying across the uterus that is called transverse.

When baby is head down, we can further describe exactly how their head is positioned. We refer to the position of the back of baby's head or occiput to describe these positions. For example, occiput anterior refers to baby's occiput facing anteriorly, or to help you picture it the back of baby's head toward mom's stomach, and it's face toward her spine. The opposite is occiput posterior, also called face up, with back of head towards mom's spine and facing her belly. In between these two is called transverse, where baby has an ear towards mom's spine, other ear towards her belly, facing the left or right hip. Anterior and posterior babies are also described as left or right, referring again to where the baby's occiput is. This can get a little confusing, I definitely recommend checking out some pictures. But the main takeaways to know is the ideal position for baby is occiput anterior and now you know see notes referring to "ROA" or "LOP" those are referring to baby's position, with ROA being right occiput anterior and LOP being left occiput posterior, for example.

Next up, electronic fetal heart monitoring! Or as I think of it, the EKG of labor and delivery, but much easier in my opinion so don't get intimidated! Most laboring patients will be on electronic fetal monitoring, you'll likely hear it referred to simply as "on the monitor" with the readings often called "the strip" or tracing. A disc looking monitor (a doppler) is strapped to her belly to monitor baby's heart rate, often with a second monitor (called a tocometer) to track contractions.

The components of a tracing that we look at include the baseline, the variability, and the presence of accelerations or decelerations. The contractions or tocometer are a separate line included on the tracing.

Starting with the baseline, this is really exactly what it sounds like, the baby's average heart rate over the tracing. Normal range is 110 to 160 beats per minute.

Next is variability or how much the heart rate is fluctuating from the baseline. We describe the variability as absent, minimal, moderate, or marked. Absent is no change from baseline (this would look like straight line), minimal is no more than 5 bpm fluctuations from baseline, moderate is 6-25 bpm variations from baseline (this looks like a wiggly line), and marked is greater than 25bpm variations. Moderate variability is normal.

Then we have accelerations, these are quick changes in the fetal heart rate that go at least 15bpm above the baseline for at least 15 seconds. I think of these as little mountains on the strip. Accels are a sign of a happy baby!

Lastly, decelerations or decels are, as you guessed it, dips in baby's heart rate, similarly defined as a decrease at least 15bpm below baseline for at least 15 seconds. These are further classified by their relationship to contractions. If there seems to be no relationship between contractions and the decels this is called a variable deceleration. Variable decels often called variables are caused by umbilical cord compression, these are generally considered normal, however, if they become persistent interventions may be taken. When the lowest point of the decel corresponds to the peak of a contraction, this is called an early decel. We attribute early decels to the baby's head being compressed by contractions, these are generally considered benign.

Late decels are when the lowest point of the decel occurs after the peak of contractions. These are the most worrisome and suggest baby is not coping very well with contractions.

Table 1 of ACOG practice bulletin 106 goes over these definitions as well and is a great resource to have.

Putting it all together, a reading of a strip could sound something like this: this patient has a baseline of 135 with moderate variability, accels are present, no decels present.

We can also take these components and use them to categorize fetal heart rate monitoring. Category 1 describes a normal, reassuring tracing. A tracing is category 1 with a baseline between 110-160, moderate variability, it can have early decels, it has accels, but it cannot have variable or late decels. I'm going to skip category 2 for just a second. A strip is category 3 if there is absent variability, and either recurrent late decels, variable decels, bradycardia, or a sinusoidal pattern. A category 3 strip is a sign a baby is in distress. Category 2 captures anything between, not a totally normal tracing but not to the level of category 3. Some examples include tachycardia, minimal variability, or late decels with moderate variability. These categories are also defined in practice bulletin 106.

Using these categories is helpful when considering management options related to a tracing that looks abnormal. I'm not going to go into detail here, but practice bulletin 116 describes some interventions.

Next we are going to move on to induction. First, it's important to understand why a patient is having an induction. There are two main categories of induction, elective and medically indicated. The ARRIVE trial is a landmark trial in OBGYN that compared induction at 39 weeks to expectant management and found a significantly lower rate of poor neonatal outcomes and c section in the induction group. That study shifted practice to allow for elective inductions at 39 weeks if a patient desires. We will link the trial in the show notes as well.

Some reasons we might induce for medical reasons include maternal conditions like diabetes, gestational diabetes, chronic HTN or HTNive disorders of pregnancy. Table 1 from ACOG Committee Opinion 831 titled Medically Indicated Late-Preterm and Early-Term Deliveries is a great reference for the timing of induction for various indications. Want to plug ACOG here! Students can make a free account to access practice bulletins and other documents that are very helpful for the clerkship and beyond.

Okay so now that we have touched on why someone might have an induction lets go over the how - as I mentioned regarding normal labor 3 things need to happen for a vaginal delivery, the cervix needs to soften, dilate to 10cm, and the baby needs to descend into the pelvis. There are 4 main tools we use to encourage these processes. First, is misoprostol, which you might hear referred to as miso or cytotec on L&D! Misoprostol is a prostaglandin E1 analog which helps to ripen the cervix. Ripening of the cervix refers to the cervix softening and thinning (aka effacement), and becomes more flexible to assist with dilation. A foley balloon is often used in

conjunction with miso, to help with cervical dilation. A foley is inserted into the cervix and the balloon is inflated with 30 ccs of saline and this balloon is placed on tension and taped to the patients leg. This applies pressure much like the baby's head would to help mechanically dilate the cervix. The foley balloon will come out on its own when the cervix is about 4cm dilated. Next in our toolkit is artificial rupture of membranes, abbreviated as AROM, also called amniotomy, where a provider uses a plastic hook to break the bag of water. Lastly, we have pitocin (often called pit) which is synthetic oxytocin which causes uterine contractions. Nurses on labor and delivery will often up titrate pitocin bedside until adequate contractions are achieved. These methods are reviewed in practice bulletin 107!

The most common complication you are likely to encounter on L&D is a postpartum hemorrhage. We have a previous episode going into much more detail you can check out practice bulletin 183 to more detail as well. To be brief, a postpartum hemorrhage is defined as blood loss exceeding 1000ml. The most common cause is uterine atony, which refers to poor muscle tone of the uterus. Trauma to the cervix, vagina, labia can also cause excessive bleeding. Retained tissue or clots in the uterus can prevent it from clamping down and also lead to excessive bleeding. And lastly, any clotting disorder in the patient. These are referred to as the 4 T's, tone (aka atony), trauma, tissue, and thrombin (aka clotting issues).

Examination for any lacerations that can be repaired. If the placenta was not fully intact or there is suspected clot in the uterus, the provider may manually sweep the uterus with their hand to remove any tissue or clot, or a D&C can be performed in the OR.

I'll go over treatment options targeted toward atony now in a general order of escalating treatments. Each institution has protocols that might have slight differences.

First, massaging the uterus to encourage increased muscle tone to clamp down and stop bleeding.

Regarding medications, we have several options, generally uterotonics which are medications that increase uterine muscle tone

1. Pitocin causes uterine contractions (hence why we also use it in induction) which can help in uterine atony to encourage the uterus to clamp down.
2. Methergine - also causes uterine contractions. One good pearl to know for the wards and exams is methergine is contraindicated with HTN, so not a good option for preeclamptic patients
3. Hemabate - again causes uterine contractions. This one also has a good pearl - contraindication of asthma
4. Misoprostol - you might also see this for inducing labor, but again is a uterotonic. This one is often given rectally in a hemorrhage situation.
5. TXA - tranexamic acid is not a uterotonic but helps with bleeding in general through various mechanisms in the clotting cascade

If bleeding is really severe and medications have been exhausted there are some procedural and surgical options

1. I mentioned this earlier but if there is any retained tissue or a large clot a manual vacuum aspiration or a D&C can be used to empty the uterus
2. For manual compression of the uterus there are two similar options - a Bakri balloon or a Jada device. The idea here is to essentially hold pressure on the inside of the uterus, same way you would with an external cut or wound. The bakri balloon is similar to a foley balloon, you insert it into the uterus and inflate it so it holds pressure. The jada is a loop looking device with holes along it, you also insert it into the uterus and connect it to suction so it shrinks the uterus down while evacuating blood at the same time, not all institutions have these readily available but they are quite cool to see in action!
3. Next we have some surgical options - there are a few suture techniques one is called the O'Leary suture where you go to the OR and ligate the uterine arteries. This can also be done with an interventional radiology procedure called a uterine artery embolization. The last thing is called a B Lynch suture, I found this hard to picture but essentially you go to the OR and put sutures in the lower segment of the uterus that go up and around the fundus like suspenders to provide manual compression of the uterus down.
4. And if all else fails, the last option is a hysterectomy to just remove the bleeding uterus.

That was a lot of information! But like I said go check out our PPH episode and practice bulletin 183 for more details or to review further.

That brings me to the end of our material for this first episode in the series! To quickly recap some key topics to review for L&D include the stages of labor, fetal positioning, fetal heart monitoring, induction of labor, and postpartum hemorrhage. All the resources mentioned will be linked in our show notes! You can access the ACOG resources by signing up for a free student membership!

There's quite a bit to learn about labor and delivery but I hope this helped start some initial learning and give you somewhere to start with tackling your OBGYN clerkship! Stay tuned for our next episodes on vaginal deliveries, C sections, and tips for OBGYN clinic.

Thank you for listening and remember, we put in the labor so you can deliver!

Shownotes:

- [UltraSounds Normal Labor](#)
- [Practice Bulletin 107 Labor Induction](#)
- [Practice Bulletin 106 Fetal Monitoring](#)
- [Practice Bulletin 116 Fetal Monitoring Management](#)
- [Arrive Trial](#)
- [Medical Indications for Induction Committee Opinion 831](#)
- [Practice Bulletin 183 Postpartum Hemorrhage](#)
- [UltraSounds Postpartum Hemorrhage](#)