Amniotic Fluid

Episode 155 · January 2, 2020 · with Davi Khalsa and Dr. Emiliano Chavira

IN THIS EPISODE

What is amniotic fluid, where does it come from, and what does it mean when there is too much — or too little? Dr. Elliot Berlin, DC is joined by certified nurse midwife Davi Khalsa and maternal fetal medicine specialist Dr. Emiliano Chavira for a clear, in-depth tour of the fluid a baby lives in: how it is made and turned over, why it matters for movement and lung development, and how it is actually measured, from the amniotic fluid index to the single deepest pocket. Together they sort evidence from old obstetric dogma on low fluid, talk through what can raise or lower levels, and finish with what happens once the water breaks — how strict the clock really is, at home and in the hospital.

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DR. ELLIOT BERLIN, DC: Welcome to the informed pregnancy podcast. I'm your host dr. Elliott Berlin and in this episode we're learning about all things Amniotic fluid and what it is how it's made how it's measured what it means if it's high or low and lots more Here to discuss and answer some of these questions are two of my favorite birth providers She is a certified nurse midwife women's health nurse practitioner and has her master's in nursing and also Caught our fourth kid Davy Kalsa. Hello To the punk house those like ten years ago, but it seems like yesterday to me. Yeah, and he is a Maternal fetal medical specialist and obstetrician who has taken care of some of the most high-risk births and pregnancies known to mankind and some

DR. ELLIOT BERLIN, DC: Run of the male plain old pregnancy and birth as well. Dr. Emiliano Shavira. Hi. Welcome back to the podcast. Thank you I'm really honestly shocked and amazed that both of you made it Considering how many babies you run to catch at the drop of a hat each of you Yeah, we better make good use of the time Let's talk about amniotic fluid. What is it?

DR. EMILIANO CHAVIRA: Well amniotic fluid is a fluid that surrounds the baby inside the uterus you can picture the uterus as like a muscular sac and There's a sack within that it's a thin lining that we refer to as the amniotic membranes and That sack encloses a pool of fluid in which the baby's floating when does it form? So the fluid is present from as early as we can visualize the pregnancy So that's

actually the first thing that you'll see an ultrasound is a little gestational sac Which is basically a little tiny pool of fluid. It's the first thing you see before you actually even see the embryo

DR. ELLIOT BERLIN, DC: Oh cool, so it's right there from the beginning right? What's the fluid made from what part of a person makes fluid?

DR. EMILIANO CHAVIRA: so that Changes over the course of the pregnancy early in the pregnancy first trimester perhaps a little beyond It's not known for certain whether this fluid comes from the mother or comes from the fetus So some of it may diffuse across The amniotic sac from the mother's uterus into the uterine cavity and some of it may just come across the fetal skin That's at the beginning at the beginning. Okay. Yeah, it's the first trimester right around 10 weeks plus or minus the little fetuses kidneys are beginning to get into a more advanced stage of development where the fetus actually begins to produce urine and Initially, it's a very small quantity

DR. EMILIANO CHAVIRA: But over the course of the pregnancy as the baby gets bigger and bigger the volume of urine gets greater and greater So as the pregnancy advances toward the midpoint and into the third trimester Most of that fluid is actually fetal urine. There's a small amount that is from the baby's lungs So in inside the lungs, there's some fluid that is generated and it flows out through the airway Some of that fluid the baby swallows and some of the fluid Makes its way into the the urine cavity Then there's probably still a small amount of the fluid that just comes across the amniotic membranes

DR. ELLIOT BERLIN, DC: But the bulk of it really is fetal urine. So the baby swallows the fluid from the lungs or the fluid around it, the general amniotic fluid. Both. Both. Yeah. Is that like for hydration or is that just plumbing? Yeah it's just plumbing that's that's the

DR. EMILIANO CHAVIRA: way fluid goes through the system. So you know it starts with mom drinking and then fluid gets into the maternal bloodstream and then it makes its way you know into the uterus and into the placental vessels and then diffuses across the placenta into the fetal bloodstream and then it enters into the amniotic cavity through the baby's kidneys basically the baby making urine.

DR. ELLIOT BERLIN, DC: So the baby's making urine surrounding itself with fluid. And at the same time

DR. EMILIANO CHAVIRA: it's swallowing and then that's the way the fluid makes its way back out. And some studies looking at this have determined that in the third trimester the fluid turns over about once a day. Oh wow. So it's turning over

DR. ELLIOT BERLIN, DC: rapidly. So a new bath every day. Yeah. Wow. I didn't know it was that frequent.

DAVI KHALSA: Yeah. It's urine therapy. Yeah. 101. There should be a sign on my wife's

DR. ELLIOT BERLIN, DC: door because she's a therapist. We can put urine therapy. Yeah. What role does the amniotic fluid play for the baby and now we see what it's made out of how it gets in there and how it gets out. Well it does a lot of

DR. EMILIANO CHAVIRA: things. So first of all it allows the fetus to move so that the fetus is not you know trapped and enclosed in a tight space but has this you know floating in this pool and that's very important for the development of limbs and joints and musculature. So you know the baby's basically doing water yoga for the duration of the pregnancy. In addition to swallowing the fluid baby's also breathing it in and out. How does that work? Because we can't breathe fluid. Well the fetus can and it's breathing for a different reason than we breathe. We breathe to get oxygen into the system and the fetus doesn't do that because the fetus is getting oxygen through the umbilical cord for placenta. So this is really just kind of exercising the lung

DR. EMILIANO CHAVIRA: apparatus. So fluid is moving in and out and it's very important for fluid development and from abnormal pregnancy states we can tell you how important it is. There are some pregnancies that for different reasons have the complication of very low or even absent amniotic fluid. That is incredibly devastating problem for the baby. So you'll see because they can't do yoga. Yeah and other things. No one's gonna do well if they can't do yoga. Right. So you'll see babies born with very tight limb contractures, joint contractures. Because they can't move around. Right because they haven't been able to have normal limb movement and then the other thing that happens is the lungs are underdeveloped and sometimes to the point where

DR. EMILIANO CHAVIRA: actually it prevents the baby even from being able to survive. So that's the ultimate proof about the importance of the presence of amniotic fluid. Are

DR. ELLIOT BERLIN, DC: those babies usually growth restricted? Not usually. So they're full-size but they have limb issues or they can't survive. So they grow and grow and grow until they just stop thriving. Yeah they'll be fine

DR. EMILIANO CHAVIRA: during the pregnancy because they're supported by the pregnancy. It's at the

DR. ELLIOT BERLIN, DC: time of birth that then becomes a problem. Can you, because Davi you don't do ultrasounds. No. So I feel like as midwives you use your hands a lot more than modern-day obstetricians and you can feel things. So you're trained to feel things but you also do it every single day. Can you get a sense for fluid by palpation? No. Not really. You can't? No. So you need to have

DAVI KHALSA: a visual to know what's going on. Really if there's a question or a concern you really need to have an

DR. ELLIOT BERLIN, DC: ultrasound. But so can you not even feel if it's like sort of high medium or low? Meaning my point is when you're palpating around do you sometimes feel like hmm question mark in my mind as to whether there's enough fluid in here we should go take a picture or you can tell from

DAVI KHALSA: other things. No, no I wouldn't that wouldn't pop up in my mind. I mean you think it would but it doesn't like sometimes I thought it seemed like the the uterus was really hugging the baby or the baby was so large there wasn't much room for the baby to move and they get an ultrasound there's

DR. ELLIOT BERLIN, DC: plenty of fluid. Yeah. So really the only way to know is to take a little picture. It's an ultrasound. Yeah. All right we're learning a lot we're gonna take a little commercial break and we're gonna be right back with some more amniotic Welcome back to the Informed Pregnancy Podcast. We are talking about amniotic fluid with Dr. Emiliano Chavira and midwife David Calza. Let's talk about measuring fluid because we know a little bit more about what it is, where it comes from, how it gets made, and why it's important too. Are there different ways to measure? David told us you can't really feel it so you sort of have to take a look. When you're doing the ultrasound,

DR. EMILIANO CHAVIRA: how do you measure how much fluid there is? Yeah, so there are three general methods for assessing amniotic fluid. So one is just a subjective assessment. You're just kind of looking around and you're sort of eyeballing it and you say, well, that looks like a normal amount of fluid or that looks a little low or that really looks like a lot of fluid. So just kind of a subjective gross assessment. Sounds really specific. Yeah, there are a couple of other methods that are a little more perhaps quantitative. What has been used probably more commonly than any other method for many, many years is what's called the amniotic fluid index. AFI. Now the AFI, one of the errors that I see is people trying to calculate an AFI at

DR. EMILIANO CHAVIRA: like 22 weeks or something. So the way you do an AFI is you divide the mom's belly into four quadrants using the belly button as the midpoint. On both vectors? Right. So that's up and down line right down the middle and a side to side line across the middle and you get four corners basically. This method was developed initially starting at about 28 weeks and beyond. So really you're only supposed to use an AFI after 28 weeks. And if, I mean, if you think about it, the top of the uterus reaches the belly button in the neighborhood of about 20 weeks, right? So it wouldn't make sense. Right, you're only getting. Yeah, you would only have two quadrants. Right. Then you take the ultrasound probe and you look for the deepest pocket of

DR. EMILIANO CHAVIRA: fluid in each corner and you measure the depth of it in centimeters and then you add up the four quadrants. And the normal values for an amniotic fluid index are somewhere between five and 24 centimeters. So anywhere in there? Anywhere in there is 24. So like nine is just

DR. ELLIOT BERLIN, DC: as normal as 22. Correct. Throughout the whole latter part of the pregnancy? Yeah. You know,

DR. EMILIANO CHAVIRA: there are tables and the fluid volume does increase progressively over the course of the pregnancy till about 36 weeks or so. And then it may begin to decline following that point. That's sort of the normal progression of the fluid dynamic. So you would expect to find more fluid every couple of weeks. So you can find tables and nomograms that define sort of your 50th percentile, your 10th, your 95th at different gestational ages. But in general, not really that specific about it and just kind of use this, you know,

DR. ELLIOT BERLIN, DC: to 24 as a as a normal range. And you said there's a third way. Yeah. So the

DR. EMILIANO CHAVIRA: third way is you look around at the fluid all over the unit cavity and you find the deepest fluid pocket that you can find and you measure that single pocket. If the fluid pocket measures two centimeters or greater then that's considered a normal amniotic fluid volume. We've

always used this for twins because if you think about it wouldn't quite make sense to do an amniotic fluid index for twins because you have two separate sacs. And you can't do the belly button situation. Right. It doesn't quite work out. So we've always used a single deepest vertical pocket method for twins. That's also what you would use in any pregnancy, you know, prior to 28 weeks when it's not really

DR. EMILIANO CHAVIRA: appropriate to use the amniotic fluid index. And what's happening now is there's a general trend favoring using the single deepest pocket method instead of the amniotic fluid index. Reason being that the amniotic fluid index probably over diagnoses low fluid. So if you find these pregnancies where the AFI is four or three by that method that's considered abnormal and is very commonly used as an indication to end the pregnancy, induce labor, deliver the baby. And the general thought is we're probably intervening in a lot of pregnancies that are actually, you know, doing just

DR. ELLIOT BERLIN, DC: fine. Well, hang on. The AFI is not, it doesn't tell you how much fluid is in the sac. It gives you an index. Right. So you're taking the deepest pocket in each quadrant adding them together. And that's, so the five to 24 is not the total fluid volume. It's just an index. And based on that index, it's like if you're in this range, we think you're okay. Why is that different than meaning less accurate? It seems on one hand, like it'd be more accurate because you're looking at all four quadrants versus just the

DR. EMILIANO CHAVIRA: one big deepest pocket. Well, the fundamental assumption is that low fluid is bad and therefore quantifying how much fluid is there is important. And as it turns out, that fundamental assumption may not be

DR. ELLIOT BERLIN, DC: correct. Meaning low fluid may not be as bad as we have been trained to believe. At the end of pregnancy. At the end of pregnancy. But you said no

DR. EMILIANO CHAVIRA: fluid is bad. Yeah. I mean, that's just sort of the extreme end of the spectrum. It may be concerning if you can't identify any fluid in the amniotic cavity. But I happen to believe that the general concern about low amniotic fluid is probably a little bit more exaggerated than what

DR. ELLIOT BERLIN, DC: it really should be. Well, I also have these a little bit of a concern about how it's measured. Meaning you're kind of looking at pockets of fluid that could squish depending on the position that mom's in or how you're pressing the transducer against the belly. And you're also looking at a snapshot of fluid that we already talked about that kind of gets made and gets swallowed, gets made and gets swallowed. So how much fluctuation, like if I had a few different people do the same AFI measurement, either with different machines or even the same machines, but with mom in slightly different positions or at different times during the same day, is there any indication on how much fluctuation, like how accurate that range would be? Would the

DR. EMILIANO CHAVIRA: measurements still come out the same? Yeah, there's definitely fluctuation that will happen. There's also artifact of taking the measurement itself. The baby moves and a fluid pocket shifts. So those are factors that reduce the precision and the accuracy of these amniotic fluid assessments. So just sort of to close the loop on the point I was making earlier, it's

becoming increasingly recognized that if we use the single deepest vertical pocket method, that's going to reduce the number of pregnancies that we diagnose low fluid so that we intervene less often. And it's also been demonstrated that the outcomes are the same. In other words, we're not putting pregnancies at increased risk by switching to the single deepest

DR. ELLIOT BERLIN, DC: vertical pocket method. So for that method, what number is considered

DR. EMILIANO CHAVIRA: normal? Anything between two and eight centimeters. So if you cannot find a single pocket of fluid that measure at least two centimeters, that would be considered oligo-hydramnios or low fluid. And if there's a single pocket that measures greater than eight centimeters, that's poly-hydramnios or excessive amniotic fluid.

DR. ELLIOT BERLIN, DC: Okay, and after the next break, we'll talk about maybe some of the things that those can indicate and if interventions needed what it would be. I just wonder for, so for home birth clients, do your typically get an ultrasound somewhere towards the end?

DAVI KHALSA: Only if they go to 41. Well, they get usually a 20-week ultrasound, anatomy scan. And then if the baby measures abnormal low or abnormal high two times in a row, then we'll recommend an ultrasound.

DR. ELLIOT BERLIN, DC: In terms of your size measurements?

DAVI KHALSA: Measuring centimeters, yeah. Or if they go to 41 weeks, at 41 weeks they have them get non-stress tests and usually an AFI.

DR. ELLIOT BERLIN, DC: Because you can deliver at home in California up until 42 weeks.

DAVI KHALSA: Yes.

DR. ELLIOT BERLIN, DC: So is there an AFI reading that would roll somebody out of a home birth or make somebody less of a good candidate for home birth?

DAVI KHALSA: I just remember one time, and we've been pretty lucky. It's usually always been above five. One time a woman, her baby was measuring small and she was only 37 weeks and her AFI came back three. And I remember the doctor said, you've got two days to get her into labor or else she's coming to the hospital we're going to induce.

DR. ELLIOT BERLIN, DC: Now that's a whole nother podcast. I need to find out the two days to get into labor deadline.

DAVI KHALSA: And it worked.

DR. ELLIOT BERLIN, DC: Yeah, I need to find out all your little midwifid tricks to do that. But we definitely have to come back for that one. All right. Let's take a quick break. We're going to be right back with our final part of our conversation about amniotic fluid. Welcome back to the Informed Pregnancy podcast. We are talking with midwife Davey Kalsa and Dr. Emiliano Shibira about amniotic fluid. You've talked about polyhydromyos and oligohydromyosis being poly meaning a lot or too much hydromyosis. I guess hydro is fluid and amniosis amniotic. And oligo meaning few, so not enough amniotic fluid. What would it mean? What are the possible reasons why fluid would go higher than the

normal range or come down lower than the normal range?

DR. EMILIANO CHAVIRA: Yes, let's say fluid is going low at the end of pregnancy, a common scenario that families tend to run into. And one possibility is that the amniotic sac has ruptured. So fluid is escaping the uterine cavity through the vagina. That's a common scenario. That's one of the first possibilities that you always have to think about.

DAVI KHALSA: Maybe like a high leak that they don't really notice. Yeah.

DR. EMILIANO CHAVIRA: And sometimes when you-

DR. ELLIOT BERLIN, DC: Do you test for that?

DR. EMILIANO CHAVIRA: Yeah. There are a series of tests that are done to try to determine whether the fluid that you're seeing from the vagina is actually amniotic fluid. Those are things you can't really do at home. They're done by whoever your care provider is. But the other thought about low fluid, some of it is the normal course of pregnancy. We talked about there's sort of a peak of amniotic fluid volume. And then there's a gradual decline in the volume of the fluid in the last weeks of pregnancy. So if you're staying within the generally established normal range, then that's considered to be a normal evolution of pregnancy. So if the fluid drops below that range, there's this old thought in obstetrics that is very deeply entrenched,

DR. EMILIANO CHAVIRA: that that is a concerning finding. And the standard management of low amniotic fluid at term is basically to deliver the baby. And the thought process might be, this is just a sign the placenta is not functioning as well. It's not delivering enough fluid. And then presumably other nutrients and oxygen. It's not gonna be supporting the baby very well anymore.

DR. ELLIOT BERLIN, DC: It's on its way out.

DR. EMILIANO CHAVIRA: And the risk of stillbirth might be increasing. So we just need to deliver this baby and get the baby off the placenta and start feeding the baby a different way, like breastfeeding or whatever the method is gonna be.

DR. ELLIOT BERLIN, DC: So are you saying it's more hypothesis than study-based?

DR. EMILIANO CHAVIRA: Well, there are studies. So this idea has been around for a while and there were some old studies that did find if the fluid was found to be low, that there was a higher incidence of perinatal mortality, meaning either the baby died in utero or shortly after birth. So there were studies that suggested that the finding of low fluid is a concerning finding and that you're at increased risk of bad things happening to your baby. The problem with old studies is they tended to be very simplistic and unsophisticated and there are a lot of problems with old studies. One of the problems with these old studies about fluid is they weren't particularly careful about the babies that they included in these studies.

DR. EMILIANO CHAVIRA: And a lot of the babies that did not do well had other birth defects. So it could be the case that this association that you saw between low fluid and bad outcomes, it was from the birth defects and not the fluid itself. The fluid was just sort of an incidental finding in other words.

DR. ELLIOT BERLIN, DC: Interesting. Are there newer studies?

DR. EMILIANO CHAVIRA: And so since then, there have been subsequent studies that were more careful about looking at populations of babies where there were no birth defects, the baby's growing fine, the pregnancy appears to be otherwise normal, the fluid starts to fall below what we have defined as the normal range. And in some of these more modern studies, we have not seen the same association with bad outcomes. However, this notion is so deeply ingrained into our culture, it's very hard to get ideas like this to disappear. There have also been some studies where they take a group of these women where the amniotic fluid is lower than the normal range. And what we traditionally would have done would be to deliver the babies.

DR. EMILIANO CHAVIRA: And instead of doing that, divide the moms into two groups and take half of them and deliver them. Take the other half and continue to follow them and see what happens. And these studies did not show worse outcomes in the moms that stayed pregnant and waited for labor. So there is some more recent evidence that kind of calls into this question, you know, this old dogma that low fluid is dangerous.

DR. ELLIOT BERLIN, DC: By itself.

DR. EMILIANO CHAVIRA: By itself.

DR. ELLIOT BERLIN, DC: No other indication.

DR. EMILIANO CHAVIRA: So it might be something different if you're talking about a baby that's not growing well and his growth is tricky. That's a different category. And the fluid is low. You know, these newer studies, you know, one of the problems is they're just smaller. And it's just not enough to kind of overturn this old concept.

DR. ELLIOT BERLIN, DC: So at the very least, it's food for thought.

DR. EMILIANO CHAVIRA: Yeah, certainly. And I think it's something for us to look into because I think one of the problems we have in general with modern obstetric care is excessive interventions. And I think, you know, looking for ways to safely reduce the amount of interventions that we do is definitely, you know, worthwhile.

DR. ELLIOT BERLIN, DC: You know, we do a lot of breach work. And I think when the fluid falls to the lower side, as you said, the more fluid there is, so that gives the baby space to move around. So sometimes people come in with a lower fluid level and want to get it up, because they're worried about being induced, but because they want their baby to have enough room to get a head down. Are there any things naturally or medically that are shown or suggested to try to raise the fluid level?

DAVI KHALSA: They've done some little studies on it. The mother drinks more fluid, more water.

DR. ELLIOT BERLIN, DC: So that just regular water?

DAVI KHALSA: Yeah, correlates to having more on the out of fluid. It's not consistent, but that's what I would recommend. I mean, it's kind of common sense. Sure. To a certain degree.

DR. ELLIOT BERLIN, DC: Well, because she's going to drink the fluid, then she's going to, you know, the theory is right past some of that extra fluid onto the baby.

DR. EMILIANO CHAVIRA: Yeah. I think if you're a little dehydrated and maybe not drinking as much as you should have been, the fluid volume may decrease a little bit. So if you restore your fluid volume, you'll restore some of the amniotic fluid volume. What I don't think works is to say, I'm going to drink five gallons of water and get my amniotic fluid index up to 27. Like that wouldn't work.

DR. ELLIOT BERLIN, DC: You probably could never leave the bathroom anyway if you do that.

DAVI KHALSA: Five gallons would kill you.

DR. EMILIANO CHAVIRA: So you can sort of have a minor influence, I think, on the fluid.

DR. ELLIOT BERLIN, DC: So anecdotally, in the office, that's what I tend to see. People who haven't been drinking very much or have been working a lot without replenishing, sweating a lot without replenishing, and their fluids on the lower side seem to raise it by just drinking some more water. But we also sometimes have people come in and they try more extreme things like IV hydration, and it still only brings them up a little bit. So the more fluid that they put in doesn't necessarily correlate. It seems like the body has a set point where it wants it to be. It's regulated. And it's hard for you to override that. Any other medical things that could be done to try to bring it back up? Or nothing that you know that works?

DR. EMILIANO CHAVIRA: Yeah.

DAVI KHALSA: And drinking. I mean, a lot of doctors don't agree with that either, that if a woman drinks more, she'll make more fluids. Some small studies have shown that, but nothing large. Right.

DR. ELLIOT BERLIN, DC: And again, anecdotally, it seems to be that it could have a factor to a point, could be effective to a point.

DR. EMILIANO CHAVIRA: Well, that's something that I do all the time. When I find someone in the office and the fluid is low, we have this conversation. I try to be reassuring about it. My personality and my orientation, as an obstetric provider, I kind of want to minimize the number of interventions I do. So usually, the first step is we'll do some hydration. And that can be done either IV or just have the mom drink a lot. And then we'll recheck. And very often, that initial low measurement has now become normal. So I'm finding, in a lot of cases, we don't have to automatically go down the road of inducing or delivering the baby.

DR. ELLIOT BERLIN, DC: What about the, oh, sorry.

DAVI KHALSA: How much do you have a drink?

DR. EMILIANO CHAVIRA: You know, just not five gallons, that would be ridiculous.

DR. ELLIOT BERLIN, DC: Like three. More than two was?

DAVI KHALSA: Really?

DR. ELLIOT BERLIN, DC: No, I'm joking.

DAVI KHALSA: No, you're joking.

DR. EMILIANO CHAVIRA: Like a quart or a couple of quarts.

DR. ELLIOT BERLIN, DC: Yeah.

DR. EMILIANO CHAVIRA: We're a leader of IV fluid. Right, exactly.

DR. ELLIOT BERLIN, DC: What about the other side? What about when the fluid's measuring on the higher side closer to polyhydrominoids? A, what does that mean? What could be causing it? And B, are there ways to bring it down?

DR. EMILIANO CHAVIRA: Yeah. So it depends on how abnormal it is. So if you're just barely slightly above what's considered the normal upper limit, which was 24, we said, right?

DR. ELLIOT BERLIN, DC: With AFI, yeah.

DR. EMILIANO CHAVIRA: With AFI. So let's say we're talking about 26, 27, something like that. The vast majority of the time, it's really just a normal pregnancy. You happen to be outside the generally accepted range, but there's really nothing going on. So it's like a normal variant. The higher the fluid is, as we're starting to get into the 30s, 40s, 50s, that's more of an indicator that there may be a problem there. So there can be physical, structural problems that the baby has that's causing that. Maybe the esophagus is underdeveloped, so the baby can't swallow fluid normally. So it's just building up. Right. And then obstruction somewhere in the intestine. Same thing. The baby's not able to swallow normally.

DR. EMILIANO CHAVIRA: And sometimes it could be a clue about some other kind of neurologic condition in the baby or some kind of syndrome. And the baby, maybe it's not swallowing normally, not because of a structural defect, but it's more of a behavioral thing. So we see that sometimes.

DR. ELLIOT BERLIN, DC: Could it be on the other side that they're producing more than normal?

DR. EMILIANO CHAVIRA: Actually it can. That's a very interesting question there. We talked about the role of the amniotic membranes in producing fluid, and there have been some studies looking at certain genes that are involved in the membrane's regulation of fluid level, and there have been some abnormalities identified there. So there are probably some pregnancies where there's excess amniotic fluid, and it has to do with the genes that determine how the membranes regulate the fluid. So definitely things are always more complicated than what we realize and more complex. And it's definitely not the same reason in every pregnancy.

DAVI KHALSA: So with polyhydramnios, towards the end of pregnancy, what's recommended?

DR. EMILIANO CHAVIRA: Usually it's antepartum testing is recommended. So these are fetal surveillance. It's usually done a couple of times a week. You have a limited ultrasound just to see what the amniotic fluid volume is. You usually also look at the position of the baby. You may look at some of the behaviors of the baby, like breathing and movement and its tone, and then you connect to the fetal heart rate monitor and listen for about 20 minutes. So that's called a biophysical profile or

a modified biophysical profile, and it's just a test of fetal well-being. Sometimes if amniotic fluid volume is significantly increased, that can complicate the delivery in certain ways. One way is that it creates a lot more freedom of movement.

DR. EMILIANO CHAVIRA: So you'll sometimes encounter what we refer to as an unstable fetal lie. One day the baby's head down. One day the baby's lying transversely across the abdomen. One day the baby's breech, and every time you look, it's something different. Sometimes in pregnancies where there's polyhydramnios that can trigger preterm labor, so some of these babies will come a little bit earlier.

DR. ELLIOT BERLIN, DC: Are you worried about the cord?

DR. EMILIANO CHAVIRA: Yeah. So that's another potential complication that can sometimes, I'd say in a small percentage of cases, but this could be a concern where the membranes rupture and you have a large gush of amniotic fluid exiting out the uterus and flowing out the vagina, particularly if the baby's head is not in the birth canal, blocking things, the cord can flow out. So cord prolapse sometimes can be a complication.

DR. ELLIOT BERLIN, DC: Essentially because if the cord comes through and then the baby comes through, you get compression of the cord and blocking the only oxygen source. Yeah.

DR. EMILIANO CHAVIRA: Well, I mean, the baby come through is usually a process of several hours. And most of the time, if you have a cord prolapse, once that's identified, you're probably going to be taken for cesarean section pretty immediately.

DR. ELLIOT BERLIN, DC: I had a couple of years ago, a patient come in with fluid that was AFI, maybe close to 28, and her OB told her, stop eating fruit and simple carbs or cut back on your fruit and simple carbs. And she did, she was eating a lot of fruit, tons of fruit. and her fluid went down. Don't know if it's connected or not, but subsequently I've told that story to people who are in the same boat. And again, just anecdotally, seems to make a difference. Is there any clinical understanding on why that would work?

DR. EMILIANO CHAVIRA: Well, one of the things you think about when you find polyhydramnios is the possibility of the presence of maternal diabetes. And it's just kind of one of those classic teachings. And I don't actually know how strong that association is because I got to tell you, I just take care of bajillions of diabetics. And it's really a very small minority that have polyhydramnios. So I think the correlation between those two conditions, I don't know if it's as strong as what I have been taught. And the other thing that's interesting to me-

DR. ELLIOT BERLIN, DC: But these are non-diabetic bombs. They're just moms that are eating a lot of sugar. So the question is if having excess sugar creates, I guess, more fetal pee.

DR. EMILIANO CHAVIRA: That sounds like an area that would be great to study.

DR. ELLIOT BERLIN, DC: I like that. We're almost out of time, but people wonder about amniotic fluid in labor once the water breaks, right, the breaking of the fluid. So at that point, are we worried that it's gonna run out? Does it keep getting replenished? Do we care, like with every surge, there

may be more fluid coming through? And then the other side of that is not to do with volume of fluid, but what is the concern once the fluid breaks? Why a clock starts in terms of from that point till providers like to see the baby come out?

DR. EMILIANO CHAVIRA: For me, there's not a tremendous amount of concern about that scenario. I mean, to me, that's a normal part of what happens during labor.

DR. ELLIOT BERLIN, DC: Membranes rupture.

DR. EMILIANO CHAVIRA: The membranes rupture. At some point, it could be earlier in the labor. It could be later in the labor. In rare cases, it may not happen at all. The baby can be born in an intact sac.

DR. ELLIOT BERLIN, DC: But in most labors- Have you guys seen this? Have you guys seen that?

DAVI KHALSA: It's rare.

DR. ELLIOT BERLIN, DC: But yeah. In the call where they just come out still.

DAVI KHALSA: In the call, they say it's very auspicious.

DR. EMILIANO CHAVIRA: Yeah, I've actually never seen that in a vaginal birth, that term.

DR. ELLIOT BERLIN, DC: Oh, you see it in cisterni births all the time, I suppose.

DR. EMILIANO CHAVIRA: More commonly, but not all the time.

DAVI KHALSA: It looks kind of funny, you know, when people put stockings over their head.

DR. ELLIOT BERLIN, DC: Yeah, that's what it looks like.

DAVI KHALSA: When I first saw it, it was funny looking.

DR. ELLIOT BERLIN, DC: Yeah, I've seen just pictures online. And yeah, at birth, I've seen it where it starts to come out, and then-

DR. EMILIANO CHAVIRA: Right, yeah. But to me, that's just part of the normal process of labor. And usually, a certain percentage of the fluid flows out, and there's still some inside the uterus. And it'll come out together with the baby at the time of birth. But not always. Sometimes, it almost all comes out, and the baby comes out without a lot of fluid. And in the vast majority of cases, it's just not a problem. Theoretically, you might be concerned that, well, this fluid cushion around the baby is no longer there. So as the uterus is contracting and squeezing the baby through the birth canal, maybe you're gonna be squeezing the cord and cutting off the oxygen supply to the baby. But it doesn't seem to be the kind of thing that happens very often.

DR. EMILIANO CHAVIRA: I wouldn't say never, which is why we listen to the fuel heart rate during labor. But it's unusual for that to turn into a problem.

DR. ELLIOT BERLIN, DC: To the other side of that question, once the fluid's ruptured, so there's a barrier of protection that's lost from, let's say, microorganisms like bacteria, is there a time limit once

that water breaks that baby must come out or we're overly concerned?

DAVI KHALSA: Well, they did a really good study on that years ago in looking at women. When the bag of water broke first and there was no labor, and they let women's bodies go into labor naturally, and they found that if the majority of women went into labor by 24 hours and there was not a higher rate of infection. Of course, you can't be doing vaginal exams.

DR. ELLIOT BERLIN, DC: Bring in bacteria.

DAVI KHALSA: Right. And women that waited till 48 hours to go into strong labor, there was a higher rate of infection. And then 72 hours, if it took that long, there was another higher rate of infection. Yeah, so there is a correlation. But you have to be safe about it. So we have, at home we allow women to stay at home, but if there's no labor, it's pretty strict. There's no vaginal exams, there's no baths, there's no sitz baths, there's no sex. Nothing goes in the vagina. We don't want anything to push up. You know, there's a lot of bacteria in the woman's vagina. So we haven't had women develop fevers at home that we've had to transport for.

DR. ELLIOT BERLIN, DC: Oh, wow, and you do a lot of babies.

DAVI KHALSA: Well, and we give it to about 48 hours, if she's not in strong labor by 48 hours, and we will use castor oil to get her into labor, you know, as a last resort.

DR. ELLIOT BERLIN, DC: Oh, you're not getting out of our how to get into labor episode.

DAVI KHALSA: Well, we will transport, and a lot of that is because there's a lot of pressure, you know, sometimes from where we're transporting to.

DR. ELLIOT BERLIN, DC: Oh, because they're quote-unquote backing you up.

DAVI KHALSA: Well, yeah, and some women have developed fevers, I mean, I've heard about it, of course, and you try to bring in a woman that's still healthy and stable.

DR. ELLIOT BERLIN, DC: Yeah, absolutely. Everybody has sort of a different comfort zone. Does the hospital have a role about it, or is there a medical role of them?

DR. EMILIANO CHAVIRA: I think that's something that probably a hospital, per se, wouldn't have a specific policy about it. It's going to be something really provider to provider. I will say that when we're talking about ruptured membranes, I very often hear patients ask me this 24-hour question. So clearly that idea is out there and it comes from somewhere. It's not necessarily part of my specific practice, but I think if you're, you know, getting obstetric care and you have an OB and your birth plan is to deliver in a hospital, you may certainly hear things like that, like you need to deliver by such and such time. I don't know that there's any formal guideline anywhere that is a universal requirement that all OBs are supposed to follow.

DR. EMILIANO CHAVIRA: So I think that's more likely to be kind of a locally established sort of general practice.

DR. ELLIOT BERLIN, DC: I mean, it would make sense that you do sort of mothering on a case-by-case basis anyway. How is this baby and how is his mother?

DR. EMILIANO CHAVIRA: Yeah, so, you know, that's one of the wonderful things about the practice of medicine is the ability to evaluate and use clinical judgment and individualized care. On the other hand, it's not necessarily advantageous for everybody out there to be doing things completely differently and there being no common ground anywhere. So there's a lot of movement towards standardization of things and generation of guidelines. And that general movement, I think, is kind of growing and increasing to create protocols and policies and procedures for everything. And there are certain ways in which that improves the safety and improves outcomes and limits complications. But another side of it is if that's done in the absence of any kind of

DR. EMILIANO CHAVIRA: clinical judgment and paying attention to the person who's in front of you and it becomes a thoughtless, one-size-fits-all, factory-line kind of approach, I think that's not desirable. And sometimes, you know, you see that happening.

DR. ELLIOT BERLIN, DC: Yeah, agreed.

DAVI KHALSA: And at home, I think we have more flexibility with it because it's a very controlled environment. It's their home. They're used to the bacteria that are there. When a woman is having a baby in the hospital, I would say what I hear mostly is that doctors will give them anywhere 6 to 12 hours and they have to come in and get induced. And because when women are planning to have a baby in the hospital, there's, you know, a doctor has a lot of patients and he's not really sure what the woman's doing at home all the time. So at home, it's specific. We don't have a lot of patients. We're very strict with do this, don't do this, let's keep it safe, take your temperature every two hours. So it's more controlled that way.

DR. ELLIOT BERLIN, DC: So in some ways, I would say you have fewer patients but more patients.

DAVI KHALSA: Patients pays. They say patients pays or you become the patient.

DR. ELLIOT BERLIN, DC: What good is a doctor with no patients? Anyway, this was a pretty thorough conversation on amniotic fluid. And I thank both of you for being here and sharing your expertise and your experience with us. Our conversations aren't medical advice. So always go ahead and talk to your provider and make a well-informed choice together with them. At home, thanks for listening. And to learn more about clinical topics like these, you can find our blog and other media online all the time at informedpregnancy.com.

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