Blood Clots: Taking the Challenge Out of Managing the Complex Obstetric Patient

Pat Iyer: Hi, this is the Physician-Patient Alliance for Health and Safety. The podcast that we are presenting today is called Blood Clots: Taking the Challenge Out of Managing the Complex Obstetric Patient.

Welcome to our podcast. My name is Pat Iyer. I have with me Lisa Enslow. Lisa is a board certified nurse with a master's degree in nursing. Lisa, could you please tell our listeners who you are and where you're working?

Lisa Enslow: Sure. I am the nurse educator for women's health at Hartford Hospital in Hartford, Connecticut.

Pat: Terrific. And I'm sure in that capacity you encounter patients who are at high risk for various obstetrical complications. The one that we want to focus on today is the risks associated with obesity during pregnancy. Lisa, why is this topic important for our listeners to understand?

Lisa: This complication of pregnancy really is affecting a larger amount of patients than ever before. We are seeing our numbers increase. And just that one obesity risk factor can cascade into so many other factors that affect the mom and her baby.

Pat: I think it would help our listeners if you could share a story of a woman who was affected by this so that we can help understand what the risks are and how they are managed. Is there someone that you have in mind that you remember of being involved with who would fit that category?

Lisa: Yes, I'll share a patient story of a patient that we took care of here over the last couple of years. She was a thirty-six year-old woman admitted at thirty seven and three/seven weeks gestation for primary caesarean delivery, secondary to a breach presentation. This was her fourth pregnancy. Two of those previous pregnancies were vaginal deliveries and one pregnancy ended in a spontaneous miscarriage. Her living children were seven and twelve years of age and the miscarriage that she had occurred two years previous to this pregnancy.

She was originally scheduled for delivery at thirty nine weeks but during a routine biophysical profile score that was done because of her risk factors, she scored four out of the ten. That score gives us cause for concern, in addition to her reports of a decrease fetal movement. So,

the low biophysical profile score and her reporting of a decrease of fetal movement prompted an earlier delivery.

Pat: Let's talk a little bit about the biophysical profile. What does that profile describe?

Lisa: This is a measure of fetal well being in utero and it's based on five criteria. It's done by ultrasound. We look for fetal movement, volume of amniotic fluid, fetal tone, fetal breathing, and the reactivity of a non-stress test. Each of these five criteria is given a maximum score of two and the highest possible score that a woman can get is a ten. So, a score of four out of ten warrants labor induction, especially if the gestational age is greater than thirty two weeks.

Pat: Let's we go back to this case that we're discussing, who we are going to call Mrs. M. What was her condition like on admission to the hospital?

Lisa: On admission, she denied any leakage of fluid, no vaginal bleeding and she did not complain of feeling any contractions. We were unable to monitor externally because of her size.

Pat: Can you give us an idea of how large a woman she was?

Lisa: The patient's BMI was a 67, which puts her in the category of having super morbid obesity and that classification is a BMI greater than 50.

Pat: By BMI, we are talking about the body mass index. Can you tell us a little bit more about how that is determined?

Lisa: BMI or body mass index lets us classify a patient's weight. Obesity is defined as having an excessive amount of body fat. So, the formula is based on height and weight to calculate the BMI, and this is often used to determine if a person is obese. A BMI of 18.5 to 24.9 is considered normal. Anything below 18.5, a person is considered underweight. A BMI of 25 to 29.9 is overweight. Thirty and higher is obese, and 40 and higher is extreme obesity. The term that we used earlier - the super morbid obesity - is greater than 50 and that is a relatively newer term.

Pat: And just to focus in on her number again, she had a BMI of 67.

Lisa: That's correct.

Pat: Alright. What are the risks of pregnancy and delivery associated with that super morbid obesity level?

Lisa: This classification puts her at significant risk for a number of complications, including an increased risk of VTE, infections, difficulty with anesthesia, respiratory compromise, hypertension, infection, pre-eclampsia, or eclampsia, having a larger gestational age infant, being overdue, fetal death, cesarean delivery, gestational diabetes, and a five minute Apgar of less than seven. And these newborns born to moms of this obesity level are likely to be admitted to the neonatal intensive care unit.

Pat: We'll come back to the Apgar score in a little bit. But you mentioned an abbreviation I wanted to make sure our listeners were familiar with which is VTE. Could you just spell that out for us?

Lisa: VTE stands for venous thromboembolism.

Pat: It is better known as what?

Lisa: DVT or a deep vein thrombosis, which is a blood clot in the leg.

Pat: Terrific. Did this patient indeed become gestational diabetic?

Lisa: She did. In the case of Mrs. M, because of her complexity due to her high BMI, she also was considered to be advanced maternal age and at a high risk for gestational diabetes, and she did require insulin to control her blood glucose levels. They began monitoring her early in her pregnancy during the first trimester - having her do fingersticks. At that time, she had consistently high fasting blood glucose levels and for that reason in addition to her obesity status, she was started on NPH insulin nightly at 16 weeks gestation. Although she frequently missed appointments and forgot to bring her insulin log, she did say her glucose levels were well controlled after initiating the insulin.

Pat: We mentioned Apgar before. Could you talk about that five minute Apgar score of less than seven? What does the Apgar score measure and what's the significance of the score that's less than seven?

Lisa: OK. The Apgar score is assigned immediately following delivery and it basically tells us how the newborn is transitioning to extra-uterine life. We assign a first score at one minute and then at five minutes. And that score is again based on five criteria. We look for color, heart rate, reflex irritability, muscle tone, and respiratory effort. And again each of those five criteria are assigned a score of zero, one or two, and that is how the score is determined at the one minute and the five minute mark. If a score is seven or less at five minutes, those are babies that require extra monitoring. We're going to measure their Apgar scores more frequently until they go above seven.

Pat: I understand. I know that there have been changes and controversies over the question of weight gain during pregnancy over the years. Is there any consensus now about how much weight a woman can safely gain during a pregnancy?

Lisa: There is. An obese woman with a single gestation or single pregnancy can have a weight gain between 11 and 20 pounds, and that equates to five to nine kilograms. An obese woman carrying twins or multiples should strive for a weight gain of 25 to 42 pounds, and that's about 11 to 19 kilograms. But still some research suggests that women who are obese can safely gain less weight than the guidelines recommend.

Pat: Returning again to Mrs. M, she clearly has numerous risk factors that you've described. What did the medical team do to manage these risk factors and manage her care?

Lisa: We have a process in place here where patients with any risk factors are referred to our high risk OB team during the prenatal period and that allows us to develop a comprehensive plan of care prior to admission and helps us individualize the plan of care involved.

With the case of Mrs. M., we used our bariatric care checklist.

Pat: Could you explain to our listeners what bariatric means?

Lisa: Bariatric is a branch of medicine that deals with the causes, prevention and treatment of obesity.

Pat: Great, and I know that this is a significant issue in health care that has spurred changes and equipment and awareness of risk factors and ways to be proactive to avoid some of the problems associated with obesity. Looking at the concept of the checklists that you mentioned, what did it cover?

Lisa: This checklist that we use is relatively new to our practice and it involved a task force looking at all the different avenues that can affect the care of these patients when they come in - things that you might not think of when you're in the moment. So, that's why a checklist is really, really important for these high risk patients. This particular checklist includes obtaining additional OR equipment, higher doses of antibiotics, epidural medications, having additional personnel in the OR to assist with transferring the patient from a bed to the OR table, and also having additional personnel to assist with retracting during the procedure, maintain an adequate positioning to maintain an adequate airway, and the use of screening tools for hemorrhage risk and venous thromboembolism prevention.

Pat: You referred to transferring and retracting. Were you talking about if a woman needed cesarean section and having people to help retract the tissues that were created when the surgeon makes the incision or were you using it differently?

Lisa: Yes, that's correct. It also includes having longer instruments just because there's more layers present that we need to get through in order to get to the baby. So, it does make surgery on these women very difficult.

Pat: You also discussed at the very end the prevention of venous thromboembolism, which again is one of the things that we want to focus on in this program. What are the risks of a blood clot developing?

Lisa: Pregnant women are at a significantly higher risk than the general public for developing a blood clot simply because of the mechanisms that are in place to help them prevent hemorrhaging. So, our pregnant patients really need a lot more risk assessments during their hospitalization and even after discharge. If a blood clot is not detected or treated, it may become dislodged and travel up into the lung and that can create even more problems for the mom.

Pat: Yes, huge medical problems. I know that you've talked about the healthcare team looking at some of these presentative measures and anticipating problems. Did an anesthesiologist become involved in this patient's care?

Lisa: Yes, the anesthesiology team is part of our high risk OB team, and they're very active in managing and making sure there's an adequate airway, if she were to require general anesthesia, but also administering epidurals or spinal anesthesia.

Pat: What did the anesthesiologist recommend for her plan?

Lisa: In Mrs. M's case, we asked her to have a consult, a one-on-one consult with an anesthesiologist prior to delivery just so that they could have a sit down face to face with her and talk to her about some of the things that would be necessary for her care. We recommended an early admission because we knew she was going to have a C section. Typically, we bring our patients in two hours prior to the time of delivery or the surgery time. But, with her, because she required extra measures, we would want her to come in more than two hours prior to the OR time - using continuous spinal epidural instead of just a straight spinal, because her surgery would most likely would be longer than an average surgery, so they want to ensure that there's adequate anesthesia coverage and also having an ultrasound available for landmark identification when they put the spinal epidural in.

Pat: And, in this context, landmark identification refers to identifying the proper place for inserting the epidural?

Lisa: That's correct. Most of the time when - no, not most of the time - all the time when anesthesia places the epidural, it's really based on feel. So I don't know if they go in blind but they really have to feel for landmarks and when a person is obese it's really difficult to feel those landmarks, so that's where the ultrasound really helps them.

Pat: Did the anesthesiologists anticipate any difficulty with her airway?

Lisa: They did. Typically, these women are harder to intubate, if that becomes necessary, so there is a tool called a glidescope that helps them with intubation with people who have difficult airways.

Pat: Did he suggest anything else?

Lisa: He recommended a trial of supplemental oxygen with room air prior to transfer to the postpartum unit, minimal use of narcotics, and early mobilization. He also identified her as having obstructive sleep apnea during that consult.

Pat: What are the implications of that condition?

Lisa: When people have obstructive sleep apnea that is not treated, they really are at risk for developing hypoxia. They're not taking in as much oxygen as they should while they are asleep.

Pat: That's why people use equipment like CPAP at home to help them breathe during the night?

Lisa: That's correct.

Pat: I know that most likely the team wanted Mrs. M to go into labor like eight o'clock on a Monday morning when everyone was around. What actually happened?

Lisa: As luck would have it, whenever a great plan is in place, there's always something that can happen to throw a wrench into that plan. Mrs. M did arrive unexpectedly during an off-shift. The planning that was done by the high risk team, including the use of our risk assessment tools, allowed the staff on the off-shift to activate a written plan of care for this patient. If you've ever worked the night shift, resources are usually not as high as during the day, so whatever work can be done for them ahead of time to give them more guidance that night is really helpful for them and for the safety of the patient.

Pat: It sounds like the planning was really a critical part of the communication because the night shift would have a blueprint to follow and a recognition of what the plan was so that they could mobilize the appropriate resources.

Lisa: Exactly, exactly.

Pat: We've talking about blood clots and the risk of blood clots. How did they address this risk in the situation of her being in labor during an off-shift?

Lisa: This patient fell into the high risk category for venous thromboembolism because of her multiple risk factors, including the high BMI, her gestational diabetes, her maternal age, just being pregnant and needing a surgical delivery. Because of this, she was provided with sequential compression devices beginning in the operating room.

Pat: Could you describe to our listeners what those devices are?

Lisa: Those devices are really quite simple. It is a pump that is attached to cuffs that go around the calf. Some can go around a foot, and they compress and release the calf area on and off to help increase blood flow.

Pat: Were these used only in the OR?

Lisa: No, they were applied in the OR, but they stayed on throughout the recovery period in our PACU and also when the patient was transferred to the postpartum unit. In Mrs. M's case, whenever she was in bed those cuffs needed to be on to decrease her risk of developing a VTE.

Pat: In addition to the cuffs and encouraging her to get out of bed early, were there any medications that were used to try to prevent blood clots from developing in her legs?

Lisa: We started chemical prophylaxis six hours following surgery for her and that was continued throughout her stay.

Pat: It sounds like you might have needed some other professionals to come in for looking at these decisions that needed to be arrived at, to come up with the appropriate dose and frequency of giving those drugs.

Lisa: Yes, that's right. We consulted with the pharmacist to get the appropriate dosage given her elevated BMI.

Pat: Up to this point you've described a woman with a BMI of 67 who's in the super morbid obesity category, with lots of risk factors, gestational diabetic and at risk for blood clots. What happened? Did she have any complications associated with her delivery or postpartum care?

Lisa: No, she was fortunate and I would like to think that it was due to the process that we had in place and the resources that we had available. She was discharged on post-op day four, which is normal for our C section patients. She had a follow up appointment scheduled within three to four days for removal of her staples and for continued glucose monitoring. Her discharge orders including frequent ambulation - really educating her about the importance of ambulating as much as she could. She did continue the chemical prophylaxis for six weeks for the VTE prevention, in addition to her routine C section post-operative instructions.

Pat: It sounds like a very good outcome for a real high risk situation.

Lisa: The outcome was as good as we could have hoped for.

Pat: Now I know that we've focused on our website, Physician-Patient Alliance for Health and Safety, on the OB VTE (venous thromboembolism) Safety Recommendations. Could you tell our listeners what these are?

Lisa: These recommendations provide a much needed road map to navigate the care of the pregnant patient to help prevent VTE. Previously, for patients at highest risk, those with a history of DVT or a PE, it was unknown in terms of how to provide care. But, all of the other risk factors are now being brought to the attention of physicians and nurses, which enables clinicians to provide the best possible care to patients.

Pat: What role these guidelines play in Mrs. M's care?

Lisa: Caring for Mrs. M. was significantly helped by the guidance from the recently released OB VTE Safety Recommendations, which offers a fine clinical process that covers the entire continuum of care. It really provides steps for each phase of her care.

Pat: Let's talk about those recommendations a little bit more in depth. Could you tell us about this four step process that was part of these recommendations or that is part of the recommendations?

Lisa: Right. Like you mentioned, it's a four step process designed to remind clinicians of the safety recommendations, and again should be considered throughout the patient's entire continuum of care. Those steps include a risk assessment at the time of admission or whenever there's a transfer of care. We want to continuously reassess these patients not only when they come in but whenever there is a significant change in their care or in transfer of care is made. The second step gives us recommendations for prophylaxis regimen. So, it really is a guide of what we should be doing at every stage of their care based on her risk factors. The third step is reassessment - continuously reassessing even during hospitalization whenever

there's a transfer of care or every twenty-four hours. And, then the last step is planning the patient's discharge - looking at what care she's going to need after she goes home.

Pat: We're talking about four steps - risk assessment, prophylaxis or prevention of complications, reassessment at intervals and during transfer of care or every 24 hours, and then at the time of planning the discharge.

Lisa: Right.

Pat: What are the advantages of this process?

Lisa: Like I mentioned before, it really provides a roadmap and it allows easy implementation and adoption across the OB specialty. It allows identification of a consistent baseline and reassessment of a patient's individual risk factors as her status changes. It lets us identify early on what their actual level of risk is, identification of which VTE prevention prophylactic measures are most appropriate and when they should be implemented.

It provides detailed discharge instructions with documented patient understanding. These are developed early in the course of care and provided to the patient who is required to read her instructions to determine the patient's level of understanding. So, we want to actually make sure that they're understanding the education that we're giving them.

It allows for patient engagement - keeping them involved in their care and when they feel like they're involved they're more likely to be compliant with the care - be more compliant because they understand why the care is being given. And, it also allows engagement of the family members and significant others in the discharge planning process. The patient's immediate support system can be assigned roles to help the patient empower herself and encourage her to stay on course.

Pat: You know, I would imagine that there's a lot that the newly discharged woman needs to think about in addition to all of the aspects of infant care. And, in Mrs. M's case, she had other children at home that she had to attend to. At the point that she left the hospital, was the prevention of blood clots and all of the treatment regimen stopped?

Lisa: No, because with these patients their risk still is present even in the postpartum period, even after they go home. So, it's important to remember that the commitment to prevent VTE doesn't end when the patient is discharged. That's why appropriate patient education is so important to help the patient understand why she should comply with her care, with making sure she understands that she really need to continue taking her discharge medications. She can get the sequential compression devices for use at home and early or frequent ambulation and making sure that she keeps all her follow-up appointments.

Pat: As you've been describing what happened with this patient and the wonderful outcome that she had, I wondered if you could just focus us in on the role that planning takes in affecting the outcomes of obese obstetrical patients.

Lisa: Pre-planning and communication between all of the team members is really key to achieving the most optimal clinical outcomes for patients with multiple challenging risk factors or

individual characteristics. In specialties such as obstetrics, we're often faced with a complex patient that requires us to be really proactive and identifying risk factors early in the course of care. This type of preparedness is necessary to prevent adverse events and to identify individual risk factors that would best guide us in the management or plan for a patient's possible hospital acquired conditions or in adverse event prevention plans to achieve high quality outcomes.

Pat: What kind of processes are necessary to make that type of planning successful?

Lisa: This type of anticipatory troubleshooting is a necessary task, but it's not always easily accomplished. It includes the support of both nursing staff and the medical staff. It requires quite a knowledgeable team and having the best tools and resources so that all possible clinical scenarios can be encountered - or all scenarios that could be encountered can be considered.

Pat: I think in summarizing what happened to Mrs. M, there were certainly some strong themes that came through as you were describing the role of the team in addressing her risk factors. What would you say are the takeaways from her case?

Lisa: Obstetrics poses unique challenges because of the possible risk on venous thromboembolism and unknown thrombophilia, as well as other risks including morbid obesity. Anticipating and overcoming these challenges is a necessary action that requires forethought, planning, communication, readily available tools, extra equipment, and resources.

Pat: And, then finally one last question for you, Lisa. Considering the overall subject of obesity in pregnancy, what health management recommendations do you have?

Lisa: I think what any physician will tell a woman who is coming for hopefully prenatal counseling, is that if she is currently obese, she should really consider attempting to lose weight before trying to conceive. And, the care of an obese pregnant woman focuses on frequent prenatal visits, establishing a healthy diet, physical activity and the effective use of the team approach.

Pat: Thank you for sharing your thoughts and your expertise with us today. This has been Lisa Enslow and Pat Iyer for the Physician-Patient Alliance for Health and Safety. You can access previous podcasts at www.ppahs.org. And, thank you for joining us and listening to us today.

