

Why is it essential to monitor twin pregnancies?

Multiple pregnancies occur when there is more than one baby at the same time in one gestation. This is most commonly twins but may include triplets or, rarely, more. Compared to singletons, twin gestations are associated with higher maternal and fetal complications risks.

What are the parameters to watch in multiple pregnancies?

Given the higher rate of fetal complications, twin gestations require close monitoring and frequent follow-up, and careful planning of mode and time of delivery. Ultrasound assessment of fetal growth, amniotic fluid volume, and Doppler velocimetry (an ultrasound test) are key tools to identify and monitor potential complications in your babies. During each antenatal ultrasound examination, your doctor will focus on measuring the size of each baby's head, abdomen, and legs, after which each baby's weight will be calculated and ranked in percentiles for gestational age. Next, an ultrasound assessment of each amniotic fluid sac will be evaluated to assess concordance, and finally, blood flow in each fetal circulation will be estimated.

What exactly is Doppler ultrasound?

A Doppler ultrasound is a painless and non-invasive technique performed with the same equipment and at the same time as an ultrasound to measure the blood flow in your blood vessels as well as your baby's. During the exam, you should experience no difference from a regular ultrasound other than sounds from the ultrasound machine created by the flow of blood in the vessel or valve being sampled. Doppler ultrasound works by measuring sound waves reflected from moving objects, in this case, the red blood cells within the vessels. This is known as the Doppler effect. The test is performed in essential vessels located in each baby's umbilical cord, fetal brain, liver, and heart. During a Doppler ultrasound, a technician trained in ultrasound imaging (sonographer) or a physician will press the transducer against your skin in the abdomen, moving from one area to another as necessary. During the exam, you may be asked to hold your breath or remain still while the sonographer obtains the Doppler sample.

How is Doppler ultrasound relevant in a multiple pregnancy?

Your first ultrasound scan also checks the chorionicity of your twin gestation, which refers to whether your babies each have their own placenta or share a placenta. In addition, the ultrasound will also define whether each baby is within their own amniotic sac or whether they share a sac. It is essential to know the chorionicity of multiple pregnancies because babies who share a placenta have a higher chance of having complications during the pregnancy. Therefore, Doppler ultrasound is critical in managing multiple pregnancies, especially in those characterized as monochorionic (sharing one placenta). Babies who share a sac also have a higher chance of complications.

Doppler assessment in twin pregnancies

Patient Information Series – What you should know, what you should ask.

The placenta in monochorionic twins displays irregular vascular connections that, in pathological conditions, can compromise nutrient supply for fetal growth and oxygenation for one or both twins. Doppler ultrasound assessment in monochorionic twins has proved helpful in diagnosing compromised fetal circulation and clinical follow-up. This exam allows your doctor to get more information about your baby's health to accurately perform a diagnosis and optimize decision-making in the timing of delivery and follow-up of multiple pregnancies.

Doppler velocimetry is applied in life-threatening complications of monochorionic twin gestations, including selective fetal growth restriction, twin-twin transfusion syndrome (TTTS), twin anemia polycythemia sequence, twin-reversed arterial perfusion syndrome sequence, and single intrauterine death (IUD). Importantly, in the event of a pathological diagnosis in a twin gestation, Doppler evaluation is key to the diagnosis of specific conditions such as twin anemia polycythemia sequence as well as for the grading of the severity of other complications including selective fetal growth restriction, fetal anemia, twin-twin transfusion syndrome, twin anemia polycythemia sequence, twin-reversed arterial perfusion syndrome sequence, and single intrauterine death.

Should I have a Doppler assessment of my twin gestation?

If you have a twin gestation, you will be offered additional ultrasound scans to ensure that you are well and monitor your babies closely. Women with an uncomplicated dichorionic twin pregnancy should have a first-trimester scan, a detailed second-trimester scan, and scans every four weeks.

Complicated dichorionic twins should be monitored more frequently, depending on their severity. Uncomplicated monochorionic twins should have the first-trimester scan and be scanned every two weeks after 16 weeks to detect TTTS and TAPS promptly. Complicated monochorionic twins should be examined more frequently, depending on the condition and its severity. For example, in an uncomplicated dichorionic twin pregnancy, ultrasound imaging should be performed the first trimester, again at around 20 weeks' gestation (second trimester). Uncomplicated monochorionic twins should have the first-trimester scan and be scanned every two weeks after 16 weeks to detect TTTS, sFGR, and TAPS promptly.

If my babies have an abnormal Doppler evaluation, what does it mean for my babies after they are born?

Notably, in monochorionic twins, an abnormal Doppler ultrasound is associated with higher rates of fetal demise and neurological damage due in the survival twin, primarily due to exsanguination of the living fetus into the circulation of the dead fetus, causing hypovolemia and acute anemia.

In addition, specific complications of twin pregnancies, such as twin-to-twin transfusion syndrome or selective fetal growth restriction, put babies with an abnormal Doppler ultrasound assessment at risk for several health problems during pregnancy, at delivery, and even long-term. For instance, the probability of impaired development of your babies' during pregnancy is higher, while there is also the possibility of one or both twins dying in the womb. Therefore, it is highly recommended that twin gestations be particularly closely followed up during pregnancy and labor so that any possible complications can be identified and treated promptly.

Are there any risks to Doppler evaluation?

There are no known risks to having a Doppler ultrasound. It is also considered safe during pregnancy.

Last updated September 2022