

## **INFORMATION ABOUT FETAL ECOCARDIOGRAPHY**

### **What is an ultrasound scan?**

Ultrasound scanning is an imaging technique allowing the visualization of parts of the body by using high-frequency sound waves (ultrasound, not audible by human ear) able to go through the tissues. When the sound waves reach the fetus, echoes are produced and transformed into images on the ultrasound machine screen.

### **What is fetal echocardiography?**

It is diagnostic ultrasound scan performed by an operator expert in the evaluation of fetal heart. The aim of such scan is the detailed evaluation of fetal heart anatomy and function and the diagnosis of major fetal heart defects.

### **When should it be done?**

Fetal echocardiography is not a screening test. Therefore, it should not be performed for all pregnant women. It is a detailed ultrasound examination for a selected group of pregnant women having an increased risk of fetal congenital heart disease. The recent guidelines published by SIEOG for the National Guidelines System provide a detailed list of such risk factors. The main indication for Fetal Echocardiography is the finding or the suspicion of a fetal heart anomaly at the screening scan. However, there are also indications pre-existing to the pregnancy, such as some maternal conditions or a congenital heart defect in previous pregnancies, leading to an increased risk for heart anomalies in the ongoing pregnancy and suggesting to refer such patients for a fetal echocardiography.

### **How is the exam performed?**

The doctor places a probe on the maternal abdomen searching for optimal views of the fetal heart. The blood flow features and direction in the heart cavities are also evaluated by color Doppler. Echocardiography is a complex examination, and it is not always possible to complete the evaluation at the first attempt, often due to unfavorable fetal position rather than the suspicion of any anomalies. In such cases either an extension of the exam time or planning a further attempt (during the same or following day) could be needed.

### **At which gestational age should a fetal echocardiography be performed?**

The appropriate gestational age for a fetal echocardiography depends on many factors, including the referral indication and when the congenital heart defect is suspected. Though the best time to perform fetal echocardiography is between 20 and 22 weeks of gestation, it could be also performed at earlier gestational ages. If such evaluation is performed by 16 weeks, it could be considered early fetal echocardiography, but echocardiography should then be repeated at 20-22 weeks, due to the lower diagnostic accuracy at earlier stages. Moreover, in case of specific risk for late-onset or evolving heart defects, it may be appropriate to perform a further echocardiography examination in the III trimester of pregnancy.

### **Does fetal echocardiography have diagnostic limits?**

Only some fetal congenital heart defects could be detected by fetal echocardiography. The diagnostic accuracy of this scan is related to the type of cardiac anomaly and could be reduced by

limiting factors such as maternal obesity, abdominal scars, uterine myomas, reduced amniotic fluid, sub-optimal fetal position or in case of twin pregnancies. Moreover, some heart defects may not be detected in utero due to their small size or late onset, being not visible at 20-22 weeks, but developing and appearing later during gestation or after birth.

**What happens if fetal echocardiography shows a normal heart?**

If fetal echocardiography does not confirm the suspected congenital heart defect or normal cardiac anatomy is reported, no further investigations are needed. The patient can continue the antenatal visits with her local obstetrician or midwife.

**What happens if a congenital heart defect is detected at fetal echocardiography?**

If a congenital heart defect is diagnosed during fetal echocardiography the couple should receive detailed information on the pathological condition detected, and counseled about management options, including further investigations for a better definition of the fetal prognosis. Moreover, a multidisciplinary counseling should be also provided. It is a patient's right to seek for a second opinion and the Referral Center should be supportive and collaborative.

**Can a fetal cardiac abnormality detected by echocardiography be not confirmed after birth?**

It is possible that a congenital heart defect detected by fetal echocardiography is not confirmed after birth, but it happens more often in case of minor anomalies. It can also happen that some abnormalities may be transient and spontaneously resolve during pregnancy or after birth.

***INFORMED CONSENT TO FETAL ECHOCARDIOGRAPHY***

***I hereby (name, surname) \_\_\_\_\_ declare that:***

- I have been correctly informed about fetal echocardiography and understood the contents of this information.
- I had the opportunity of clarifying my doubts with a doctor and all my questions were satisfactorily answered.
- I am aware that this examination is suggested but not mandatory and I would like to undergo the examination aware that fetal echocardiography might identify fetal anomalies requiring further diagnostic examinations.

***Date***

***Patient's signature***