

# Fetal brain anatomy – Mid-trimester scan evaluation

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

## **Why is the brain evaluated during the mid-trimester fetal ultrasound scan (anomaly scan)?**

Congenital brain abnormalities include all brain anomalies occurring before childbirth. Such anomalies are among the most common fetal malformations. Most of the time the cause is unknown, but some are related to infections, genetic disorders, or exposure to certain substances during pregnancy.

Brain abnormalities could vary from mild to severe, or from isolated to associated with other malformations. Depending on the severity or association with other malformations, the baby may develop significant clinical problems or developmental delays in the future. Therefore, antenatal detection of malformations would allow doctors to establish the most appropriate management before and after birth and a follow-up plan tailored to each baby.

The mid-trimester fetal ultrasound scan, also called the anomaly scan or 20 weeks ultrasound, is usually offered between 18–24 weeks of gestational age as a part of routine prenatal care. During this exam, the Obstetrician or Sonographer will evaluate the fetal anatomy, including the fetal brain. At this stage of the pregnancy, ultrasound provides a clear view of the fetal brain and allows the detection of most severe congenital brain malformations.

## **How is the fetal brain examination performed?**

The evaluation of the fetal brain is in accordance with the recommendations of the International Society of Ultrasound in Obstetrics and Gynecology (ISUOG). The obstetrician/sonographer performing the ultrasound scan will obtain ultrasound images of the brain on different planes, on which most of the structures associated with fetal brain malformations could be visualised.

The obstetrician/sonographer will also perform measurements of some fetal brain structures, to check if their size is compatible with normal fetal brain anatomy. If this examination is satisfactory, the probability of the baby having an undetected brain malformation is low.

A satisfactory examination of the fetal brain requires expertise and meticulous scanning, and the results could depend also on fetal position.

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## **What happens if there is suspicion of brain malformation?**

If during the ultrasound scan any suspicious finding of fetal abnormalities is detected, the case should be referred to a specialised center to be evaluated by an expert, who will perform an advanced examination of the fetal brain.

These examinations involve the acquisition of additional ultrasound images in different planes and might require the use of a transvaginal probe to better visualize the fetal brain anatomy. This approach allows the specialist to better visualise and classify the detected anomaly. After diagnosis, the specialist should provide the parents with detailed counseling on the possible consequences for the baby's health.

Depending on the brain malformation, some women will be offered further testing, such as magnetic resonance imaging (MRI) or genetic testing to obtain more information on the brain anomaly.

*Last updated September 2022*