

The role of mid-trimester ultrasound scan: scope and limitations

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The mid-trimester ultrasound scan is performed mainly for anatomical evaluation of the fetus. In expert hands, most clinically important structural anomalies can be detected. A routine mid-trimester fetal ultrasound examination includes an evaluation of the following: cardiac activity, fetal number (chorionicity and amnionicity in cases of multiple pregnancies), basic fetal anatomy, placental appearance and location, amniotic fluid volume, and gestational age/fetal size¹.

In the second trimester scan, fetal biometrics above the 90th percentile increase the risk of gestational diabetes mellitus (GDM), suggesting that the fetus is affected by abnormal maternal glucose metabolism prior to the diagnosis of GDM². Amniotic fluid index may be preferred in the assessment of polyhydramnios, while the deepest vertical pocket may be preferred in the assessment of oligohydramnios¹.

The use of prenatal ultrasound has been shown to be effective in the prenatal diagnosis of chromosomal abnormalities. The genetic sonogram, which includes a detailed search for sonographic signs of aneuploidy, can be used both to identify fetuses at high risk for aneuploidy and, if normal, to reduce the risk of aneuploidy for a pregnancy in which no sonographic markers are identified².

Since the clinical implementation of noninvasive prenatal testing (NIPT) in 2012, there has been a paradigm shift in prenatal screening. Although different approaches have been used to implement NIPT, there is consensus that NIPT should always be offered in combination with a qualified ultrasound scan³.

A routine mid-trimester ultrasound scan can be performed between approximately 18 and 24 weeks gestation, depending on technical considerations and local legislation. In countries where pregnancy termination is restricted by gestational age, detection rates should be balanced against time¹. Although many fetal malformations and anomalies can be detected at this mid-trimester scan, some may be missed or become apparent later in pregnancy, even with the best sonographic equipment

in the best hands. If the examination cannot be performed completely according to the adopted guidelines, the scan should be repeated to ensure a complete examination, or the patient should be referred to another examiner¹. Maternal obesity, a growing problem worldwide, has been shown to decrease the accuracy of ultrasound in high-risk pregnancies.

Marginal cord insertion (within 2 cm of the placental margin) occurs in 5–8% of cases, and velamentous insertion (insertion of the umbilical vessels into the amniotic membranes instead of the placenta) occurs in approximately 1% of cases¹. Although formal assessment of umbilical cord insertion is not part of the routine mid-trimester scan, in our opinion it is recommended to describe it at the earliest opportunity as we may need this information later in the pregnancy. Velamentous cord insertion may be associated with vasa previa and fetal growth restriction (FGR).

A single umbilical artery (SUA) is associated with congenital anomalies and FGR, although it is not an anomaly per se. Therefore, care should be taken not to cause anxiety for the parents if no major anomaly is found at the mid-trimester scan. There is no consensus on the potential impact of SUA on pregnancy outcome.

We also recommend that the cervical length (CL) measurement by transvaginal route be offered to all pregnant women at the time of the mid-trimester scan for screening of preterm birth because of the high association between a short cervix (CL < 25 mm) and subsequent preterm birth⁴.

There is currently insufficient evidence to support the universal use of uterine or umbilical artery pulsed Doppler evaluation for the screening of low-risk pregnant women. Color Doppler is encouraged and can assist in the examination of the fetal heart and the cord vessels and in the determination of the amount of amniotic fluid¹.

In summary, we support the idea that the mid-trimester scan should be offered to all pregnant women as part of routine antenatal care.

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