Use and Interpretation of Pregnancy Ultrasound

Disclaimer

This pathway describes the use and interpretation of ultrasound performed as part of pregnancy care.

See also:

- Prenatal Screening and Diagnosis of Fetal Anomalies

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Ultrasound examination is an important tool for assessment of fetal health and well being throughout pregnancy.

It is considered safe and can be performed transvaginally or transabdominally.

Specialist obstetric ultrasound services are performed by a specialist obstetrician holding a Certificate of Obstetric and Gynaecological Ultrasound (COGU), Maternal Fetal Medicine Certification (MFM), or Diploma of Diagnostic Ultrasound (DDU). Many of these services offer prenatal screening, genetic counselling and invasive diagnostic testing. Access may be limited due to geographical location and cost.

Some patients may request a ‘3D/4D’ scan. Note that these scans are not routinely performed for clinical diagnosis in pregnancy.

First Trimester

Often performed as transvaginal ultrasound, depending on gestation, position of uterus, and position of the fetus.

For use in miscarriage or ectopic pregnancy see Early Pregnancy Bleeding.

➢ Dating ultrasound
  • Best performed between 7 weeks and 13 weeks plus 6 days gestation.
  • Confirms pregnancy dates, location, multiplicity, and viability.

➢ Nuchal translucency ultrasound and/or first trimester anatomy review
  • Nuchal translucency measurement:
    o must be performed between 11 weeks and 13 weeks plus 6 days gestation to be used in combined first trimester screening.
    o measures fetal nuchal translucency thickness, which may be increased in fetuses with Down syndrome.
    o is not recommended alone as a screening test for aneuploidies, better test characteristics if performed as part of combined first trimester screening.
  • First trimester anatomy review:
    o first trimester anatomy including nuchal translucency should be offered to all women including those having non-invasive prenatal testing (NIPT) as a nuchal fold > 3.5 mm (or > 95th centile for gestation) can be a marker of other abnormalities not detected on NIPT, e.g. cardiac conditions, skeletal abnormalities.
    o can detect 50 to 60% of major structural abnormalities.

  • Early pre-eclampsia risk assessment is offered by some ultrasound providers.
Second Trimester

➢ **Mid trimester morphology ultrasound**
  - Recommended for all pregnancies between 20 to 22 weeks.
  - Not recommended alone as a screening test for aneuploidy.
  - May show or raise suspicion of fetal structural abnormalities of the heart, limbs, abdomen, bones, brain, spine, and renal tract.
  - Confirms placenta location. If this is not reported, call ultrasound provider to confirm it has been performed.
  - May detect early fetal growth restriction.

Consider requesting:
  - measurement of cervical length, if previous mid-trimester loss or preterm birth.
  - uterine artery doppler measurement, if at risk of fetal growth restriction.

➢ **Measurement of cervical length**
  - Cervical length is most accurately measured by transvaginal ultrasound.
  - Patients with a history of preterm birth and/or cervical insufficiency should be referred early for specialist obstetric care. Management options depend on clinical circumstances and include cervical length surveillance, cervical cerclage or vaginal progesterone.
  - There is controversy around the routine ultrasound assessment of the cervix as a means of defining risk of preterm delivery in low risk women. Some ultrasound providers measure cervical length as a routine.
  - Cut-off level for a short cervix at mid-trimester scan is < 25 mm (transvaginal).
  - If cervical length is < 35 mm (transabdominal) transvaginal ultrasound should be performed.

Third Trimester

➢ **Fetal growth and wellbeing ultrasound**
  - Routine third trimester ultrasound has not been the standard of care in low risk pregnancies, although there is growing evidence that routine serial growth scans for all women can improve the overall detection of fetal growth restriction.
  - Serial third trimester growth scans are indicated for pregnancies at risk of fetal growth restriction, e.g. low BMI, previous IUGR, smoker, advanced maternal age, maternal medical conditions.
  - Common indications include:
    - Confirmation of placental position
    - Clinical concerns regarding growth restriction (measuring small for gestational age)
    - Follow-up of fetal abnormalities detected on earlier scans
    - Post-dates monitoring in prolonged pregnancy
    - Maternal medical conditions such as gestational diabetes, hypertension, renal impairment

  - See [Antenatal – Second and Third Trimester Care](#)
  - Can measure different parameters of fetal growth and wellbeing such as:
    - biometry (including estimated fetal weight)
    - biophysical profile (heart rate, breathing, movements and muscle tone)
    - amniotic fluid index (AFI) or deepest vertical pocket (DVP)
    - Doppler studies (flow in umbilical arteries, middle cerebral arteries).
Pregnancy Ultrasound Results

It is not possible to cover all abnormalities detected on ultrasound in pregnancy. Any concerns should be discussed with the patient’s obstetric care provider.

- **Common placental abnormalities**
  - **Placenta praevia / low-lying placenta**
    - Low lying placenta occurs when the placenta is positioned in the lower part of the uterus (< 20 mm from internal os) at > 18 weeks gestation.
    - Placenta praevia occurs when the placenta is implanted in the lower segment, and remains < 20 mm from the internal os at > 28 weeks gestation.
    - Ensure obstetric care provider is aware of finding.
    - If placenta covers or overlaps cervical os on mid trimester ultrasound repeat scan for placental position at 32 weeks.
    - If low lying, but not covering os, repeat scan at 34 to 36 weeks.
    - If anterior low lying placenta and previous uterine surgery including caesarean section, placenta accreta must be considered document on referral.
  - **Placenta accreta (includes spectrum of accreta, increta and percreta)**
    - Morbid adherence of the placenta to the uterus
    - Risk factors include previous accreta, previous caesarean section or uterine surgery
    - Refer for urgent obstetric review and further imaging with specialist obstetric ultrasound and possible MRI

**Note:** Statewide referral criteria for placenta accreta apply.
Criteria for referral to level 6 public hospital maternity service:
- Known or suspected placenta accreta (including increta and percreta).
- Suspicion of a placenta accreta or consideration of risk factors for placenta accreta may be informed by low anterior placenta on a mid-trimester scan or known or suspected major anterior placenta praevia with a history of:
  - Uterine surgery including caesarean section(s) as the greater the number of uterine surgeries, the greater the likelihood of a placenta accreta
  - Placenta accreta
  - Asherman’s syndrome

- **Vasa praevia**
  - Occurs when exposed fetal vessels within the membranes cover or are in close proximity to the internal cervical os.
  - Associated with significant fetal risk.
  - Ensure obstetric care provider is aware of the ultrasound findings.

- **Single umbilical artery**
  - Present in about 2% of pregnancies.
  - If isolated, no increased risk of aneuploidy.
  - Ensure obstetric provider is aware of finding as may be associated with renal abnormalities and growth restriction, requiring extra surveillance during pregnancy.
➢ **Shortened cervix**
- If open cervix, direct to an emergency department with a maternity service
- If cervix length less than 25 mm (transvaginal) or 35 mm (transabdominal) on ultrasound before 24 weeks, refer for urgent obstetric opinion

**Statewide referral criteria for shortened cervix**
Criteria for referral to level 6 public hospital maternity service:
- Cervical length < 10 mm measured by transvaginal scan with an empty bladder, performed over a minimum of 3 minutes to allow for dynamic cervix changes, at or before 26 weeks.
- Cervical length < 25 mm measured by transvaginal scan with an empty bladder, performed over a minimum of 3 minutes to allow for dynamic cervix changes, at or before 26 weeks unless the current obstetrics service provides a specialised preterm labour surveillance program.

➢ **Fetal abnormalities on ultrasound**
If a fetal abnormality (e.g. heart, limbs, brain, spinal cord) is detected on ultrasound:
- Review aneuploidy screening test result.
- Discuss with the patient’s obstetric care provider.
- Arrange a specialist ultrasound scan (either in public hospital or private provider) to confirm abnormal findings, if not already performed.
- Consider referral for genetic counselling.

Sometimes an **ultrasound ‘marker’** is reported:

**Ultrasound ‘marker’**
- Not an anomaly in themselves but may be an indicator of an underlying abnormality.
- Some may be ‘soft’ markers, or normal variants, which can be considered an incidental finding if isolated and patient has low risk aneuploidy screening.

➢ **High risk markers**
- **Increased nuchal translucency** (11 to 13 weeks plus 6 days gestation)
  - Can indicate Down syndrome, other aneuploidies, or abnormalities (e.g cardiac).
  - If ≥ 3.5 mm, refer for genetic counselling or obstetric advice.
  - If 2.5 to 3.5 mm, seek obstetric advice as this generally requires a specialist ultrasound to exclude cardiac or other abnormality, even if low risk aneuploidy result.

- **Absent or hypoplastic nasal bone**
  - Major marker for aneuploidy, particularly Down Syndrome.
  - Refer for genetic counselling or obstetric advice noting whether patient has had non-invasive prenatal screening or not.

- **Echogenic bowel**
  - Major marker for aneuploidy and other problems such as fetal growth restriction, fetal infection, and bowel pathology.
  - Refer for genetic counselling or obstetric advice.
  - Consider arranging blood test screening for perinatal infection (‘TORCH screen’), including toxoplasma, CMV, parvovirus, rubella, herpes.
- **Soft markers**
  - **Choroid plexus cysts**
    - Often an incidental finding.
    - Occur in up to 2% of pregnancies and usually resolve by 26 weeks.
    - Can be associated with increased risk for trisomy 18 and 21 (soft marker), usually in association with other findings.
    - If low risk aneuploidy screening result and isolated finding, no further management required.
  - **Echogenic intracardiac focus**
    - Often an incidental finding.
    - Occur in up to 5% of karyotypically normal foetuses.
    - If low risk aneuploidy screening and isolated finding, no further management required.
  - **Fetal renal pyelectasis**
    - If isolated, no significant risk of aneuploidy.
    - More common in boys than girls and can recur in subsequent pregnancy.
    - Ensure obstetric provider is aware, as will need follow-up ultrasounds in pregnancy and postnatal paediatric review.

Refer for genetic counselling if a single high-risk marker or more than one soft marker is detected.

- **Fetal growth restriction**
  Phone obstetric provider immediately and refer for urgent obstetric review if ultrasound shows:
  - Estimated Fetal Weight (EFW) or abdominal circumference (AC) ≤ 10th centile
  - Static or falling interval growth in EFW or AC (a fall of > 30 centiles is considered abnormal)
  - Abnormalities in Doppler flow or AFI

Note: Statewide obstetric referral criteria for fetal growth restriction apply in some circumstances.

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### Information

#### For health professionals

#### Further information

The Royal Women’s Hospital, Mercy Health, and Western Health – Guidelines for Maternity Shared Care Affiliates 2015

#### For patients

- Better Health Channel – Pregnancy Tests - Ultrasound
- Raising Children Network – Tests in Pregnancy: Ultrasound scans in pregnancy
References


Select bibliography


Disclaimer

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