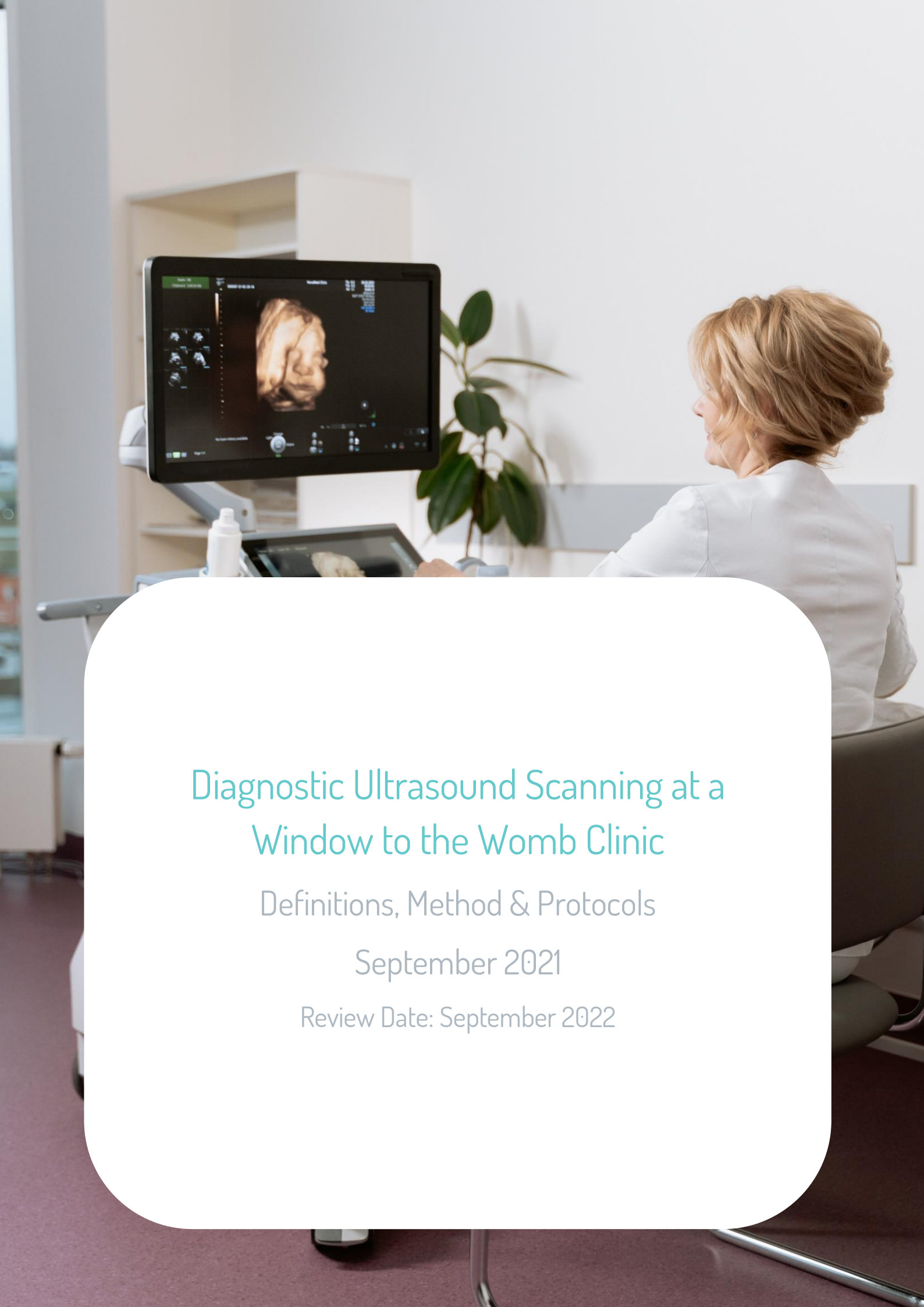

Diagnostic Ultrasound Scanning at a Window to the Womb Clinic

Definitions, Method & Protocols

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Contents

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Co-author of Obstetric & Gynaecological Ultrasound How, Why & When

Marion Macpherson

Consultant Obstetrician & Gynaecologist, MB ChB, FROCG, DM. (1974).

Source documents

1. National Institute for Health and Care Excellence Guidelines & Pathways.
2. Fetal Anomaly Screening Programme Handbook.
3. Obstetric & Gynaecological Ultrasound How, Why & When (Fourth edition).
4. Information and guidance from The Royal College of Obstetricians & Gynaecologists

Introduction

This document contains essential information relating to the way that sonographers provide scans to our patient's. Not only does it include the way that we refer any patient who receives an adverse diagnosis from her scan to the NHS, but also includes the principals that we would want all sonographers to adopt when scanning in a Window to the Womb clinic.

These principals have been compiled using prescribed and established professional guidance such as:

1. Guidelines for Professional Ultrasound Practice, published by the Society & College of Radiographers and British Medical Ultrasound Society, December 2015.

2. Fetal Anomaly Screening Programme (FASP) Standards, published August 2018.
3. Obstetric and Gynaecological Ultrasound How, Why and When (Fourth Edition) Trish Chudleigh, Alison Smith, Sonia Cumming.

Sonographers working in Window to the Womb clinics must be experienced in conducting FASP screening scans and must perform all scans in accordance with our protocols including local guidance.

Sonographers employed for firstScan clinics must be experienced in early pregnancy scanning and must perform all scans in accordance with our protocols including local guidance.

It is critical that all sonographers follow our way of scanning as described in this document to ensure safety, diagnostic relevance, patient satisfaction and to comply with insurance requirements.

Ultrasound scans at firstScan and WTTW are offered from 6 weeks of pregnancy to 40 weeks of pregnancy. The different services available are documented in our Services Available section of this document.

The primary purposes of all our scans are to confirm, or otherwise for viability and to provide diagnostic well-being checks. The different services available are marketed on the websites:

1. https://windowtothewomb.co.uk/
2. https://baby-scan.co.uk/

For the purpose of compliance with our protocols and for the benefit of the patient, all scans are digitally recorded, and ultrasound images are taken and stored. The electronic data is securely stored locally in each clinic and via a secure cloud service, owned and operated by Window to the Womb.

Scans completed at firstScan or Window to the Womb are not designed to replace NHS screening scans. These diagnostic scans are completed in a different timeframe at a different gestation to screening scans. Scan results are not recorded with The Fetal Medicine Foundation (FMF) or The Down's syndrome Quality Assurance Support Service (DQASS) and as such certain structures cannot be examined or reported on.

Definitions

- **Dating**: The estimation of a pregnancy's gestation.
- **LMP**: The date of first day of last normal menstrual period.
- **EDD**: Estimated date of delivery.
- **Measurements**:
    - **FL**: Femur Length.
    - **HC**: Head Circumference.
    - **AC**: Abdominal Circumference.
    - **CRL**: Crown Rump Length.
    - **GS**: Gestation Sac Diameter.
    - **MSD**: Mean Sac Diameter (Gestation Sac).
- **EPU or EPAU**: Early Pregnancy [Assessment] Unit.
- **Adnexae**: Structures that are adjacent or near to the uterus (within the pelvis).

- **Gravida**: describes the total number of confirmed pregnancies that a patient has had, regardless of the outcome.
- **Para**/**Parity**: the number of births that a patient has had after 24 weeks gestation.
- **Egg Retrieval** (**IVF**): technique used in 'in vitro fertilization' in order to remove eggs from the ovary of a patient, enabling fertilization outside the body.
- **Cyst**: sacs containing fluid or semisolid material that develop in or on the surface of an ovary.
- **Haematoma**: Bleed.
- **Molar Pregnancy**: a gestational trophoblastic disease which grows into a mass in the uterus that has swollen chorionic villi.
- **Embryo Transfer Date**: a step in the process of IVF in which fertilised embryos are placed into the uterus of a female with the intent to establish a pregnancy.
- **Intrauterine**: Pertaining to within the uterus.
- **Ectopic pregnancy**: Pregnancy in an incorrect site.
- **Sub chorionic Haematoma**: A bleed that lies between the chorionic membrane and the inner wall of the uterus.
- **Bicornuate**: Two well-formed uterine cornua.
- **Cornua**: The uterine horns which are the points where the uterus and the fallopian tubes meet.
- **Endometrium**/**Endometrial Thickness**: Lining of womb.
- **Decidua**: Lining of the womb in pregnancy.
- **Corpus Luteum**: Ovarian cyst after ovulation which produces hormones.
- **Gestation sac**: First sign of developing pregnancy.
- **IUCD**: Intrauterine Contraceptive Device.
- **Fibroids**: benign tumours of the smooth muscle of the uterus.
- **PWD**: Pulsed Wave Doppler.
- **Yolk Sac**: first structure seen within a developing pregnancy sac. Confirms a pregnancy in the uterus.
- **Embryo**: Early stage development of a baby up to 10 weeks gestation.
- **Fetal heartbeat**: Seeing a heart beating within the developing baby.
- **Situs solitus**: is the normal position of thoracic and abdominal organs. Anatomically, this means that the heart is on the left with the pulmonary atrium on the right and the systemic atrium on the left along with the cardiac apex.
- **Congenital Uterine Anomaly**: birth defects of the uterus (septate, arcuate, bicornuate). Confirmation and classification should not be attempted by a 2D scan. Confirmation requires a 3D scan performed on the non- pregnant uterus, mid-cycle or by Laparoscopy and Hysterosalpinogram. *OBSGYN C16 P388*.
- **NT**: Nuchal Translucency scan. This is a scan to detect chromosomal abnormalities in a fetus by measuring the thickness of the fluid build-up at the back of the developing baby's neck.
- **FASP**: The NHS Fetal Anomaly Screening Programme.
- **OBSGYN**: 'Obstetric & Gynaecological Ultrasound How, Why & When'.

Definitions that should NEVER be used

- Abortion: Never use the word…replace with miscarriage.
- Complete abortion: Miscarriage.
- Missed abortion: Miscarriage.

- Blighted Ovum: Out dated term for missed miscarriage.
- Anembryonic pregnancy: Out dated term.
- Fetal pole: A term for developing baby

Diagnostic Scanning

Preparing to Scan

At Window to the Womb the scan room and clinic environment will be set up by the scan assistants at the beginning of the scan day. Before starting any clinic, you are responsible for ensuring that:

- There are enough stocks of scan room consumables required to complete the session.
- The scan room has been cleaned to an acceptable standard by the clinic staff.
- The ultrasound machine is clean.
- The ultrasound machine is switched on and seen to be fully operational.

It is vital that you are provided with and understands the schedule of appointments for the session before the session commences. In firstScan clinics the scan report of any scan performed previously on the patient must be available for you prior to the scan.

Further reading: OBSGYN C2 Preparing to Scan [The Components of the Ultrasound Machine, The Ergonomics of Safe Scanning, Preparing Yourself for the Scan, Preparing the Patient for the Scan]

Ultrasound Assessment Under 16 Weeks (firstScan Clinic)

Clinic Purpose

firstScan at Window to the Womb is a private diagnostic obstetric clinic aimed primarily at 1st trimester pregnancies. The sole purpose of the clinic is to allow expectant patient's access to a service designed to assess the viability of a pregnancy from as early as 6 weeks gestation. Scans conducted in the clinic may identify live intrauterine pregnancies (singular or multiple), non-viable pregnancies, ectopic pregnancies and a range of anomalies.

Services Available

• Viability Scan: Available from 6 weeks to 10 weeks gestation. This service offers the earliest possible confirmation of a viable intrauterine pregnancy.

• Dating Scan: Available from 8 weeks to 12 weeks gestation. This service, offered at a slightly later gestation, provides an accurate method of dating a pregnancy (when compared to LMP equations) and to confirm viability.

• Reassurance Scan: Available from 10 weeks to 15 weeks & 6 days gestation. This service allows access to private ultrasound scans between other antenatal appointments for ongoing assessment and parental reassurance.

• Symptomatic Scan: Available from 6 weeks to 15 weeks & 6 days gestation. This service allows the patient to notify the clinic, prior to attending, that she is experiencing symptoms potentially associated with a pregnancy complication.

• Previous Recurrent Miscarriages: Available from 6 weeks to 15 weeks & 6 days gestation. This service allows the patient to notify the clinic, prior to attending, that she has had two or more previous miscarriages.

- Previous Ectopic Pregnancy: Available from 6 weeks to 15 weeks & 6 days gestation. This service allows the patient to notify the clinic, prior to attending, that she has previously suffered an ectopic pregnancy.

- IVF/Fertility Treatment: Available from 6 weeks to 15 weeks & 6 days gestation. This service allows the patient to access private antenatal ultrasound scans following fertility treatment. This service notifies the clinic of the requirement to calculate due dates using an alternative method based on the egg-retrieval date being the date of conception. OBSGYN C5 S1 Sub 6,7,8 [Using Assisted Conception Dates, Using the Date of Egg Collection, Using the Date of Embryo Transfer]

firstScan Procedures

Prior to the patient entering the scan room you will be presented with the patient's pre-scan questionnaire (displayed on the scan room tablet) containing information about the patient's pregnancy history. This information coupled with the patient's chosen service provides you with a summary overview of any clinical indication. Using this information, you should complete the patient information screen on the ultrasound machine, confirming details such as name spelling with the patient. If the patient is attending following IVF treatment the egg retrieval date should be used as the date of conception (DOC). This is equivalent to two weeks later than LMP for normal fertilisation. If the patient provides a 'X Days' Transfer Date a calculation should be undertaken to calculate the egg retrieval date and this should be used as the date of conception (DOC). OBSGYN C5 Pg 80

All pregnancies presenting at less than 10 weeks of gestation should be scanned using the transvaginal route (subject to patient consent). A woman booking for such a scan should therefore be advised that she will be having a transvaginal scan and that she should attend with an empty bladder. A transvaginal scan is performed, rather than a transabdominal scan, for the following reasons:

1. the superior image quality due to the higher frequency of the transvaginal probe, leading to;
2. greater accuracy of image interpretation, resulting in;
3. earlier identification and assessment of the early pregnancy and/or embryo(s).

Appendix 2 [Benefits of transvaginal scanning].

Where you believe that there is a diagnostic benefit to carrying out a transvaginal scan post 10 weeks of gestation consent must be sought from the client before proceeding.

Consent to conduct a transvaginal scan MUST be clearly documented on the scan report:

"TV SCAN WITH CONSENT"

If the patient declines a transvaginal scan, this should be clearly documented on the scan report:

"TV SCAN DECLINED BY CUSTOMER"

All scans are completed within a 15-minute appointment window.

Further reading on scan techniques OBGYN C3 S2 [Transabdominal: The Scanning Technique] and OBGYN C4 S3 [Transvaginal: The Scanning Technique]

firstScan Scan Objectives & Observations (What we look for)

1. Identify a live intrauterine pregnancy (singular or multiple) *OBGYN C5 [Assessing the early intrauterine pregnancy]* Images required in two planes.
2. Identify inconclusive or PUV *OBGYN C6 S3.2 [Pregnancy of Unknown Viability]* Image required of findings.
3. Identify findings indicatory of a miscarriage *OBGYN C6 S3.3 [Miscarriage]* Image required of embryo/fetus.
4. Provide accurate dating by measurements *OBGYN C5 S3.2 [Ultrasound Parameters]* Image required of all measurements taken.
5. Excluding/confirm ectopic pregnancy *OBGYN C6 S3.5 [Ectopic Pregnancy]* Image required of any adnexal mass (with measurements) and both ovaries.
6. Identify a PUL *OBGYN C6 S3.4 [Pregnancy of Unknown Location]* Images (with generic measurements) of transonic area / endometrial thickness required.
7. Identify trophoblastic disease (molar pregnancy) *OBGYN C6 S3.6 [Trophoblastic Disease]* Images required of findings.
8. Note any corpus luteum (normal finding) *OBGYN C6 S3.9.1 [Ovarian Cysts in Pregnancy]*.
9. Note any 2nd or 3rd non-viable sacs *OBGYN C5 S5.1.4 [The Pseudosac (Fluid Within the Cavity)]* Images (with generic measurements) required.
10. Note any haematoma *OBGYN C6 S3.1 [Sub chorionic Haematoma]* Images (with measurements) required.
11. Note any IUCD *OBGYN C6 S3.7 [Pregnancy and an Intrauterine Contraceptive Device]*.
12. Note any fibroids *OBGYN C6 S3.8 [Uterine Fibroids]*.
13. Note any obvious fetal/maternal anomaly or ovarian pathology. *Further reading: Appendix 7 Window to the Womb Fetal Abnormality Policy.* Image required (measure where appropriate).
14. Discuss the findings with the patient throughout the scan.

Observations Not Required (What we don't look for)

1. NT scan. We do not measure NT as it is not recorded with FMF or DQASS and these are not screening scans. If at any gestation fetal ascites/oedema is observed this should be explained to the patient (no view as to diagnosis should be made as this can be transient in pregnancy) and requires a referral.
2. Cervical funnelling/dilatation.
3. There is no requirement to complete a detailed FASP Fetal anomaly scan. However, any observed anomaly should be recorded.
4. Doppler. Pulsed wave Doppler is not performed in the first trimester due to risk of bioeffects.
5. Fetal gender.
6. No Gynae scans or post recurrent miscarriage assessment of uterine anomaly.
7. No fertility scans.
8. Slow/fast fetal heartbeat should not be noted as there is currently no intervention possible and would cause unnecessary distress. Heartrate varies greatly during early pregnancy and advising of a subjective variant to heartrate (whilst it may be suggestive of an early development issue) would not open the patient to any additional options or interventions. A slow/fast heartbeat is not definitive of any abnormality.

NICE Guidelines.

Nice Clinical Guideline [CG154] – Ectopic pregnancy and miscarriage: diagnosis and initial management

- 1.4.1 Offer women who attend an early pregnancy assessment service (or out-of-hours gynaecology service if the early pregnancy assessment service is not available) a transvaginal ultrasound scan to identify the location of the pregnancy and whether there is a fetal pole and heartbeat.
- 1.4.2 Consider a transabdominal ultrasound scan for women with an enlarged uterus or other pelvic pathology, such as fibroids or an ovarian cyst.
- 1.4.3 If a transvaginal ultrasound scan is unacceptable to the woman, offer a transabdominal ultrasound scan and explain the limitations of this method of scanning.
- 1.4.4 Inform women that the diagnosis of miscarriage using 1 ultrasound scan cannot be guaranteed to be 100% accurate and there is a small chance that the diagnosis may be incorrect, particularly at very early gestational ages

The following guidelines have been amended to include local guidelines for a Window to the Womb clinic. Local guidance must be followed to ensure patient safety.

1. 1.4.5 When performing an ultrasound scan to determine the viability of an intrauterine pregnancy, first look to identify a fetal heartbeat. If there is no visible heartbeat but there is a visible embryo, measure the crown–rump length. Measure the mean gestational sac diameter in all cases where there is no visible heartbeat.

firstScan Report & Outcomes

During any session, all clinical indications should be matched to *Appendix 3: Scan Outcomes* Flowchart which provides guidance on the need or otherwise for ongoing treatment. Where applicable further guidance on ongoing treatment or clinic level expectant management (rescans) is available at *Appendix 4: Referral Guidance*. When completing the Obstetric Report please refer to the templates detailed at *Appendix 10: Templates for firstScan Reports*.

- In the case of a suspected fetal abnormality refer to the Window to the Womb Fetal Abnormality Policy.
- In the case of a scan showing a live intrauterine pregnancy with an area of haemorrhage, this should be noted on the scan report and pointed out to the patient with an explanation that in most instances it will likely dissipate or be passed through the vagina. The patient should be advised that if heavy vaginal bleeding develops she should contact her GP, midwife or EPU.
- Any pregnancy where an IUCD is noted should be referred to the EPU.
- Fibroids should be noted although a referral is not required.
- Cysts – note any normal cysts, however any suspicion of malignancy should be referred to EPU.

An example completed live intrauterine pregnancy report is available at Appendix 5: Example Scan Report

Support and Information Giving

Throughout a patient's care at firstScan, give her and (with agreement) her partner specific evidence-based information. This should include (as appropriate):

- When and how to seek help if existing symptoms worsen or new symptoms develop, including a 24-hour contact telephone number for her local EPU.
- What to expect during the time she is waiting for an ultrasound scan.
- Where there is a system in place to enable women referred by firstScan to their local early pregnancy assessment service, to attend within 24 hours if the clinical situation warrants this.
- Where the service is not available, and the clinical symptoms warrant further assessment, refer women to the nearest accessible facility that offers specialist clinical assessment and ultrasound scanning (such as a gynaecology ward or the local Accident & Emergency service with access to specialist gynaecology support).
- firstScan will give women a business card with information detailing where to access support and information from the Miscarriage Association.

When performing an ultrasound scan to determine if there is a live intrauterine pregnancy, first look to identify a fetal heartbeat. If there is no visible heartbeat but there is a visible embryo, measure the crown–rump length. If the CRL is less than 7mm this is an inconclusive scan. Only measure the mean gestational sac diameter where there is no embryo present and only a yolk sac visible. The mean gestation sac diameter should only be documented when there is no embryo visible.

You are a qualified healthcare professional and have the responsibility of explaining the scan findings and, where required, the need for a follow-up scan either with Window to the Womb or an early pregnancy unit in the NHS. You must use your professional experience alongside NICE to decide where a second opinion is required. This is the practice in many Early Pregnancy Units particularly at weekends and Bank holidays.

Current RCOG guidelines are that following the finding of an inconclusive scan the pregnancy test should be repeated in 2 weeks on an early morning urine sample and when positive contact their midwife to arrange a dating scan.

A follow up scan in firstScan may be offered after their repeat positive pregnancy test in 2 weeks, this is chargeable.

It is your responsibility to discuss the need for a further pregnancy test in 2 weeks, the reasons for a second scan and to discuss the possibility of any PV bleeding and/or pain after a conclusion of Inconclusive scan. You need to ensure that the patient is given the emergency contact advice.

Ref: *RCOG, Guidance for rationalising early pregnancy services in the evolving coronavirus (COVID-19) pandemic, Information for healthcare professionals Version 1.2: Published Friday 15 May 2020.*

A further scan may be discussed as a possibility for follow up in order to distinguish the necessary diagnostic criteria to distinguish between a continuing pregnancy and miscarriage, but you should discuss the need for a 2 week interval between follow up to avoid leading to another inconclusive result (which is unhelpful) or a false positive result. The optimum time interval to access a repeat scan is 2 weeks and the patient should be advised to discuss with her GP or EPU if she is concerned.

The follow up for Inconclusive scan may be a live IUP at the 11 to 14 weeks scan assuming no PV bleeding has occurred and repeat positive pregnancy test two weeks after the initial scan.

You should not assume that a patient who is experiencing vaginal bleeding, is certain of her menstrual dates and the ultrasound findings are inconclusive, has had a miscarriage. If the menstrual dates and ultrasound findings show a discrepancy of 2 weeks from menstrual dates then it may be suggestive of a failing pregnancy. *OBGYN C6, page 103.*

If the gestation sac measures (or appears subjectively) greater than 25mm with no visible heartbeat you should consider advising that this is highly suggestive of a miscarriage and if she does have bleeding it may become very heavy. As per NICE guidelines she must have contact details for their EPU.

- When there are appearances of complete miscarriage on an ultrasound scan (e.g. no intra uterine gestation sac), in the absence of a previous scan confirming an intrauterine pregnancy, you should always be aware of and check for the possibility of ectopic pregnancy. This must be reported as a Pregnancy of Unknown Location, RCOG guidelines are for an early morning urine pregnancy test the day following the scan and if positive, refer to the EPU. If negative, there is no requirement for referral.
- A complete miscarriage must only be confirmed when a previous scan has confirmed an intrauterine pregnancy, either inconclusive or live pregnancy.
- All ultrasound scans should be performed by someone with training in, and experience of, diagnosing ectopic pregnancies.

Ultrasound Assessment Over 16 Weeks (Window to the Womb clinic)

Clinic Purpose

Window to the Womb is a private diagnostic obstetric clinic aimed primarily at 2nd & 3rd trimester pregnancies. The primary purpose of the clinic is to allow expectant patients access to a private service designed to assess the health and well-being of mother and baby from 16 weeks gestation to term. Each well-being scan at a Window to the Womb clinic can be delivered solely for diagnostic results or can be combined with other components such as gender identification or 4D image rendering.

Well-being checks are designed to rule out clear abnormalities by ensuring we have observed the fetal structure. Well-being checks are not a suitable replacement for scans completed by the NHS under the FASP due to the absence of combined screening and comparatively reduced scan time. Customers must be advised of this and guided to ensure they access all antenatal services available to them through the NHS.

Services Available

- **Well-being Scan**: Available from 16 weeks to 40 weeks gestation. This service provides diagnostic ultrasound results pertaining to the health and well-being of the fetus and mother. This scan can be booked as it is, but it also represents the initial part and most important element of any WTTW scan package.
- **Well-being + Gender Scan**: Available from 16 weeks to 22 weeks gestation. This service provides diagnostic ultrasound results pertaining to the health and well-being of the fetus and mother followed by gender confirmation and a free 'peek' at 4D image rendering.
- **Well-being + 4D Scan (various packages)**: Available from 24 weeks to 34 weeks gestation. This service provides diagnostic ultrasound results pertaining to the health

and well-being of the fetus and mother followed by 4D image rendering and optional gender confirmation.
- **Growth & Presentation Scan**: Available from 26 weeks to 42 weeks gestation. This service provides diagnostic ultrasound results pertaining to the health and well-being of the fetus and mother including key fetal measurements, estimated fetal weight and fetal presentation.

NB. Gestational limitations apply to multiple pregnancies

Procedures

Immediately before or as the patient enters the scan room you will be presented with the patient's information on the scan room tablet. Using this information, you should complete the patient information screen on the ultrasound machine, confirming details such as name spelling, with the patient.

You should be satisfied that the scan is appropriate for the patient and that there are no reasons that the scan should not be completed.

During the scan you must notify the scan assistant of key observations which the scan assistant will document on this same form.

Patient's will present with a full bladder for well-being and gender scans but should have empty bladders for later gestation scans. All scans completed at a Window to the Womb post 16-week gestation are to be completed abdominally.

All scans are completed within a 15-minute appointment window.

Further reading on scan techniques OBGYN C3 S2 [Transabdominal: The Scanning Technique]

Window to the Womb Scan Objectives & Observations (What we look for)

Well-being Scan

Our process follows this 18-point scanning sequence:

1. Determine the number of fetuses and confirm that the fetus(es) are alive.
2. Determine the longitudinal axis of the fetus and more specifically its lie, presentation and attitude.
3. Show the patient a longitudinal section of her baby, in which its heart can be seen clearly beating. Enhance this evidence by showing the patient the fetal heartbeat using PWD (maximum 10 second exposure).
4. Confirm situs solitus. *OBGYN C8 S3.1 pg164 [Confirming Situs Solitus]*.
5. Measure the HC (Growth scans only unless clinically indicated). Observe skull shape. *OBGYN C8 S4 pc164 [Measuring the HC and BPD]* Observe the cerebellum in a suboccipitobregmatic plane. *OBGYN C8 S6 pg175 [The suboccipitobregmatic section]* Evaluate the intracranial anatomy and skull integrity from the two sections obtained.
6. Return to a longitudinal section which demonstrates the full length of the fetal spine. Note the presence and position of the fetal stomach below the diaphragm.
7. Rotate the probe through 90° to obtain a transverse section of the fetal chest at the level of the four-chamber heart view to confirm size and situs only. There is no requirement to evaluate the four-chamber heart view. There is no requirement to evaluate the left and

right outflow tracts, the 3-vessel view (3VV) and the 3 vessel and trachea view (3VT) unless clinically indicated. Full Heart and Lungs process is detailed later in this document.

8. Slide the probe down the fetus in transverse section. Confirm a single stomach 'bubble'.
9. Measure the AC (Growth scans only unless clinically indicated). *OBGYN C8 S7 pg177 [Measuring the AC]*.
10. Continue sliding the probe down the fetus in transverse section. Evaluate the normal appearances of the cord insertion and abdominal wall and the bladder. The bladder must be shown to be of normal size during a scan. The renal fossae should be examined to exclude cysts, dilatation and grossly enlarged, bright kidneys. It is not expected that bilateral renal agenesis would necessarily be detected in the absence of oligohydramnios.
11. Confirm the presence of three long bones in each limb.
12. Measure the FL (Growth scans only unless clinically indicated). *OBGYN C8 S8 pg179 [Measuring the FL]*.
13. Observe the fetus for body and limb movements.
14. Evaluate amniotic fluid volume (deepest pool), but no need to measure unless concerned from observations. *OBGYN C8 S9 pg182 [Evaluation of amniotic fluid volume]*.
15. Localize the position of the placenta. Do not offer a second opinion of a low-lying placenta where the client is already in a care plan with the NHS. If no previous diagnosis, refer for a second opinion. *OBGYN C8 S10 pg184 [Localization of the position of the placenta relative to the internal os]*.
16. Assess the uterus for evidence of fibroids and the pelvis for any evidence of ovarian pathological conditions.
17. Consider normal growth velocity (only measure if it's a Growth Scan or if concerned).
18. Discuss the findings with the patient throughout the scan. Ensure the Fetal Well-being Report is completed and signed by you. Arrange follow-up/referral as appropriate.

Observations Not Required (What we don't look for)

Normal variants are not required to be reported if the patient has had 12 weeks NHS screening:

- Choroid plexus cysts.
- Echogenic foci in the heart.
- Increased nuchal fold on the suboccipitobregmatic view. Subjective consideration of a grossly enlarged nuchal fold should be referred for a second opinion due to its association with chromosomal abnormalities. No opinion of diagnosis or outcome should be given.
- Two vessel cord.

Except for:

Echogenic bowel, because of its possible association with CF (cystic fibrosis and growth restriction). Echogenic bowel should appear brighter than bone.

- Pulsed wave Doppler of the umbilical artery is not performed as part of a fetal growth check. "Umbilical artery waveforms are invaluable in the management of fetal growth restriction but are of little or no value as a screening test for the small gestational age fetus." *[OBGYN Pg. 332]*.
- Abdominal circumference measurements for assessment of fetal growth should not be performed less than two weeks since the previous measurement (including by the NHS

or at a Window to the Womb clinic). If this information is not available, please complete the measurements and advise the patient to share this information with her midwife at her next appointment.

- If the patient has a known diagnosis of a low-lying placenta and this is being followed up at their antenatal clinic, you are not required to assess, document or arrange referral.
- If the patient has no knowledge of her low-lying placenta you should explain and discuss this with her and complete the appropriate referral form ensuring they recommend an appointment be made with their midwife in order that a follow up scan may be arranged at their local NHS hospital.
- When gender reveal is specifically not required by the parents, but they want you to check so this can be revealed later, the patient should be advised not to watch the recording until they are aware of the gender. Patients and guests should be advised to look away from the screen whilst you complete the well-being check where there is danger they may inadvertently see gender.
- Patients should not routinely be offered a re scan if the standard well-being checks cannot be completed due to increased BMI or fetal position and this should be documented on the wellbeing form where indicated.
- Checking the intra cranial anatomy and HC measure can be omitted from Growth and Presentation scans if the fetal head is deep in the pelvis.

Heart & Lungs View

Sonographers are expected to observe the fetal chest transversely at the level of the four-chamber heart view from 16 weeks gestation. It is widely accepted that the view has a role to play in the diagnosis of Congenital Diaphragmatic Hernia. Within a Window to the Womb (WTTW) well-being scan the only conditions which may be suspected are:

- Abnormal situs/laterality.
- Grossly enlarged heart.
- Diaphragmatic Hernia.
- Fluid in the chest.
- Cystic Adenomatoid Malformation (CAM).

These conditions may be excluded by the correct imaging of the heart and lungs view which should be obtained:

- At an appropriate magnification.
- At 90 degrees to the spine showing two complete ribs.
- With the heart occupying one third of the chest.

Sonographers completing Window to the Womb well-being checks are not expected to obtain any of the additional views that are included in the Fetal Abnormality Screening Programme (FASP), which are designed to examine the major vessels and outflow tracts. These additional observations are not required at any gestational age in a WTTW scan. It should however be noted that some defects may be clearly observed in the third trimester such as large VSD's and would therefore result in a referral to NHS for a second opinion and ongoing treatment.

It is well documented that one of the main constraints to identifying Congenital heart Defect (CHD) is that of lack of time. All well-being scans at WTTW are conducted in a 15-minute appointment time which therefore restricts the capability, and therefore requirement, to obtain the correct views and detect heart anomalies.

It remains a requirement that the heart and lungs view is obtained and documented from 16 weeks to rule out any clear and immediately discernible anomalies. This singular view has been extensively trialled and shown to be achievable within our well-being checks during a 15-minute appointment.

Report & Outcomes

During the scan, specifically the elements relating to well-being, you must advise both the patient and the scan assistant of each observation as completed. The scan assistant is responsible for completing the Fetal Well-being Report during the scan. You must check this form at the end of the scan for accuracy and ensure that it is signed.

In all instances any fetal abnormality should be considered in line with the *Window to the Womb Fetal Abnormality Policy (Appendix 1).*

Identifying Gender

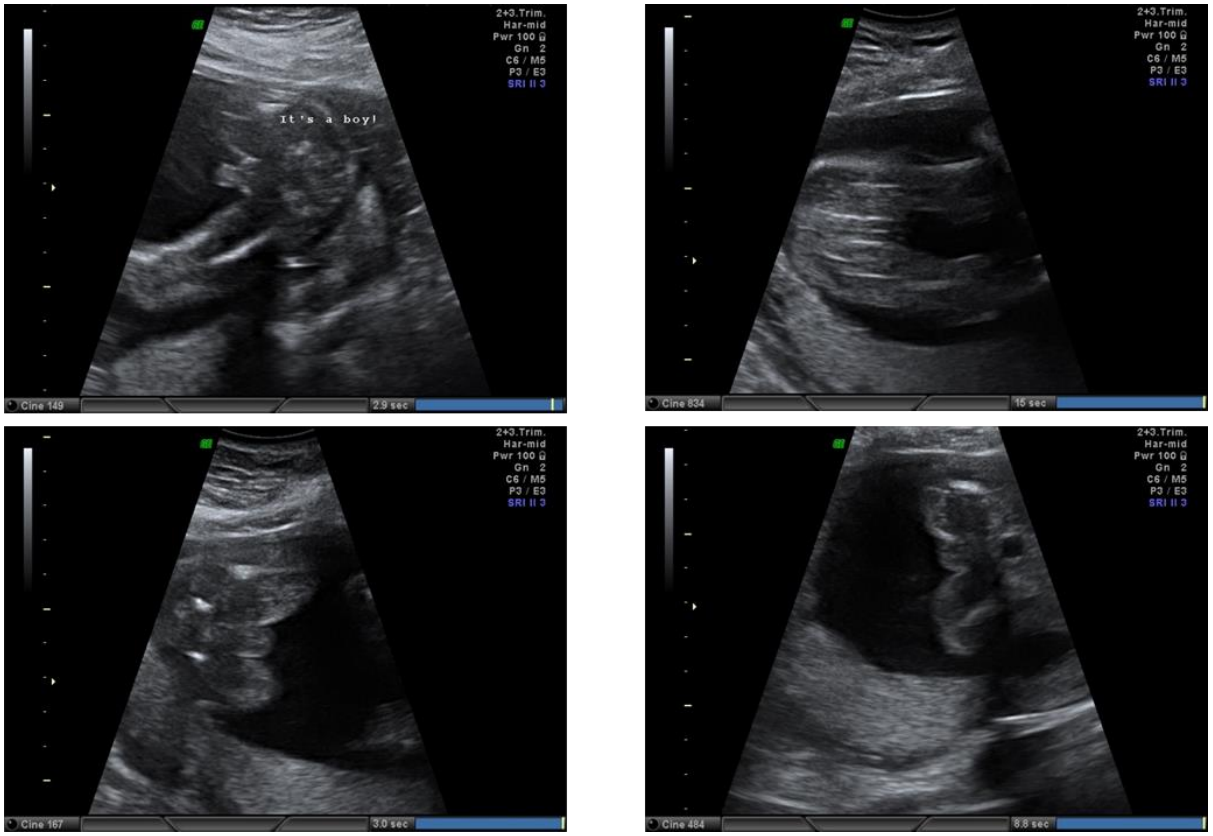
As there is no formal training in gender determination available to the sonography profession, this section provides sonographers with a comprehensive guide to assessing fetal sex.

Gender identification and well-being is always done in 2D mode. Once the gender is identified the image should be frozen, labelled with the gender and saved to the customer's file.

- Gender must only be visualised if specifically requested by the customer.
- Please aim to satisfy any client requirements such as privately writing the gender and sealing in an envelope to reveal later.

It is important to note that we do not consider the absence of a penis to confirm a positive indicator of a female. We have considered two studies (EZE et al Published in Radiography online April 15, 2010 and MEAGHER & DAVISON, Ultrasound Obstetrics & Gynaecology, 1996: Nov;8 (5) 322 – 4) and in both it was stated that "the assigning of female gender as a negative diagnosis because of the inability to identify a penis most likely explains a wide variation in accuracy rates".

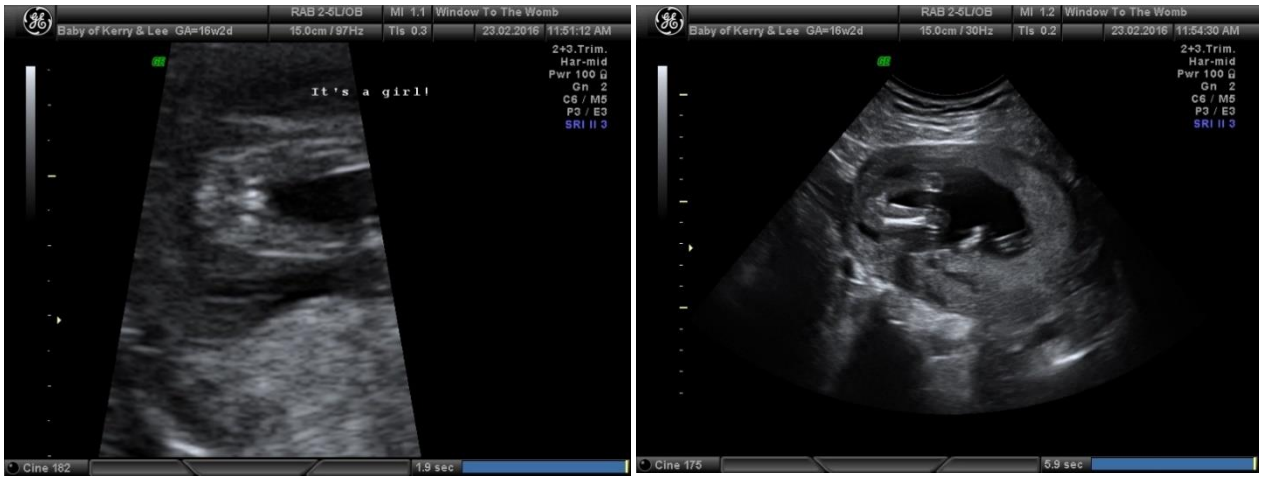
The following four 'potty shot' images are all of the same fetus.



Top left image is the correct image showing the penis.

Top right image is too superficial/tangential on the baby's bottom. The legs do not show the femora.

The two bottom images show how easy it is to incorrectly sex this baby as a girl but note that the swelling in between the legs is hypoechogenic in appearance as opposed to the brightness of the three white lines of a girl.

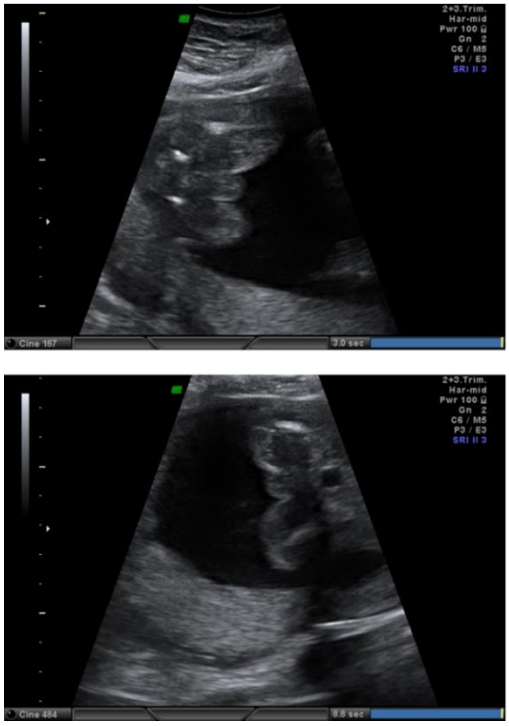


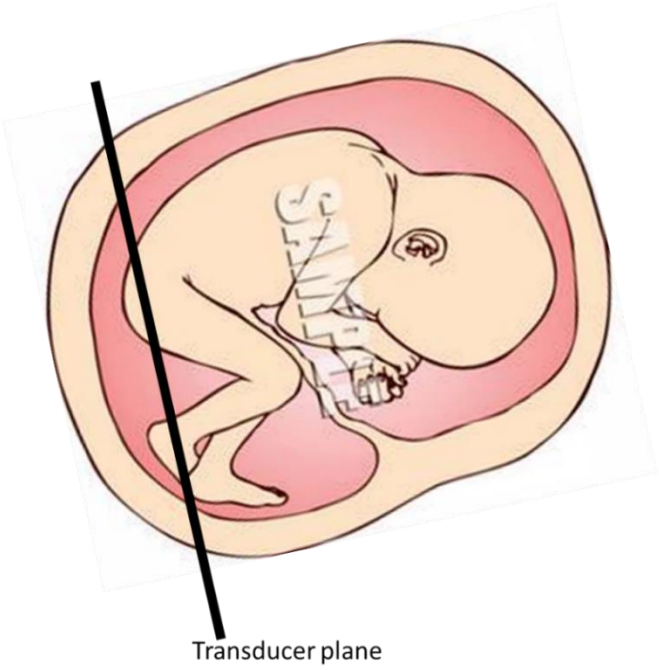
Left image is not clear in its appearance of gender as this could easily be mistaken as a male.

Right image shows the benefits of using different zoom levels

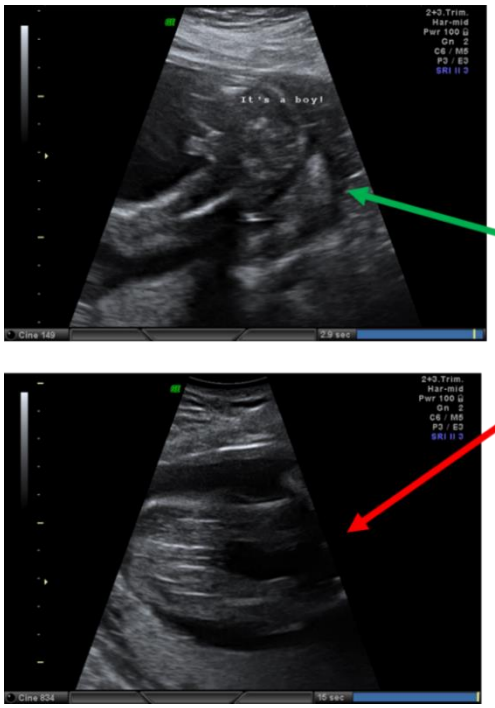
These two images demonstrate the value of looking more than once and at differing zoom levels.

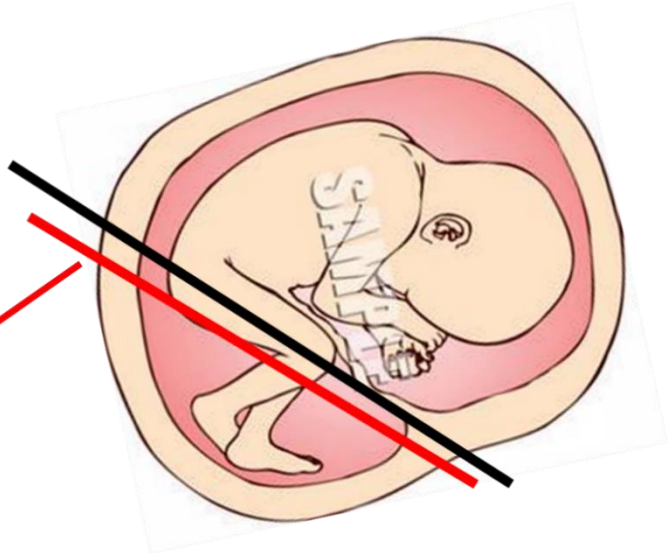
Transducer angle.



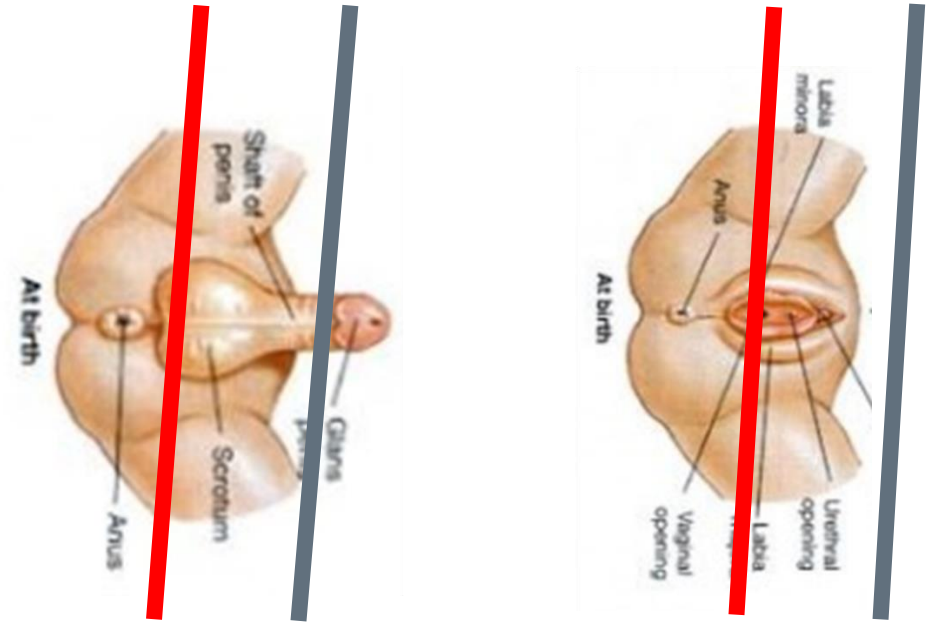


These two images are of a male fetus, but the transducer is not in the correct plane. It should be parallel to the femora as in the following two images. This is the plane where males can be incorrectly sexed as females.





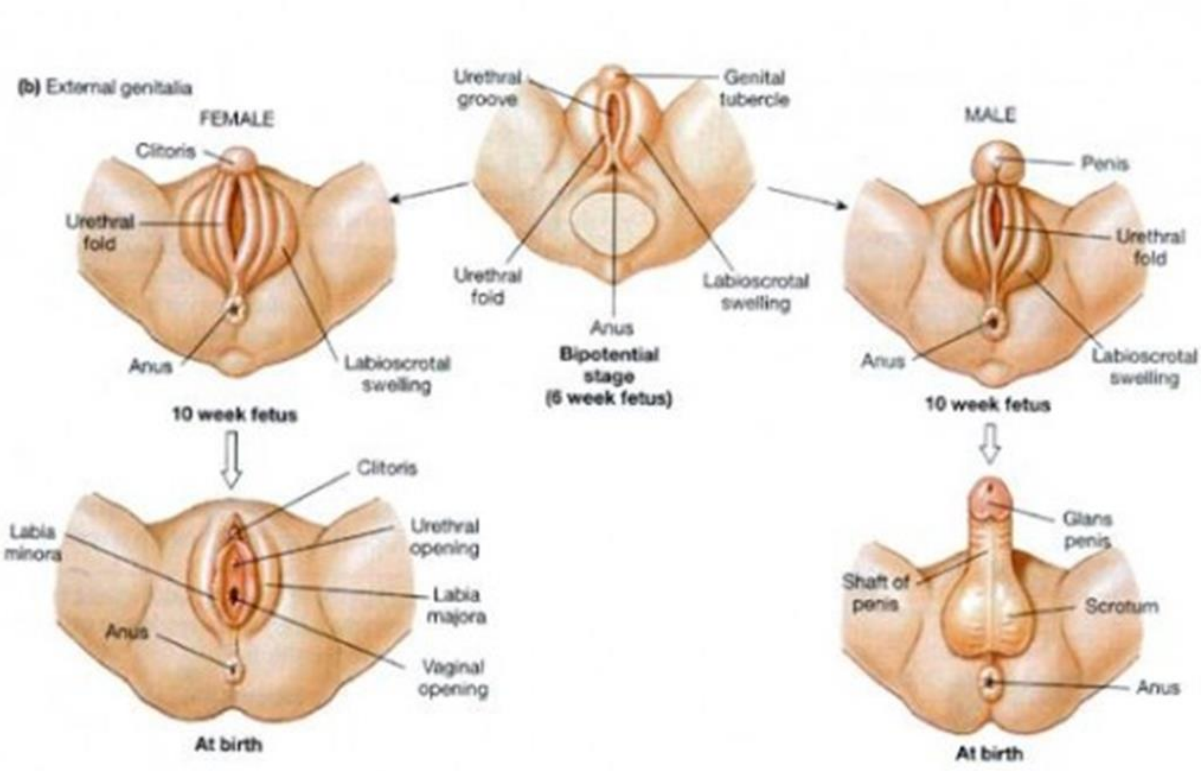
These two images of the same fetus are both in the correct plane – parallel to the femora but the red one is too superficial and again maybe mistaken for female.



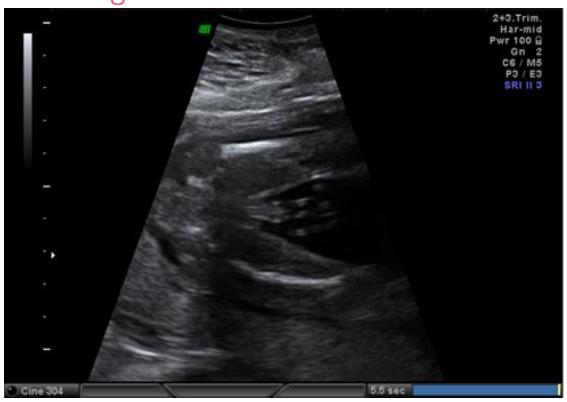
There is a subtle difference in these two scan planes, but mistakes are usually made when the scanning plane is too superficial (or towards the back of the baby's bottom [red line]).

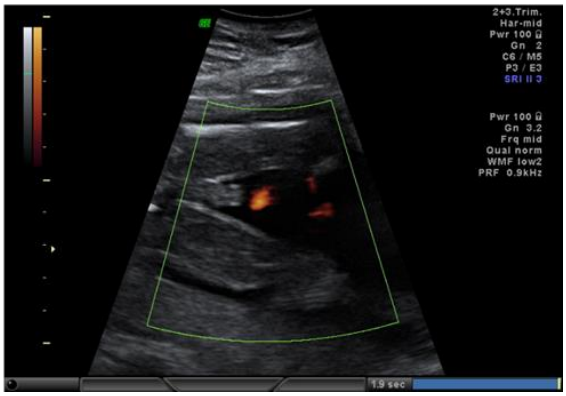
The perineum view of a male is too superficial but correct for a female. Remember that the scrotum and the cephalad pointing penis are more anterior. The black line shows the correct method for confirming or ruling out a male, the red line is the correct view for confirming a female. The ruling out of a penis [black line] is not enough alone to confirm a female.

Embryological development



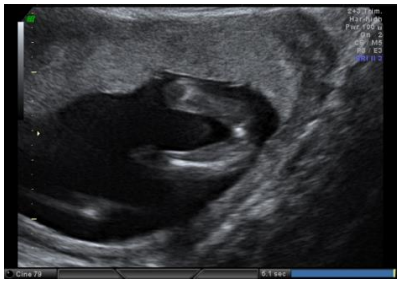
Mistaking the Umbilical Cord

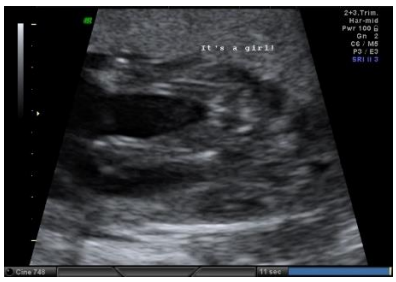


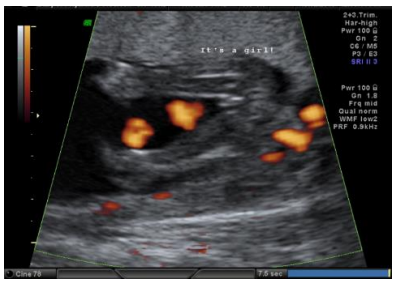


The umbilical cord should never be mistaken for a penis. If you are unsure use the colour doppler.

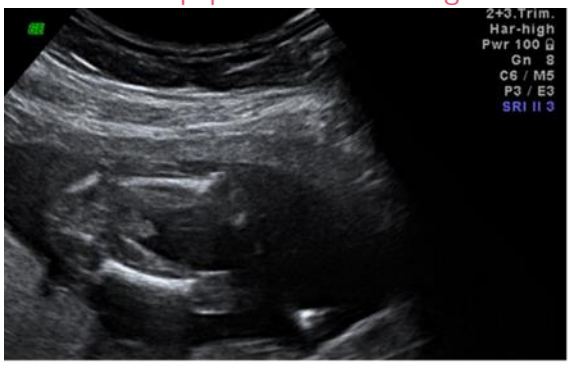
The following three images show the benefit of using different zoom levels and of using Doppler in a female fetus.

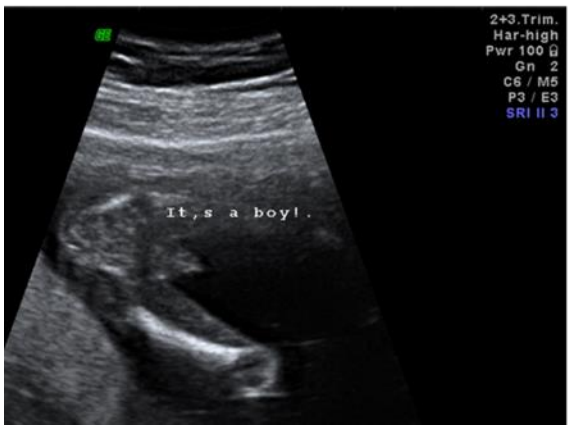


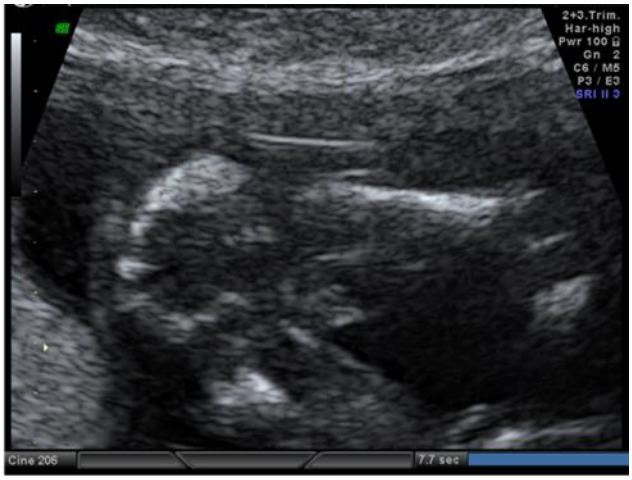




Ultrasound Equipment User Settings

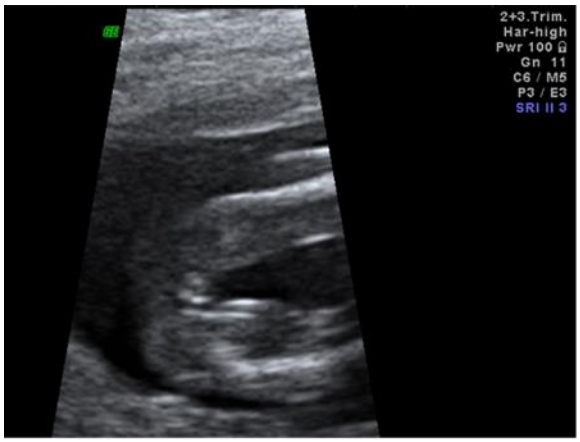


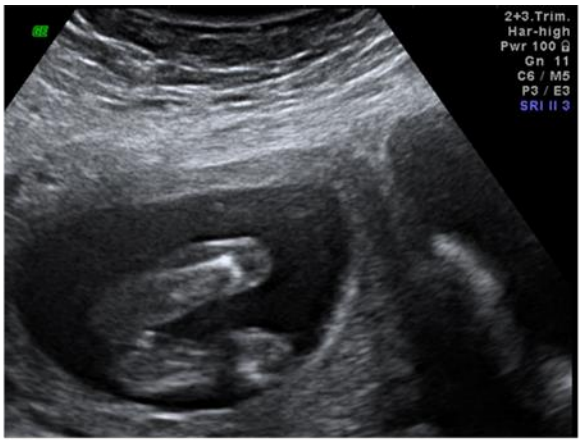


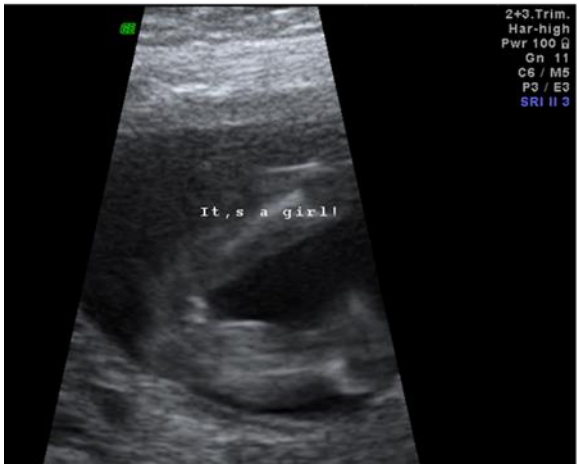


Take care when using PanZoom/HDZoom as the image may be quite grainy Method 1.

This image is taken using narrow field of view and zoom Method 2.







I advise using different levels of Harmonics settings, different Zoom levels and narrow and wide angle settings

(these images are all of the same client)

Summary; Gendering Recommendations and Tips

- The essential requirement to sexing a baby correctly is that of imaging a penis or three prominent white lines indicating either a male or female.
- You should scan anteriorly to see (or eliminate) the presence of a forward pointing penis and compare it with the length of the femur.
- Make sure that the fetus is in a true lateral position with both femora in view.
- Do not confuse what may be slightly swollen labia of a girl for a small scrotum of a boy. As normally the proportions of each are different. The scrotum is soft tissue and will appear grey, whilst labial lines are usually quite bright.
- Make sure you wait in position until the fetus moves in and out of focus.
- You should reconfirm the gender at least twice during a scan, should complete this at differing magnifications and should refrain from confirming gender to the parents until this is completed.
- Gender identification and well-being is always done in 2D mode.

Procedure for Dealing with an Incorrect Sexing

In the instance where a gender is reported as inaccurate, please refer to the Window to the Womb Incorrect Gender Identification Policy.

If the customer presents at under 16 weeks

If you believe the customer is under 16 weeks gestation and hasn't attended the clinic with her hospital notes, a measurement (usually HC) is required to determine actual gestation. If the measurement confirms a gestation of less than 16 weeks, you must not give any indication as to gender. A well-being assessment should be completed unless the pregnancy is less than 15 weeks gestation (by measurements) and if a sneak into 4D is part of the scan this too should be completed.

Challenging situations for Gender Identification

- Increased BMI: In this instance the gender identification may take longer and in very excessive cases you may need to abandon the gender identification advising the customer to return in 1 to 2 weeks (with the clinic managers agreement).
- Babies in a Vertical position: Your ability to obtain the correct plane is particularly challenging when the fetus is positioned with its bottom down towards the cervix (greatly increased distance from the probe). In this instance it is important to remember that a fetus of 16 to 18 weeks gestation will likely move frequently and this can often be resolved after the customer has taken a short walk. In extreme circumstances the customer may need to be invited back in 1 to 2 weeks.
- Crossed legs: Where the fetus is creating an obstruction to the ultrasound plane, again it is important to remember that a fetus of 16 to 18 weeks gestation will likely move frequently and this can often be resolved after the customer has taken a short walk. In extreme circumstances the customer may need to be invited back.

Appendices

- Appendix 1: firstScan Pre scan Questionnaire
- Appendix 2: Benefits (and Limitations) of the Transvaginal Scan
- Appendix 3: Scan Outcomes Flowchart
- Appendix 4: Referral Guidance
- Appendix 5: Example Scan Report
- Appendix 6: WTTW Fetal Well-being Report
- Appendix 7: Examples of completed Fetal Well-being Reports and Referral Letters
- Appendix 8: Fetal Abnormality Policy
- Appendix 9: WTTW Referral Letters

Support Reading

Obstetric & Gynaecological Ultrasound How, Why & When (Fourth edition)
Authors: Trish Chudleigh, Alison Smith and Sonia Cumming.

Author information:

Edited by Trish Chudleigh, PhD, DMU, Education Consultant, International Society of Ultrasound in Obstetrics and Gynaecology, London, UK

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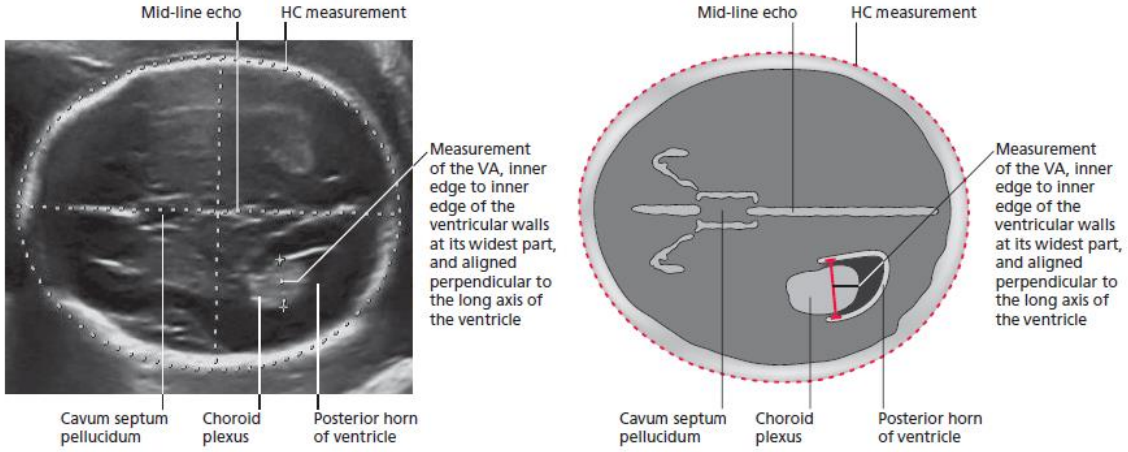
Sonia Cumming, RGN, RM, PGCert Medical Ultrasound, Midwife Sonographer, Rosie Hospital, Cambridge University Hospitals NHS Foundation Trust, Cambridge, UK

Summary:

A highly illustrated manual ideal for both the trainee and experienced sonographer that covers the full range of obstetric and gynaecological ultrasound examinations undertaken within a secondary referral setting. It combines the practicalities of how to perform these examinations with the information needed to interpret the findings and construct a clinically useful report.

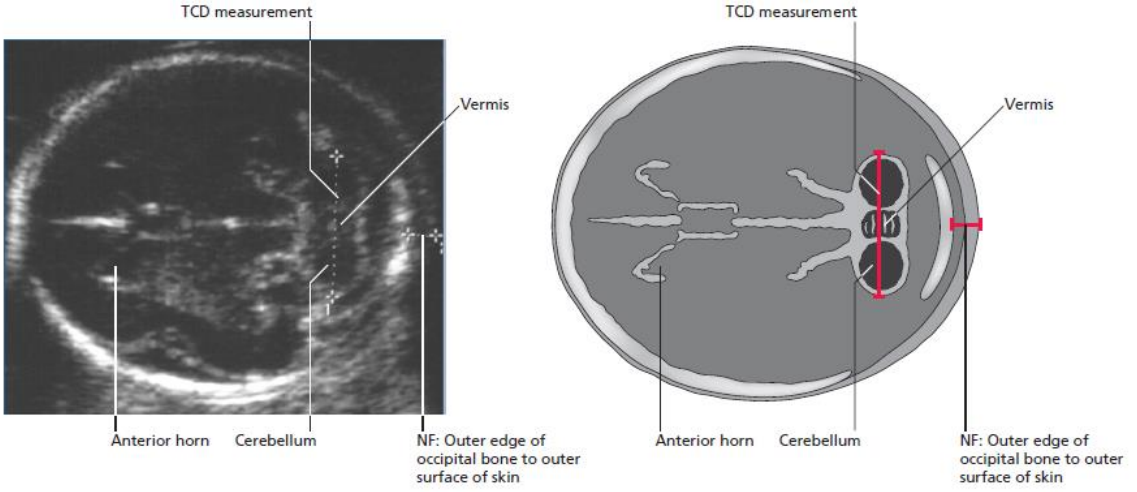
Diagrams

Head Circumference View



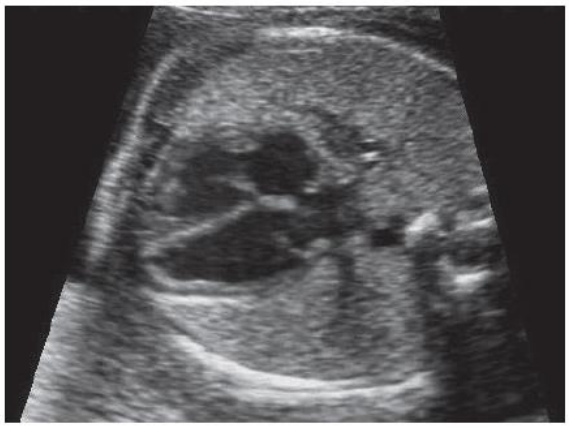
Normal findings are head shape, presence of cavum septum pellucidum, presence of mid-line echo, presence of choroid plexus and normal width of ventricular atrium (measure if obviously enlarged).

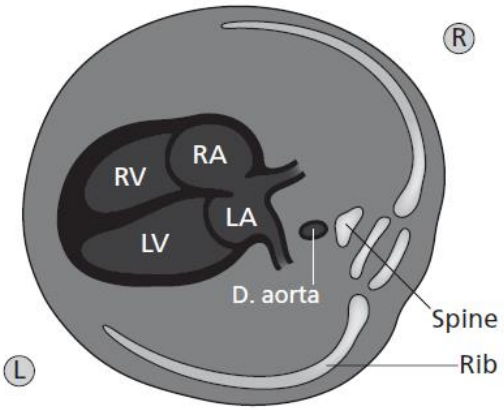
Suboccipitobregmatic View



Normal findings are presence of cerebellum. Nuchal fold thickening only requires comment if customer has not had 12 weeks NHS screening scan.

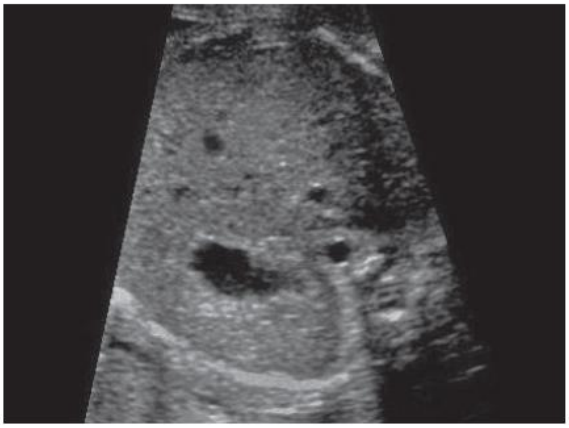
Heart & Lungs View

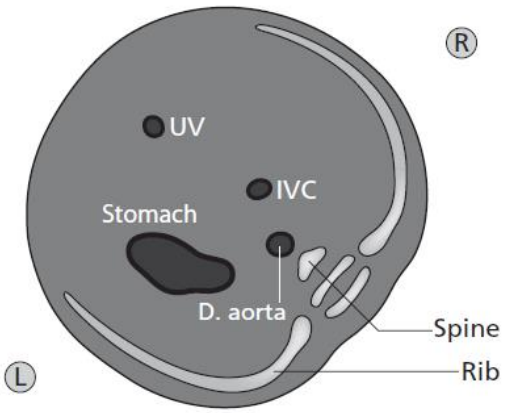




This the only view of the heart required. No extended views of the outflow tracts or great vessels are required.

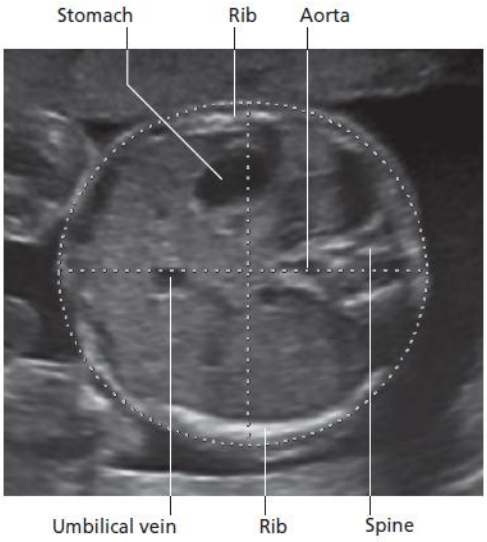
Abdominal Contents

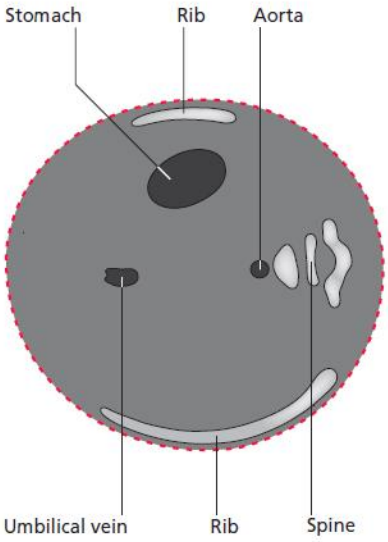




Normal findings are presence of and position of stomach, intact abdominal wall and normal cord insertion, normal size and position of urinary bladder. No obvious cystic masses or fluid collections.

Abdominal Circumference





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