

Ultrasound in Pregnancy

Adapted from Pomegranate Midwives

What is an ultrasound?

During an ultrasound scan, very high frequency sound waves are produced by a transducer (the part of the machine which is placed on the body). The sound waves are passed into the body where they encounter structures (such as the fetus). When this happens, the waves reflect back, and the sound (or echo) is detected electronically and transmitted onto a screen as a dot. This results in a picture being formed, with strong echoes creating white dots (representative of bone), weaker echoes creating grey dots (tissue) and no reflection creating black dots (fluid).

Can ultrasound confirm that my baby is “normal”?

Ultrasound has been used for many years to gather information about developing babies. Ultrasound is considered a screening test rather than a diagnostic test. This means that there may be a small chance of false positives or false negatives when ultrasound is used as a diagnostic tool in pregnancy. However, ultrasound remains the method of choice for confirming the diagnosis of some conditions (i.e. spina bifida) and is considered a valuable tool to gain information about the developing fetus. The accuracy of an ultrasound is directly related to the skill of the technician performing the scan, the skill of the radiologist interpreting the picture, and the quality of the equipment used.

At what point in pregnancy will I be offered an ultrasound?

- An ultrasound is offered in the first trimester since it is the best time and method to determine an accurate gestational age of the baby and corresponding due date.
- For pregnant people who are over the age of 30 and choose to do genetic screening, a nuchal translucency ultrasound is performed between 12-14 weeks.
- A “screening” or “detailed” scan is recommended at 18-21 weeks. At this point, ultrasound aims to verify that the baby is developing and growing normally.
- An ultrasound may be offered at other points in pregnancy for any of the following reasons: concern that the baby is not growing as expected, to investigate the source of vaginal bleeding, to diagnose cervical changes in cases of suspected preterm labour, to verify the position of a suspected breech baby, to follow up previously discovered concerns, or to monitor a pregnancy that extends far past the due date.

What are the benefits of having an ultrasound in pregnancy?

Dating: When performed in early pregnancy, ultrasound is considered the most accurate method to predict the estimated due date, especially for pregnant people who have irregular menstrual cycles, or are uncertain of when their last period was. Dating ultrasounds have been shown to

reduce the number of pregnancies considered to be “post-term” and to decrease the rate of inductions for pregnancies extending far past the due date.

Number of Fetuses: Ultrasound can detect multiple (i.e. twin) pregnancies early on, which allows pregnant people access to specialized care sooner (multiple pregnancies can be associated with a higher rate of complications). Early detection also allows more time to prepare physically and psychologically for the birth of multiples.

Malformations of the Fetus: Approximately 35–50% of serious defects are diagnosed during a detailed ultrasound at 18-21 weeks. Ultrasound may also detect “soft markers” — characteristics of fetal anatomy which are in themselves normal but can be associated with an increased chance of genetic anomalies. Detection of soft markers or true abnormalities allows pregnant people the chance to consider options to further diagnosis or rule out a condition (i.e. triple marker screen, amniocentesis), as well as the opportunity to consider termination of the pregnancy or the ability to engage resources/prepare for the birth of a special needs baby.

Uterine formation: Although rare, some pregnant people have a uniquely shaped uterus that increases the likelihood of complications such as postpartum hemorrhage. More commonly, many pregnant people (30% over the age of 30) have uterine fibroids. In rare cases, these fibroids are large enough and low enough in the pelvis to make vaginal birth difficult or impossible. Detection by ultrasound may aid pregnant people and their caregivers in making birth plans, e.g. hospital instead of home.

Placental Location: Ultrasound can rule out placenta previa (a condition affecting 0.5% of the population where the placenta grows over top of the cervix; cesarean birth is indicated). For the small number of pregnant people affected by placenta previa, early detection may result in healthier parents and babies.

Parents’ Experience of Ultrasound: Many parents say that they are happy to see their baby move and swim around on screen. While the pregnant person has often been feeling the baby move for a few weeks, a number of partners report that this is the first time the baby seems “real” and that this allows them to feel “more connected” to the pregnancy.

What are the limitations of ultrasound in pregnancy?

Placental Location: There is no evidence that routine screening ultrasounds at 18-21 weeks improve outcomes for the pregnant person or the baby in the case of placenta previa.

Malformations of the Fetus: At least 50% of fetal malformations will not be detected via ultrasound. Additionally, some malformations will be “diagnosed,” but in reality not be present, causing undue stress to expectant parents. Approximately 4 -17% of pregnant people who are told that their fetus has “soft markers” associated with an increased chance of Down syndrome will actually be carrying a genetically normal baby. Many pregnant people who are given this type of information consider proceeding to diagnostic testing (i.e. amniocentesis), which carries a degree of risk (1 in 200 chance of miscarriage following the procedure).

Estimated fetal size: Ultrasound only gives a rough estimate of fetal size. It is especially difficult to accurately estimate the size of very large or very small babies at term, when the margin of error is +/- 1lb. Therefore, ultrasound is only one tool of many that are used to estimate fetal size (and whether the fetus will fit through a pregnant person's pelvis).

Parents' Experience of Ultrasound: While an ultrasound has the potential to be a happy experience, real or mistaken diagnosis of abnormalities of the fetus can be very upsetting for parents. If soft markers are noted, some parents have a hard time accepting - even after further testing shows these markers are variations of normal - that their pregnancy or their baby is not abnormal.

Like choosing any test, families choosing ultrasound screening should consider the positive, negative or equivocal findings that could be revealed so as to be prepared for unexpected results, and the potential for further testing options to be offered.

Is ultrasound safe?

There has been no study to date linking ultrasound to adverse outcomes for the pregnant person or the baby. As well, ultrasound has been used on millions of pregnant people for more than 30 years without any clear adverse effects.

At the same time, because there have never been any long term, scientific studies on ultrasound, most experts agree that ultrasound exposure should be minimized and only be used during pregnancy for medical indications.

Private ultrasound clinics offering 3-D images or videos have become very popular among expecting families. In 2004, the FDA (Food and Drug Administration in the USA) put out a caution discouraging pregnant people from obtaining "keepsake" ultrasounds during pregnancy. Their rationale for this cites studies that acknowledge ultrasound as a form of energy that can raise the temperature of tissue. While there is no evidence that this could harm a fetus, the FDA says that there is a potential that ultrasounds in pregnancy aren't entirely innocuous.

Is there an alternative to having an ultrasound in pregnancy?

It is considered the standard of care for pregnant people to be offered a detailed scan from 18-21 weeks. There are some limited alternatives for detection of some fetal anomalies. The main alternative to having a routine ultrasound is simply to not have one. Pregnant people choosing to decline a scan in pregnancy ideally are aware of the benefits and limitations of ultrasound, as well as potential information that could be gained solely via this method of prenatal screening.

Can I find out the sex of my baby?

If the ultrasound technician is able to see the pictures clearly, the technician will disclose the sex of the baby to the parents if they choose.

What about Doppler use in the clinic?

The Doppler that care providers in clinic settings use to verify the fetal heart rate is a form of ultrasound. If you wish to minimize ultrasound exposure, your care provider can (occasionally or always) use a specially designed stethoscope called a fetoscope to listen to the heartbeat.

The limitations of using the fetoscope include:

- having to wait until the fetus is large enough to hear (usually after 20-24 weeks)
- sometimes it is hard for parents to hear without a trained ear
- it is impractical to use during labour as the pregnant person needs to be lying flat

The advantages of using the fetoscope, besides minimizing ultrasound exposure, include:

- there is something magical about hearing the actual heartbeat of your baby, not an electronic representation produced by the Doppler technology
- helping to verify the position of the baby