Understanding Ultrasound during Pregnancy

What is an ultrasound?

Ultrasound uses harmless sound waves to make images of how your baby is growing and developing. In an ultrasound exam the health care provider moves a handheld device, called a transducer, along your abdomen. To get a clearer picture, your abdomen is covered with a thin layer of gel. The transducer sends sound waves into your uterus. A computer gathers the information from these waves to make a live picture of the baby seen on a monitor.

If it is hard to get all the pictures of the baby that are needed, or the ultrasound is done very early in pregnancy, sometimes women also have a transvaginal ultrasound. A special transducer that is designed to be placed in the vagina is used to send the sound waves in the same way as the process mentioned above.

The ultrasound exam is painless.

Ultrasound is available only when requested by your health care provider.

When are ultrasounds done, and what can be seen on an ultrasound?

Some women are booked for an ultrasound early in pregnancy (before 14 weeks of pregnancy) to check baby's heartbeat, see if there is more than one baby, and check how far along the pregnancy is by measuring how big baby is.

Examples of why an ultrasound may be needed early in pregnancy are:

- To ensure correct dating in the pregnancy when a woman is unsure of the date of her last menstrual period, has irregular cycles, was breastfeeding, or just stopped oral contraceptive pills before this pregnancy.
- If there has been bleeding or cramping.

Some women are offered a specialized ultrasound called a Nuchal Translucency (NT) as part of prenatal screening. NT ultrasound is described in the next section.

All women are offered an ultrasound at about 18 to 20 weeks (four and a half months) of pregnancy. The ultrasound is used to check the following:

- How far along is the pregnancy by checking the baby's size.
- If there is one or more babies.
- Where the placenta has attached to the uterus.
- The baby's heartbeat.
- The amount of amniotic fluid (the fluid around the baby).
- How the baby has developed by checking the brain, spine, heart, lungs, stomach, kidneys, bladder, heart, arms and legs, face, and umbilical cord.

An ultrasound done at about 18 to 20 weeks (four and a half months) of pregnancy can find many (but not all) physical concerns, such as open neural tube defects and heart defects. Sometimes an ultrasound can show signs, called soft markers that increase the chance that the baby has Down syndrome or Trisomy 18. Soft markers are described in more detail in the next section.

What are "soft markers"?

Soft makers are variations sometimes seen during an ultrasound scan done in the second trimester of pregnancy. They usually are not permanent (the feature will usually disappear later in pregnancy). Most babies with a soft marker are healthy but depending on which soft marker is seen, the chance of Down syndrome or Trisomy 18 is slightly increased.

Some examples of soft markers are:

1) Echogenic Intracardiac Focus of the Heart (EICF)

An EICF is seen on ultrasound as small bright white spot on the baby's heart muscle. On ultrasound organs are usually grey, fluid, like amniotic fluid, is black, and bones are white.

An EICF does NOT cause a problem with how the baby's heart works. The bright spot is simply due to a build up of calcium in a portion of the heart muscle. The calcium causes the brightness in the same way calcium makes bones appear bright white on ultrasound.

In British Columbia an EICF is seen in about 7% of babies (most of these babies are healthy). As babies with Down syndrome have a higher chance of having this soft marker than babies who don't have Down syndrome, when an EICF is seen on ultrasound the chance of Down syndrome increases slightly.

If an EICF is seen in your pregnancy your health provider will review the chance of Down syndrome for your baby by looking at the result of your prenatal screening test. If you have not had screening for Down syndrome in the pregnancy this will be offered to you if you are less than 21 weeks. For *most* women, when an EICF is seen the chance of Down syndrome remains low. For some women the chance may increase enough that amniocentesis will be offered.

2) Choroid Plexus Cyst (CPC)

A choroid plexus cyst is a small collection of fluid in the part of the brain called the choroid plexus. The choroid plexus makes the fluid that cushions the brain and spinal cord. The choroid plexus is not in the "thinking" part of the brain. We have two of these structures (called choroid plexi), one on each side of the brain.

Occasionally, a small amount of the fluid made by the choroid plexus can build up and be seen on ultrasound as a CPC. As the baby grows and the brain

develops the fluid usually moves on. CPCs are almost always gone by 24 weeks of pregnancy and do not harm to the baby's brain. They can be seen in one or both choroid plexi, and sometimes more than one is seen. *Regardless of their number, shape or size, CPCs are not harmful to the baby.*

About 1-2% of babies have a CPC seen on ultrasound (most of these babies are healthy). When they are seen, it increases the chance of the baby having Trisomy 18. However, most babies with Trisomy 18 will also show other physical defects, like a heart or brain defects, and poor growth. When only a CPC is seen the chance of Trisomy 18 is low.

If a CPC is seen in your pregnancy and you are less than 21 weeks your health provider will offer you prenatal screening if it has not been done. If it was done and your prenatal screening result was "below screen cut-off" for Trisomy 18 and nothing else is noted on the ultrasound then chance of Trisomy 18 is low and no further testing or ultrasounds are required.

Are there other types of soft markers?

Yes there are other types of soft markers. The other soft markers, like EICF, raise the chance of Down syndrome. If any soft marker is seen on ultrasound your health care provider will discuss what it means for your pregnancy.

Depending on the soft marker seen, and the number of soft markers, you may be referred to the Medical Genetics clinic in Vancouver or Victoria to be seen by a genetic counsellor, or be referred to see a specialist called a Maternal-Fetal Medicine doctor. At this appointment the chance of Down syndrome or Trisomy 18 would be discussed and depending on the chance you may be offered diagnostic testing, an amniocentesis. It would be up to you to decide if an amniocentesis is right for you.