Center For Advanced Fetal Care

Tripoli - Lebanon

Patient Information

Obstetrical Ultrasound

Some Facts...

- There have been tremendous recent advances in the field of Ob/Gyn ultrasound because of the new machinery.
- Most babies are born normal however, most women have a small risk of delivering a baby with an abnormality.
- Though we are not 100% accurate in our prenatal diagnosis, we are able to see many of the fetal abnormalities, sometimes as early as the third month.
- A special evaluation is now possible in the third month, at 11-14 weeks, to calculate a mother's risk for delivering a baby affected by Down's syndrome (trisomy 21).
- At this same time, we can assess all major organ development of the fetus.
- This must still be followed by the second trimester scan in the 5th month, at 20-23 weeks, to ascertain the healthy development of the fetus, look for signs of Down's syndrome babies and recalculate the mother's risk for delivering a baby affected by trisomy 21.
- The only definitive confirmatory test is still the amniocentesis, which can be done in the fourth month, at around 15-16 weeks. However, that carries a 1% chance of miscarriage.

Risks of Trisomy 21 in Relation to Maternal Age

As a mother gets older, her chances of delivering a baby with trisomy 21 go up. The table below shows how the chance of having a baby with trisomy 21 increases with the age of the mother. In the beginning of pregnancy, the risk that the fetus has a chromosomal abnormality is higher than at birth because many affected fetuses die naturally during pregnancy.

Maternal Age (yrs)	Risk for a Trisomy 21 Fetus	
	At 12 weeks	At birth
20	1 in 1068	1 in 1527
25	1 in 946	1 in 1352
30	1 in 626	1 in 895
32	1 in 461	1 in 659
34	1 in 312	1 in 446
36	1 in 196	1 in 280
38	1 in 117	1 in 167
40	1 in 68	1 in 97
42	1 in 38	1 in 55
44	1 in 21	1 in 30

Snijders et al. Maternal age and gestational age specific risk for trisomy 21. Ultrasound Obstet Gynecol 1999; 13:167-170.

The First Trimester Scan (FTS)

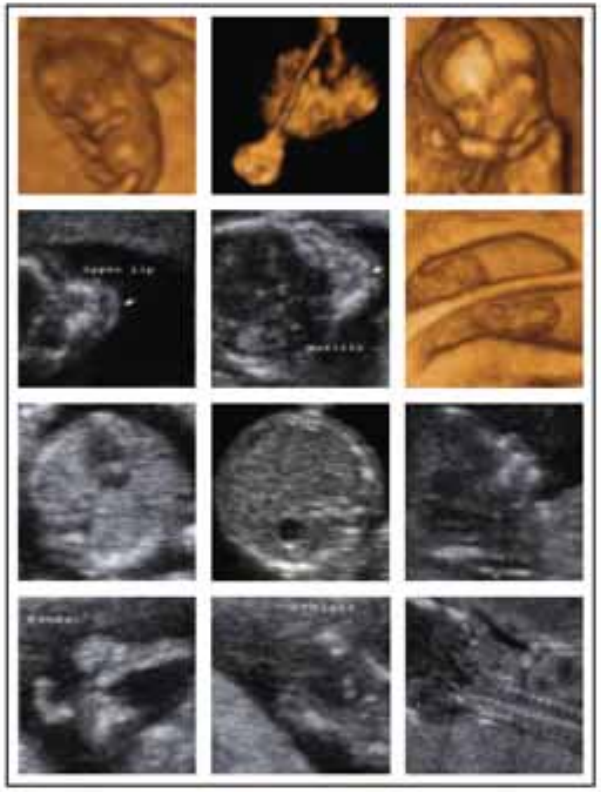
The FTS is done between 11 weeks 6 days and 13 weeks 6 days. You do not need to have a full bladder and it may take up to 30 minutes to complete the exam. At this time, we can see the skull, all 4 extremities, the nuchal translucency (fetal neck thickness), nasal bone, facial angle, heart chambers and check for leakage at the right tricuspid valve. We can also see the stomach, bladder and the sealed abdominal wall. Based on the findings, we have a special computer program that can calculate the risks for having a baby affected by trisomy 21. This is based on studies done on over 100,000 pregnancies by the Fetal Medicine Foundation in London. At our center, we have published a study on 1370 fetuses on which we were able to pick out genetic abnormalities in 83% based on this scan. The cases that were missed in the first trimester were picked up at the time of the detailed second trimester scan. In addition, we were able to detect 76% of all major abnormalities and 75% of serious cardiac defects. Though this scan may identify most serious defects, it is by no means a substitute for the more complete scan at 20-23 weeks (5th month).

• Serum Biochemistry

At our center, we offer the "double screen" which is specialized blood test that checks for fetal hormones in the maternal blood. The levels of these hormones can be calculated with respect to the size of the baby and if they are high or low, they may alert us to abnormalities. We carry out this test on a machine that has been certified by the Fetal Medicine Foundation (a world authority on the first trimester testing) that fulfills their strict criteria as to safety and acceptable levels of error.

Your Decision

We consider a concerning risk one that is greater than or equal to 1/300. If that were the case, it is up to you decide on whether you would like more invasive testing done on the baby to check its genetic makeup. Otherwise, a more detailed evaluation can be done at the time of the second trimester ultrasound at 20-23 weeks to look for other signs and recalculate the risk.



The Second Trimester Scan (STS)

This is the detailed scan carried out at 20-23 weeks. It is also called the genetic scan because one can look for what is called "markers" or ultrasound signs that raise concern that a baby may have a chromosomal abnormality. At the time of this scan, many other structural abnormalities of the fetus can be seen and a good detailed evaluation of the fetal heart, with its 4 main chambers and its 2 main blood vessels can be examined.

• Fetal Brain and Spine

The fetal brain can be looked at in detail at the time of this scan to assess the size and the development of the internal structures. Sometimes it is normal to see areas of fluid accumulation that do disappear later on. At the same time, some blockage in the brain may not be present at this point in pregnancy and can be missed. The intactness of the fetal spine can be confirmed at this time.

• Fetal Face

The fetal orbits and the distance between them, the fetal nose, jaw bones and lips can be seen. Using 3D and 4D ultrasound, a reconstructed fetal face can be seen.

• Fetal Chest

A detailed examination of the fetal heart and lungs with respect to their position in the chest can be seen at this point. The 4 main chambers (rooms) of the heart with the valves (doorways) between them can be examined at this point. The main blood vessels and their relationships to each other can be seen as well. There are some cardiac abnormalities that may not be apparent at this point in pregnancy, such as coarctation or narrowing of the aorta, and other subtle abnormalities.

• Fetal Abdomen and Pelvis

The fetal stomach, kidneys, bowel and bladder can be seen at this point in pregnancy. There still may be some abnormalities in the intestines and urinary system that can be missed at this time and can only be seen beyond the 6th month, once these areas undergo further growth and expansion.

• Fetal Skeletal System

The fetal skull, all the long bones, hands, feet, spine and at times, the fetal rib cage can be examined at this time. A special program in our machine allows us to get pictures that look exactly like X-rays without the use of any radiation.

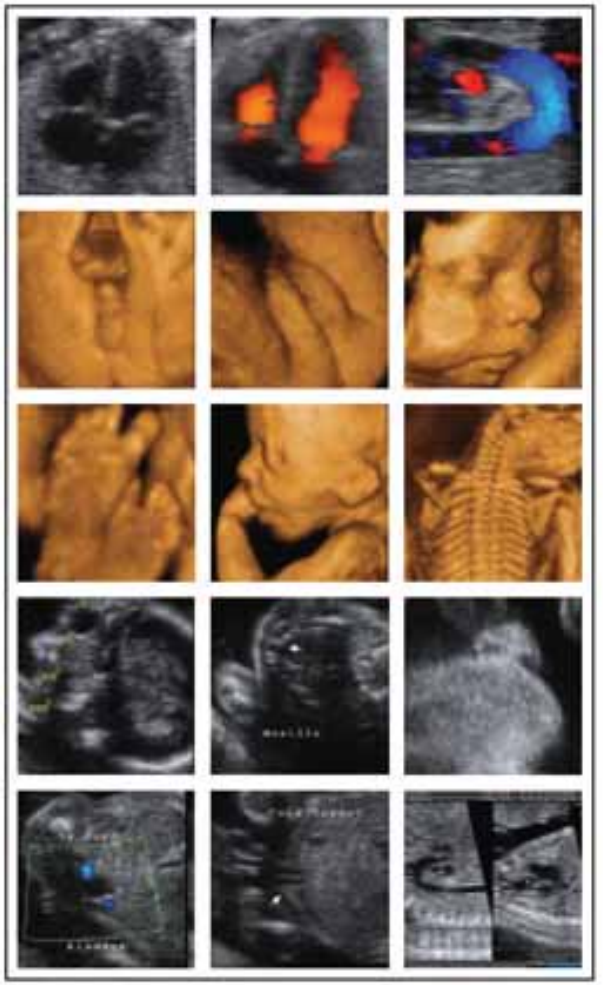
• Amniotic Fluid and Placenta

Detailed examination of the placenta and fluid around the fetus is done. This alerts us to many problems if there is too much or too little fluid. Also, studies on the blood flow to the fetus from the afterbirth or placenta and from the mother to her uterus can be done.

Summary of Your Options

We are currently offering 2 sonographic evaluations to assess for structural and genetic abnormalities and they are complementary to each other. A first trimester scan does not, by any means, replace the more detailed second trimester scan. It just allows for early reassurance and risk calculation for trisomy 21 babies and other major fetal structural abnormalities at an early point in gestation.

- First Trimester Scan at 11-14 weeks
- First Trimester Blood Test
- Amniocentesis
- Second Trimester Genetic Scan at 20-23 weeks



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