Amniocentesis Procedure

(Amniotic Fluid Analysis)

Procedure overview

What is amniocentesis?

Amniocentesis is a procedure used to obtain a small sample of the amniotic fluid that surrounds the fetus during pregnancy. Amniotic fluid is a clear, pale yellow fluid made by the fetus. The fluid protects the fetus from injury and helps to regulate the temperature of the fetus.

In addition to various enzymes, proteins, hormones, and other substances, the amniotic fluid contains cells shed by the fetus. These cells contain genetic information that can be used to diagnose chromosomal disorders and open neural tube defects (ONTDs), such as spina bifida. Testing may be available for other genetic defects and metabolic disorders depending on the family history and availability of lab testing at the time of the procedure.

Amniotic fluid also contains other substances that provide information about certain conditions. An amniocentesis may be performed in late pregnancy to check fetal well-being and diagnose fetal conditions, such as infection. An amniocentesis may be performed to check for fetal lung maturity if a baby is expected to be delivered early. Specific substances present in the amniotic fluid can be measured or tested for these conditions.

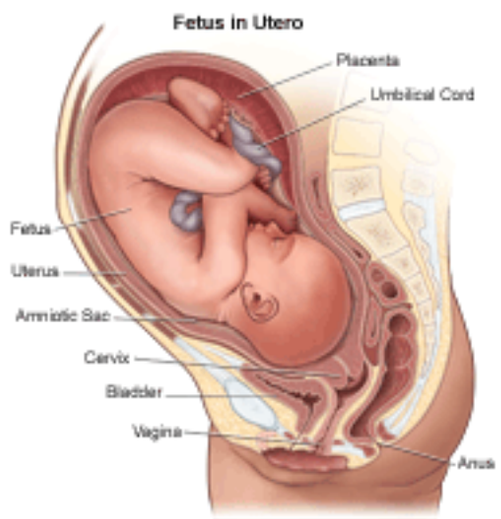
The fluid is sent to a genetics lab so that the cells can grow and be analyzed. Results are usually available in about 10 days to two weeks, depending on the lab. Results from fetal lung maturity tests are available within a few hours.

An amniocentesis is generally offered to women between the 15th and 20th weeks of pregnancy who are at increased risk for chromosome abnormalities. This includes women who are over 35 years of age at delivery, or those who have had an abnormal maternal serum (blood) screening test indicating an increased risk for a chromosomal abnormality or neural tube defect.

Amniocentesis helps confirm a tentative diagnosis of an abnormality previously found with other testing. It may also find that a fetus does not have the abnormality that was suspected.

Another related procedure that may be used to diagnose genetic and chromosomal defects is chorionic villus sampling (CVS). Please see this procedure for additional information.

Anatomy of the fetus in utero:



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Amniotic sac. This is a thin-walled sac that surrounds the fetus during pregnancy. The sac is filled with amniotic fluid (liquid made by the fetus) and the amnion (the membrane that covers the fetal side of the placenta), which protects the fetus from injury and helps to regulate the temperature of the fetus.

Anus. This is the opening at the end of the anal canal.

Cervix. This is the lower part of the uterus that projects into the vagina. Made up of mostly fibrous tissue and muscle, the cervix is circular in shape.

Fetus. An unborn baby from the eighth week after fertilization until birth is the fetus.

Placenta. This is an organ, shaped like a flat cake that only grows during pregnancy and provides a metabolic interchange between the fetus and mother. (The fetus takes in oxygen, food, and other substances and eliminates carbon dioxide and other wastes.)

Umbilical cord. This is a rope-like cord connecting the fetus to the placenta. The umbilical cord contains two arteries and a vein, which carry oxygen and nutrients to the fetus and waste products away from the fetus.

Uterine wall. This is the wall of the uterus.

Uterus (also called the womb) The uterus is a hollow, pear-shaped organ located in a woman's lower abdomen, between the bladder and the rectum. It sheds its lining each month during menstruation and in which a fertilized egg (ovum) becomes implanted and the fetus develops.

Vagina. This is the part of the female genitals, behind the bladder and in front of the rectum, that forms a canal extending from the uterus to the vulva

Reasons for the procedure

An amniocentesis may be used for genetic and chromosome testing in the second trimester of pregnancy in the presence of one or more of these conditions:

- Family history or previous child with a genetic disease or chromosomal or metabolic disorder
- Risk of open neural tube defects (ONTDs), such as spina bifida
- Maternal age over 35 years by the pregnancy due date
- Abnormal maternal screening tests, such as maternal serum alpha fetoprotein level (MSAFP)
- Risk of a sex-linked genetic disease

Amniocentesis may be used in the third trimester of pregnancy to assess for conditions such as:

- Fetal lung maturity when there is a potential for premature birth
- Uterine infection
- Rh disease

There may be other reasons for your doctor to recommend an amniocentesis.

Risks of the procedure

As with any invasive procedure, complications may occur. Some possible complications may include, but are not limited to, the following:

- Cramping
- Bleeding or leaking of amniotic fluid from the puncture site or the vagina
- Infection
- Miscarriage

- Preterm labor

The risk of miscarriage is generally considered to be less than one percent after an amniocentesis in the second trimester of pregnancy. This is only slightly higher than the normal risk of miscarriage without an amniocentesis at this time in pregnancy.

People who are allergic to or sensitive to medications or latex should notify their doctor.

Certain factors or conditions may interfere with an amniocentesis. These factors include, but are not limited to, the following:

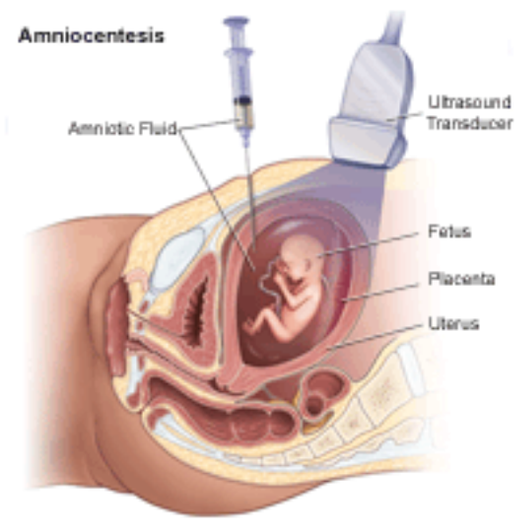
- Pregnancy earlier than 14 weeks
- The position of the baby, placenta, amount of fluid, or mother's anatomy
- Women with twins or other multiples will need sampling from each amniotic sac, in order to study each baby

There may be other risks depending upon your specific medical condition. Be sure to discuss any concerns with your doctor prior to the procedure.

Before the procedure

- The doctor will explain the procedure to you and offer you the opportunity to ask any questions that you might have about the procedure.
- You will be asked to sign a consent form that gives your permission to do the procedure. Read the form carefully and ask questions if something is not clear.
- Generally, there is no special restriction on diet or activity prior to an amniocentesis.
- Notify your doctor if you are sensitive to or are allergic to any medications, latex, tape, and anesthetic agents (local and general).
- Notify your doctor of all medications (prescription and over-the-counter) and herbal supplements that you are taking.
- Notify your doctor if you have a history of bleeding disorders or if you are taking any anticoagulant (blood-thinning) medications, aspirin, or other medications that affect blood clotting. It may be necessary for you to stop these medications prior to the procedure.
- Notify your doctor if you are Rh negative. During the amniocentesis, blood cells from the mother and fetus can mix. This may lead to Rh sensitization and breaking down of fetal red blood cells.
- You may or may not be asked to empty your bladder right before the procedure. In early pregnancy, a full bladder helps move the uterus into a better position for the procedure. In later pregnancy, your bladder should be empty to minimize the risk of puncture with the amniocentesis needle.
- Based upon your medical condition, your doctor may request other specific preparation.

During the procedure



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An amniocentesis may be performed on an outpatient basis or as part of your stay in a hospital. Procedures may vary depending on your condition and your doctor's practices.

Generally, an amniocentesis follows this process:

1. You will be asked to undress completely, or from the waist down, and put on a hospital gown.
2. You will be asked to lie down on an exam table and place your hands behind your head.
3. Your vital signs (blood pressure, heart rate, and breathing rate) will be checked.
4. An ultrasound will be performed to check the fetal heart rate, the position of the placenta, fetus, and umbilical cord, and to locate a pocket of amniotic fluid.
5. Your abdomen will be cleansed with an antiseptic. You will be instructed not to touch the sterile area on your abdomen during the procedure.
6. You will feel a needle stick if a local anesthetic is injected. This may cause a brief stinging sensation.
7. Ultrasound will be used to help guide a long, thin, hollow needle through your abdomen, into the uterus and the amniotic sac. This may be slightly painful. You may feel some cramping as the needle enters the uterus.
8. The doctor will withdraw a small amount of amniotic fluid into a syringe. The amount depends upon the type of testing that will be performed, but usually no more than an ounce is removed. You may feel a tugging or pulling sensation as the fluid is removed.
9. The fluid will be placed into a special light-protected container.
10. The needle will be removed.
11. An adhesive bandage will be placed over the needle site.
12. The fetus' heart rate and your vital signs will be reassessed.
13. If you are Rh negative, you may be given Rhogam, a specially developed blood product that can prevent an Rh negative mother's antibodies from reacting to Rh positive fetal cells.
14. The amniotic fluid will be sent to the lab for examination.

After the procedure

You and your fetus will be monitored for a time after the procedure. Your vital signs and the fetal heart rate will be checked periodically for an hour or longer.

Amniotic fluid for genetic and chromosome testing will be sent to a specialty genetics lab for analysis. Alpha-fetoprotein, a protein made by the fetus that is present in the fluid, may also measured to rule out an open neural tube defect, such as spina bifida. Testing may also be done for other substances related to metabolic or genetic conditions. Depending on test results, counseling with a genetics specialist may be recommended.

You may feel some cramping during or after the amniocentesis. If you feel lightheaded, dizzy, or nauseated, notify the nurse. You may be instructed to rest on your left side.

You should rest at home and avoid strenuous activities for at least 24 hours, or as directed by your doctor.

Notify your physician to report any of the following:

Any bleeding or leaking of amniotic fluid from the needle puncture site or the vagina

Fever and/or chills

Severe abdominal pain and/or cramping

Changes in the activity level of your fetus (if you are past 20-24 weeks of pregnancy)

Your doctor may give you additional or alternate instructions after the procedure, depending on your particular situation.

Online resources

The content provided here is for informational purposes only, and was not designed to diagnose or treat a health problem or disease, or replace the professional medical advice you receive from your physician. Please consult your doctor with any questions or concerns you may have regarding your condition.

This page contains links to other Web sites with information about this procedure and related health conditions. We hope you find these sites helpful, but please remember we do not control or endorse the information presented on these Web sites, nor do these sites endorse the information contained here

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