

## What is oligohydramnios?

Oligohydramnios means that, relative to gestational age (meaning how far along the pregnancy is), the amniotic fluid surrounding the fetus (baby) is at low levels. Amniotic fluid is the water that surrounds the fetus in the uterus. At the start, it contains mostly water with electrolytes. However, with the progression of pregnancy, more molecules (including proteins, carbohydrates, lipids and urea) are contained in it.

## What is the importance of amniotic fluid?

Amniotic fluid has a large number of functions whose purpose is the protection and development of the fetus.

- It gives the baby the freedom to move about, thus enabling musculoskeletal (muscle and bone) development.
- It prevents any compression on the umbilical cord: too much pressure could interrupt the supply of nutrition and oxygen from the mother.
- It keeps the baby warm and maintains a constant temperature.
- Amniotic fluid maintains humidity
- When the fetus swallows the amniotic fluid, this helps it to develop its gastrointestinal tract.
- The fetus inhales and exhales the fluid, which stimulates lung development.
- It acts as a barrier against fetal infection of the intra-amniotic environment, while it also offers protection against any blows, for example if the mother falls.
- Finally, since the amniotic fluid contains fetal cells, analysis of it can furnish information on possible genetic defects. This sampling is carried out via the medical procedure called amniocentesis (or amniotic fluid test).

## How exactly is amniotic fluid produced?

During the first trimester of pregnancy, the main component of amniotic fluid is fluid supplied by the mother via the placenta (maternal plasma, nutrients and growth factors). In the latter half of pregnancy the baby is the main producer of amniotic fluid, with fetal urine and fluid excreted from its lungs also contributing to the fluid. As the baby develops, it produces more urine, with the amount of amniotic fluid reaching a peak at about 32-34 weeks of gestation. After 36 weeks of gestation, i.e. near term, the volume declines naturally.

## How does ultrasound help with the diagnosis of oligohydramnios?

Via ultrasound, physicians are able to have a reliable estimation of amniotic fluid volume by calculating the amniotic fluid index, or AFI, normally using a four-quadrant technique. This means that the uterus is divided into four imaginary quarters and the measurements taken

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(vertical length of each fluid pocket) are summed up to a score. This score denotes the amniotic fluid index. Generally speaking, an AFI of less than 5-6 cm it is considered below normal.

There is another easily performed and reliable method for amniotic fluid assessment: this is measurement of the deepest vertical pocket (DVP) that one can find in any of the four quadrants, not counting the fetal parts or umbilical cord, measured in centimetres. The normal range for DVP is 2cm-8 cm (for multiple pregnancies it is around the same), with values below 2 cm indicating probable oligohydramnios.

## **When should I have the scan?**

Amniotic fluid does not need to be measured routinely at any scan as a DVP < 2cm or AFI < 5-6 cm is easily recognisable. Therefore, amniotic fluid has to be measured only if subjectively diminished or for obstetric indication. The best time to carry out amniotic fluid calculations is during the second trimester, between 18 and 22 weeks (fetal anatomy scan), and then during the third trimester (fetal growth scan).

## **Is there anything else that ultrasound can tell me about oligohydramnios?**

Oligohydramnios can be associated to fetal anomalies (mainly from the urine tract) or fetal growth restriction. So, once oligohydramnios is detected, anomalies should be discarded by a detailed scan and the fetal growth assessed. Sonographic measurement of fetal size and estimations of fetal weight gain that are performed together with Doppler scans (fetal circulation assessment) may suggest the presence of oligohydramnios occurring as a manifestation of fetal growth restriction. Amniotic fluid is included in the biophysical profile which is a tool that takes together parameters as fetal movements to evaluate fetal wellbeing.

## **What can cause this condition?**

The most common cause of oligohydramnios is rupture of membranes, but renal dysfunction or urinary tract blockage can also lead to oligohydramnios at any moment. Oligohydramnios is in addition an early indicator of placental dysfunction, which means that the placenta hasn't developed properly or is damaged (hypoperfusion). Very rarely (less than 1% of cases), the cause may be idiopathic (of unknown cause).

## **Complications and prognosis of oligohydramnios**

Because the amniotic fluid is a baby's life support system, oligohydramnios is a serious development since all the vital functions and protective actions of amniotic fluid are reduced. There are several complications resulting from oligohydramnios that vary according to its cause and severity and the time of its presentation. The earlier in pregnancy that oligohydramnios occurs, the worse is the prognosis derived from the cause which is explaining the oligohydramnios. Oligohydramnios, when isolated in the third trimester, usually has a good

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prognosis. Some of the risks associated with oligohydramnios are infectious complications (rupture of membranes), preterm birth (rupture of membranes, fetal growth restriction), malpresentation because of the difficult to move).

## What is the treatment for oligohydramnios?

No effective treatment for oligohydramnios is currently available. If it concerns a mild case of oligohydramnios in an otherwise healthy pregnancy near term, no intervention is needed. Particularly in the case of ruptured membranes, management will involve maternal monitoring for signs of infection, antibiotics eventually, sonographic monitoring of the baby and in a few cases hospital admission or steroids. In the event of lower urinary tract obstruction, Fetal surgery should be considered.

## Will I require any other tests?

Oligohydramnios may be an indicator of fetal growth restriction. That is, there should be examination of the rate of fetal growth, fetal anatomy (in particular the kidneys and urinary tract) and fetal circulation (Doppler scans).

## What other questions should I ask?

- How much is the amount of amniotic fluid?
- How often will I have ultrasound examinations done?
- Does this look like a severe form of Oligohydramnios? When did it present itself?
- Are there other anomalies visible?
- Are there other causes that can explain the oligohydramnios?
- Is invasive testing recommended?
- Where should I deliver?
- Where will the baby receive the best care after it is born?
- Can I meet in advance the team of doctors that will be looking after my baby when it is born?

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