



PATIENT EDUCATION HANDOUTS

Spina Bifida

Topic Overview

What is spina bifida?

Spina bifida is a birth defect in which the bones of the spine (vertebrae) do not form properly around the spinal cord. This can occur anywhere along the spine. Spina bifida is the most common of a group of birth defects called [neural tube defects](#).

Spina bifida develops in a fetus early in pregnancy, often before a woman knows she is pregnant. In the United States, over 4 million babies are born each year, and 1,500 to 2,000 of these have some form of spina bifida.¹ It is one of the most common birth defects, although the rates have steadily declined in recent years.

There are two main types of spina bifida: spina bifida occulta and spina bifida manifesta.

- **Spina bifida occulta** is the mildest and most common form. The spinal defect is hidden under the skin and does not usually cause problems or need treatment. Doctors estimate that up to 24% of the general population unknowingly have this spinal defect.² In some cases, a dimple, depression, birthmark, or hairy patch forms over the skin where more than one vertebra is affected. This is referred to as occult spinal dysraphism (OSD).
- **Spina bifida manifesta** is the rare form of this birth defect. It can be separated into two classes, meningocele and myelomeningocele.
 - In meningocele, fluid leaks out of the spinal canal, causing a swollen area over the baby's spine. In many cases, meningocele causes no symptoms.
 - [Myelomeningocele](#) is the most rare and severe form of spina bifida. This is the form most people mean when they say "spina bifida." In myelomeningocele (also called meningocele), a segment of the spinal nerves pushes out of the spinal canal against the underside of the skin. The nerves are often damaged. In the worst cases, the skin is open and the nerves are exposed to the outside of the body. Meningocele is often associated with nerve damage that can result in problems with walking, bladder control, and coordination.

What causes spina bifida?

Doctors do not know the exact cause of spina bifida but believe that both genetic and environmental factors are involved. Women who have had one child with spina bifida are more likely to have another child with spina bifida. Other factors that may increase the risk for having a baby with spina bifida include:³

- Having [folic acid deficiency](#).
- Taking certain medicines, such as some used to treat epilepsy or acne.

- Excessive use of alcohol.
- Exposure to certain chemicals.
- Exposure to high temperatures.
- Having [diabetes](#).
- Being obese.

What are the symptoms?

Symptoms of spina bifida depend on the severity of the condition. In spina bifida occulta, there may be no symptoms or only a dimple, depression, birthmark, or hairy patch over the affected vertebrae.

In spina bifida manifesta, there may be swelling over the affected spine or even exposed spinal nerves on the back. If the nerves are damaged, the child may have problems with walking, bladder and bowel control, and coordination. The child may experience numbness and paralysis in the legs, and less commonly in the arms.

How is spina bifida diagnosed?

The [maternal serum triple or quadruple screen](#) uses a blood sample from the mother to screen for fetal abnormalities, including neural tube defects. When tests show elevated levels of alpha-fetoprotein (AFP), neural tube defects such as spina bifida are more likely. A high-resolution [fetal ultrasound](#) may then be done to try to determine whether the fetus has any visible abnormalities. Usually fetal ultrasound can only detect signs of severe spina bifida (manifesta).

[Amniocentesis](#) usually is also done when the maternal serum triple or quadruple screen indicates a high level of AFP. Amniocentesis allows health professionals to measure the levels of substances in the amniotic fluid of the fetus. Because abnormalities related to spina bifida are not always revealed by fetal ultrasound, an amniocentesis may be done even without first having an ultrasound or if an ultrasound is done and appears normal.

Spina bifida is usually diagnosed when amniocentesis results confirm heightened levels of AFP and the enzyme acetylcholinesterase (ACH) and the ultrasound shows fetal abnormalities in the spine that are specific to spina bifida.

After birth, spina bifida may be diagnosed by the appearance of the back. An [X-ray](#), [MRI](#), or [CT scan](#) may be done to evaluate suspected spina bifida.

Can spina bifida be prevented?

Having enough folic acid (a B vitamin) in your diet is an important part of preventing spina bifida and other neural tube defects. But to be effective, folic acid needs to be consumed before a baby is conceived. To reduce the risk of spina bifida, most women need to consume 400 mcg (micrograms) of folic acid a day. Women who are at risk (such as those who have already had a child with spina bifida) should take 4,000 mcg of folic acid a day.⁴ You can get enough folic acid by eating foods rich in folic acid, such as avocados, black beans, and asparagus, or by taking a vitamin pill. Since 1998, the United States government has required that foods made from grains and sold in the United States be supplemented with folic acid to help reduce the risk of spina bifida.

If you take medicine for epilepsy or acne, talk with your doctor before you become pregnant about the risk of having a baby with spina bifida.

Do not drink alcohol while you are pregnant. No amount of alcohol is considered safe during pregnancy. A child born to a woman who drank alcohol during pregnancy has an increased risk for spina bifida, as well as other problems.

Avoid exposure to excessive heat, such as saunas or soaking in a very hot bath, during the first weeks of your pregnancy. A high fever during the first weeks of pregnancy could also cause your baby to develop spina bifida.

How is it treated?

Treatment for spina bifida depends on how severe the condition is. Surgery may be done to repair the spinal defect or to correct complications such as [hydrocephalus](#). Physical therapy, braces, and other treatments may be necessary to help children who have problems resulting from nerve damage.

- Learning about spina bifida:**
 - [What is spina bifida?](#)
 - [What are the symptoms?](#)
 - [What are the types of spina bifida?](#)

- Being diagnosed:**
 - [How is spina bifida diagnosed?](#)

- Getting treatment:**
 - [What is the treatment for spina bifida?](#)

- Living with spina bifida:**
 - [How can I help my child with spina bifida?](#)

Author: [Shannon Erstad, MBA/MPH](#)

Last Updated: [May 10, 2007](#)

Medical Review: [Michael J. Sexton, MD - Pediatrics](#)
[Colin Chalk, MD, CM, FRCPC - Neurology](#)

Reviewed 9 June 2008