

WHAT IS SPINA BIFIDA?



Spina bifida literally means split spine

This fault in the spinal column in which one or more vertebrae (the bones which form the backbone) fail to form properly, leaves a gap or a split, causing damage to the central nervous system. To help understand what it is, it is useful to explain the composition of the nervous system.



The Central Nervous System

The central nervous system consists of the brain and the spinal cord. All activities are controlled by the brain which receives information from touching, seeing, feeling, tasting and hearing – responding to this information by initiating the appropriate movements of different parts of the body. Messages from the brain are carried to different parts of the body by the spinal cord which runs down the centre of the spinal column. This communication system for the body is very important and needs protection.



The Spine

The spine is made up of 33 bones or vertebrae. The vertebrae have two main functions. One is to provide anchorage for muscles so that we can move as the brain dictates to those muscles. The other is to provide protection to the spinal cord.

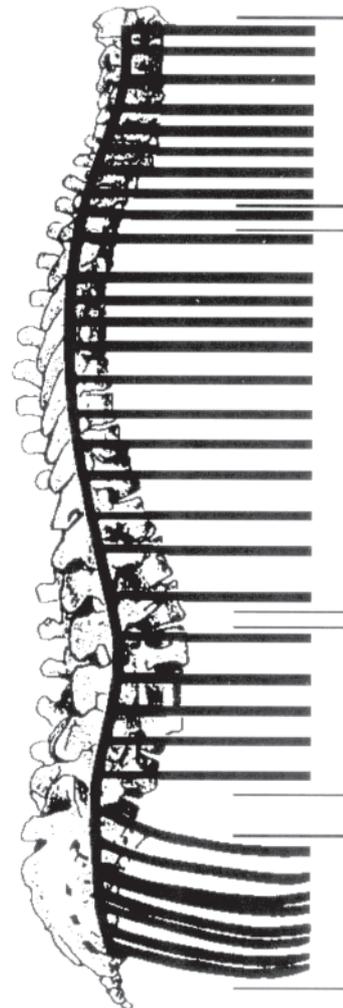


The Neural Tube

The central nervous system and spine develop between the 14th and 28th day after conception. Spina bifida occurs when there is a failure of development of the bony canal which surrounds the brain and spinal cord. In the spine, the affected vertebrae have a defect posteriorly (at the back) so that a bony ring

does not completely surround the spinal cord. This leaves a gap so that, instead of the posterior arm being whole it is divided – that is, bifid. The fault may occur in one or more of the vertebrae but it is most common around waist-level.

▲ Nerves which control the movement of different parts of the body



8 Cervical Nerves

Use of neck, shoulders and arms

12 Thoracic Nerves

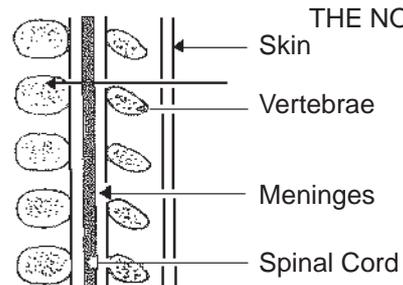
Use of hands and fingers, chest and abdomen, lower back and hip

5 Lumbar Nerves

Use of 'seat' muscles to keep body erect, leg, knee and foot and ejaculation (in men)

8 Sacral Nerves

Bowel and bladder and control of erection (in men)



THE NORMAL SPINE



Types of Spina Bifida

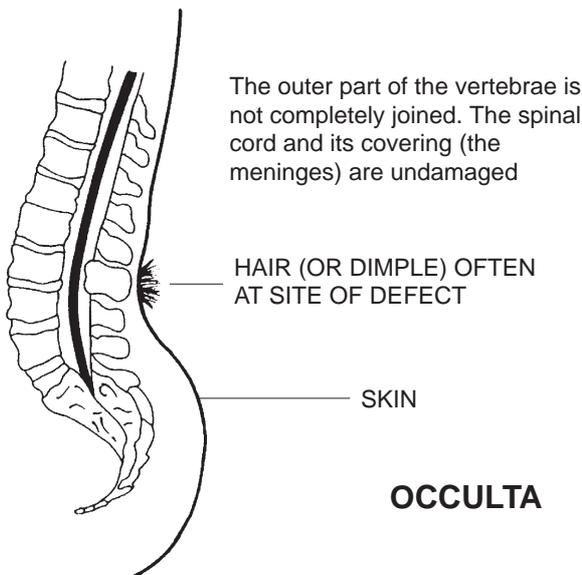
There are three main types of spina bifida, if affected, these are present at birth.



Spina Bifida Occulta (hidden form)

This is a mild form of spina bifida which is very common. Estimates vary but between 5% and 10% of people may have spina bifida occulta. **It must be emphasised that, for the vast majority of those affected, having spina bifida occulta is of no consequence whatsoever. Often people only become aware that they have spina bifida occulta after having a back x-ray for an unrelated problem.**

However, for a few (about 1 in 1,000) there can be associated problems. See ASBAH's information sheet on 'Spina Bifida Occulta'.



The outer part of the vertebrae is not completely joined. The spinal cord and its covering (the meninges) are undamaged

HAIR (OR DIMPLE) OFTEN AT SITE OF DEFECT

SKIN

OCCULTA

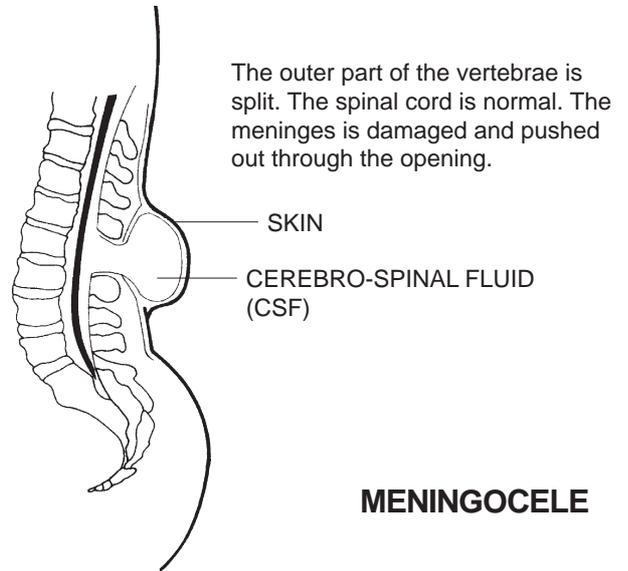


Spina Bifida Cystica (cyst-like)

The visible signs are a sac or cyst, rather like a large blister on the back, covered by a thin layer of skin. There are two forms:

a) Meningocele

In this form, the sac contains tissues which cover the spinal cord (meninges) and cerebro-spinal fluid. The fluid bathes and protects the brain and spinal cord. The nerves are not usually damaged and are able to function, therefore there may be little disability present. This is the least common form of spina bifida.



The outer part of the vertebrae is split. The spinal cord is normal. The meninges are damaged and pushed out through the opening.

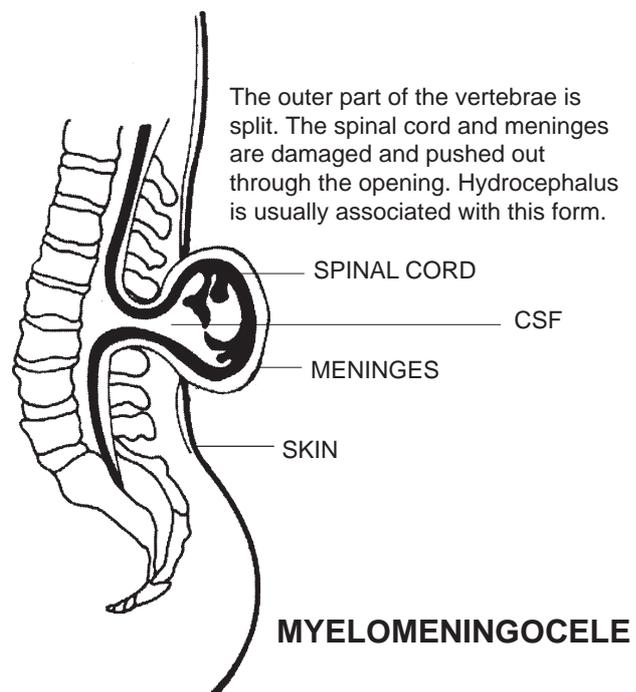
SKIN

CEREBRO-SPINAL FLUID (CSF)

MENINGOCELE

b) Myelomeningocele (meningomyelocele)

Myelomeningocele is the most serious and more common of the two forms of cystic spina bifida. Here the cyst not only contains tissue and cerebro-spinal fluid but also nerves and part of the spinal cord. The spinal cord is damaged or not properly developed. As a result, there is always some paralysis and loss of sensation below the damaged region. The amount of disability depends very much on where the spina bifida is, and the amount of nerve damage involved. Most people with this condition have bowel and bladder problems because of damage to the nerves going to the bowel or bladder from the bottom end of the spinal cord.



The outer part of the vertebrae is split. The spinal cord and meninges are damaged and pushed out through the opening. Hydrocephalus is usually associated with this form.

SPINAL CORD

CSF

MENINGES

SKIN

MYELOMENINGOCELE



Encephalocele

This is a sac which is formed when the bones of the skull fail to develop. It may contain cerebro-spinal fluid only, however, part of the brain may also be present in the sac, resulting in brain damage.



Anencephaly

This is where the brain does not develop properly or is absent, and the baby is either still born or dies shortly after birth. See Information Sheet Number 9.



Hydrocephalus

Most babies born with spina bifida also have hydrocephalus (from the Greek hydro, meaning water, and cephalie meaning brain). This is an accumulation of cerebro-spinal fluid which arises from an imbalance in the production and drainage of that fluid. Further information

about hydrocephalus is given in ASBAH Information Sheet Number 2.



Why does Spina Bifida happen?

At present causation is unknown and research continues. However, we do know that taking folic acid supplements can reduce the risk of spina bifida in unborn babies. For families with no history of spina bifida the Dept. of Health recommends women take an 'over the counter' dose of 400mcg daily. For families where there is a history of spina bifida, a prescription dose (5mg) of folic acid is needed.

Folic acid should be taken daily for at least one month prior to conception and through to the 12th week of pregnancy.

The exact reasons why the neural tube develops incorrectly are not yet known but it is probably connected with both genetic and environmental factors.

For Information on genetic counselling, see ASBAH sheet no 4. For further information on folic acid, see ASBAH sheet no 5.

SHUNT ALERT CARD

**TO BE USED IN
AN EMERGENCY**

I have Hydrocephalus
which is controlled by a
VP / VA - shunt
(delete which does not apply)



ASBAH

Association for Spina Bifida and Hydrocephalus
Getting the most out of life

THIS IS the front cover of ASBAH's **Shunt Alert Card**, which should be carried at all times by people with **hydrocephalus** treated by a shunt (this will include some people with spina bifida).

The card is available from ASBAH 42 Park Road, Peterborough PE1 2UQ

The card emphasises that, if the card-holder is showing signs similar to those which occur when there is shunt blockage or infection, urgent assessment of shunt function should be carried out in a specialist neuro-surgical unit in order to eliminate shunt failure as a cause.

People applying for a Shunt Alert Card can also request that an **information sheet about hydrocephalus**, specially written for doctors, can be sent to their GP.

An insert is available for people who have a programmable shunt.

For people with hydrocephalus treated by ventriculostomy, there is a separate alert card. Teachers and employers can ask for "Shunt malfunctions: a guide to symptoms and suggested actions for schools/employers".

Further information

ASBAH offers support and practical advice, study days and a range of publications on hydrocephalus, spina bifida and related topics. Our services are available to people with hydrocephalus and/or spina bifida, and to parents, health professionals, schools and other interested organisations.

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