



PARADIGM SPINE

the movement in spine care

Patient Information



**Treatment of a Narrow Lumbar
Spinal Canal**

Dear Patient,

This brochure is intended to inform you of a possible treatment option for narrowing of the spinal canal, often called spinal canal stenosis, in the region of the lumbar spine.

The information given here is general in nature. We therefore strongly advise each patient to talk to one's family doctor to obtain more detailed information as well as individual advice.

Dynamic stabilization
with the ***coflex***
implant in the
treatment of narrow
lumbar spinal canal



coflex[™]
Interlaminar Implant

Spine

The Spine

Stabilization

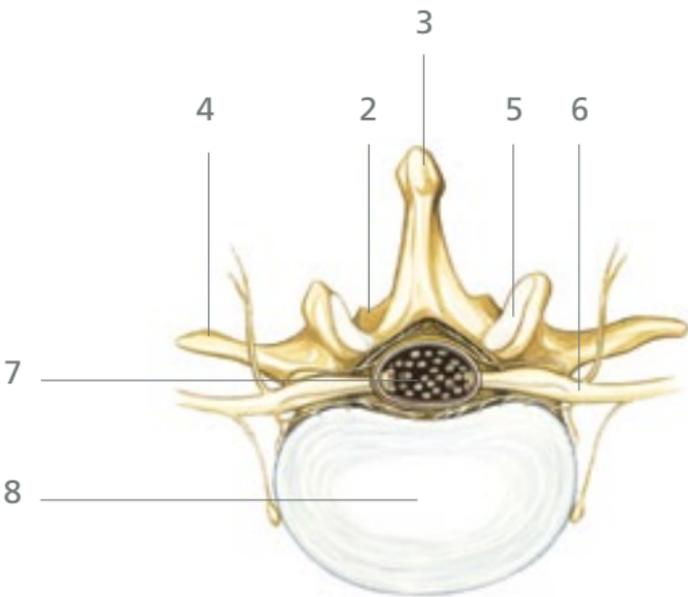
One of the principal tasks of the human vertebral column, also called the spine, is to stabilize the head and upper body, and this enables us to walk upright. The main burden falls on the vertebrae to supply this central support. Their structure gives them particularly good resilience and resistance against fractures due to forces applied from above or below, for example when one jumps, climbs stairs, or even when walking. The soft tissues associated with the spine (muscles, ligaments, tendons) and the joints contribute to dynamic stability or limiting the impact of twisting forces.

Mechanical Protective Function

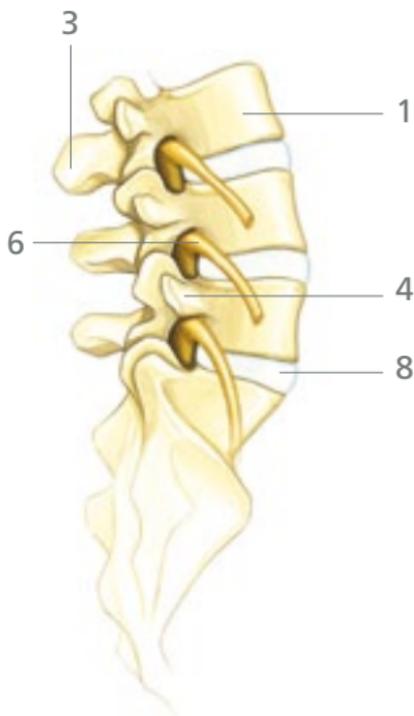
The lumbar spine is composed of five vertebrae. A vertebra consists of a vertebral body, a vertebral arch along with its facet joints, and transverse processes. The vertebral body and vertebral arch form a channel through which the spinal cord nerves run and are protected from external impact.

Shock Absorption and Mobility

“Shock absorbers” – the vertebral discs – are in between the vertebral bodies to buffer the force of an impact. Along with the facet joints, they enable the body to flex during turning, stretching and bending movements. The vertebral disc consists of an outer fibrous ring and a central pulp.



- 1- Vertebral body
- 2- Vertebral arch
- 3- Spinous process
- 4- Transverse process
- 5- Facet joint
- 6- Nerve root
- 7- Spinal canal
- 8- Intervertebral disc



Spinal Canal

The Narrow Spinal Canal –

Lumbar Spinal Canal Stenosis

The spinal cord runs through the vertebral canal – also called the spinal canal – and the spinal nerves exit from there. In the case of hereditary or degenerative narrowing of the lumbar spinal canal, the space enclosed by the vertebral arch is often considerably reduced. Spinal nerves and emerging nerve roots become subject to pressure.

Symptoms

Symptoms manifest themselves in different ways, depending on the site and extent of the stenosis. They include pain, abnormal sensations, and occasionally paralysis. One of the characteristics of lumbar spinal stenosis is a shortened stride due to the onset of symptoms. Sometimes such severe discomfort occurs during walking that it radiates to the buttocks and the legs and forces the patient to stand still. Often it is possible to take only a few steps. The discomfort is relieved by bending forward, sitting down, or lying down since these movements widen the spinal canal. So, for example, cycling is often no problem at all. But if you bend your spine backwards, you create additional narrowing of the canal and the pain will actually increase.

Stenosis

Spinal Canal Stenosis

Cause

There are many possible causes that may give rise to spinal canal stenosis. It often happens that several factors come together to promote wear and tear (degenerative changes), for example:

1. **Degenerative changes** give rise to bony spurs and bony outgrowths on the vertebrae. These **osteophytes** can extend in the direction of the spinal canal and penetrate it.
2. Degenerative changes in the **spinal ligaments** (e.g. posterior longitudinal ligament, yellow ligament) over a lifetime lead to thickening of these ligaments. The space inside the vertebral arch can also be narrowed in this way.
3. If **spinal osteoarthritis** occurs, the facet joints can enlarge so much that they project into the spinal canal.

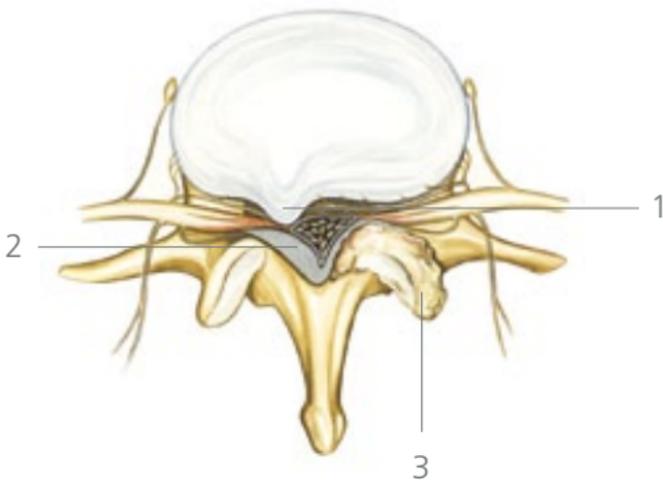
4. A disc herniation or **disc protrusion** reduces the diameter of the spinal canal.

These changes often occur together and cause spinal canal narrowing. Permanent nerve injury may occur due to the constant pressure exerted by the narrowed spinal canal.

Healthy spinal canal



Narrowed spinal canal



- 1- Disc protrusion
- 2- Yellow ligament thickening
- 3- Facet joint osteoarthritis/osteophytes

Treatment

“Decompression surgery” releases pressure on irritated nerve fibres. The extent of the operation depends on the particular conditions encountered in different patients. The vertebral arch, bony spurs, thickened ligaments and joints, and herniated or prolapsed disc tissue can be systematically removed in one or more spinal segments. Prevention of recurrence of spinal canal stenosis requires decompression of the affected areas of the spinal column and sufficient stabilization to maintain flexibility.

A small operation with a big result – this is the new treatment concept for stabilization of the spinal column with the *coflex* implant.

The ***coflex*** implant was designed for functional dynamic stabilization of the spinal column after decompression surgery.



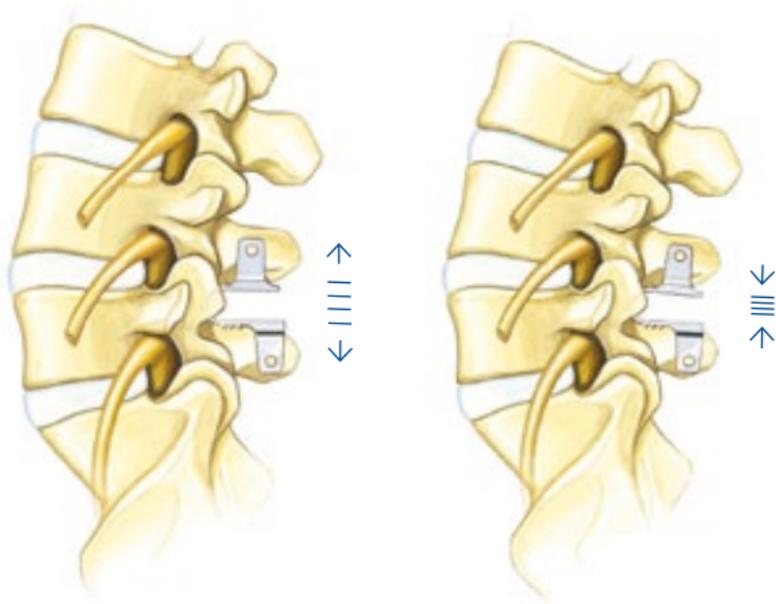
The **coflex** implant focuses on three important factors:

1. Stabilization

One result of a decompression operation may be the loss of stability in the spinal column. But this loss can be compensated through the insertion of a **coflex** implant and it also ensures that the proper height of the segment will be maintained. The vertebral joint is effectively decompressed and nerve fibres that were previously irritated are now protected.

2. Maintenance of Mobility

In addition to stabilization, maintaining function – that is, mobility – is also very important to prevent the advance of the degenerative process into the adjacent spinal segments. The **coflex** implant allows itself to be compressed if you bend backwards and in this way it is functionally dynamic.



3. Less-invasive Treatment

The **coflex** implantation procedure is performed in a less-invasive manner while still permitting the surgeon to maintain precision and sureness.

The **coflex** implant is made of a very resilient titanium alloy. This implant material has proven itself over many years and has excellent biocompatibility.

Operation

The Operation

Decompression

The operation requires general anesthesia. First, the exact location of the spinal canal stenosis is determined by x-ray and the skin incision is defined. Next, the skin is incised and the muscles of the back are pushed to either side, allowing the spinal canal to be opened.

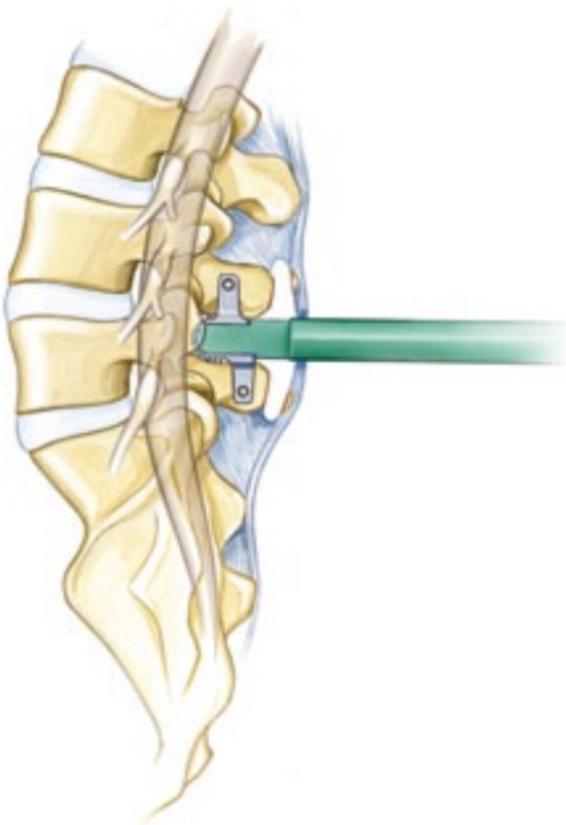
The next step involves decompression of the irritated nerve fibres. This involves the surgeon removing all bone, joint, ligament or disc segments that are narrowing the spinal canal.

Implant Selection

Once the spinal canal is widened and the nerve cords are decompressed, the surgeon chooses the appropriate implant for insertion. He measures the distance between the spinous processes with a test implant and determines the correct size of implant needed.

Implant Insertion

The *coflex* implant is inserted between the adjacent spinous processes providing a close fit.

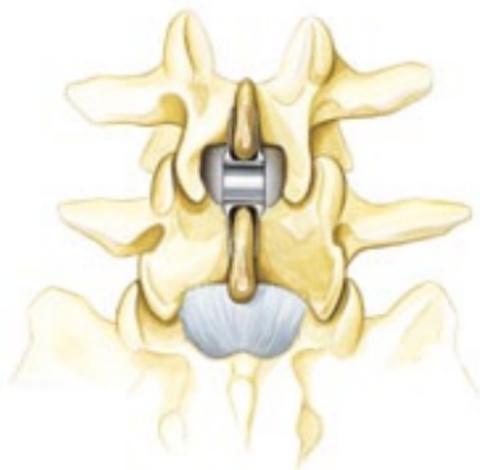


Final situation after implantation – a view from the side



Once decompression of the irritated nerve fibres is complete, the **coflex** implant will permanently stabilize the spinal column. Maintenance of function is now ensured.

Final situation after implantation – a view from above



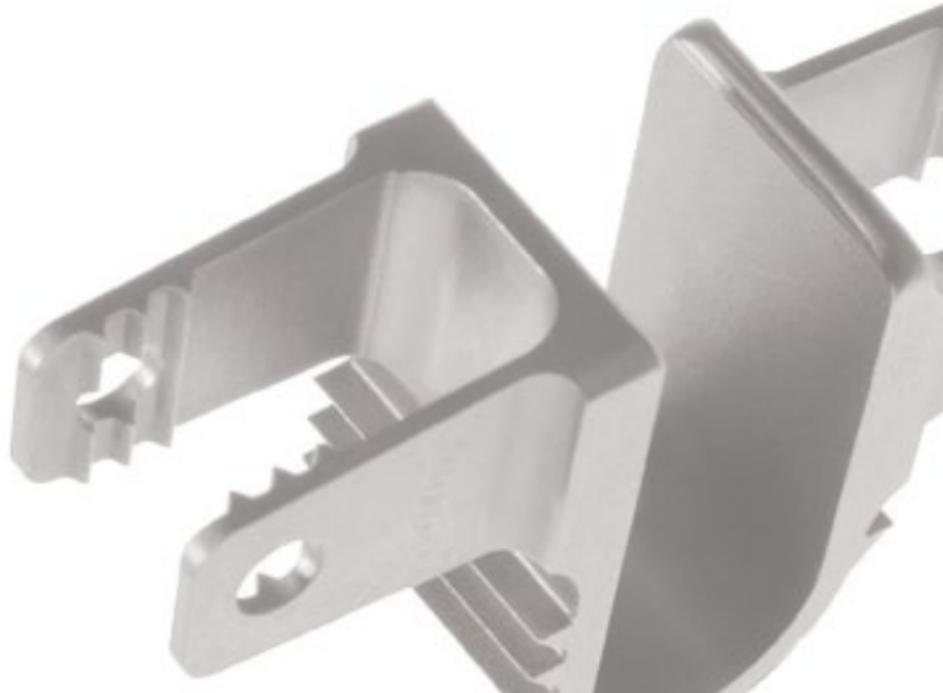
What happens after the operation?

Although the pain in one's back and at the wound site after surgery can be uncomfortable, there are good pain remedies available that will usually relieve the discomfort.

The implant is immediately ready to bear weight and it also stabilizes the spinal column. You will usually be able to stand up immediately after the operation.

During the first weeks after surgery you should generally avoid severe stress on the spine through heavy lifting, twisting and/or leaning backwards. This will speed up the healing process for the implant.







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