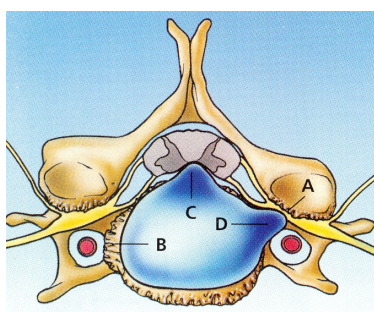


Modern surgical techniques for degenerative diseases of the Cervical spine with special consideration of the intervertebral disc prosthesis

The clinical pictures and symptoms of degenerative diseases of the cervical spine are very similar to those of the lumbar spine. Analogous to the lumbar spine, the degenerative diseases of the cervical spine are essentially disc herniation (herniated disc), narrowing of the spinal canal or intervertebral hole due to bony reactions as part of the wear process, and osteoarthritis of the vertebral joints.



Legend

- a) Arthritis of the vertebral joint
- b) Degenerative bone spur
- c) different localizations of a disc hernia
- d) different localizations of a disc hernia

Figure 1 Possibilities of nerve entrapment.



Figure 2

Figure 2 shows a relatively large disc hernia in the lateral image of an MRI.

Osteoarthritis of the intervertebral joints leads primarily to neck pain, which unfortunately can only be treated with moderate success with surgery. In contrast, the nerve symptoms caused by a disc hernia, narrowing of the spinal canal or the intervertebral hole are very amenable to surgical therapy with 90% successful results.

Operations on the cervical spine due to degenerative diseases are performed 8 times less than on the lumbar spine. Nevertheless, the indication for surgery due to degenerative diseases outweighs vertebral fractures, tumors and malpositions.

« Very crucial is the distinction between arm and neck pain! »

Chronic neck pain without radiation, which is caused by the wear and tear of the vertebral joints, is the domain of conservative therapy with physiotherapy, pain medication or alternative medical measures. Unfortunately, operations such as stiffening or prosthesis implantation in these situations usually bring only unsatisfactory results and should therefore only be treated surgically in exceptional situations.

Nerve pain, on the other hand, which may be acute or chronic and localized in the shoulder/arm region and may be accompanied by sensory disturbances and motor deficits, can be treated surgically with excellent results. In summary, the localization of pain is extremely important, in that neck pain alone must be treated in a fundamentally different way from nerve pain in the shoulder/arm region.

« Accurate diagnosis leads to minimally invasive surgery »

The most important step in successful treatment is accurate diagnosis. This means the precise identification of the pain-causing changes in the cervical spine. The great advances in X-ray imaging (MRI, CT) are, of course, indispensable for making a diagnosis today. However, the most conspicuous change in the X-ray image is not always the one that causes the patient the most discomfort. In addition to the necessary extensive experience of the treating physician, diagnostic injections under X-ray control (infiltrations) can definitely confirm the diagnosis (Fig. 3). The simultaneous injection of cortisone also offers the chance of a positive influence on the symptoms.

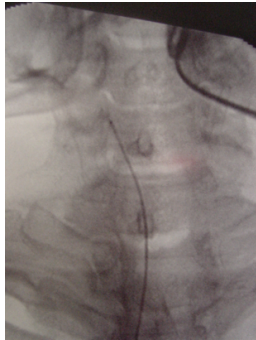


Figure 3

In more complicated case situations, spinal medicine is an ideal example of a multidisciplinary specialty. Through the cooperation of orthopedics, neurosurgery, pain therapy, rheumatology, rehabilitation, neurology and internal medicine in one team, most patients can be helped without surgery or with only a small minimally invasive operation.

« Modern surgical techniques guarantee a high success rate »

The sole nerve decompression operation, which is performed from the rear, is nowadays only indicated in exceptional cases, since it has two decisive disadvantages. The posterior approach with the traumatization of the sensitive neck musculature and the partial destruction of the intervertebral joints caused by the surgical technique can solve the problem of nerve root entrapment, but often leads to surgery-related pain in the neck area.

With great advantages, decompression is performed via an anterior approach with the patient in the supine position (Figure 4).

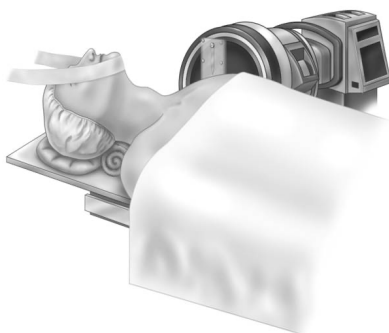


Figure 4

Due to the anatomical constellation, this may appear very spectacular, but it carries significantly lower risks with regard to nerve injury and is also extremely gentle on soft tissue (Figure 5 shows the scar, which is barely visible). This is confirmed by the fact that patients are usually hospitalized for only 2-3 days and can get up again just a few hours after the operation.



Figure 5

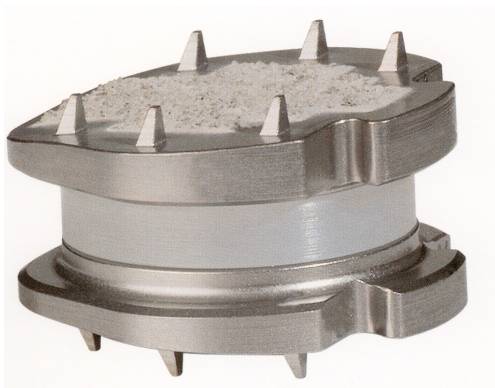


Figure 6

In terms of surgical technique, the intervertebral disc together with the herniated disc is removed from the front and replaced either by a hollow body filled with bone or by a disc prosthesis (Fig. 6).

In addition, implantation of the cage or disc prosthesis results in indirect nerve decompression by allowing these implants to reconstruct the original height of the disc space or intervertebral holes (Figure 7)



Figure 7

Compared to fusion with a cage, the disc prosthesis has the advantage that the follow-up treatment is simplified and that the adjacent segments do not have to bear the same loads as after fusion. However, the surgical results after fusion or disc prosthesis hardly differ in the cervical spine.

Advantages of modern cervical spine surgery

- The minimally invasive anterior approach is extremely gentle
- In 90% of cases good to very good results with average hospital stay of 2-3 days
- Slightly better surgical results after disc prosthesis compared to stiffening
- Easier aftercare after disc prosthesis implantation as well as protection of the adjacent segments from overloading and the associated consequential damage.