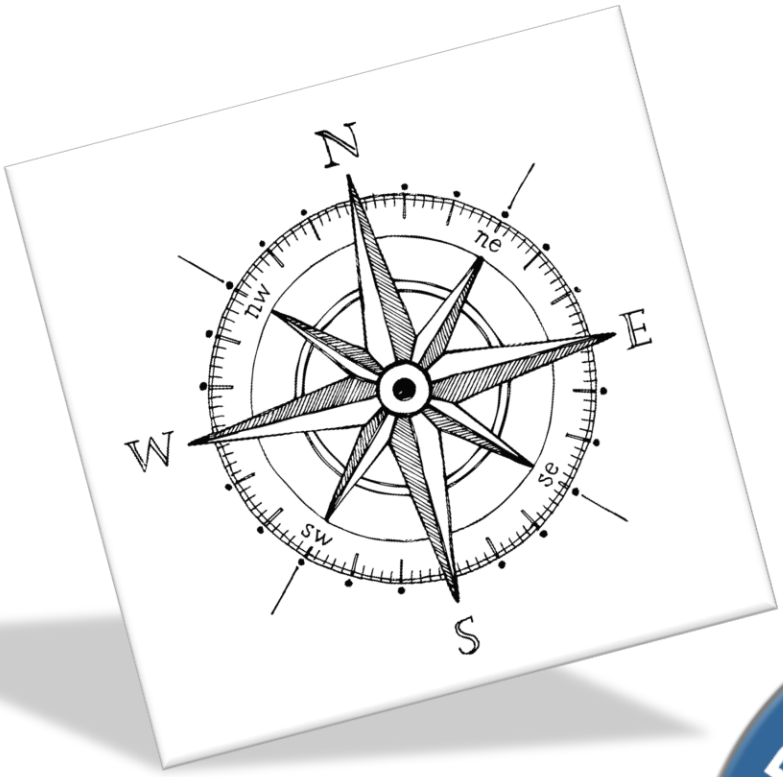
DaneSpine

Spine surgery guided by patient outcomes

2026



JUNE 2026

Danish Society of Spinal Surgery

Only a few patients with spinal pain require surgery

According to the Danish Health Authority, 970,289 people were living with low back pain in 2017. Fewer than 8,000 underwent lumbar spine surgery, corresponding to less than 1%.

- **Patients who are offered surgery are carefully selected and experience severe pain or significant functional impairment.**
- **Patients are referred by their general practitioner, chiropractor or physiotherapist after extensive non-surgical treatment does not provide sufficient relief. The choice is therefore not between exercise and surgery, but a combination of the two.**
- **Timely surgery is crucial in preventing patients from living with persistent pain or paralysis.**

The Danish Society of Spinal Surgery continually works to ensure that patients with lumbar spine disorders receive the best possible treatment at the right time.

Introduction

Systematic recording of spinal disorder treatments in both primary and secondary healthcare sectors provides an essential basis for assessing and optimising the value of individual interventions. In spinal surgery, DaneSpine supports the documentation of outcomes for both established and newer spinal procedures.

Each year, an annual report is published based on DaneSpine data, documenting the extensive, systematic data collection carried out daily at all spinal surgery units.

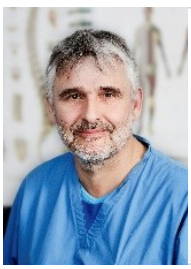
"Data is the compass that guides quality improvement in healthcare. Without it, we're navigating in the dark."

This brochure presents selected results from the annual DaneSpine report.

All annual DaneSpine reports are available at: www.DRKS.ortopaedi.dk or by scanning the QR code.

Happy reading!

The DaneSpine Steering Committee



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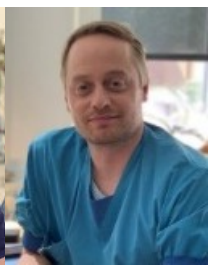

Andreas Kiilerich Andresen

DaneSpine

DaneSpine is a nationwide clinical quality database, formally registered within a research framework and established to monitor and improve the quality of spinal surgery for all spine patients in Denmark. The database contains data on surgically treated spine patients and is based on a voluntary collaboration between all spinal surgery departments and clinics in the country.

The DaneSpine database systematically collects data on spinal surgery patients, surgical procedures and outcomes. This enables the assessment and, when necessary, improvement of care pathways and treatments for patients undergoing lumbar and other spinal surgeries in Denmark.

Data

The database comprises data and information on spinal surgical procedures, along with a wide range of patient-reported outcome measures (PROs), providing a comprehensive overview of spinal surgery activity and outcomes.

DaneSpine captures patient-reported preoperative data, surgeon-reported operative data, and patient-reported data at 1, 2, 5 and 10 years postoperatively. Patients provide basic demographic information and PRO data.

All questionnaires adhere to international standards.

Status

DaneSpine has collected data since 2009, and data have currently been recorded for more than 125,000 patients.

PRO-guided spine surgery
- from patient data to valuable health care

Spinal surgery guided by patient-reported outcomes (PRO) places patients' experiences and reported outcomes at the centre of both treatment and evaluation. The focus is not only on which conditions are amenable to surgery, but on what is most beneficial for the patient.

By systematically collecting data on symptoms, function and quality of life before and after surgery, a strong foundation is established for assessing the true treatment effects from the patient's perspective. This approach makes it possible to:

- Identify the treatments that generate the greatest value.
- Avoid interventions with little or no effect.
- Develop decision-support tools that strengthen shared decision-making between patient and clinician.

PRO-guided surgery thus contributes both to improved patient pathways and a more efficient use of healthcare resources, and it should be prioritised in the ongoing development of a quality-based healthcare system.

ODI - Oswestry Disability Index

A questionnaire specifically designed to assess **disability** caused by low back pain. It consists of 10 categories of questions, and it generates a sum score from 0 to 100.

A total score of <20 indicates no or minimal back-related disability, a score between 41 and 60 indicates severe disability, and a score of >80 indicates being bed-bound due to back pain.

EQ-5D – EuroQol

A questionnaire that measures **health-related quality of life**. It consists of 5 questions and generates a score from 0 to 1, where 0 corresponds to severe illness and 1 to full health.

VAS leg / back

The Visual Analogue Scale (VAS) is a measure of **pain** on a scale from 0 to 100, where 0 represents no pain and 100 is the worst imaginable pain.

Narrowing of the spinal canal

”Spinal stenosis”

After surgery, the average **pain intensity** decreases by
40% in the back (VAS from 53 to 32)
45% in the legs (VAS from 60 to 33).

Physical functioning improves by 38% (ODI from 42 to 26).

On average, patients rated their **health** at 40% of full health before spinal surgery and 65% after spinal surgery
(EQ-5D from 0.40 to 0.65).

The proportion of patients with a narrowing of the spinal canal who are **able to walk** more than 1 km increases from 16% to 44% after surgery.

Spinal stenosis – a common condition with documented benefit of surgical treatment.

Spinal stenosis is caused by age-related degenerative changes in the spine. These changes lead to nerve compression and result in leg pain, sensory disturbances and impaired walking capacity.

Surgery is the only well-documented treatment that provides lasting symptom relief. More than 37,000 patients have been registered as having undergone surgery in the national quality database, DaneSpine, making it the most common spine surgery procedure in Denmark. The mean age of the patients is 67 years, and 52% are women.

Data from DaneSpine point to evident health policy challenges: When patients with spinal stenosis initiate opioid therapy in primary care, they often struggle to discontinue it. Furthermore, the data show that the longer the symptom duration prior to surgery, the poorer the outcome. This underlines the need for timely referral for MRI and/or surgical evaluation, as well as a critical approach to initiating opioid therapy.

Herniated disc in the lower back

”Lumbar disc herniation”

After surgery, the average **pain intensity** decreases by
43% in the back (VAS from 49 to 28)
58% in the legs (VAS from 63 to 26).

Physical functioning improves by 54%
(ODI from 46 to 21).

On average, patients rated their **health** at 33% of full health before spinal surgery and 71% after spinal surgery
(EQ-5D from 0.33 to 0.71).

Lumbar Disc Herniation – a common spinal disorder with major implications for work participation.

Lumbar disc herniation (LDH) occurs when an intervertebral disc protrudes and compresses the the nerves supplying the legs. The condition causes radiating leg pain and, in severe cases, may lead to paresis or impaired control of bladder and bowel function. Most cases do not require surgery, but an operation may be indicated in the presence of neurological deficits, persistent pain, or impaired work ability. In such cases, parts of the disc are removed to decompress the affected nerve root.

The Danish National Spine Registry, DaneSpine, contains data on more than 31,000 surgically treated LDH patients. The mean patient age is 49 years, and 44% are women. An analysis based on DaneSpine and the DREAM database from the Danish Ministry of Employment shows that only 25% of patients with more than 3 months of sick leave prior to surgery return to work. This highlights the need for early MRI and timely spinal surgical assessment when nerve root compression is suspected – particularly when sick leave is required.

Age-related vertebral slip

”Degenerative spondylolisthesis”

After surgery, the average **pain intensity** decreases by
50% in the back (VAS from 56 to 28)
35% in the legs (VAS from 54 to 35).

Physical functioning improves by 43% (ODI from 42 to 24).

On average, patients rated their **health** at 39% of full health before spinal surgery and 70% after spinal surgery (EQ-5D from 0.39 to 0.70).

When MRI is not enough. Age-related instability requires comprehensive diagnostic assessment.

Approximately 10% of patients with lumbar spinal stenosis have age-related spinal instability, referred to as degenerative spondylolisthesis. This condition causes vertebral slippage and nerve compression, resulting in leg and back pain that typically worsens when walking.

Surgical decompression, combined with fusion if necessary, can provide effective symptom relief.

Data from more than 5,000 procedures show that the mean patient age is 69 years, and more than half of the patients are women.

The diagnosis is challenging, as instability is not always evident on supine MRI. Standing radiographs are therefore often required for an accurate assessment.

The choice of treatment must be based on an integrated evaluation of spinal instability, imaging findings, patient age and overall health status.

Nerve impingement in the neck

”Cervical disc herniation / foraminal stenosis with radiculopathy”

After surgery, the average **pain intensity** decreases by
48% in the neck (VAS from 54 to 28)
55% in the arms (VAS from 56 to 25).

Physical functioning improves by 40%
(ODI from 40 to 24).

On average, patients rated their **health** at 49% of full health before spinal surgery and 80% after spinal surgery
(EQ-5D from 0.49 to 0.80).

Cervical disc herniation or cervical foraminal stenosis develops due to disc weakness or age-related degenerative changes in the intervertebral discs, ligaments, and facet joints, resulting in reduced space for the neural structures.

Most patients experience neck pain radiating into their arms. In more severe cases, patients may also present with impaired leg, bowel and bladder control.

Surgical treatment may help relieve symptoms by restoring space for the neural structures within the spinal canal.

The annual report includes data on approximately 8,000 surgically treated patients. Their mean age is 52 years, and there is an almost equal representation of men and women.

Vertebral collapse

”Vertebroplasty”

Physical functioning improves by 35% (ODI from 54 to 35).

On average, patients rated their **health** at 23% of full health before spinal surgery and 57% after spinal surgery (EQ-5D from 0.23 to 0.57).

Pain relief and reduced mortality after vertebral compression fractures.

Vertebral compression fractures are a common and often under-recognised consequence of osteoporosis. They may occur spontaneously during everyday activities and typically cause sharp back pain. When multiple fractures are present, patients often develop loss of height, increased kyphosis, and, in severe cases, impaired lung function.

Vertebroplasty is a minimally invasive surgical procedure performed under local anaesthesia, in which bone cement is injected into the collapsed vertebral body to stabilise the bone and reduce pain. Although its effectiveness has been debated, a large 2020 study found that vertebroplasty-treated patients had a 22% lower mortality over a 10-year period than patients who did not undergo surgery.

Guidelines – including the “Getting It Right First Time” programme in the UK – support a more proactive approach in which osteoporotic vertebral fractures are managed similarly to hip fractures. Patients who cannot be mobilised within a few days should be evaluated for surgical treatment, including vertebroplasty.

According to the annual DaneSpine report, more than 1,800 patients have been treated for vertebral compression fractures, primarily due to osteoporosis or secondary to cancer. Osteoporotic fractures are most frequently seen in older women, whereas malignant causes are more common in somewhat younger men.

DaneSpine 2026

Published June 2026 by:
The DaneSpine Steering Committee
Danish Society of Spinal Surgery
The DaneSpine Secretariat

Excerpts, including figures and tables, are permitted provided that the source is clearly acknowledged.

All annual DaneSpine reports
are available for download
from the society's website:
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