SPINE TANGO / EURO SPINE

ANNUAL REPORT 2023

"We have used Spine Tango since 2011 with over 12,000 patients on the system. We have published research, measured our own performance and changed our practice due to the information we have gained from the system. It is a vital part of our everyday practice."

Tim Pigott, former Consultant Neurosurgeon, Walton Centre for Neurosurgery, United Kingdom

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FOREWORD SABRINA DONZELLI

IMPROVING SPINE CARE THROUGH DATA AND COLLABORATION: A VISION FOR THE FUTURE

Dear colleagues and esteemed members of EUROSPINE,

As a dedicated professional with 13 years' experience in conservative spine care and a Master of Science in Evidence-Based Healthcare from Oxford University, I'm deeply committed to improving patient care.

My passion for statistics and research drives me to make a tangible difference to patients' lives. My journey with Spine Tango began at the forefront of big data in medicine, where I recognised the critical role of prospective data in improving predictive models for identifying patient risk.

Today, the Spine Tango Registry is one of the oldest established spine registries. While interest in spine registries is growing, many countries are starting to implement national spine registries, and Spine Tango's know-how and long-standing experience is in demand.

Various successes were achieved in 2023. Spine Tango and the Spine Tango-based Swiss Spine Registry have joined forces and collaborating with other spine registries to harmonise the data structure and develop a common dataset to be able to combine data across countries.

The first meeting with a group of spine registries took place in March 2023 followed by multiple virtual meetings and the 2nd meeting in person at the EUROSPINE meeting in Frankfurt. The working groups develops consensus on the variables to be included in data structures of the spine registries as well as on common PROMs and on the implant documentation. The work will be continued in 2024 and the group will also be meeting at the next annual meeting in Vienna.

All the spine registries from around the world see the need to join forces to enable data analyses across country boarders.

Combining data from different registries will be very powerful as it will lead to a very large and unique international dataset!

Another large project is the European PREPARE project with about 20 consortium partners will provide translation of the Tango's data structure into OMOP language and development of AI-based prediction models in different areas of rehabilitation.

Spine Tango has successfully developed a rich implant catalogue in close collaboration with implant manufacturers, which Spine Tango offer to other spine registries for the purpose of a common language in implant registration.

Although Spine Tango today is primarily a surgical registry, it offers a conservative case report form that was developed by international experts and, thus, supports quality assurance in conservative care.

Spine Tango and Swiss spine registries have launched electronic PROMs this year, which can be sent to patient's emails and mobile phone numbers. Furthermore, Spine Tango Committee has also defined and published terms and conditions for the use of international anonymised and aggregated data to all interested parties for statistics and research. Towards a better future! Several new platform functions and exciting global spine projects are planned for 2024. With unwavering commitment, we, united under EUROSPINE, will drive progress and innovation in spine care.

Together, we will touch countless lives by treating spinal disorders with the utmost care. Thank you all for your support and commitment to our shared vision and mission.

Sabrina Donzelli, Spine Tango Task Force Chair

A GLOBAL COMMITMENT TO DATA-DRIVEN EXCELLENCE

Welcome to the Annual Report of Spine Tango - a global initiative dedicated to revolutionising spine health through quality assurance, innovation, and excellence. As a web-based registry, Spine Tango serves as a unifying language for quality assurance in spine care worldwide, providing a benchmark for performance and a robust evidence base.

## ADVANCING SPINE HEALTH THROUGH DATA AND INNOVATION

Spine Tango's mission is clear: to empower participants worldwide, including surgeons and non-surgeons, to contribute to a benchmark for treatment performance and a comprehensive evidence base. Our goal is to establish a common language for data collection and evaluation, ensuring consistency and reliability across the diverse landscape of spine treatments.

VISION: BETTER OUTCOMES AND PATIENT SAFETY

At the core of Spine Tango's vision is a commitment to empower surgeons, hospitals, national specialist societies and implant manufacturers in measuring and improving clinical outcomes and patient safety through continuous and efficient data collection and data use. By supporting implant manufacturers and providing tools in multiple languages, we are raising the standard of care, fostering collaboration, and driving innovation in spine care.

As you explore this report, witness the collaborative efforts that are shaping a future of better spine care. Spine Tango's data-driven insights benefit individuals, hospitals, and national spine societies, contributing to advances in treatment outcomes and patient safety.

Thank you for joining us on this transformative journey towards a healthier future.
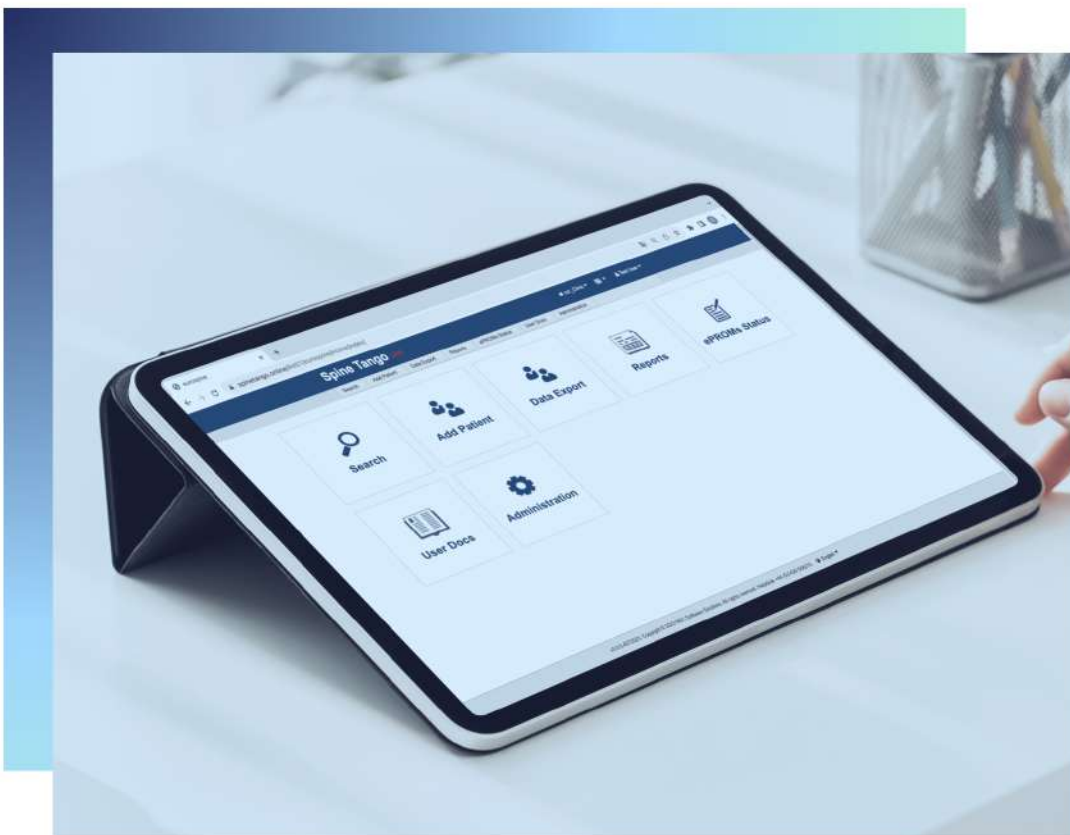
PROGRESS AND INNOVATION UPDATE - 2023 REPORT

Under the leadership of Chair Sabrina Donzelli and Senior Advisor Emin Aghayev, Spine Tango has achieved significant milestones in 2023:

INTRODUCTION OF ELECTRONIC PROMS

In 2023, we marked the successful pilot of ePROMs in Switzerland, followed by its seamless integration into Spine Tango. The first experience in 13 pilot hospitals showed spontaneous responses to automatically sent ePROMS by email and/or mobile phone number in more than half of the patients. While the functionality of ePROMs will continue to evolve in the future, offering additional languages and features such as QR codes instead of mailed links to the questionnaires, hospitals may be able to achieve high response rates already with adequate patient information alone.
The use of ePROMs provides valuable insights into treatment effectiveness and enhances our understanding of the patient experience, contributing significantly to overall quality of care.
is this verified number?

QUARTERLY BENCHMARK REPORTS

In response to the need for more timely reporting, we have effectively implemented quarterly benchmark reports. From 2023, these reports will be readily available on personal dashboards, providing users with a user-friendly interface to analyse trends and make informed decisions.

GENERATING STRONG VALUE FOR IMPLANT MANUFACTURERS

We strive to work closely with all players in the healthcare sector, including implant manufacturers. By providing reporting services on implant performance and outcomes, this collaboration is driving remarkable advances in spine technology.

UPDATE OF THE USER DOCUMENTS AND TUTORIALS

We have taken the new EUROSPINE logo in 2023 as an opportunity to check that all user documents and tutorials are up to date and complete. The work has started in Q4 2023 and shall be completed in Q2 2024 with the publication of new versions of all documents in the application.

IMPROVED ACCESSIBILITY

We keep working on new translations of the platform ensuring that Spine Tango is accessible to a wider audience and regions. These enhancements facilitate seamless collaboration and knowledge sharing among spine care professionals worldwide. This year we prepared the Czech version of the platform in close collaboration with Krajská nemocnice Liberec. The Czech version shall go live in March 2024.
With these achievements and advancements, participating hospitals and EUROSPINE continues to drive innovation, advance research and improve patient outcomes in spine care. We celebrate these achievements and express our gratitude for the commitment of our esteemed hospitals and partners.

EU HORIZON PROGRAMME PROJECT

An outstanding achievement is becoming part of a four-year large European consortium project from the EU's HORIZON programme. This project with the title Personalised Rehabilitation via Novel AI Patient Stratification Strategies (PREPARE) aims to use artificial intelligence methods to analyse Spine Tango and other medical data to develop prediction of patient outcomes and advance rehabilitation in spine care and beyond. This multi-stakeholder, interdisciplinary initiative is at the forefront of transforming rehabilitation care for chronic non-communicable diseases.

Christian Herrmann has joined our team as a Senior Data Analyst and is co-leading this project from the EUROSPINE part.

EUROSPINE'S INTEGRAL ROLE

EUROSPINE plays a central role in the PREPARE consortium, bringing decades of expertise in spinal disorders. Our main contribution is the Spine Tango Registry - a comprehensive repository of anonymised medical data that is crucial for research within the spine community. This rich dataset is essential for the development and refinement of the PREPARE models.

The ultimate goal of the PREPARE project is to develop new tools that can be offered to treating physicians. The tools based on the comprehensive data from Spine Tango, will assist in communicating and navigating treatment options, managing patient expectations, and supporting shared decision making for optimal treatment outcomes in spine care. Additionally, we are:

- Contributing to the conceptualisation, health data integration technology and computational models.
- Defining requirements, validating tools, and designing the overall architecture.
- Conducting smaller studies to explore the usability, compliance, and effectiveness of these tools.

CELEBRATING THE FIRST MILESTONE

The project celebrated a successful first year milestone in Thessaloniki, Greece in June. The meeting highlighted the timely completion of all planned deliverables and set the stage for the next phases of the project. The consortium reviewed past activities, discussed new findings, and identified action points for the future.
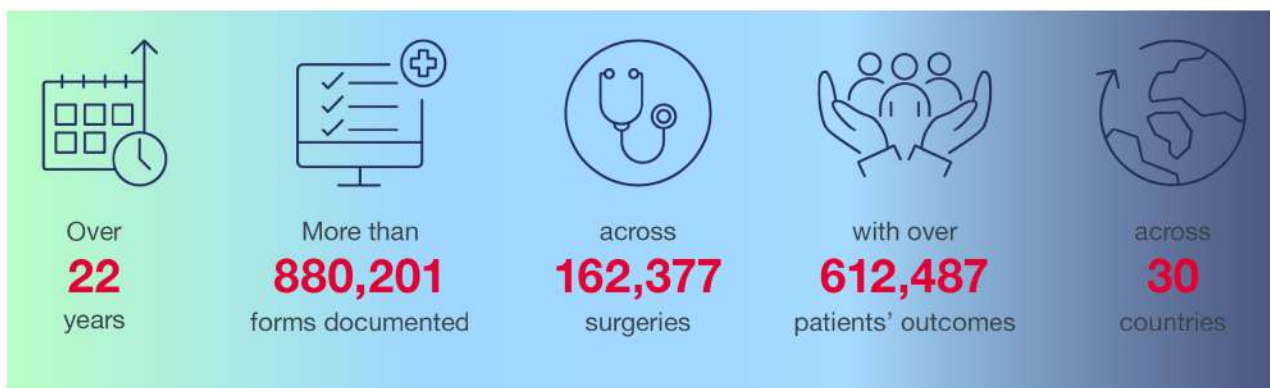
GOVERNANCE

Sabrina Donzelli continues her term as Chair of the Spine Tango Task Force, maintaining a period of effective leadership.
We acknowledge Andrea Luca's valuable contributions as he steps down from the Task Force after 7 years in the Task Force and thank him for his outstanding support in achieving our vision.
We look forward to continued growth and innovation under Sabrina's leadership. The Spine Tango Task Force remains dedicated to advancing spine care, with a legacy of commitment from leaders like Sabrina and Andrea.

FACTS & FIGURES

Over	More than	across	with over	across
22	**880,201**	**162,377**	**612,487**	**30**
years	forms documented	surgeries	patients' outcomes	countries

LOOKING AHEAD TO 2024: PROGRESS AND PRIORITIES

As we step into the promising landscape of 2024, we are pleased to reveal a number of planned updates that will enhance your experience with and the value of Spine Tango for you.

ENHANCED EPROM FUNCTIONALITY

The upcoming 2024 release will introduce a next version of ePROM feature. Czech and Portuguese languages will be added as the next languages. Furthermore, the possibility to generate a QR-code and use it instead of an email or a text message link. Also, the overview of the status of ePROMs will be further developed and receive additional action buttons.

NEW FEATURE OF ONLINE AD-HOC STATISTICS AND REPORTS

This function has been a long time coming. Its development has required a technological change on the platform. Now a new powerful technology Power BI has been integrated into the platform. In 2024, the possibility of online self-made data, analyses and reporting queries is expected. The results, comparisons, tables, and images can be copied or exported and used outside the platform, e.g. in presentations.

EXPORT OF LINKED FORMS

As part of our commitment to providing robust analytical tools, we are introducing a new data export format. This format will combine all available patient and physician- reported forms of a single
clinical case per data line, streamlining the data analysis process and providing a new way to analyse and interpret your findings.

REVISED DATA STRUCTURE STARTING FROM 2025

We are working on a revision of the current data structure of the surgery form 2017. The goal of the revision of the data structure is to further simplify it where possible but also to make sure that the current diagnosis, treatments, and evaluation trends are considered, and the required data is collected in a structured manner. In particularly, we aim to introduce a minimal version of the surgery form with a reduced but still reasonable amount of data to collect. This enhancement aims to refine and streamline the data collection process, ensuring a more seamless and user-friendly experience for hospitals. The new data structure is expected in January 2025.

SPINE TANGO COMMITTEE REPLACING SPINE TANGO TASK FORCE

After a few years of further development of the Registry, the Spine Tango Task Force will become the status of a regular committee in the organisation of EUROSPINE in 2024. Due to the increasing interest in and use of the Registry in Ireland and the Czech Republic, we aim to invite a representative from each of these countries to join the Committee and help us steer the development of the registry.

EXPECT A STREAMLINED EXPERIENCE

As we embark on these improvements, we are deeply grateful for your continued use of the registry. We are confident that the innovations planned for 2024 will not only meet, but exceed your expectations, contributing to a more streamlined, effective, and user-friendly experience for all participants.

USE OF ANONYMISED POOLED DATA BY NON-PARTICIPANTS FOR STATISTICAL AND RESEARCH PURPOSES

Spine Tango has collected a unique and large international dataset over the last year. In 2023, the Spine Tango Task Force agreed to open the use of these data for statistical and research purposes to individuals or groups of individuals from academic institutions who have never contributed data to the registry or who have contributed data to the registry in the past but have stopped contributing.

The Spine Tango Task Force has developed terms and conditions for such data use. These have now been published and can be found on the Spine Tango Website.

This opening of data use is intended to serve the statistical and research needs of the spine community and to contribute to the advancement of spine care.
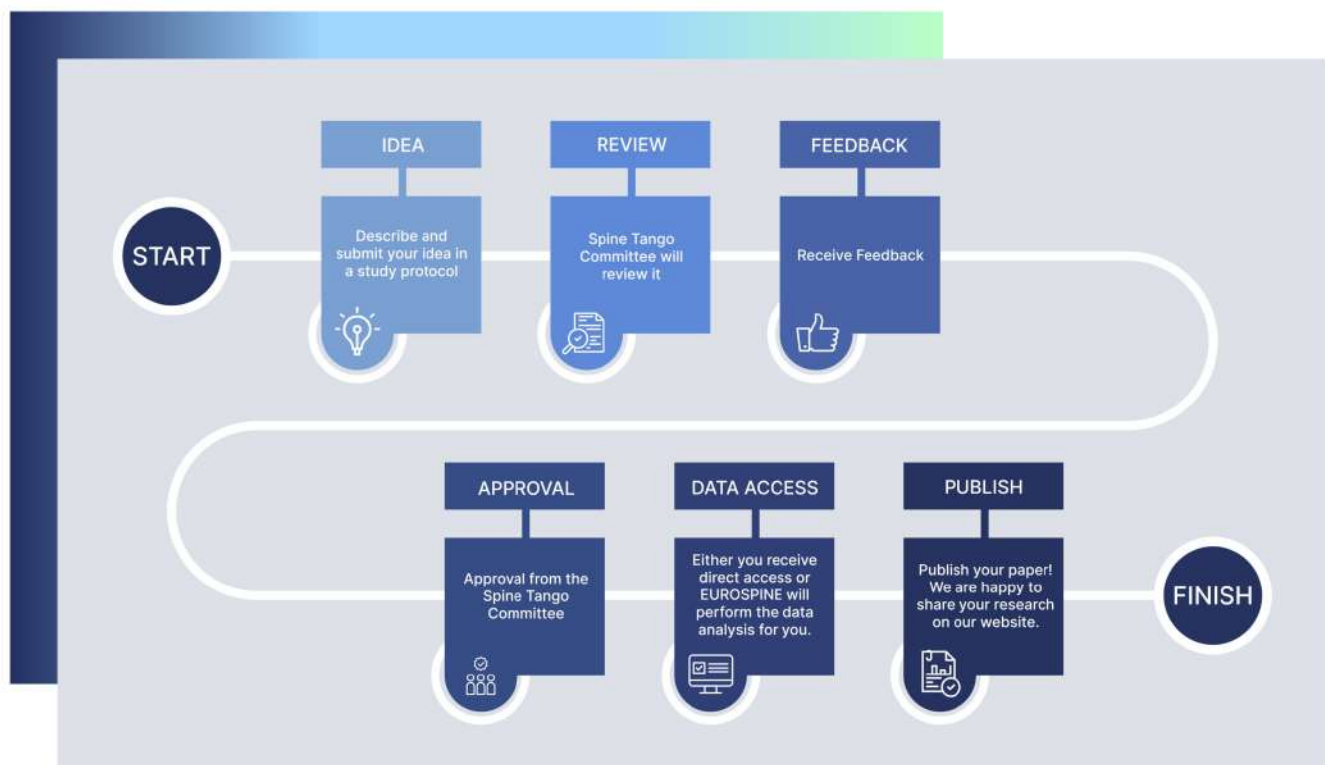
SELECTED STATISICS

WORLD MAP

The Spine Tango Registry and the majority of participating hospitals are based in Europe. Hospitals from many other countries are participating or have participated in the registry, as illustrated in the two maps below. This international distribution demonstrates the interest in a common language in the registration of spinal treatments and their outcomes, which in turn will help to further develop spinal care as well as harmonise and improve it.

All following maps are based on registry data collected up to 31 December 2023.
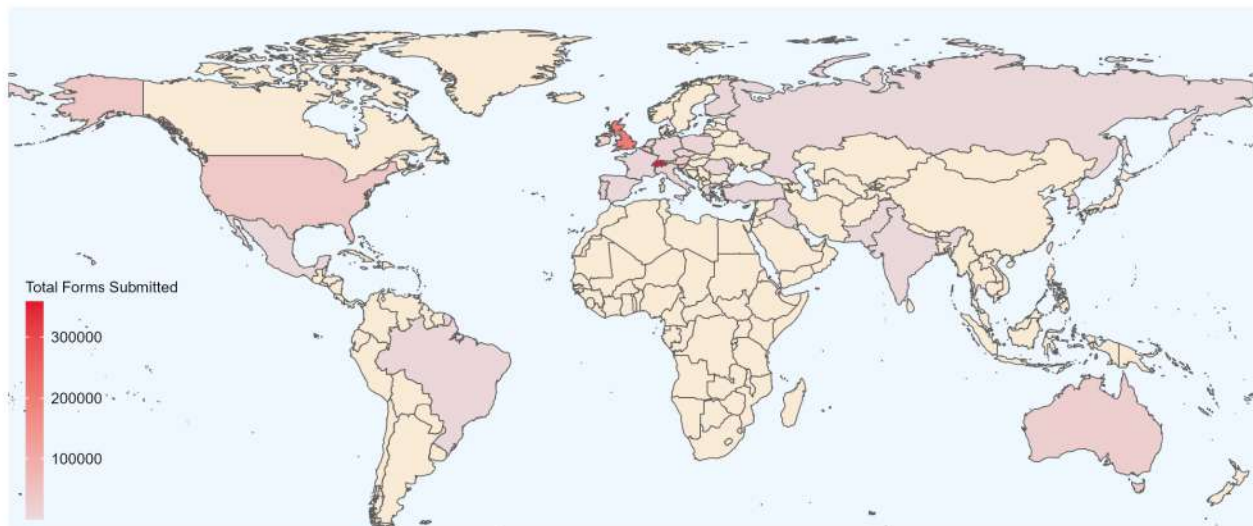
Figure 1. Global overview of origin of participants in the registry and submitted forms by country

Figure 2. Overview of submitted forms of the participants by country in Europe

OVERALL DATA GROWTH BY FORM TYPE

The number of documented forms in the registry increases each year. After a significant drop in 2020, the number of forms documented picked up again in 2021. The decrease in 2020 was probably related to the COVID-19 pandemic.
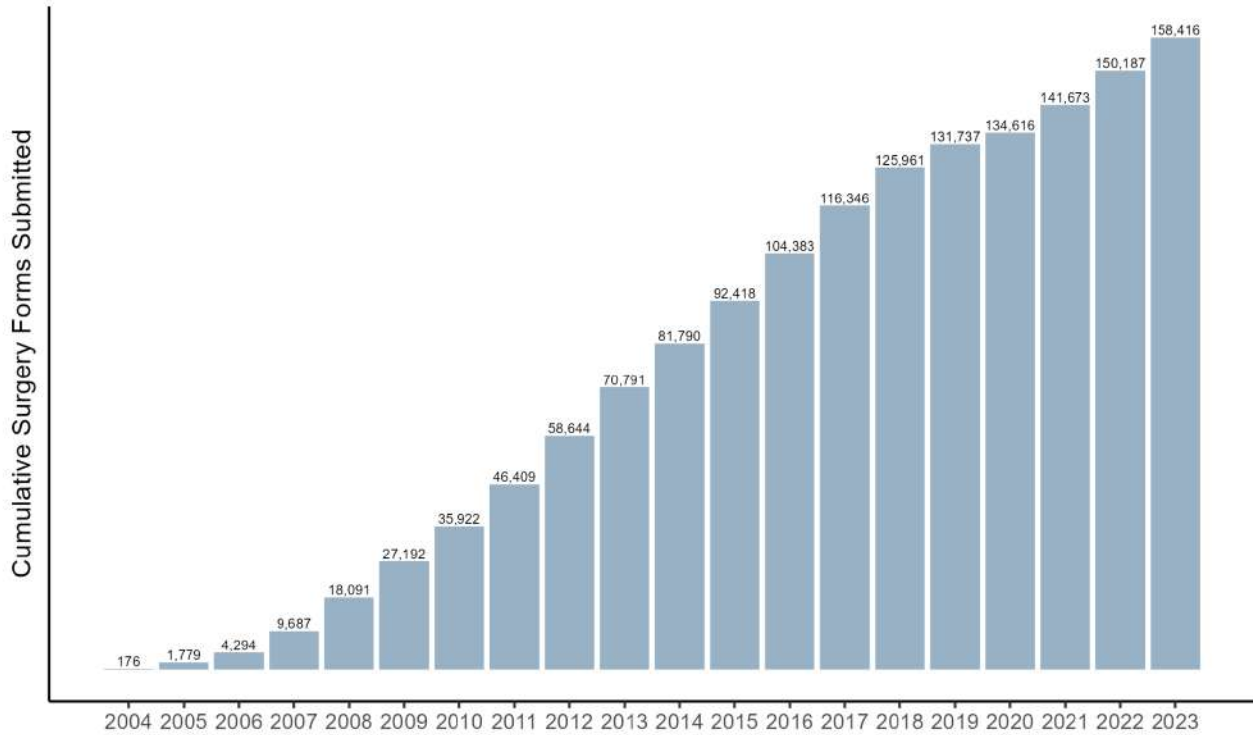
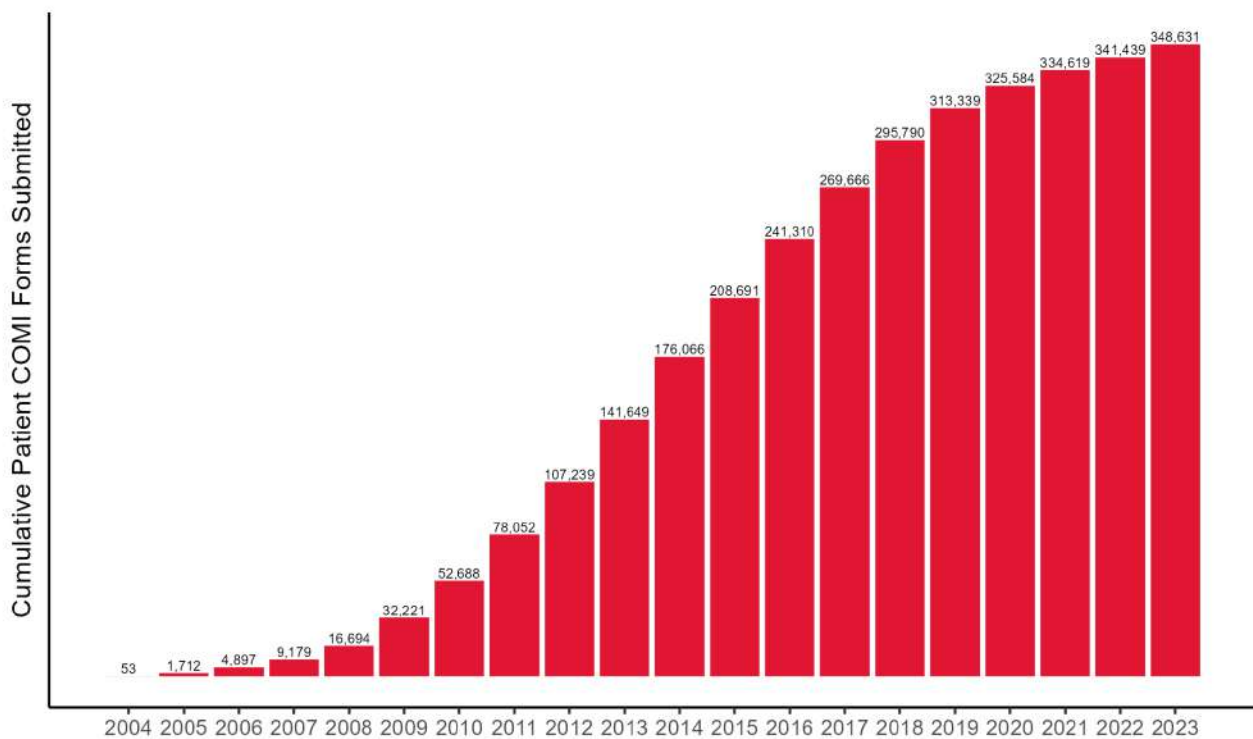Figure 3. Cumulative Surgery forms

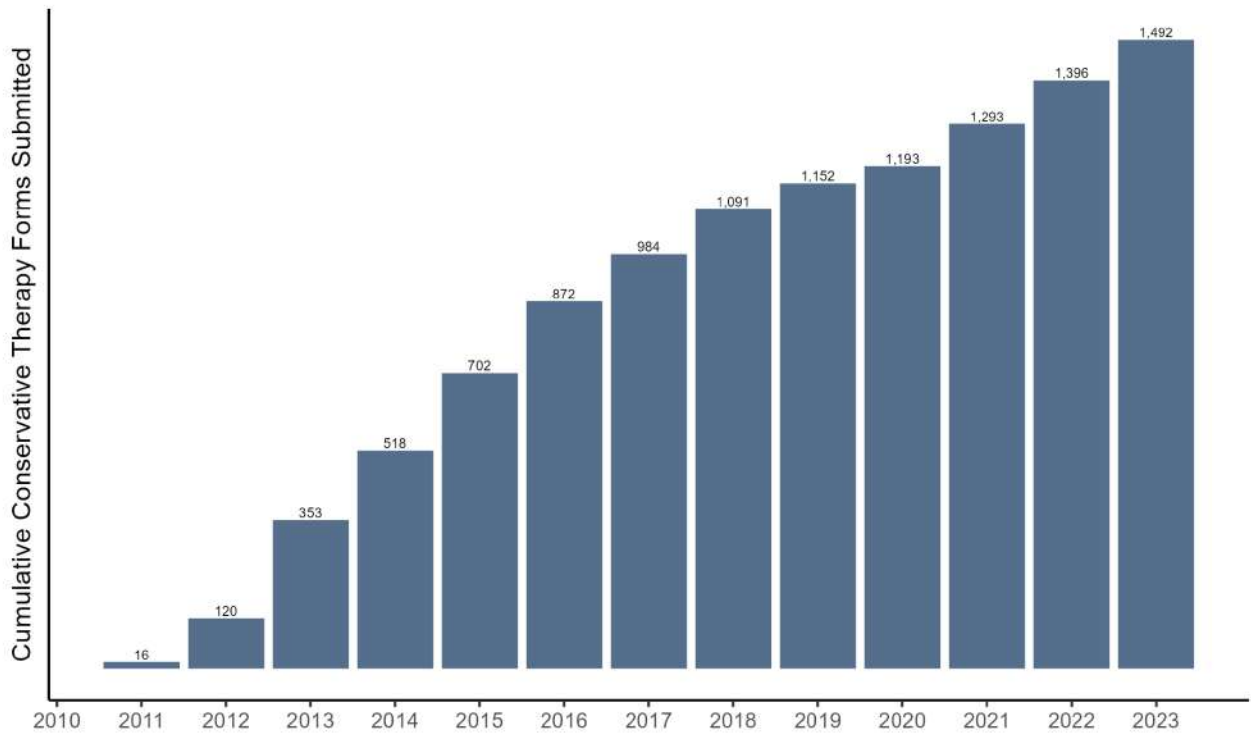Figure 4. Cumulative COMI forms (both surgery and conservative COMI)

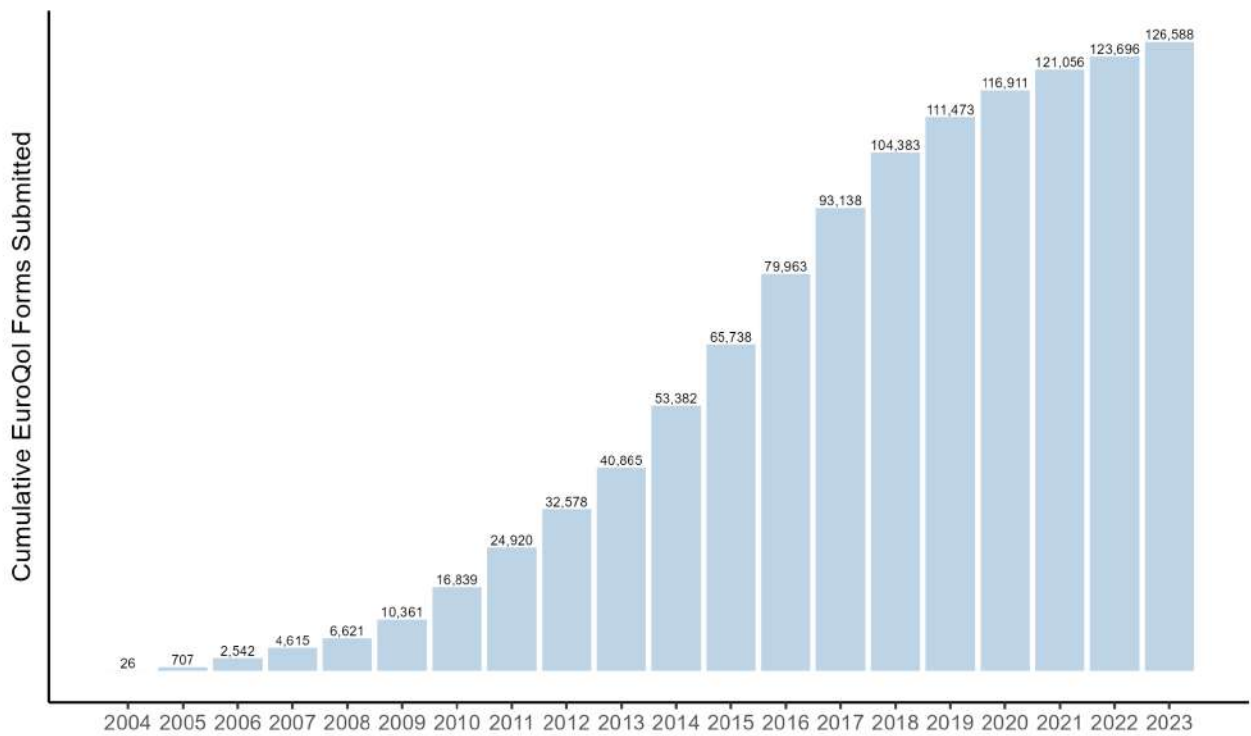Figure 5. Cumulative Conservative treatment forms

Figure 6. Cumulative EuroQol forms
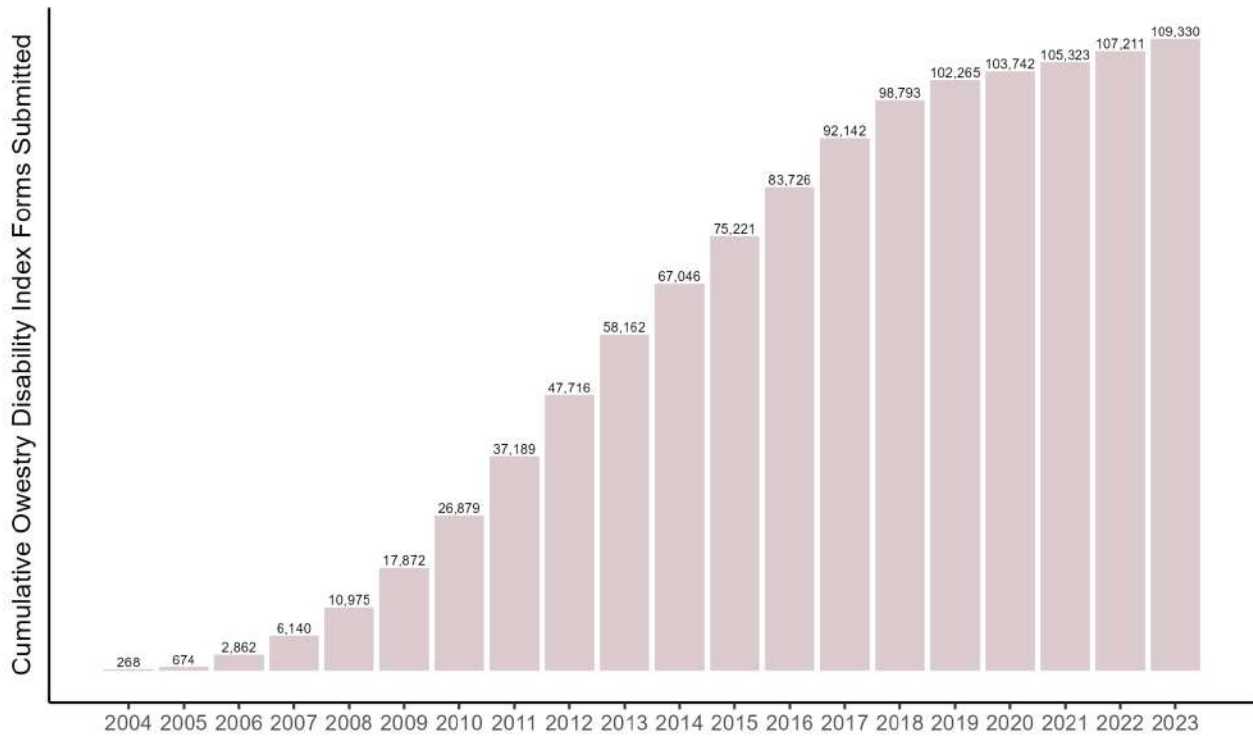
Figure 7. Cumulative Oswestry Disability Index (ODI) forms

"Our registry is committed to shaping a future of better patient outcomes by ensuring that all participants and stakeholders benefit from valuable data. Spine Tango serves as a unifying platform for the global spine care community, establishing a common language and data structure through its international multilingual registry. "
Sabrina Donzelli, Chair Spine Tango Committee

PATIENT CHARACTERISTICS

The figures presented in the following tables are based on 158,416 surgeries documented up to 31 December 2023.

Table 1. Patient characteristics overview (unknown data is not included in the calculation of the other proportions)

Surgical Forms (N = 158,416)			
Age	< 40	14.7%	23,297
	40-50	16.3%	25,739
	50-60	20.3%	32,159
	60-80	41.0%	64,913
	> 80	7.8%	12,308
Gender	Male	47.9%	75,946
	Female	52.1%	82,464
	Other	0.0%	6
Smoker (N = 108,236)	No	77.6%	54,518
	Yes	22.5%	15,784
	Unknown	(35.0%)	37,934
BMI	< 20	5.3%	5,257
	20-25	33.9%	33,992
	26-30	36.7%	36,758
	31-35	16.2%	16,248
	> 35	7.9%	7,902
	Unknown	(36.8%)	58'259
Number of segments affected	1	35.6%	56,322
	2-3	28.6%	45,295
	>= 4	35.8%	56,559
	Unknown	(0.2%)	240
Number of previous surgeries	0	69.9%	109,265
	1	19.6%	30,629
	>1	10.5%	16,372
	Unknown	(1.4%)	2,150

MAIN PATHOLOGIES

The most common pathology seen in the registry is degenerative disease, which represents about three-quarters of the surgeries, followed by repeat surgery at 5.3% and other less frequent pathologies.

Table 2. Main pathologies tabular overview

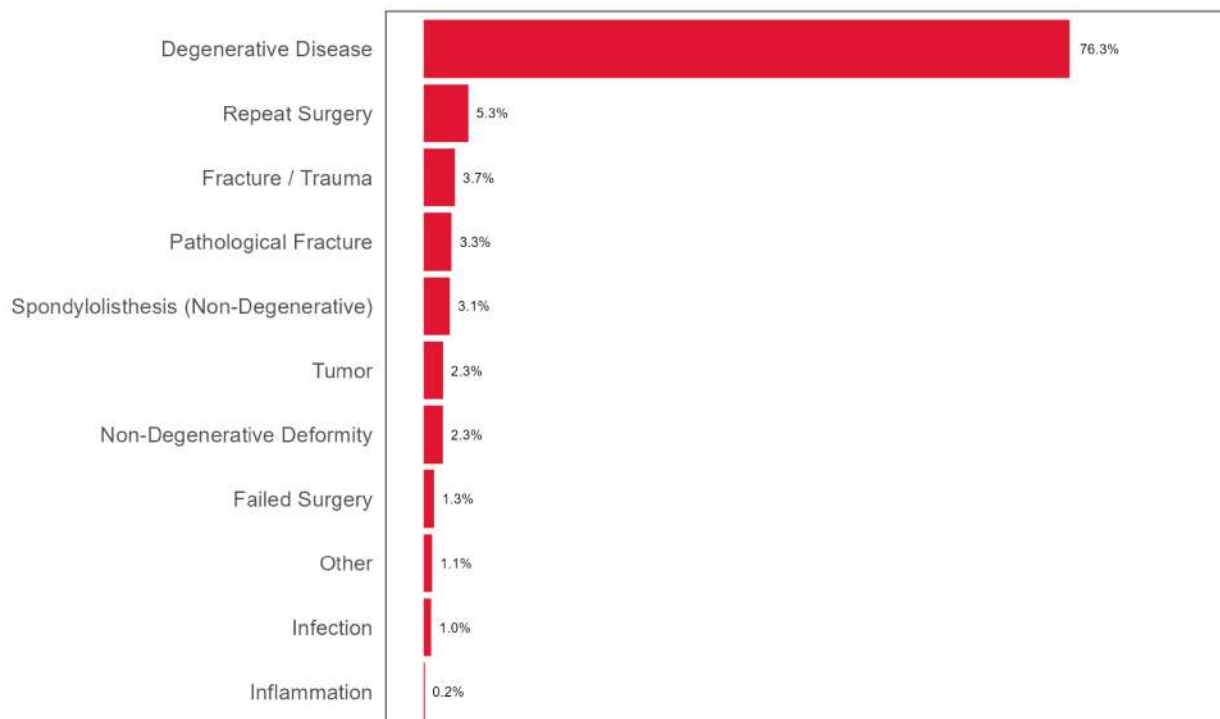| Pathology	Percent	Count
Degenerative disease	76.3%	120,865
Repeat surgery	5.3%	8,425
Fracture / trauma	3.7%	5,930
Pathological fracture	3.3%	5,277
Spondylolisthesis (non-degenerative)	3.1%	4,987
Non-degenerative deformity	2.3%	3,686
Tumour	2.3%	3,717
Failed surgery	1.3%	2,060
Other	1.1%	1,704
Infection	1.0%	1'519
Inflammation	0.2%	246

Figure 8. Main pathologies bar chart overview

In terms of levels of intervention, most of the cervical surgeries are performed at C5 (11.5%), followed by C6 (9.2%). Thoracic levels are rather rare with Th12 being the most frequent thoracic level with 4.0%. The three most treated levels are L4 (50.3%) followed by L5 (39.3%) and L3 (22.5%).
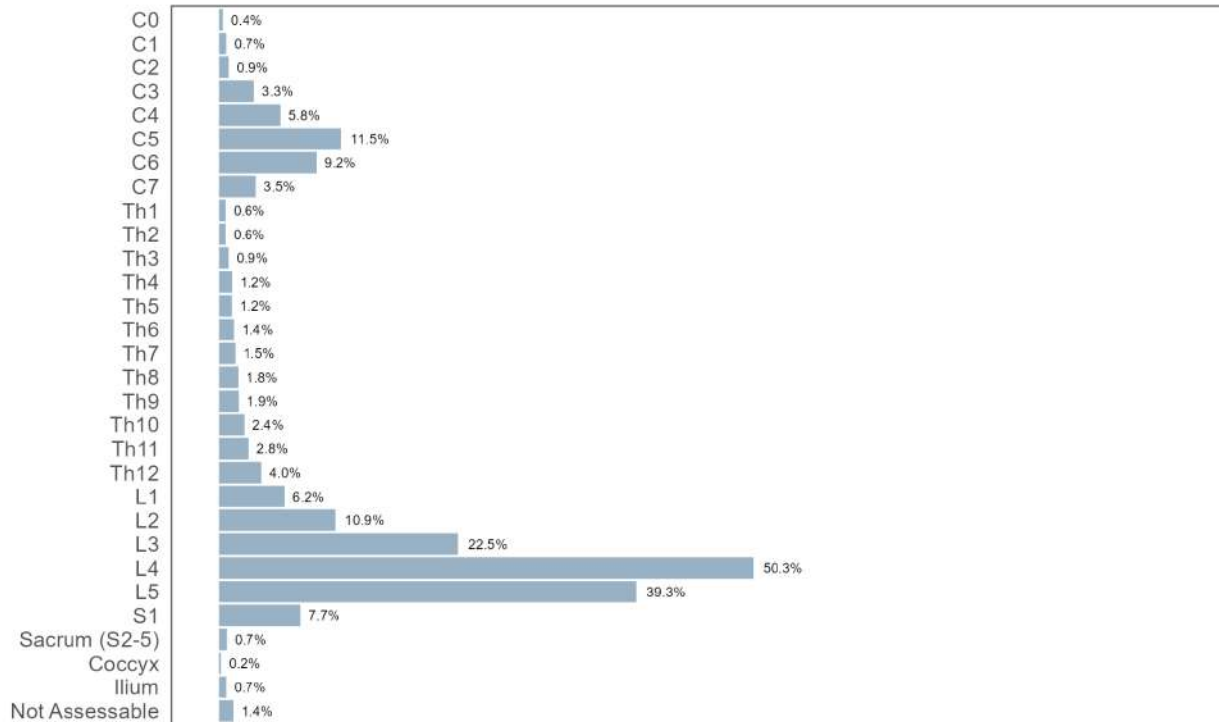

Figure 9. Levels of intervention

DESCRIPTIVE ANALYSIS OF SELECTED PATHOLOGIES

The authors of this annual report have chosen two of the most common pathologies, disc herniation and spinal stenosis, to highlight some key characteristics of patient groups undergoing surgical treatment.

Disc herniation

37.0% of all documented surgeries in Spine Tango (N=58,574) were related to the treatment of disc herniation. Table 3 describes the characteristics of this patient population.

Table 3. Patient characteristics disc herniation (unknown data is not included in the calculation of the other proportions)

	Surgical forms (N = 58,574)		
Age	< 40	22.4%	13,107
	40-50	25.5%	14,947
	50-60	22.9%	13'428
	60-80	26.2%	15,316
	> 80	3.0%	1,776
Gender	Male	52.3%	30,655
	Female	47.7%	27,918
	Other	0.0%	1
Smoker	No	73.6%	17,556
	Yes	26.4%	6,287
	Unknown	(40.5%)	16,207
BMI	< 20	4.4%	1,581
	20-25	33.5%	12,125
	26-30	38.0%	13,752
	31-35	16.0%	5,794
	> 35	8.0%	2,908
	Unknown	(38.3%)	22,414
Number of segments affected	1	46.1%	27,001
	2-3	23.1%	13,520
	>= 4	30.8%	18,046
	Unknown	0.0%	7
Number of previous surgeries	0	77.6%	45,427
	1	16.4%	9,623
	> 1	6.0%	3,487
	Unknown	(0.1%)	37

Surgical measures

Figure 10 presents the proportions of key surgical measures over a period of 19 years, between 2005 and 2023. The distribution of the individual surgical measures remained rather stable over this time period with a slight but visible reduction of motion-preserving stabilisation in the last decade. It is not yet clear if the increase in the last two years are outliers or marks a change in trends.
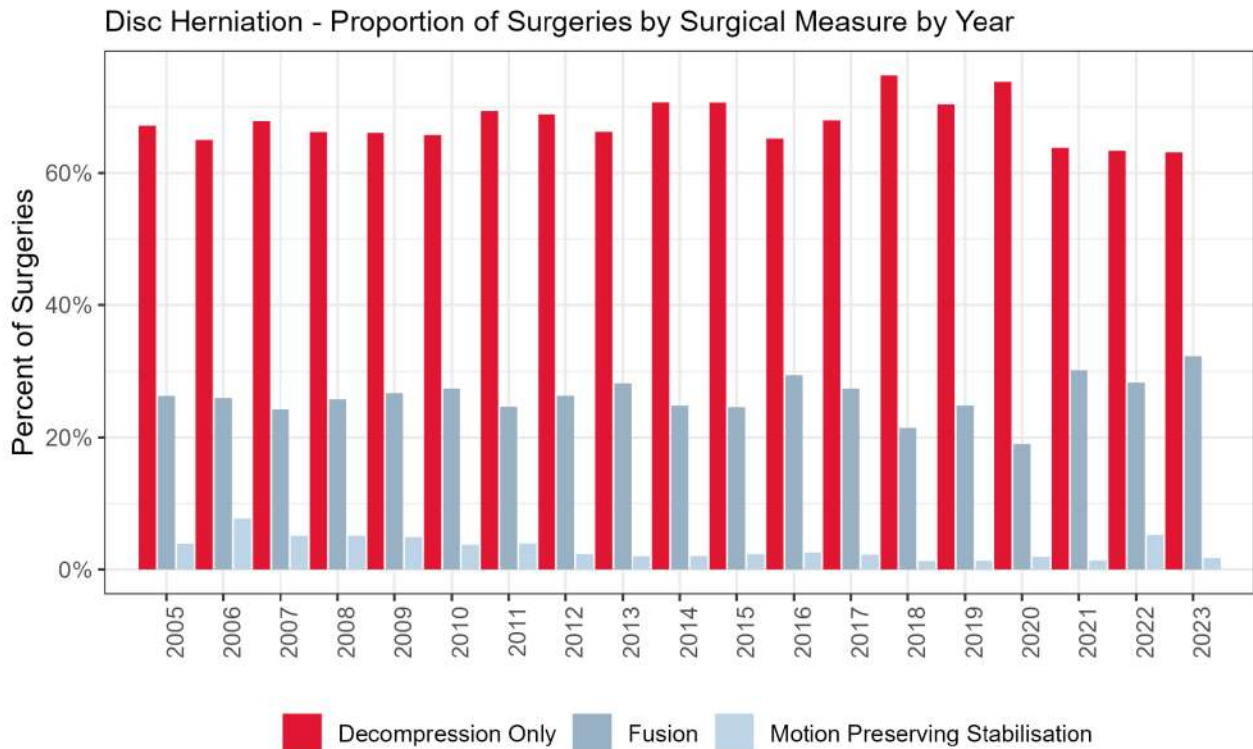

Figure 10. Proportion of surgeries by surgical measure by year

Complications

General complications were rather rare with the leading complication of kidney and urinary tract in 0.52% of the surgeries (Figure 11).

Spinal Stenosis - General Complications

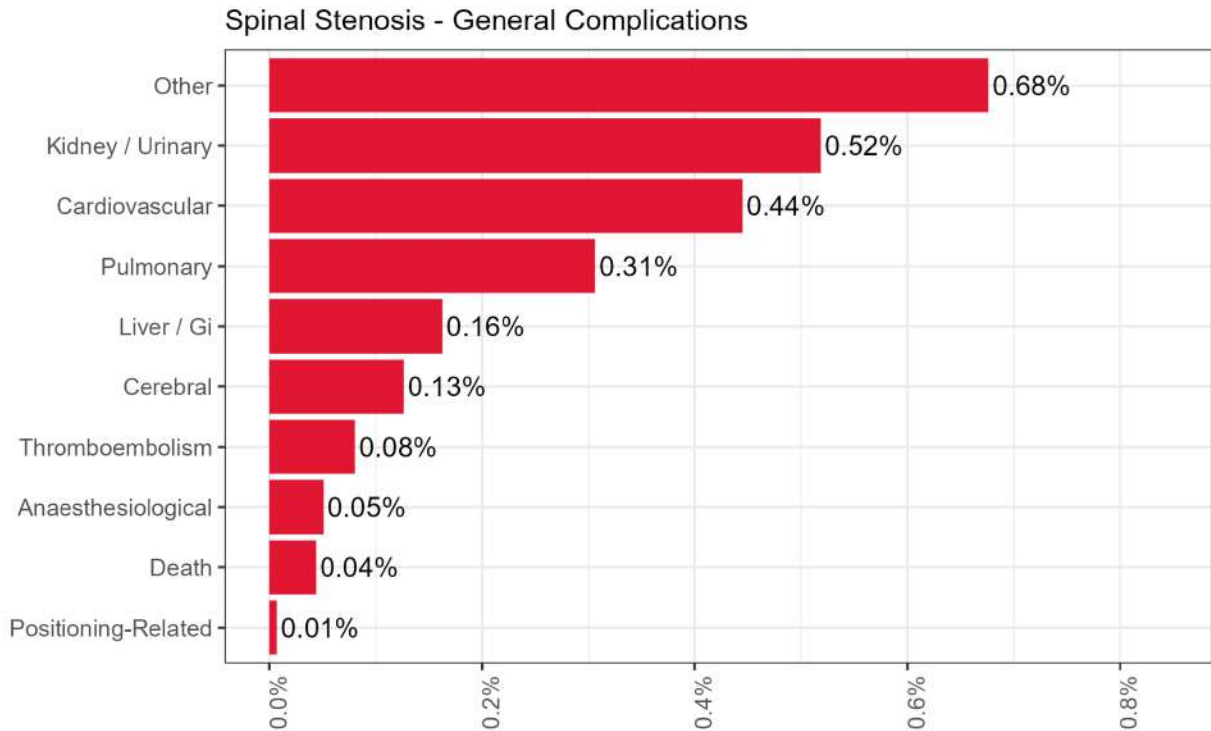| Category	Value
Other	0.68%
Kidney / Urinary	0.52%
Cardiovascular	0.44%
Pulmonary	0.31%
Liver / Gi	0.16%
Cerebral	0.13%
Thromboembolism	0.08%
Anaesthesiological	0.05%
Death	0.04%
Positioning-Related	0.01%

Figure 11. General complications for herniated disc cases

Surgical complications were more frequent with dural lesions documented in 2.91% of the surgeries (Figure12). The next most common complications were neurological with motor dysfunction, radiculopathy and sensory dysfunction in 0.37%, 0.32% and 0.30%, respectively.

Disc Herniation - Surgical Complications

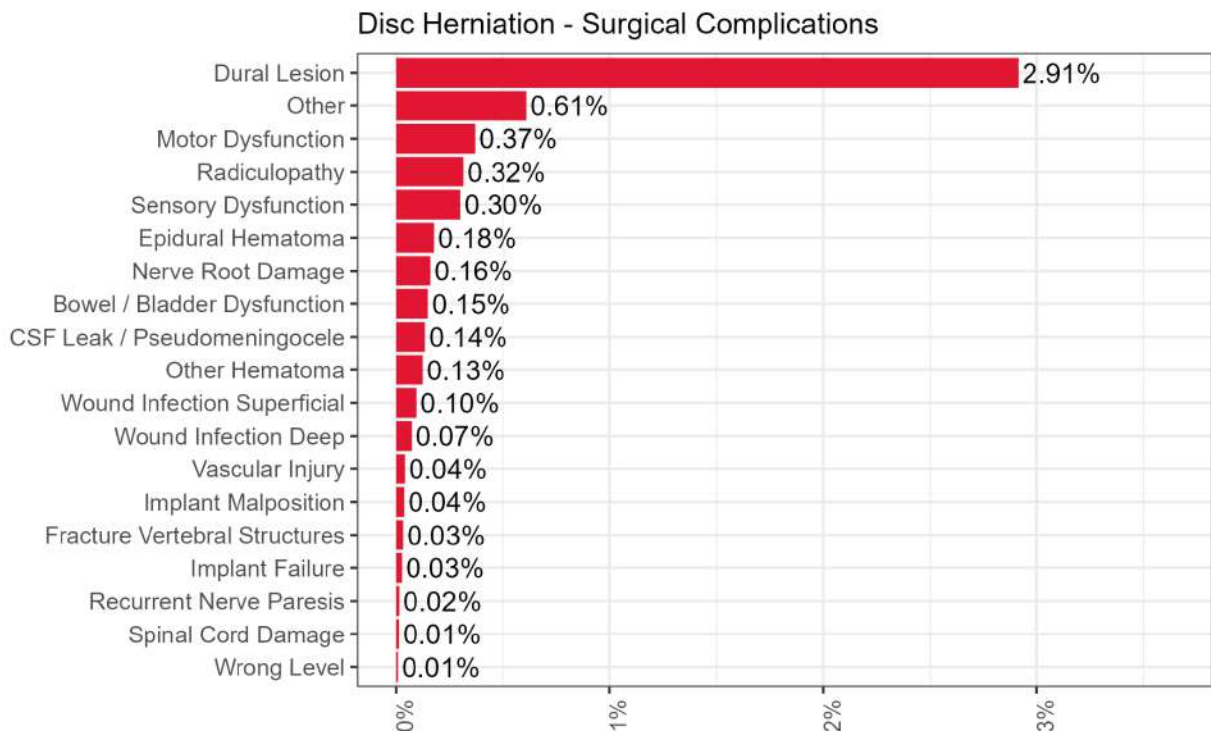| Category	Value
Dural Lesion	2.91%
Other	0.61%
Motor Dysfunction	0.37%
Radiculopathy	0.32%
Sensory Dysfunction	0.30%
Epidural Hematoma	0.18%
Nerve Root Damage	0.16%
Bowel / Bladder Dysfunction	0.15%
CSF Leak / Pseudomeningocele	0.14%
Other Hematoma	0.13%
Wound Infection Superficial	0.10%
Wound Infection Deep	0.07%
Vascular Injury	0.04%
Implant Malposition	0.04%
Fracture Vertebral Structures	0.03%
Implant Failure	0.03%
Recurrent Nerve Paresis	0.02%
Spinal Cord Damage	0.01%
Wrong Level	0.01%

Figure 12. Surgical complications for herniated disc cases

Outcomes - COMI

A quarter of all patients with disc herniation a baseline COMI form and a 3-month postoperative or a later COMI form were documented. This rate varies considerably between hospitals, depending on whether they collect COMI or not. Figure 13 to Figure 15 illustrate the average pre-operative and post-operative axial and peripheral pain levels as well as COMI scores with 95% confidence intervals over the last 19 years. The curves have not been adjusted by patient characteristics, surgical procedures and follow-up interval, which are assumed to be relatively stable. Nevertheless, the figures have a descriptive character only and a conclusive interpretation requires more granular investigations.

During this period the preoperative axial pain increased steadily from about 5 points to 6 points, while the postoperative axial pain increased slightly from 3 to 3.5 points. This finding of increasing preoperative axial pain points to a stable but still improving treatment indication. This is positive. The increasing post-operative axial pain over the years demonstrates, however, that a better treatment indication does not necessarily result in a better in overall post-operative axial pain level. The average pain reduction still increased from about 2 to about 2.5 points.
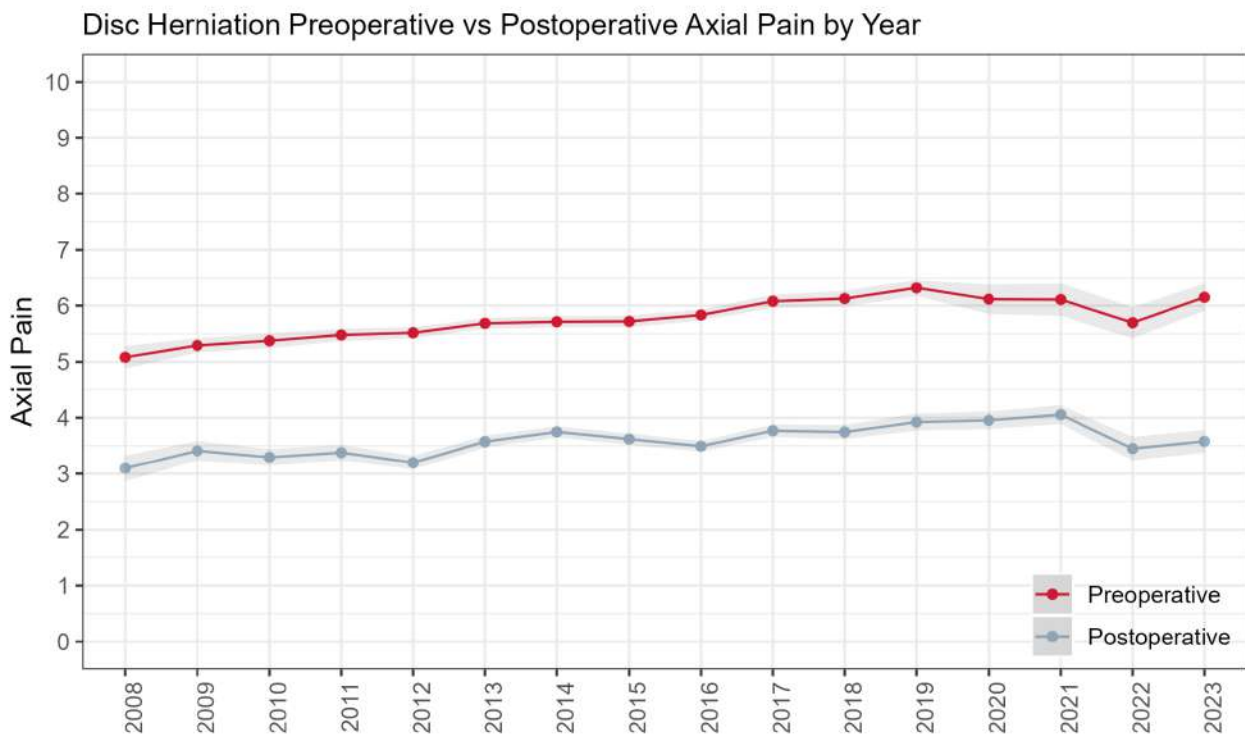

Figure 13. Preoperative and postoperative axial pain in disc herniation cases by year

Over this period the preoperative peripheral pain increased only slightly from around 7 to 7.5 points, while the postoperative peripheral pain also remained more or less stable around 3.5 points.
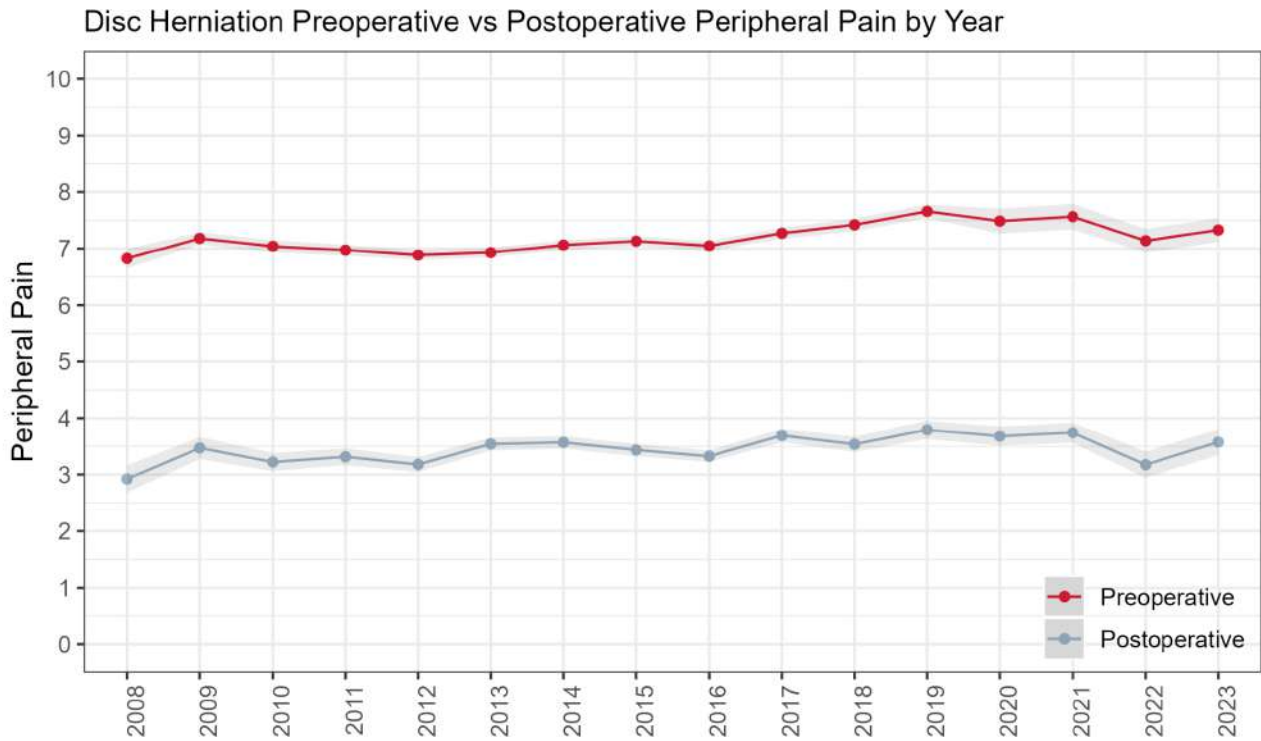

Figure 14. Preoperative and postoperative peripheral pain in disc herniation cases by year

Over this period the COMI score pre-operative and post-operative also remained stable at just over 7.5 and 4.5 points, respectively. No relevant trend was observed for either the pre-operative or post-operative scores over the entire period.
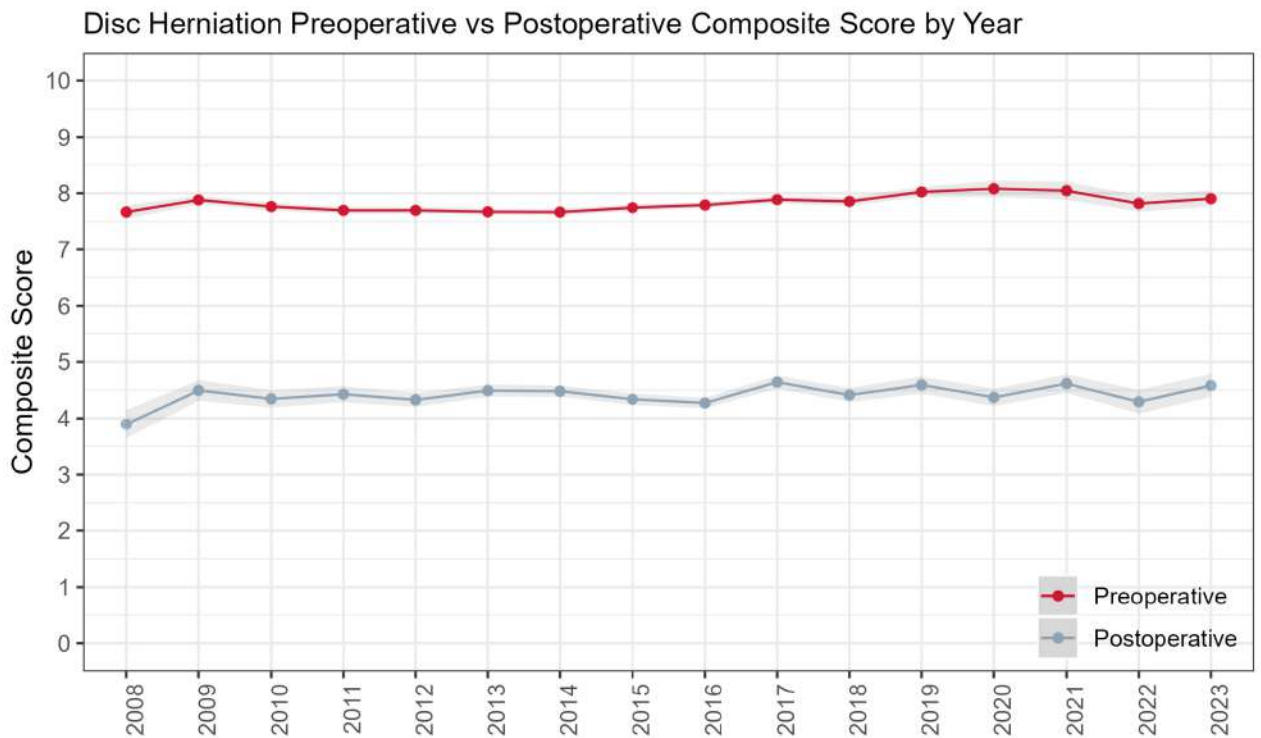

Figure 15. Preoperative and postoperative COMI score in disc herniation cases by year

SPINAL STENOSIS

9.0% of all surgeries documented in Spine Tango (N=71,577) were related to the treatment of spinal stenosis. The following Table 4 describes the characteristics of this patient population.

Table 4. Patient characteristics spinal stenosis (unknown data is not included in the calculation of the other proportions)

	Surgical Forms (N=71,577)		
Age	< 40	4.4%	3,157
	40-50	10.2%	7,286
	50-60	19.5%	13,921
	60-80	55.5%	39,700
	> 80	10.5%	7,513
Gender	Male	49.4%	35,380
	Female	50.6%	36,196
Smoker	No	80.9%	27,966
	Yes	19.1%	6,599
	Unknown	(36.5%)	19,607
BMI	< 20	3.5%	1,296
	20-25	28.3%	10,431
	26-30	39.8%	14,640
	31-35	19.7%	7,241
	> 35	8.8%	3,221
	Unknown	(48.5%)	34,748
Number of Segments Affected	1	33.1%	23,691
	2-3	34.6%	24,765
	>= 4	32.3%	23,119
Number of Previous Surgeries	0	74.7%	53,472
	1	17.7%	12,681
	> 1	7.5%	5,367

Surgical measures

Figure 16 demonstrates the proportions of key surgical measures over a period of 19 years from 2005 to 2023. The distribution of individual surgical measures has changed over this period, mainly due to the substantial proportion of fusions registered in the mandatory Swiss Implant Registry SIRIS.

If the last three years are excluded, the proportion of decompression only increases and the proportion of fusions decreases over time.
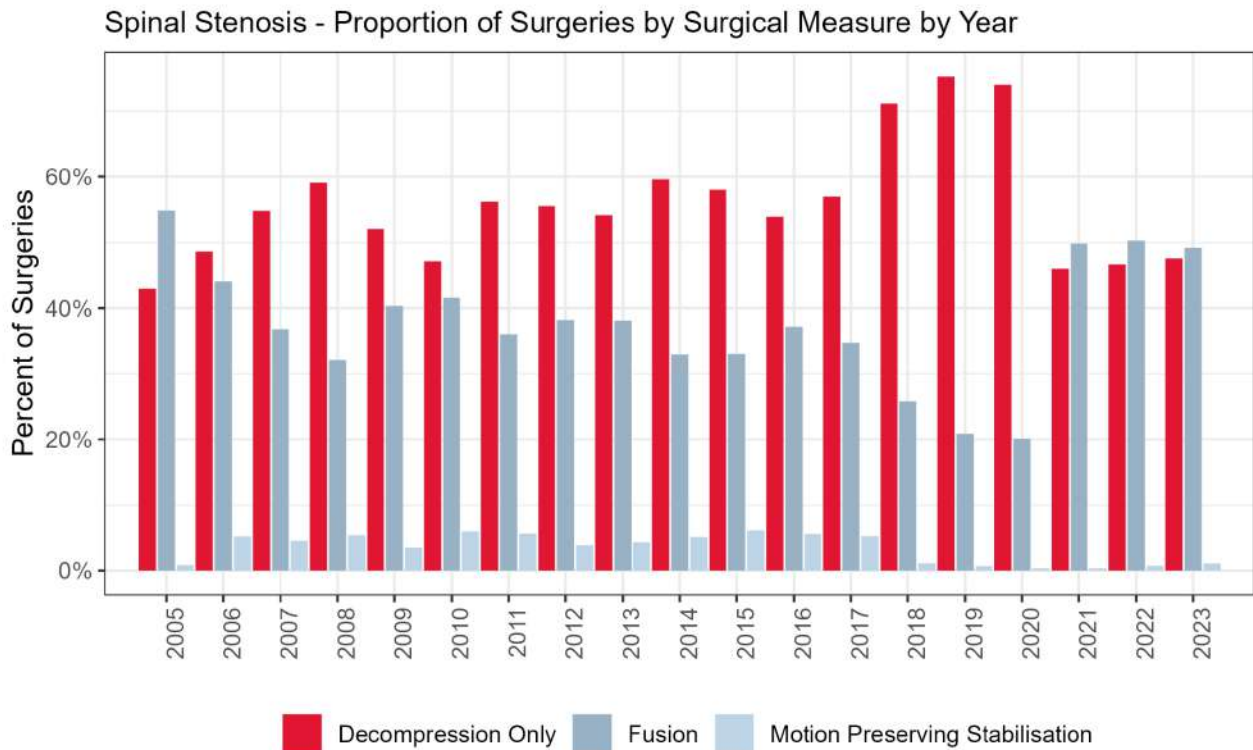

Figure 16. Proportion of surgeries by surgical measures by year

Complications

General complications were relatively rare, with the leading complication being kidney and/or urinary tract in 0.52% of surgeries (Figure 17).
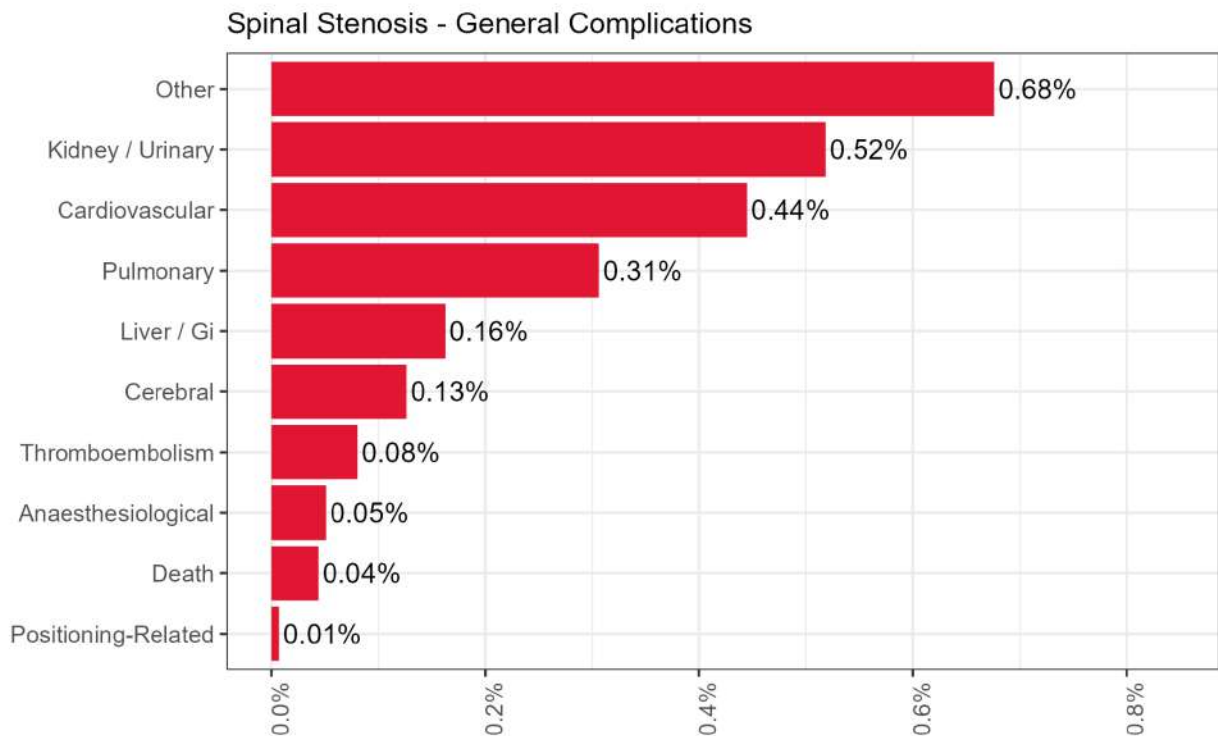
Spinal Stenosis - General Complications

Complication	%
Other	0.68%
Kidney / Urinary	0.52%
Cardiovascular	0.44%
Pulmonary	0.31%
Liver / Gi	0.16%
Cerebral	0.13%
Thromboembolism	0.08%
Anaesthesiological	0.05%
Death	0.04%
Positioning-Related	0.01%

Figure 17. General complications for spinal stenosis cases

Surgical complications were more frequent, with dural lesions being documented in 4.47% of the surgeries (Figure 18). The next most common complications were neurological with motor dysfunction, epidural hematoma, sensory dysfunction and radiculopathy in 0,52%, 0,47%, 0,36% and 0,33%, respectively.

Spinal Stenosis - Surgical Complications

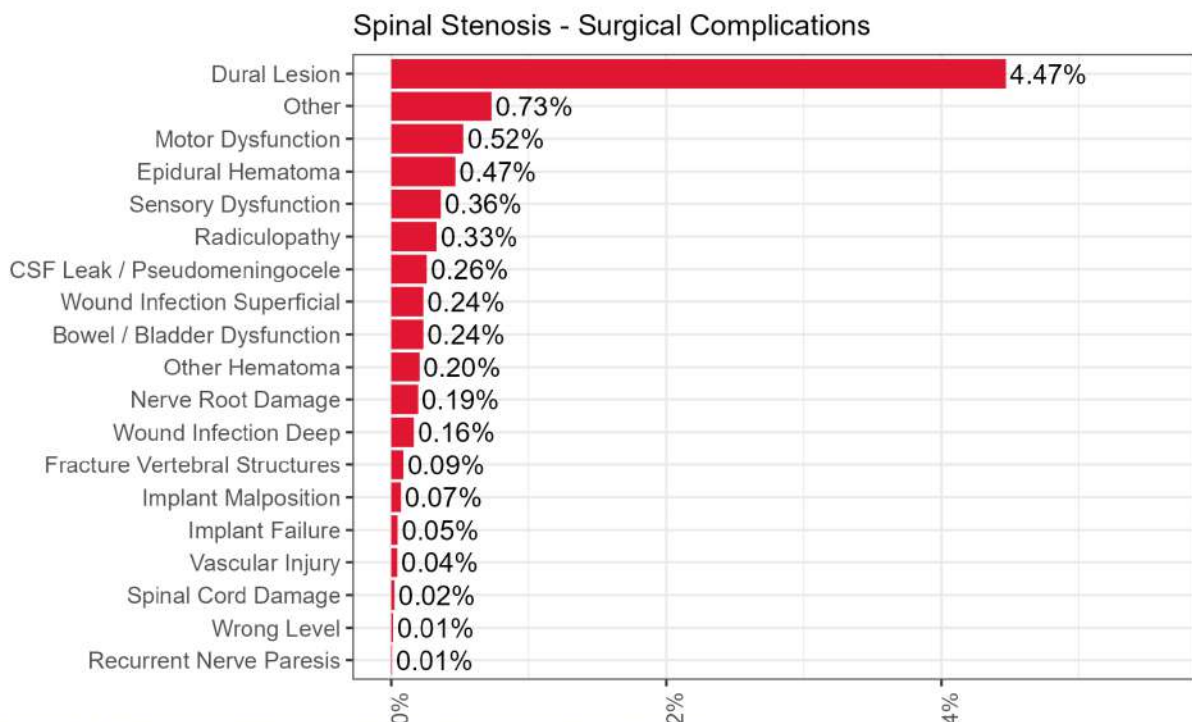| Complication	%
Dural Lesion	4.47%
Other	0.73%
Motor Dysfunction	0.52%
Epidural Hematoma	0.47%
Sensory Dysfunction	0.36%
Radiculopathy	0.33%
CSF Leak / Pseudomeningocele	0.26%
Wound Infection Superficial	0.24%
Bowel / Bladder Dysfunction	0.24%
Other Hematoma	0.20%
Nerve Root Damage	0.19%
Wound Infection Deep	0.16%
Fracture Vertebral Structures	0.09%
Implant Malposition	0.07%
Implant Failure	0.05%
Vascular Injury	0.04%
Spinal Cord Damage	0.02%
Wrong Level	0.01%
Recurrent Nerve Paresis	0.01%

Figure 18. Surgical complications for spinal stenosis cases

Outcomes - COMI

Almost one in three patients had a baseline COMI form and a 3-month or a later postoperative COMI form were documented. This rate varies considerably between hospitals, depending on whether they collect COMI or not. Figure 19 to Figure 21 demonstrate the average pre-operative and post-operative axial and peripheral pain levels as well as COMI scores with 95% confidence intervals over the last 19 years. The curves have not been adjusted by patient characteristics, surgical measures and follow-up intervals, which are assumed to be relatively stable. Nevertheless, the figures are only descriptive and more studies are required for a conclusive interpretation.

Over this period the preoperative axial pain increased marginally from slightly to slightly above 6 points, while post-operative axial pain increased slightly from 3.5 to 4 points. Thus, also for spinal stenosis rather stable levels of preoperative and postoperative axial pain were seen.
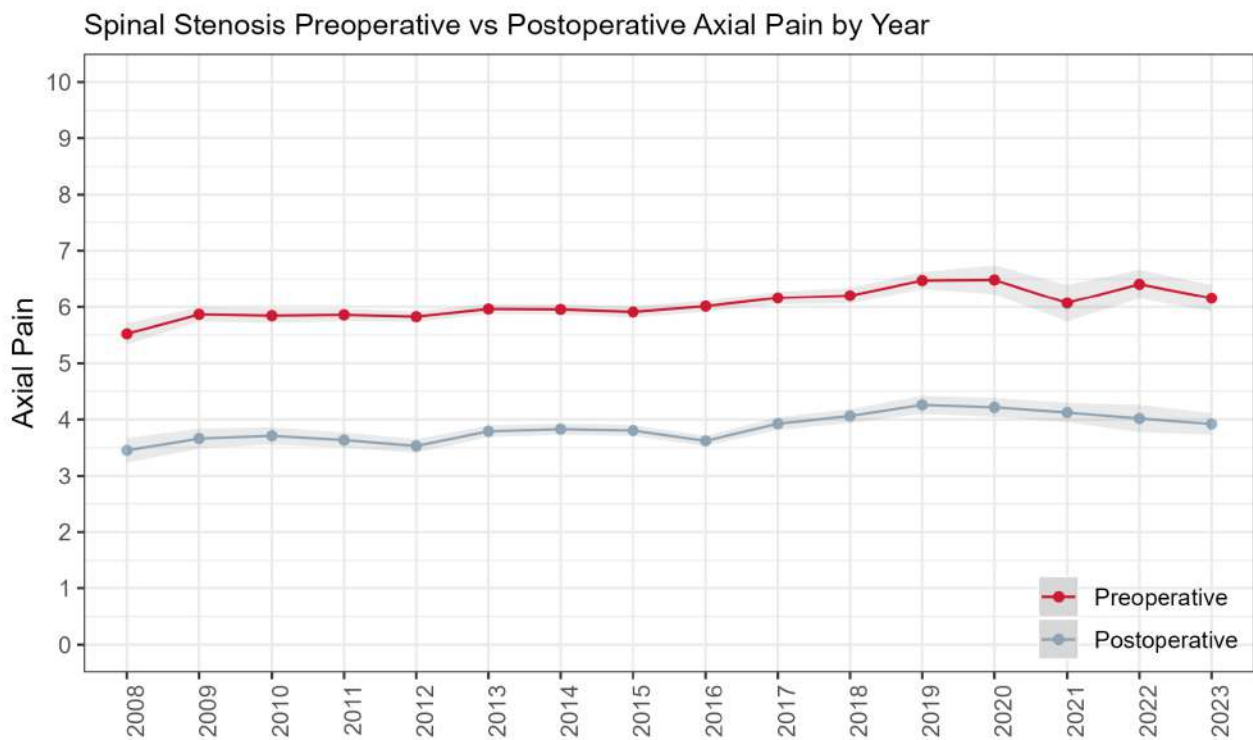
Figure 19. Preoperative and postoperative axial pain in spinal stenosis cases by year

Over this period the preoperative peripheral pain has increased slightly from about 6.7 points to 7 points, while the postoperative pain relief fluctuated between 3.5 and 4 points.
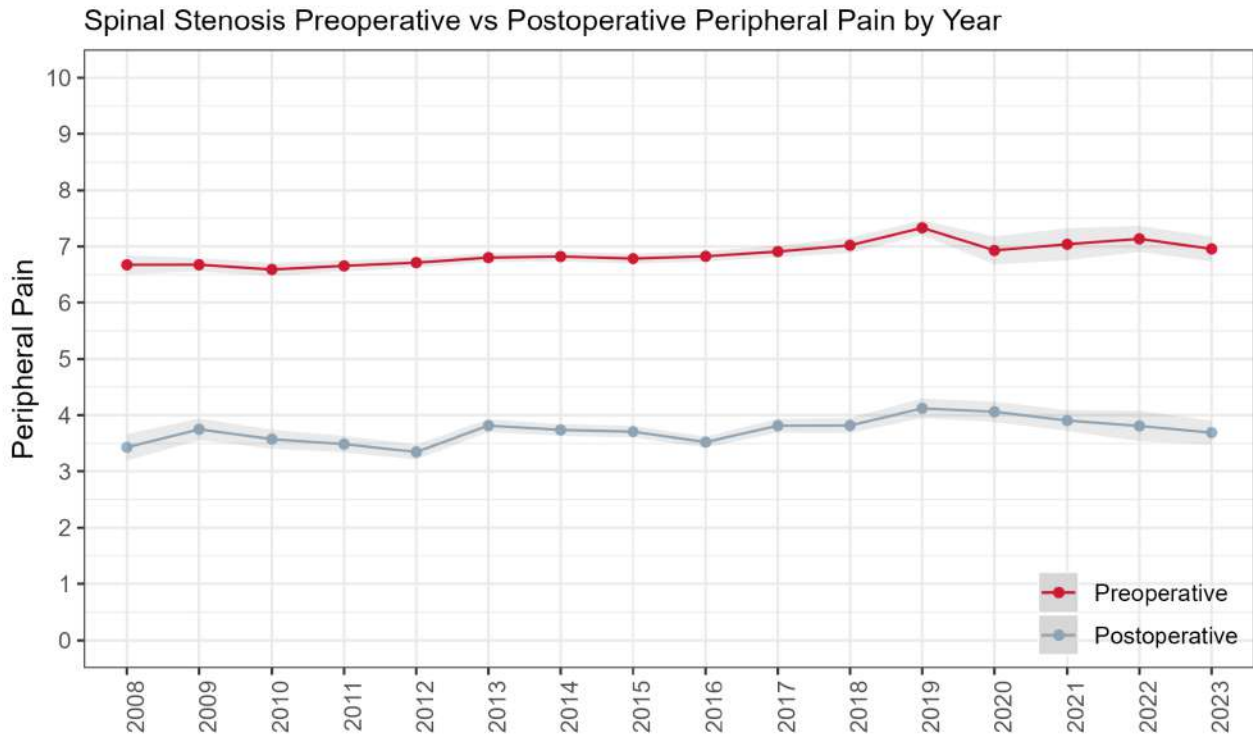

Figure 20. Preoperative and postoperative peripheral pain in spinal stenosis cases by year

Over this time period the preoperative and postoperative COMI scores remained stable at 7.5 points and 4.7 points, respectively.
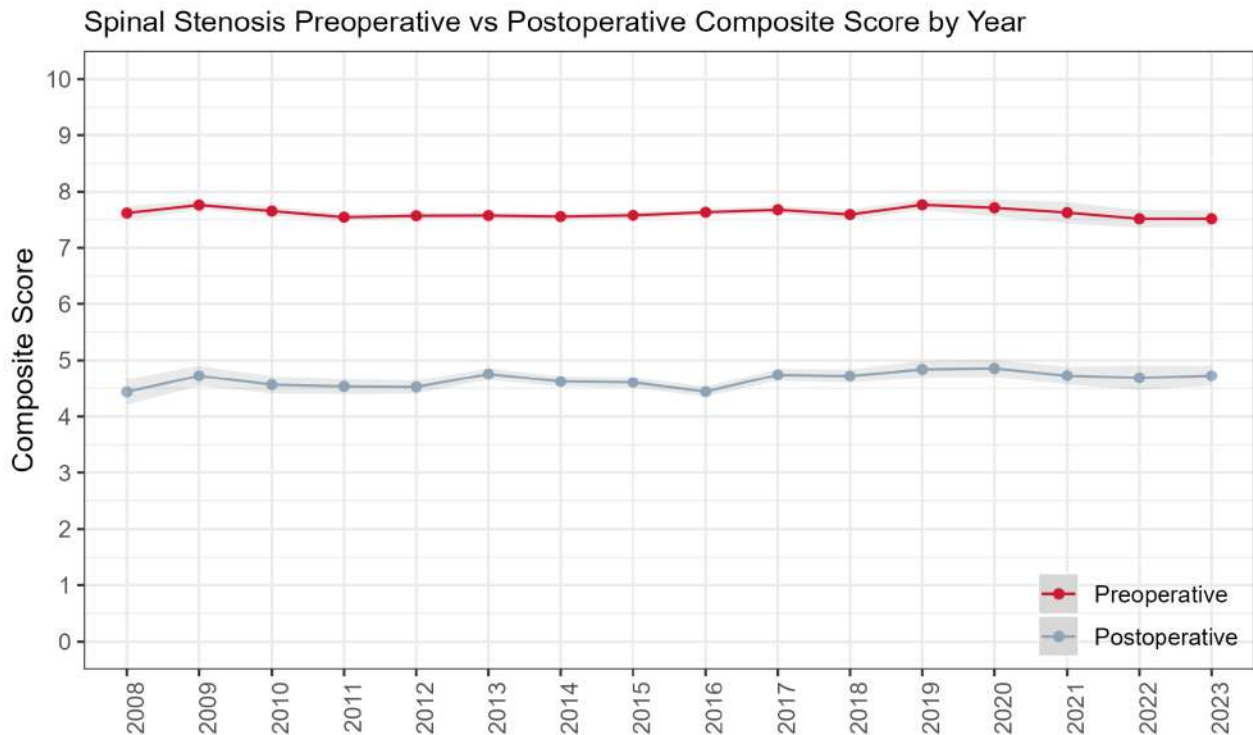

Figure 21. Preoperative and postoperative COMI score in spinal stenosis cases by year

SELECTED RESULTS: CUMULATIVE REVISIONS RATES

The first Kaplan-Meier (KM) curves for cumulative revision rates were calculated and stratified by selected characteristics. The analysis was performed on the entire registry population of 158,414 surgeries.

The following figures 22 and 26 show the cumulative revision rates by age groups and smoking status of the patients.

Looking at the KM curves by age groups at 2 years post-operatively, the shape of the curves appears quite similar with 70-79 year old patients appear to have the highest cumulative revision rates.
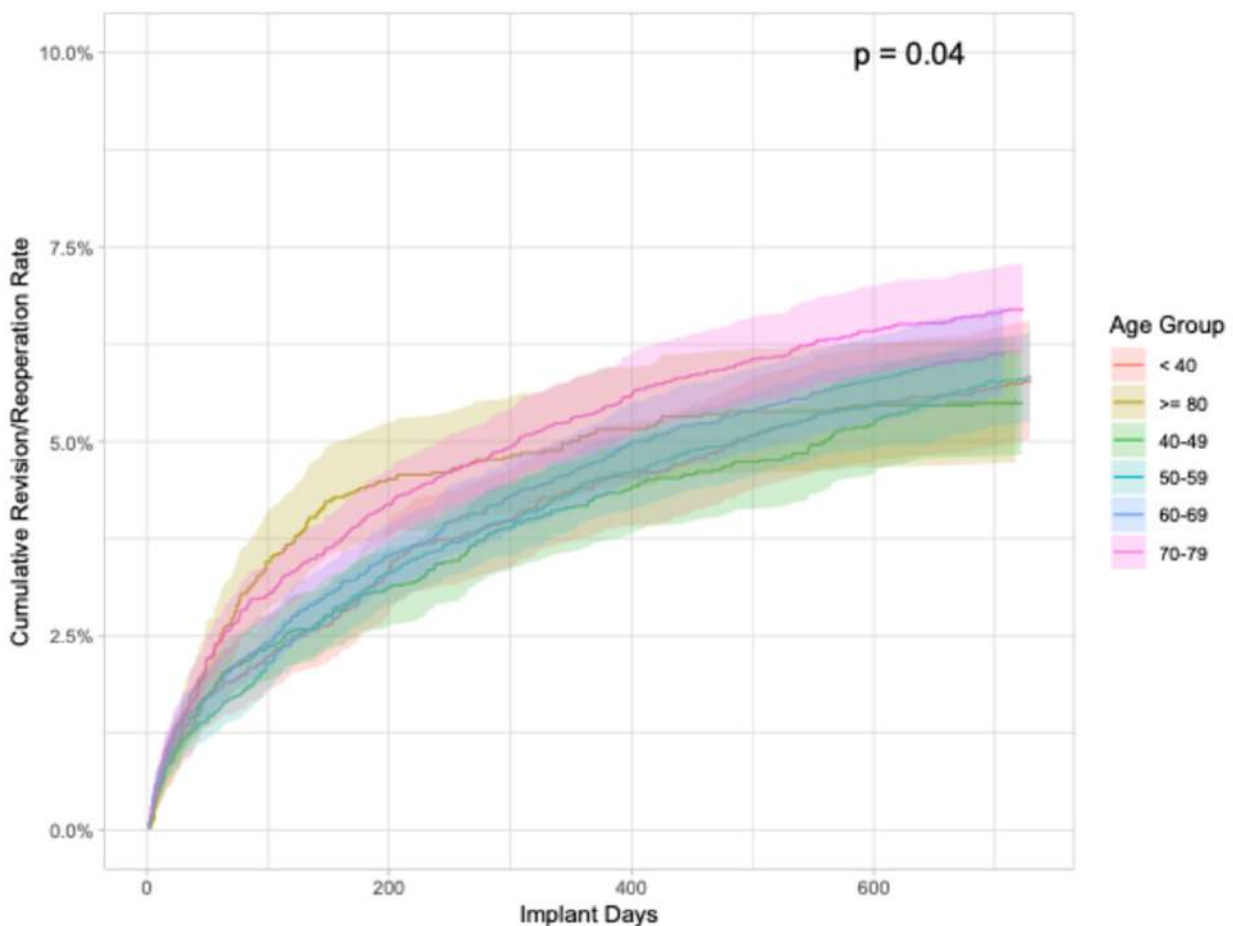
Figure 22. Cumulative revision rate by age group.

Revision rates according to smoking status shows clear differences. Current smokers had the highest cumulative revision rate at 2 years of around 8.3%. While non-smokers are at around 6% and those with unknown smoking status at around 4.5%
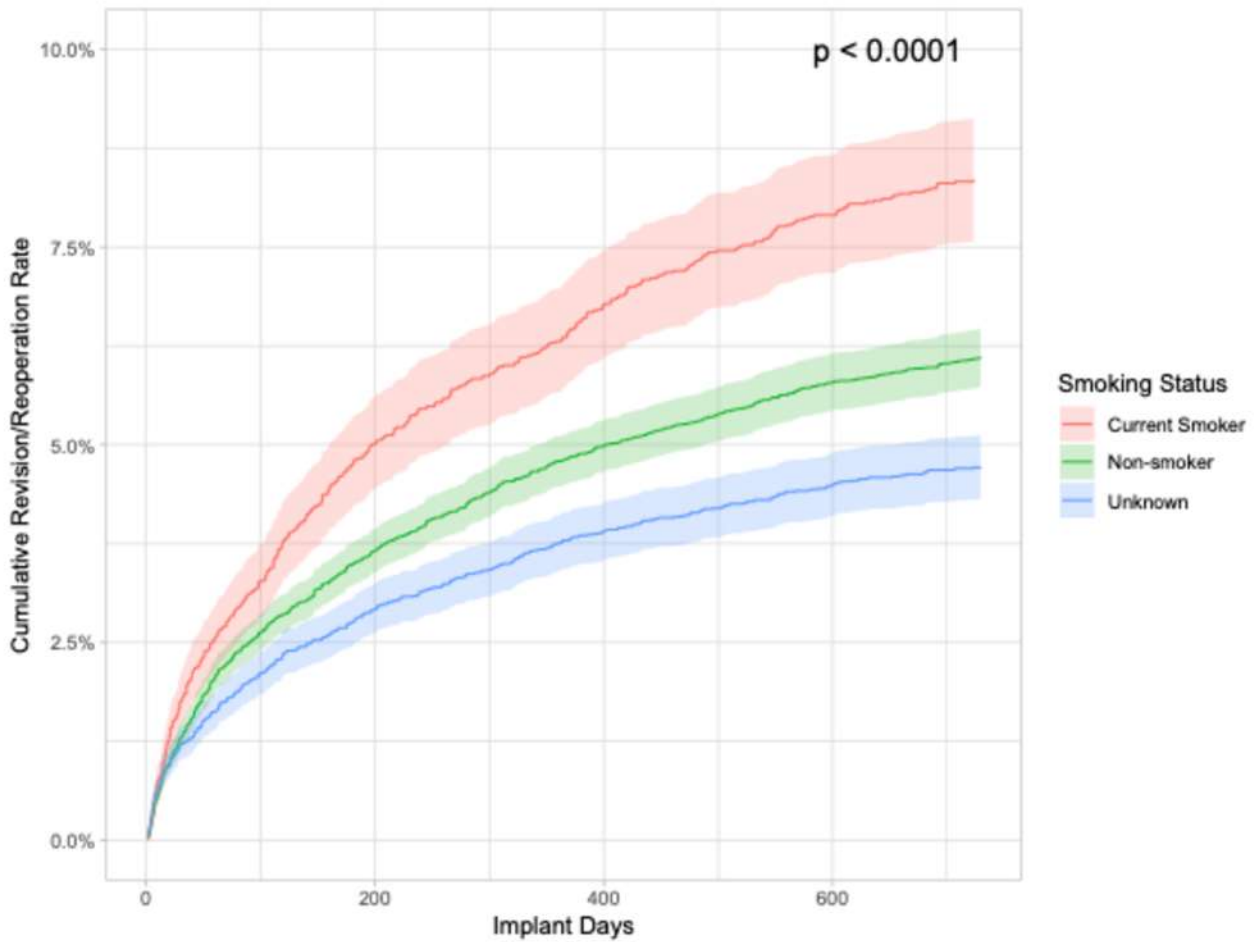

Figure 23. Cumulative revision rate by smoker status.

The next figure 24 demonstrates similar cumulative revision rates for male and female patients. However, revision rates in female patients appear higher at all times.
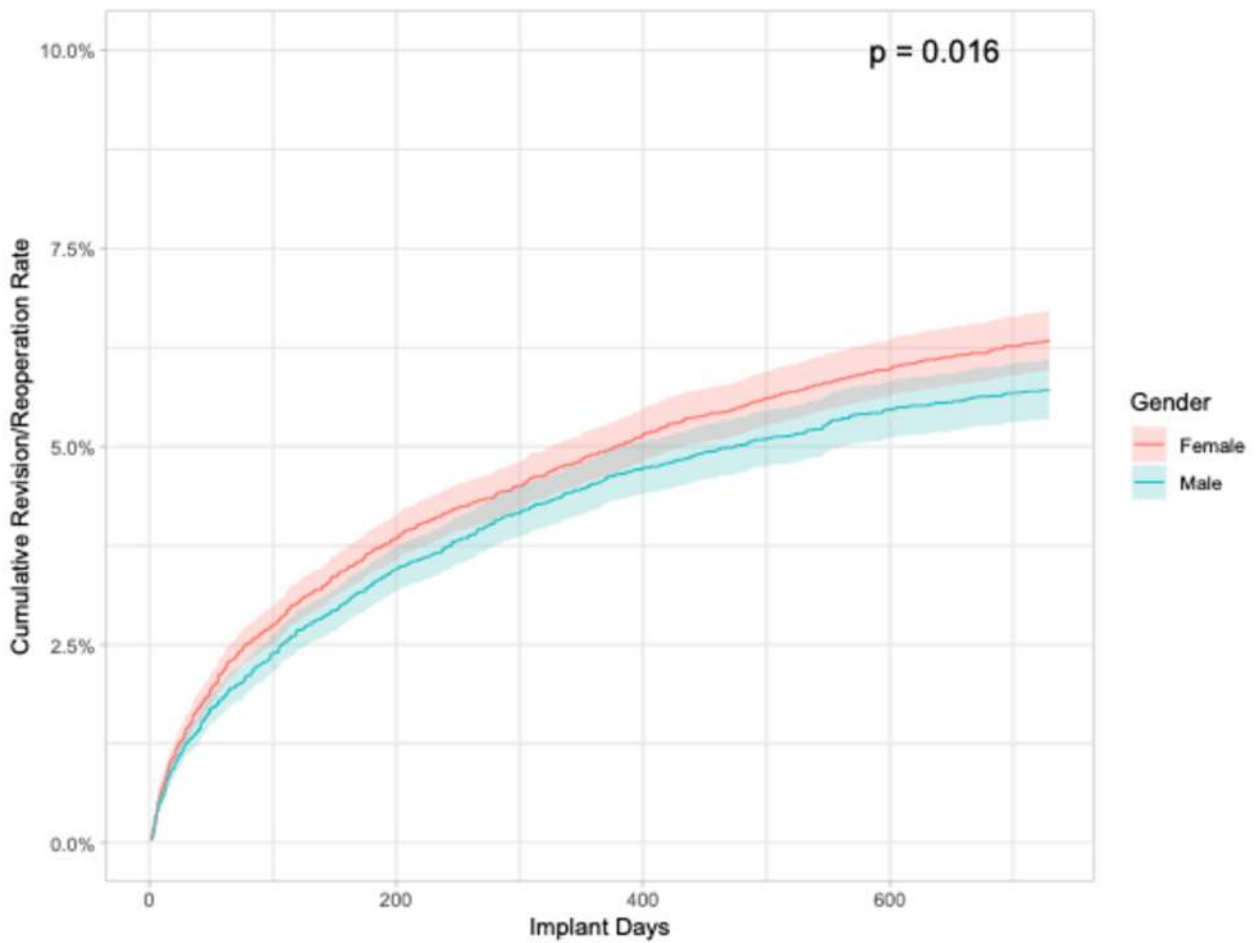

Figure 24. Cumulative revision rate by gender.

The following stratification of cumulative revision rates by ASA in figure 25 shows a rather expected image with higher revision rates with increasingly severe ASA status. The highest cumulated revision rate at 2 years are for ASA4 around 9% and the lowest rate for ASA 1 around 3.2% (the ASA 5 category is excluded from the analysis due to low numbers).
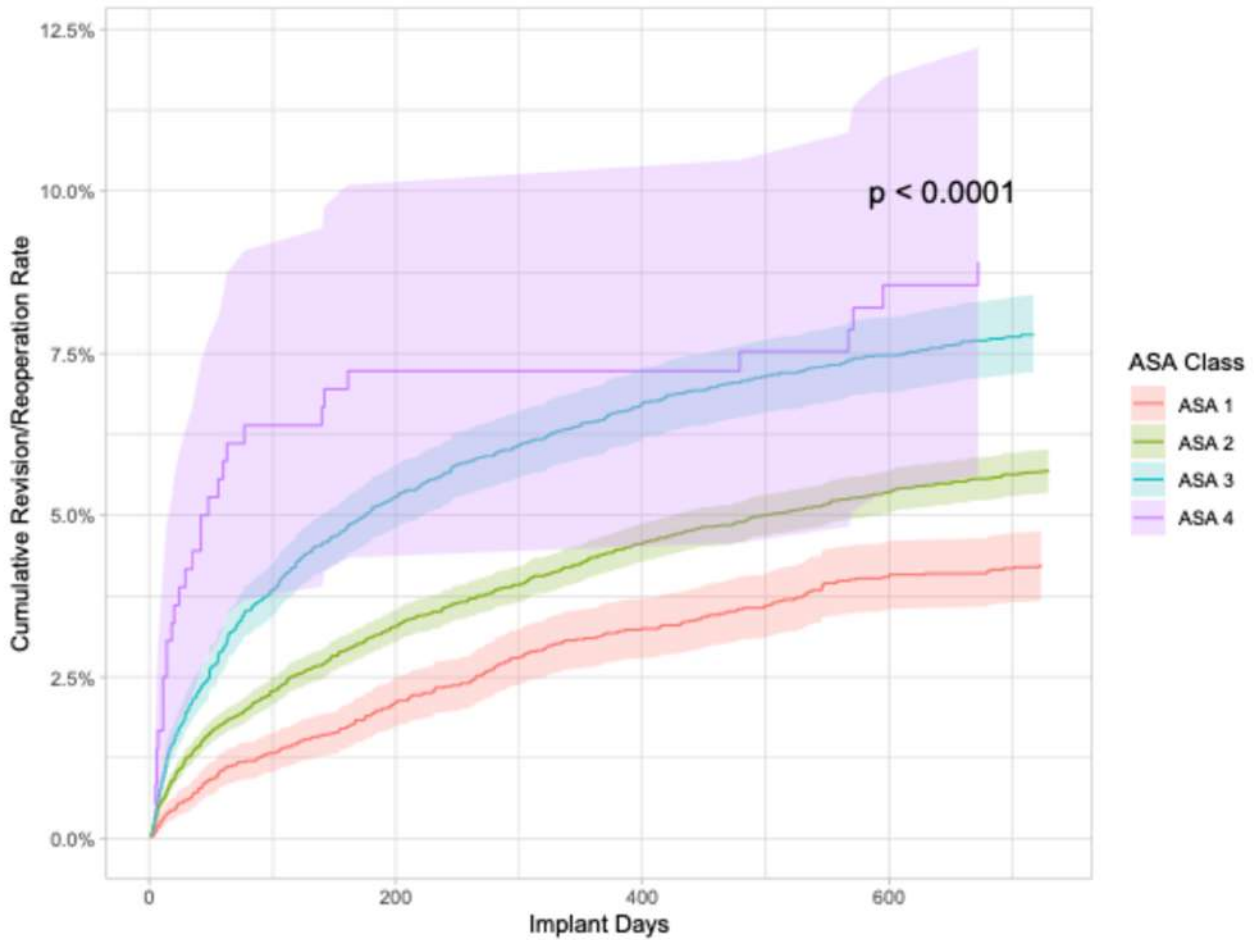

Figure 25. Cumulative revision rate by ASA category.

SELECTED RESULTS: PATIENT SATISFACTION BY COUNTRY AND SURGERY TYPE

The next analysis included all patients with lumbar spinal stenosis who were >= 18 years old and had a pre-operative and post-operative COMI form. The analysis assessed the level of patient satisfaction (COMI item "Over the course of treatment for your back problem, how satisfied were you with your overall medical care in our hospital?") with decompression only and with fusion surgeries while adjusting for the case mix (age, gender, smoker status, ASA, and number of previous surgeries).

The following figure 26 demonstrates a very similar level of patient satisfaction around 88.5% after decompression only and after fusion in the countries analysed.
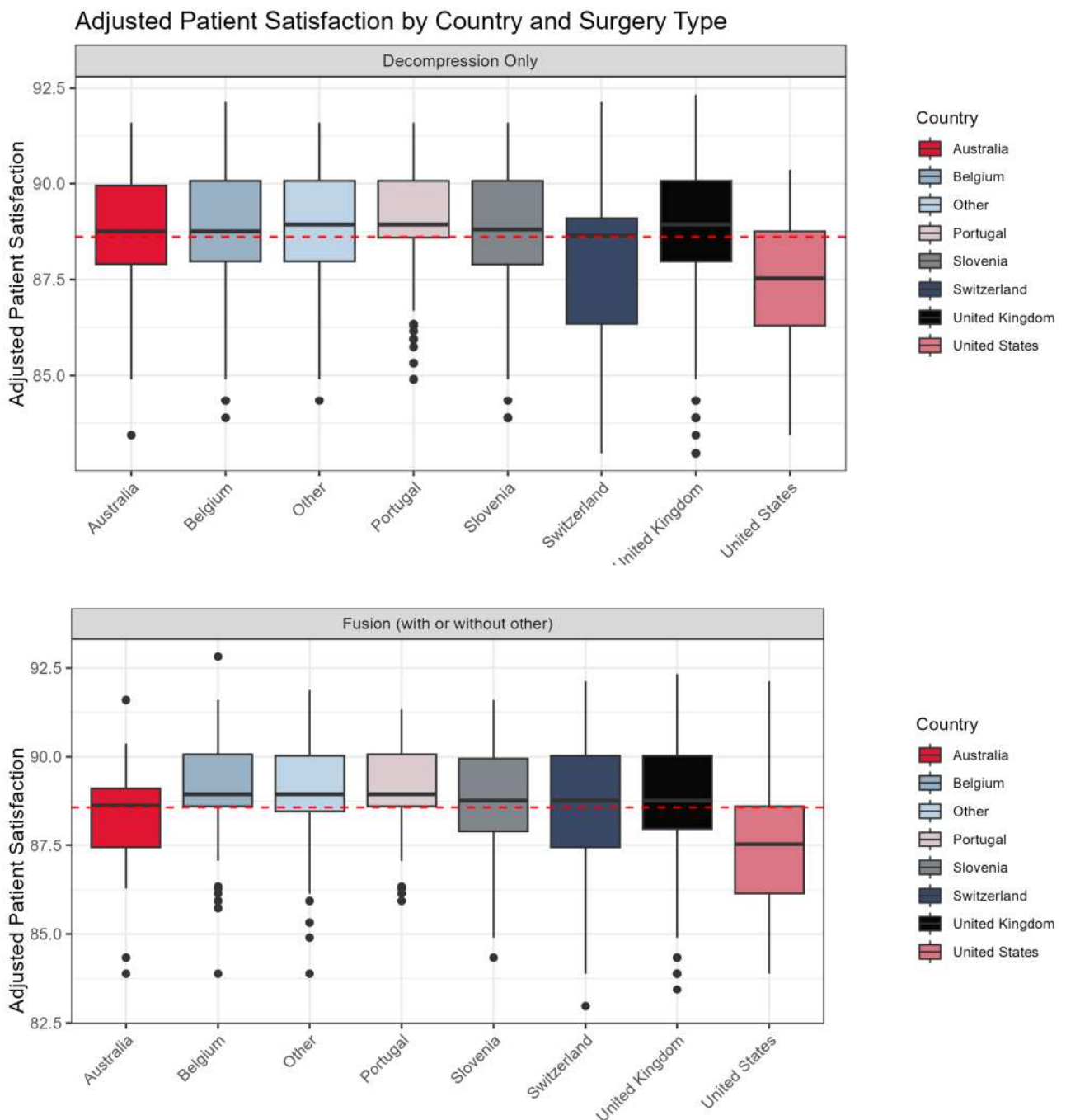

Figure 26. Patient satisfaction by country and surgery type.

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EUROSPINE's Spine Tango offers powerful generic and customisable registry tools for the documentation and evaluation of spinal treatments.
Besides clinical data on surgical interventions, data on implants, clinical scores, patient-reported outcome measures, follow-ups as well as non-surgical treatments can be registered and analysed."
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