

SPINE TANGO Report

International 2006-2008



The International Spine Registry
EuroSpine

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www.eurospine.org

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INTRODUCTION

For more than 6 years EuroSpine – The Spine Society of Europe has been developing and enhancing a documentation system for spinal surgery in form of a registry. With Spine Tango we are meeting the growing demand to assess the safety and efficiency of all surgical interventions of the spine. Only few other fields in medicine are under comparable scrutiny. Reacting to these tendencies, endeavors of pioneer clinicians and the Spine Tango team in collaboration with the Institute for Evaluative Research in Orthopaedic Surgery of the University of Bern have led to the implementation of the only international spinal registry to date.

The constantly growing number of Spine Tango participants indicates that the system has overcome its development period. Now, having reached a recognized status we would like to encourage national societies and individual partners to join the registry. Health authorities will increasingly limit the accessibility of our treatment modalities if we do not fulfill the demanded standards. Therefore we are offering Spine Tango as a common language to make our service visible and transparent.

With a constantly increasing activity in the registry we would like to inform you about its history, its objectives and more.

Max Aebi



^b
**UNIVERSITÄT
BERN**

BRIEF HISTORY OF SPINE TANGO

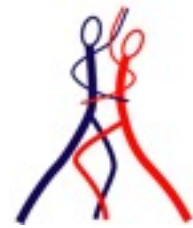
4

Registries, mainly focusing on arthroplasty of the hip, have a long tradition in orthopaedic surgery. The national project for Total Hip Arthroplasty in Sweden and the Müller Hip registry in Switzerland, the latter set up by the precursor of today's Institute for Evaluative Research in Orthopaedic Surgery (IEFO) are two important exponents (1). IEFO, the institute in which the international spine registry Spine Tango is hosted, has gained its expertise by conducting numerous multicenter studies and registries (e.g. SWISSspine, shoulder TA registry, ankle TA registry...). In comparison to the other registries Spine Tango is covering the whole variety of surgical procedures in spine surgery. The collection of data over a period of more than six years and several major modifications have granted Spine Tango with the well acknowledged status it holds today.

In cooperation with the IEFO of the University of Bern the following pioneers have invested time and energy to develop Spine Tango: McGill University Montreal (Dec. 2002), Salem-Hospital Bern, Schulthess-Clinic Zurich (Nov. 2002), Orthopaedic Hospital Vienna (Nov. 2002), Walton Centre Liverpool (Dec. 2002) und Invalidisaatio Foundation Helsinki (Nov. 2003).



1. Multicenter clinical trials and their value in assessing total joint arthroplasty.
Herberts P, Ahnfelt L, Malchau H, Strömberg C, Andersson GB.
Clin Orthop Relat Res. 1989 Dec;(249):48-55



PROFILE

Spine Tango enables you to document the whole spectrum of spinal pathologies and the possible surgical treatment options. The generic approach of the Spine Tango documentation system is a must to reach the maximum number of participants using a common web based technology. This, in turn, reduces the potential for customizing Tango to meet the individual expectations of specific users. There are, nevertheless, still a number of possibilities to parameterize the data collection processes according to the various hospital workflows in the user community. To give you the opportunity to document not only the surgical treatment, we have developed Spine Tango Conservative, which is currently being validated. It is due to be released in autumn 2009.

Spine Tango is an international, non-commercial system under the auspices of EuroSpine aiming to enable national societies to control their own modules. A technology called "national module concept" has been implemented to enhance participation options and to provide the hardware structure for the security measures. In conclusion, Spine Tango is a unique applied medical and scientific documentation and technology solution. It is to the benefit of patients and physicians whilst generating evidence based findings to improve spinal care (2).

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2. Aebi M, Grob D (2004)

SSE Spine Tango: a European Spine Registry promoted by the Spine Society of Europe (SSE)

Eur Spine J 13:661-662. DOI 10.1007/s00586-004-0868-0

PERFORMANCE

Internal quality control: Assuming that you have a complete data collection Spine Tango enables you to monitor all types of surgery during a specific period, observing the date and duration of operation, patient characteristics and outcomes (patient and physician based).

External quality control: Benchmarking is a powerful management tool because it overcomes "paradigm blindness." Paradigm blindness can be summed up as the mode of thinking, "The way we do it is the best because this is the way we've always done it." Benchmarking opens organizations to new methods, ideas and tools to improve their effectiveness. It helps overcome resistance to change by presenting successful methods of problem solving that are different to the ones currently employed. Enabling benchmarking possibilities is one of the fundamental goals of the Spine Tango venture.

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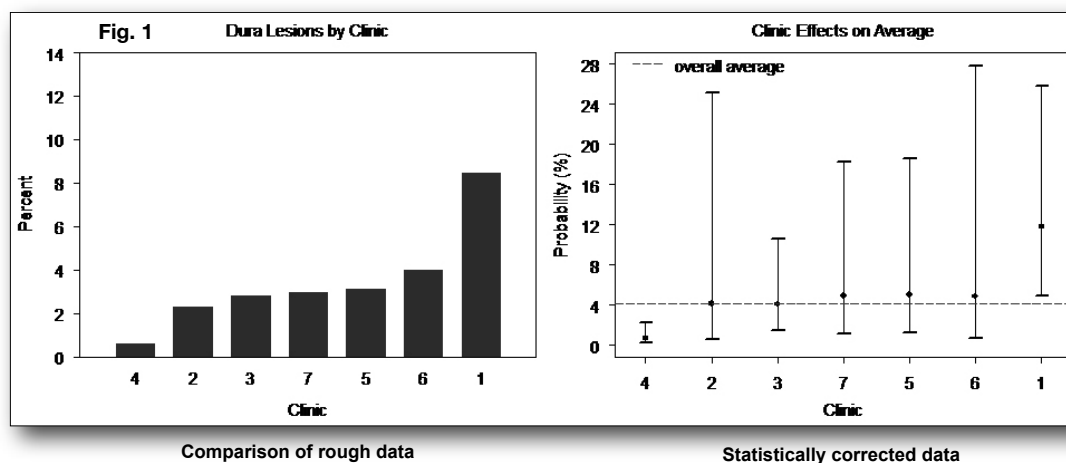




BENCHMARKING

The newly released online statistics function of Spine Tango allows comparison of own data against the aggregated results of the data pool that all other participants generate. This comparison can be considered a very simple way of benchmarking, which means that the quality of what one organization does is compared with other similar organizations. The goal is to make changes towards better practice if benchmarking shows inferior results compared with the pool. There are, however, pitfalls in this simplified way of comparing data which can result in wrong conclusions (3). This means that important influential factors can make results appear better or worse than they are in reality and these factors can only be identified and neutralized in a multiple regression analysis performed by a statistical expert. Comparing input variables is less of a problem than comparing outcome variables. Therefore, the potentials and limitations of automated online comparisons need to be considered when interpreting the results of the benchmarking procedure.

7



3. Röder C, Staub LP, Dietrich D, Zweig T, Melloh M, Aebi M.
Benchmarking with Spine Tango: potentials and pitfalls
Eur Spine J, epub ahead of print

DATA ENTRY

There are **4 possible ways** forms and questionnaires can be transferred to the database (Fig. 2)

- ① Online data entry via the web-interface (no software to be installed)
- ② OMR (Optical Mark Reader) i.e. scanner-assisted entry of paper forms
- ③ Paper based data capture with mailing to the IEFO or other partner institutions for OMR scanner-assisted entry of paper forms
- ④ Hybrid method of online data entry and OMR scanner-assisted entry of paper forms (not pictured)

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In the rectangles multiple methods of gathering patient and physician generated data are shown [per mail, in house, outpatient clinics, telephone and new electronic media]. The goal to generate a comprehensive database is achieved by collecting data of the patient layer and the clinic/physician layer.

Having created a consistent data set the options of analyses are almost unlimited. Outcome evaluation can now be done in particular.





A COMPLETE CASE

Following Ernest Codman's "end result system" the result of a surgical intervention should be recorded if the outcome can be considered as definitive (3). In most cases of spinal surgery, this can be done after a minimum of 6 months after surgery (Fig 3).

EuroSpine additionally encourages the registration of complications at any time during the postoperative period.

Patient based outcome documentation with the COMI (Core Outcome Measure Index) questionnaires for neck and back pain has become an essential part of the Spine Tango documentation (4).

The figure below illustrates the ideal case of a completely documented treatment (5).

9

3. Codman, Ernest A. (1916). A Study in Hospital Efficiency. Boston, Mass., privately printed

4. Mannion AF, Elfering A, Staerkle R, Junge A, Grob D, Semmer NK, Jacobshagen N, Dvorak J, Boos N (2005) Outcome assessment in low back pain: how low can you go? Eur Spine J 14:1014-1026

5. T Zweig, A Mannion, D Grob, M Melloh, E Munting, M Aebi, A Tuschel, C Röder (2009) How to Tango – a manual for implementing Spine Tango. Eur Spine J, in press

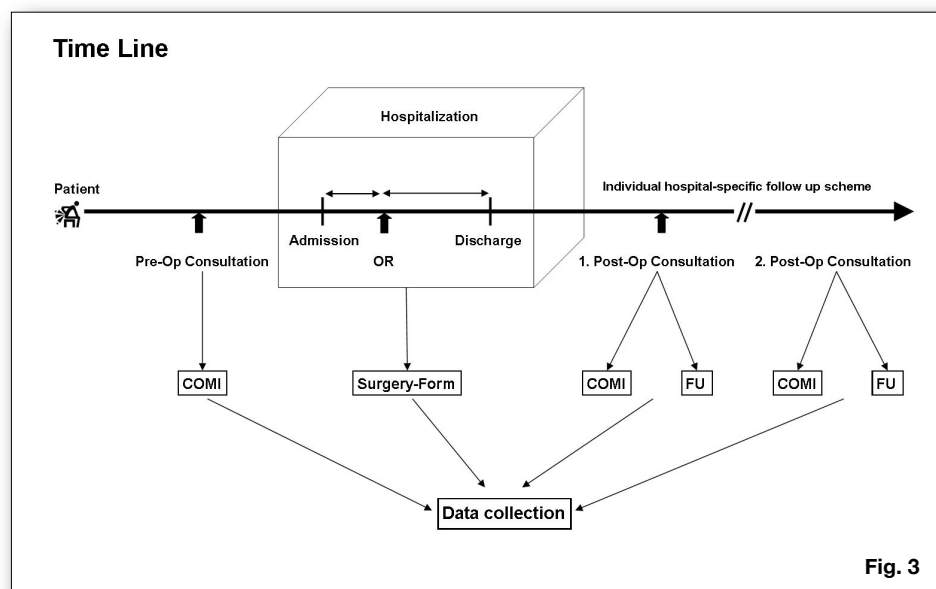



Fig. 3

Surgery Form
front

SPINE TANGO



SURGERY

2006

Directions

- Use a #2 soft pencil for marking.
- Text answers must be entered with the web interface.
- All questions must be answered unless otherwise indicated.
- Completely fill in boxes to record answers.

Question types

only 1 answer allowed multiple answers allowed
 mandatory questions

Level of procedure

upper cervical cervicothoracic thoracic thoraco-lumbo-sacral lumbo-sacral coccyx
 mid lower cervical cervico-thoraco-lumbar thoracolumbar lumbar sacral

Admission / Pathology

Day (1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16) (17) (18) (19) (20) (21) (22) (23) (24) (25) (26) (27) (28) (29) (30) (31)
 Month (1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) Year (00) (01) (02) (03) (04) (05) (06) (07) (08) (09) (10) (11) (12) (13) (14) (15) (16) (17)

Main pathology

degenerative disease fracture/trauma spondylolisthesis infection failed surgery
 deformity pathological fracture inflammation tumor other: specify _____

Specification of Main Pathology Only answer questions related to Main Pathology (Main Pathology "other" requires no specification).

<p>Degenerative Disease</p> <p>Type of degeneration</p> <p><input type="checkbox"/> black disc <input type="checkbox"/> spondylarthrosis <input type="checkbox"/> disc degeneration <input type="checkbox"/> spinal stenosis <input type="checkbox"/> disc herniation <input type="checkbox"/> adjacent segment degen. <input type="checkbox"/> spondylosis <input type="checkbox"/> other _____</p> <p>Type of deformity</p> <p><input type="checkbox"/> scoliosis <input type="checkbox"/> combined <input type="checkbox"/> kyphosis <input type="checkbox"/> other _____</p> <p>Type of scoliosis</p> <p><input type="checkbox"/> single curve <input type="checkbox"/> double curve</p> <p>Predominant etiology</p> <p><input type="checkbox"/> idiopathic <input type="checkbox"/> posttraumatic <input type="checkbox"/> congenital <input type="checkbox"/> M. Scheuermann <input type="checkbox"/> neuromuscular <input type="checkbox"/> other _____ <input type="checkbox"/> degenerative</p>	<p>Spondylolisthesis</p> <p>Type of spondylolisthesis</p> <p><input type="checkbox"/> Type I (congenital, dysplastic) <input type="checkbox"/> Type II (isthmic) <input type="checkbox"/> Type III (degenerative) <input type="checkbox"/> Type IV (traumatic) <input type="checkbox"/> Type V (pathologic) <input type="checkbox"/> Type VI (postsurgical)</p> <p>Grade of spondylolisthesis</p> <p><input type="checkbox"/> Grade 0 <input type="checkbox"/> Grade I <input type="checkbox"/> Grade II <input type="checkbox"/> Grade III <input type="checkbox"/> Grade IV <input type="checkbox"/> Spondyloptosis (V)</p>
<p>(Pathological) Fracture/Trauma</p> <p><small>Additional fractures w/different treatments require separate forms.</small></p> <p>Type of (pathological) fracture/trauma</p> <p><input type="checkbox"/> condylar (C0) <input type="checkbox"/> C0/1 dissociation <input type="checkbox"/> C1 fracture <input type="checkbox"/> C1/2 instability <input type="checkbox"/> C2 dens fracture</p> <p>Dens fracture type</p> <p><input type="checkbox"/> I <input type="checkbox"/> A1 <input type="checkbox"/> B1 <input type="checkbox"/> C1 <input type="checkbox"/> II <input type="checkbox"/> A2 <input type="checkbox"/> B2 <input type="checkbox"/> C2 <input type="checkbox"/> III <input type="checkbox"/> A3 <input type="checkbox"/> B3 <input type="checkbox"/> C3</p> <p>Pathological fracture due to ...</p> <p><input type="checkbox"/> osteoporosis <input type="checkbox"/> fresh fracture <input type="checkbox"/> tumor <input type="checkbox"/> old fracture <input type="checkbox"/> other _____ <small>(In case of tumor, answer questions "Type of tumor" and "Localization" in section "TUMOR")</small></p>	<p>Inflammation</p> <p>Type of inflammation</p> <p><input type="checkbox"/> inflammatory arthritis (seropos) <input type="checkbox"/> seronegative arthritis <input type="checkbox"/> ankylosing spondylitis (M. Bechterew) <input type="checkbox"/> other _____</p> <p>Infection</p> <p>Infection specification</p> <p><input type="checkbox"/> pyogenic <input type="checkbox"/> fungal <input type="checkbox"/> parasitic <input type="checkbox"/> other _____ <input type="checkbox"/> tuberculous</p> <p>Affected structure(s)</p> <p><input type="checkbox"/> spondylitis <input type="checkbox"/> discitis <input type="checkbox"/> spondylodiscitis</p>
<p>Tumor</p> <p>Type of tumor</p> <p><input type="checkbox"/> primary malignant <input type="checkbox"/> primary benign <input type="checkbox"/> secondary malignant <input type="checkbox"/> tumor like lesion <input type="checkbox"/> other _____</p> <p>Specify type of tumor _____</p>	<p>Localization</p> <p><input type="checkbox"/> vertebral body <input type="checkbox"/> posterior bony elements <input type="checkbox"/> extradural <input type="checkbox"/> intradural extramedullary <input type="checkbox"/> intradural intramedullary <input type="checkbox"/> other _____</p>
<p>Failed surg.</p> <p>Type of failed surgery</p> <p><input type="checkbox"/> non-union <input type="checkbox"/> postop. infection <input type="checkbox"/> frontal imbalance <input type="checkbox"/> instability <input type="checkbox"/> implant failure <input type="checkbox"/> other _____ <input type="checkbox"/> neurocompression <input type="checkbox"/> sagittal imbalance</p>	

Comments regarding main pathology:

Most severely affected segment/vertebral body

<input type="checkbox"/> not applicable/assessable	<input type="checkbox"/> C3	<input type="checkbox"/> C7	<input type="checkbox"/> Th4	<input type="checkbox"/> Th8	<input type="checkbox"/> Th12	<input type="checkbox"/> L4
<input type="checkbox"/> unknown	<input type="checkbox"/> C3/4	<input type="checkbox"/> C7/Th1	<input type="checkbox"/> Th4/5	<input type="checkbox"/> Th8/9	<input type="checkbox"/> Th12/L1	<input type="checkbox"/> L4/5
<input type="checkbox"/> C0	<input type="checkbox"/> C4	<input type="checkbox"/> Th1	<input type="checkbox"/> Th5	<input type="checkbox"/> Th9	<input type="checkbox"/> L1	<input type="checkbox"/> L5
<input type="checkbox"/> C0/1	<input type="checkbox"/> C4/5	<input type="checkbox"/> Th1/2	<input type="checkbox"/> Th5/6	<input type="checkbox"/> Th9/10	<input type="checkbox"/> L1/2	<input type="checkbox"/> L5/S1
<input type="checkbox"/> C1	<input type="checkbox"/> C5	<input type="checkbox"/> Th2	<input type="checkbox"/> Th6	<input type="checkbox"/> Th10	<input type="checkbox"/> L2	<input type="checkbox"/> S1
<input type="checkbox"/> C1/2	<input type="checkbox"/> C5/6	<input type="checkbox"/> Th2/3	<input type="checkbox"/> Th6/7	<input type="checkbox"/> Th10/11	<input type="checkbox"/> L2/3	<input type="checkbox"/> sacrum (S2-5)
<input type="checkbox"/> C2	<input type="checkbox"/> C6	<input type="checkbox"/> Th3	<input type="checkbox"/> Th7	<input type="checkbox"/> Th11	<input type="checkbox"/> L3	<input type="checkbox"/> coccyx
<input type="checkbox"/> C2/3	<input type="checkbox"/> C6/7	<input type="checkbox"/> Th3/4	<input type="checkbox"/> Th7/8	<input type="checkbox"/> Th11/12	<input type="checkbox"/> L3/4	

Extent of lesion

1 segment/vertebral body 2-3 segments/vertebral bodies 4-5 segments/vertebral bodies >5 segments/vertebral bodies

Additional pathology (Answer to question "Main pathology" is excluded)

none deformity pathological fracture inflammation tumor
 degenerative disease fracture/trauma spondylolisthesis infection failed surgery
 other: specify _____

Number of previous spine surgeries (0) (1) (2) (3) (4) (5) (6)

Answer "0" excludes both "Previous surgery" questions ("at same level" and "at same hospital")

Previous surgeries at same level no yes partially

Previous surgeries at same hospital no yes partially

Previous treatment for main pathology

none 3-6 mon. conservative
 surgical 6-12 mon. conservative
 < 3 mon. conservative > 12 mon. conservative

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The year on the form indicates the developmental version

Surgery Form back

SPINE TANGO

SURGERY
Page 2 of 2

Internal Use Only - Not read by scanner

Surgeon _____
Assistant _____

Surgery

Day 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

Month 1 2 3 4 5 6 7 8 9 10 11 12

Year 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29

Surgeon credentials <input type="checkbox"/> specialized spine <input type="checkbox"/> board certif. orthopaedic <input type="checkbox"/> board certified neuro	<input type="checkbox"/> orthopaedic in training <input type="checkbox"/> neuro in training <input type="checkbox"/> other	Goal of surgery <input type="checkbox"/> pain relief <input type="checkbox"/> functional improvement <input type="checkbox"/> neurological improvement <input type="checkbox"/> cosmetic improvement <input type="checkbox"/> diagnostic measures <input type="checkbox"/> other
Morbidity state <input type="checkbox"/> unknown <input type="checkbox"/> ASA1 (no disturbance) <input type="checkbox"/> ASA2 (mild/moderate) <input type="checkbox"/> ASA3 (severe) <input type="checkbox"/> ASA4 (life threatening) <input type="checkbox"/> ASA5 (moribund)	Anterior access <input type="checkbox"/> no anterior access <input type="checkbox"/> transoral <input type="checkbox"/> anterior <input type="checkbox"/> anterolateral <input type="checkbox"/> cervicothorac. anterolat. <input type="checkbox"/> cervicothorac. a.lat. w/sternotomy	<input type="checkbox"/> cervicothor. a.lat. w/thoracot. <input type="checkbox"/> thoracotomy <input type="checkbox"/> thoraco-phrenico-lumbotomy <input type="checkbox"/> retroperitoneal <input type="checkbox"/> transperitoneal <input type="checkbox"/> other
Technology <input type="checkbox"/> conventional <input type="checkbox"/> MISS/LISS <input type="checkbox"/> loops <input type="checkbox"/> microscope	Blood loss <input type="checkbox"/> endoscope <input type="checkbox"/> CASS <input type="checkbox"/> other	Operation time <input type="checkbox"/> unknown <input type="checkbox"/> < 1 hr. <input type="checkbox"/> 1-2 hrs. <input type="checkbox"/> 2-3 hrs. <input type="checkbox"/> 3-4 hrs. <input type="checkbox"/> 4-5 hrs. <input type="checkbox"/> 5-6 hrs. <input type="checkbox"/> 6-8 hrs. <input type="checkbox"/> 8-10 hrs. <input type="checkbox"/> > 10 hrs.

Components
 yes
 no

Supplier: _____ **Article No:** _____
Article name: _____

Surgical Measures

Note: "anterior" / "posterior" refers to location of MEASURES in the spine, NOT to access!

Decompression <input type="checkbox"/> none <input type="checkbox"/> anterior } specify ... <input type="checkbox"/> posterior } <small>Location in spine, choose at least one!</small>	<input type="checkbox"/> discectomy <input type="checkbox"/> vertebrectomy partial <input type="checkbox"/> vertebrectomy full <input type="checkbox"/> other	<input type="checkbox"/> osteotomy <input type="checkbox"/> laminotomy <input type="checkbox"/> hemi-laminectomy <input type="checkbox"/> laminectomy <input type="checkbox"/> facet joint resection partial <input type="checkbox"/> facet joint resection full <input type="checkbox"/> sequestrectomy
Fusion <input type="checkbox"/> none <input type="checkbox"/> anterior } specify ... <input type="checkbox"/> posterior } <small>Location in spine, choose at least one!</small>	<input type="checkbox"/> interbody fusion between adjct. vertebrae (ant. appr.) <input type="checkbox"/> interbody fusion between adjct. vertebrae (post. appr.) <input type="checkbox"/> interbody fusion between dist. vertebrae (ant. appr.) <input type="checkbox"/> interbody fusion between dist. vertebrae (post. appr.)	Fusion material <input type="checkbox"/> none <input type="checkbox"/> autol. bone <input type="checkbox"/> allog. bone <input type="checkbox"/> bone subst. <input type="checkbox"/> cement <input type="checkbox"/> other
Stabilization rigid <input type="checkbox"/> none <input type="checkbox"/> anterior } specify ... <input type="checkbox"/> posterior } <small>Location in spine, choose at least one!</small>	<input type="checkbox"/> interbody stabil. with cage (ant. approach) <input type="checkbox"/> interbody stabil. with cage (post. approach) <input type="checkbox"/> vertebral body replacement by cage <input type="checkbox"/> plates <input type="checkbox"/> pedicle screws with rod	<input type="checkbox"/> pedicle screws with plate <input type="checkbox"/> facet screws <input type="checkbox"/> transarticular screw <input type="checkbox"/> laminar hooks with rod <input type="checkbox"/> pedicle hooks with rod <input type="checkbox"/> lateral mass screw with rod <input type="checkbox"/> lateral mass screw with plate <input type="checkbox"/> odontoid screws <input type="checkbox"/> other
Stabil. motion preserving <input type="checkbox"/> none <input type="checkbox"/> anterior } specify ... <input type="checkbox"/> posterior } <small>Location in spine, choose at least one!</small>	<input type="checkbox"/> disc replacement <input type="checkbox"/> dynamic stabilizat. <input type="checkbox"/> other	Percutan. measures <input type="checkbox"/> none <input type="checkbox"/> post. } specify ... <small>Choose one!</small>

Other surgical measures
 no
 yes } specify ...
Choose one!

Surgical notes _____

Discharge

Day 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

Month 1 2 3 4 5 6 7 8 9 10 11 12

Year 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29

(Answer "none" in both "Surgical" and "General complications" excludes all remaining questions.)

Surgical complications <input type="checkbox"/> none <input type="checkbox"/> wrong level <input type="checkbox"/> nerve root damage <input type="checkbox"/> cauda equina damage <input type="checkbox"/> spinal cord damage	<input type="checkbox"/> bleeding in spinal canal <input type="checkbox"/> bleeding outside spinal canal <input type="checkbox"/> malposition of implant <input type="checkbox"/> duraltear <input type="checkbox"/> wound infection	General complications <input type="checkbox"/> none <input type="checkbox"/> anaesthesiological <input type="checkbox"/> cardiovascular <input type="checkbox"/> pulmonary <input type="checkbox"/> implant failure <input type="checkbox"/> other <input type="checkbox"/> cerebral <input type="checkbox"/> kidney/urinary <input type="checkbox"/> liver/GI <input type="checkbox"/> death <input type="checkbox"/> other
Measures taken <input type="checkbox"/> none <input type="checkbox"/> intervention during surgery <input type="checkbox"/> re-intervention after surgery <input type="checkbox"/> conservative medical <input type="checkbox"/> conservative functional <input type="checkbox"/> extended hospital stay <input type="checkbox"/> other	Surgical intervention/re-intervention <input type="checkbox"/> none <input type="checkbox"/> hematoma evacuation <input type="checkbox"/> abscess drainage <input type="checkbox"/> metal removal <input type="checkbox"/> re-implantation <input type="checkbox"/> refusion <input type="checkbox"/> suture <input type="checkbox"/> other	Comments regarding discharge _____ _____ _____

Status of Complications
Surgical resolved improved persisting
General resolved improved persisting

Abbreviations: MISS = Minimally Invasive Spine Surgery, LISS = Less Invasive Spine Surgery, CASS = Computer-Assisted Spine Surgery

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Follow-up (low back)
patient based, front

Spine Tango COMI
Patient self-assessment



Low Back
2008

Directions

- Use a #2 soft pencil for marking.
- Only one answer per question allowed
- Completely fill in boxes to record answers
- Mandatory information

Personal Use Only
Not ready for scanning

Last name		First name		Gender
Street			M/R/N	
Country Code	Zip Code	City		
Occupation	Birthdate (DD/MM/YYYY)		Telephone	

Examination interval

- | | | | |
|---|-----------------------------------|---|------------------------------------|
| <input type="checkbox"/> before surgery | <input type="checkbox"/> 3 months | <input type="checkbox"/> 2 years | |
| <input type="checkbox"/> 4 weeks | <input type="checkbox"/> 6 months | <input type="checkbox"/> 3 years | |
| <input type="checkbox"/> 6 weeks | <input type="checkbox"/> 9 months | <input type="checkbox"/> 4 years | e.g. 4 months = 4 months/12 months |
| <input type="checkbox"/> 2 months | <input type="checkbox"/> 1 year | <input type="checkbox"/> 5 years | = 0.33 year |
| | | <input type="checkbox"/> other: years | |

Back problems can lead to back pain and/or pain in the legs/buttocks, as well as to sensory disturbances such as tingling, 'pins and needles' or numbness in any of these regions.

1 Which of the following problems troubles you **the most**? Please tick **ONE BOX only**

- back pain
- leg/buttock pain
- sensory disturbances in the back/leg/buttocks, e.g. tingling, 'pins and needles', numbness
- none of the above

2 For the following 2 questions (2a and 2b) we would like you to indicate the severity of your pain, by ticking the appropriate box (where "0" = no pain, "10" = worst pain you can imagine). There are separate questions for **back pain** and for **leg pain (sciatica)/buttock pain**.

2a How severe was your **back pain** in the last week?

- | | | | | | | | | | | | | |
|---------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------|
| no pain | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | worst pain that I can imagine |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |

2b How severe was your **leg pain (sciatica)/buttock pain** in the last week?

- | | | | | | | | | | | | | |
|---------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------|
| no pain | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | worst pain that I can imagine |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |

3 During the **past week**, how much did your back problem **interfere with your normal work** (including both work outside the home and housework)?

- not at all
- a little bit
- moderately
- quite a bit
- extremely

4 If you had to spend **the rest of your life with the symptoms you have right now**, how would you feel about it?

- very satisfied
- somewhat satisfied
- neither satisfied nor dissatisfied
- somewhat dissatisfied
- very dissatisfied

5 Please reflect **on the last week**. How would you rate your quality of life?

- very good
- good
- moderate
- bad
- very bad

Please go to the next page...

Follow-up (low back)
patient based, back

Spine Tango COMI **Patient self-assessment**
Low back

page 2 of 2

6 During the past 4 weeks, how many days did you **cut down on the things you usually do** (work, housework, school, recreational activities) because of your back problem?

- none
- between 1 and 7 days
- between 8 and 14 days
- between 15 and 21 days
- more than 22 days

7 During the past 4 weeks, how many days did your back problem **keep you from going to work** (job, school, housework)?

- none
- between 1 and 7 days
- between 8 and 14 days
- between 15 and 21 days
- more than 22 days

Answer the following questions only if you are completing this questionnaire AFTER the operation

8a Did any **complications** arise as a consequence of your operation **in our hospital** (e.g. problems with wound healing, paralysis, sensory disturbances)?

- no
- yes → please describe these:

8b How bothersome were these complications?

- not at all bothersome
- slightly bothersome
- moderately bothersome
- very bothersome
- extremely bothersome

9 Since the operation in our hospital, have you had any **further operation(s)** on your lumbar spine (back) **in our or in other hospitals**?

- no
- yes, but at a different level of the spine.
- yes, at the same level of the spine (same segment)

10 Over the course of treatment for your back problem, how satisfied were you with your overall medical care **in our hospital**?

- very satisfied
- somewhat satisfied
- neither satisfied nor dissatisfied
- somewhat dissatisfied
- very dissatisfied

11 Overall, how much did the **operation in our hospital** help your back problem?

- helped a lot
- helped
- helped only little
- didn't help
- made things worse

Date

Day 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

Month 1 2 3 4 5 6 7 8 9 10 11 12


Year 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19

Signature:

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15.05.2008

Follow-up
physician based

SPINE TANGO



FOLLOW-UP

2006

Directions

- Use a #2 soft pencil for marking
- Text answers must be entered with the web interface
- All questions must be answered unless otherwise indicated
- Completely fill in boxes to record answers

Question types

only 1 answer allowed multiple answers allowed
 mandatory information

Level of procedure

<input type="checkbox"/> upper cervical	<input type="checkbox"/> cervicothoracic	<input type="checkbox"/> thoracic	<input type="checkbox"/> thoraco-lumbo-sacral	<input type="checkbox"/> lumbo-sacral	<input type="checkbox"/> coccyx
<input type="checkbox"/> mid lower cervical	<input type="checkbox"/> cervico-thoraco-lumbar	<input type="checkbox"/> thoracolumbar	<input type="checkbox"/> lumbar	<input type="checkbox"/> sacral	

Follow-up

Day: (1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16) (17) (18) (19) (20) (21) (22) (23) (24) (25) (26) (27) (28) (29) (30) (31)

Month: (1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12)

Year: (00) (01) (02) (03) (04) (05) (06) (07) (08) (09) (10) (11) (12) (13) (14) (15) (16)

Follow up interval

6 weeks 1 year
 3 months 2 years
 6 months other (yrs.) _____
(Ex: 4 months=0.33 yrs. (4/12))

Work status

not at work since OP resumed work, different job housewife
 started partially, same job has been dismissed child/student
 fully reintegrated retired since OP other _____
 resumed work, but quit again retired before OP

Only comment on those goals/measures which were indicated for the "Goal of surgery" question on the "SURGERY" form

<p>Surgical goals/measures achieved</p> <input type="checkbox"/> none <input type="checkbox"/> pain relief <input type="checkbox"/> functional improvement <input type="checkbox"/> neurological improvement <input type="checkbox"/> cosmetic improvement <input type="checkbox"/> diagnostic measures <input type="checkbox"/> other _____	<p>Surgical goals/measures partially achieved</p> <input type="checkbox"/> none <input type="checkbox"/> pain relief <input type="checkbox"/> functional improvement <input type="checkbox"/> neurological improvement <input type="checkbox"/> cosmetic improvement <input type="checkbox"/> diagnostic measures <input type="checkbox"/> other _____	<p>Surgical goals/measures not achieved</p> <input type="checkbox"/> none <input type="checkbox"/> pain relief <input type="checkbox"/> functional improvement <input type="checkbox"/> neurological improvement <input type="checkbox"/> cosmetic improvement <input type="checkbox"/> diagnostic measures <input type="checkbox"/> other _____
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Medication

none steroids antibiotics
 NSAIDs antidepressives other _____
 opiates vitamin B complex

Overall outcome (examiner)

not applicable good poor
 excellent fair

Rehabilitation

none outpatient rehab / physio other _____
 home-based inpatient rehab / physio

Decision

no further follow-up revision foreseen
 further follow-up other primary intervention foreseen

Comments regarding follow-up _____

Complications

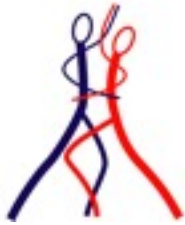
no (Answer "no" excludes all remaining questions.)
 yes

<p>Time</p> <input type="checkbox"/> early, Op-day - 28 days postop <input type="checkbox"/> sub-acute, 2 - 6 months <input type="checkbox"/> late, > 6 months _____	<p>Type</p> <input type="checkbox"/> sensory disturbance <input type="checkbox"/> liquor fistula <input type="checkbox"/> motor disturbance <input type="checkbox"/> superficial wound infection <input type="checkbox"/> sphincter disturbance <input type="checkbox"/> deep subfascial wound infection <input type="checkbox"/> non-union <input type="checkbox"/> spondylitis <input type="checkbox"/> implant failure <input type="checkbox"/> discs <input type="checkbox"/> wrong segment <input type="checkbox"/> instability <input type="checkbox"/> malposition of implant <input type="checkbox"/> recurrence of symptoms <input type="checkbox"/> graft complication <input type="checkbox"/> sequelae anaesthesia <input type="checkbox"/> internal medicine <input type="checkbox"/> other _____
---	---

<p>Therapeutic consequences</p> <input type="checkbox"/> none <input type="checkbox"/> non-operative inpatient <input type="checkbox"/> non-operative outpatient <input type="checkbox"/> reintervention <input type="checkbox"/> other _____	<p>Individual consequences</p> <input type="checkbox"/> none <input type="checkbox"/> increased pain <input type="checkbox"/> prolonged impairment <input type="checkbox"/> reduced social activities <input type="checkbox"/> permanent impairment <input type="checkbox"/> other _____
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Examiner _____

Comments regarding complications _____



EPITOME OF AVAILABLE DATA

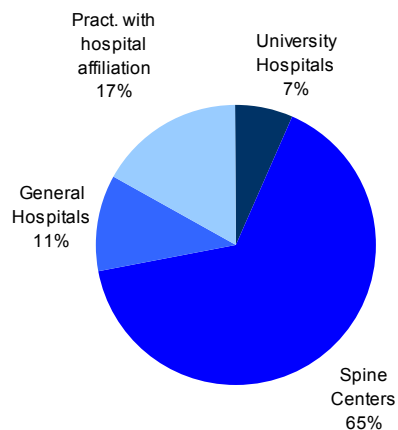
Overview (Pool)

Basic demographics
Distribution of diagnoses
Stratification of levels
Stratification of vertebrae

Short exemplary analysis on lumbar spinal stenosis (Pool)

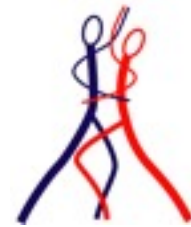
Demographics
Distribution of levels
Extent of lesion
Previous surgery
Previous treatment
Blood loss
Method of decompression
Time of surgery
Length of stay
Complications
Outcome physician based
COMI back
COMI leg

15



Spine Tango Pool

Documentation of surgeries is provided by different types of institutions (EuroSpine, Short Report 2008)



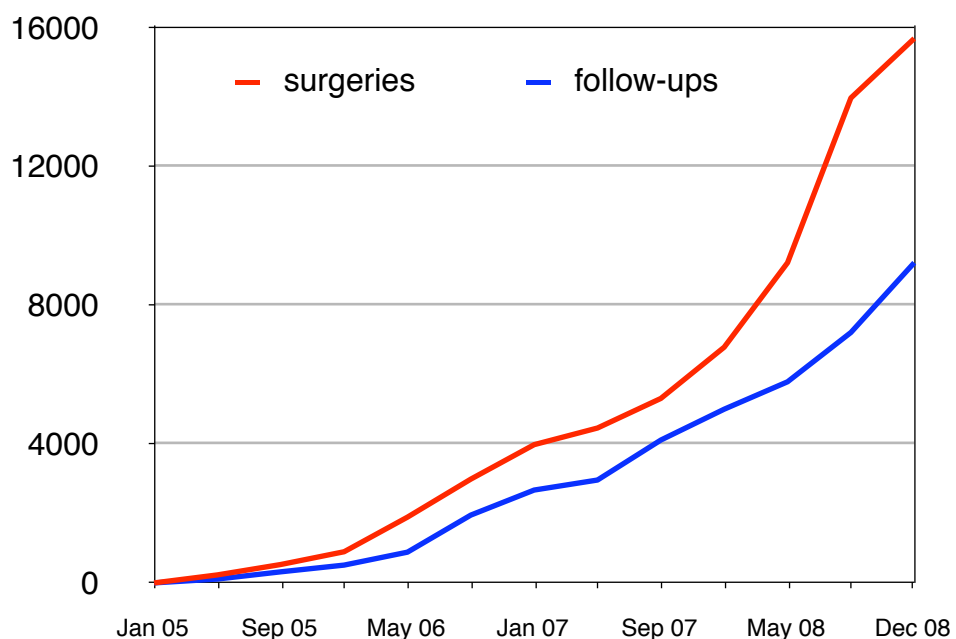
STATISTICS and COMMENTS

A study of the weighting and frequency of statistical reports was published by Windish in Jama in 2007 (6). This work comprises the study of 239 original articles in 6 journals (American Journal of Medicine, Annals of Internal Medicine, BMJ, JAMA, Lancet, New England Journal of Medicine) with regard to statistical evaluation. 91.6% of the articles included descriptive statistics and 50.2% were compiled from simple statistical methods. Multivariate analyses were used for 68.6% of the cases. All the above-mentioned methodologies can be used in Spine Tango. The Spine Tango International Pool offers 25.000 eligible cases. The number of entries increases constantly.

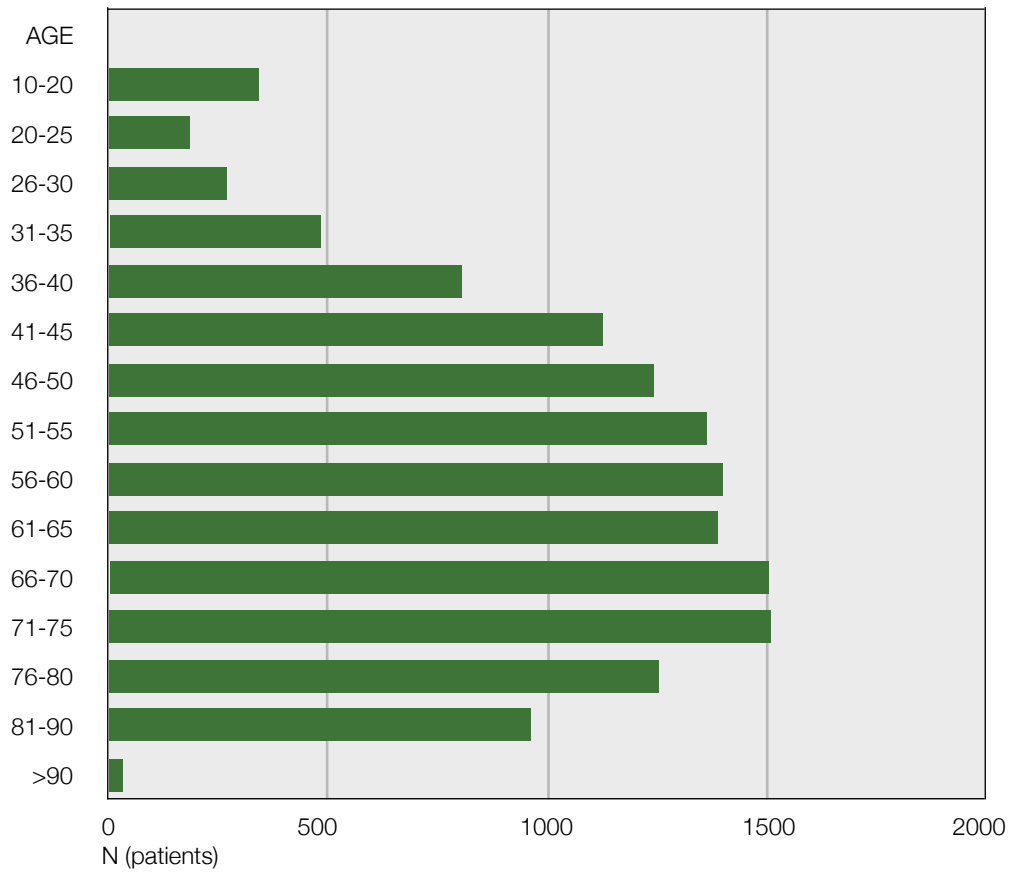
16

Below you will find a short summary of all the documented surgeries in Spine Tango followed by a detailed assessment of the patient sub-group with the diagnosis degenerative lumbar spinal stenosis.

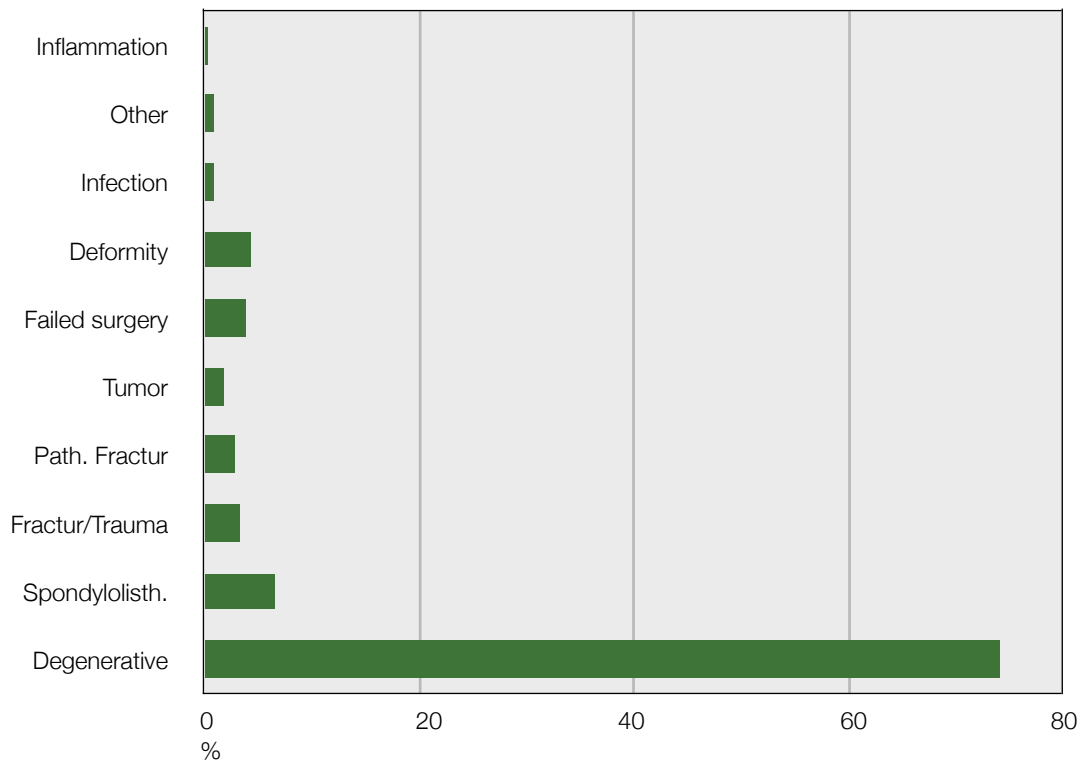
6. D. Windish, S.J. Huot, M.L. Green; Medicine Residents' Understanding of the Biostatistics and Results in the Medical Literature; JAMA. 2007;298(9):1010-1022.



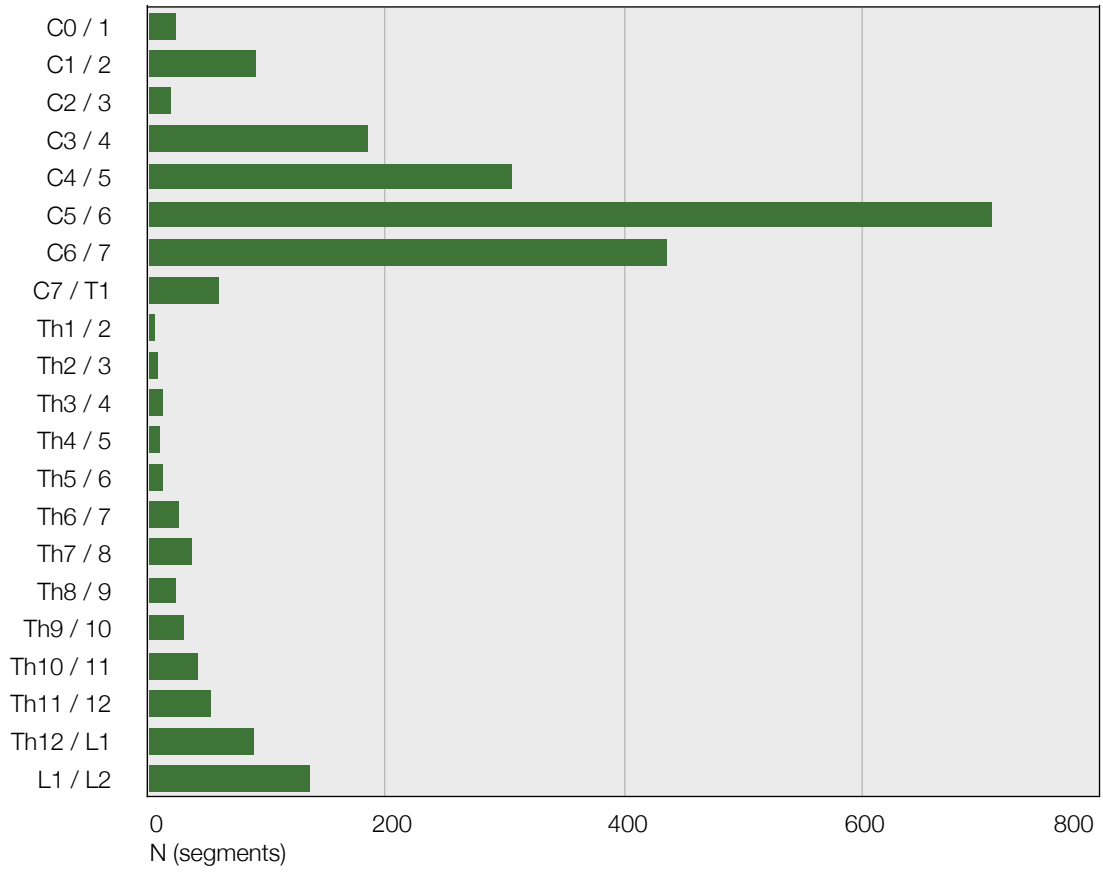
Distribution of age (at surgery)



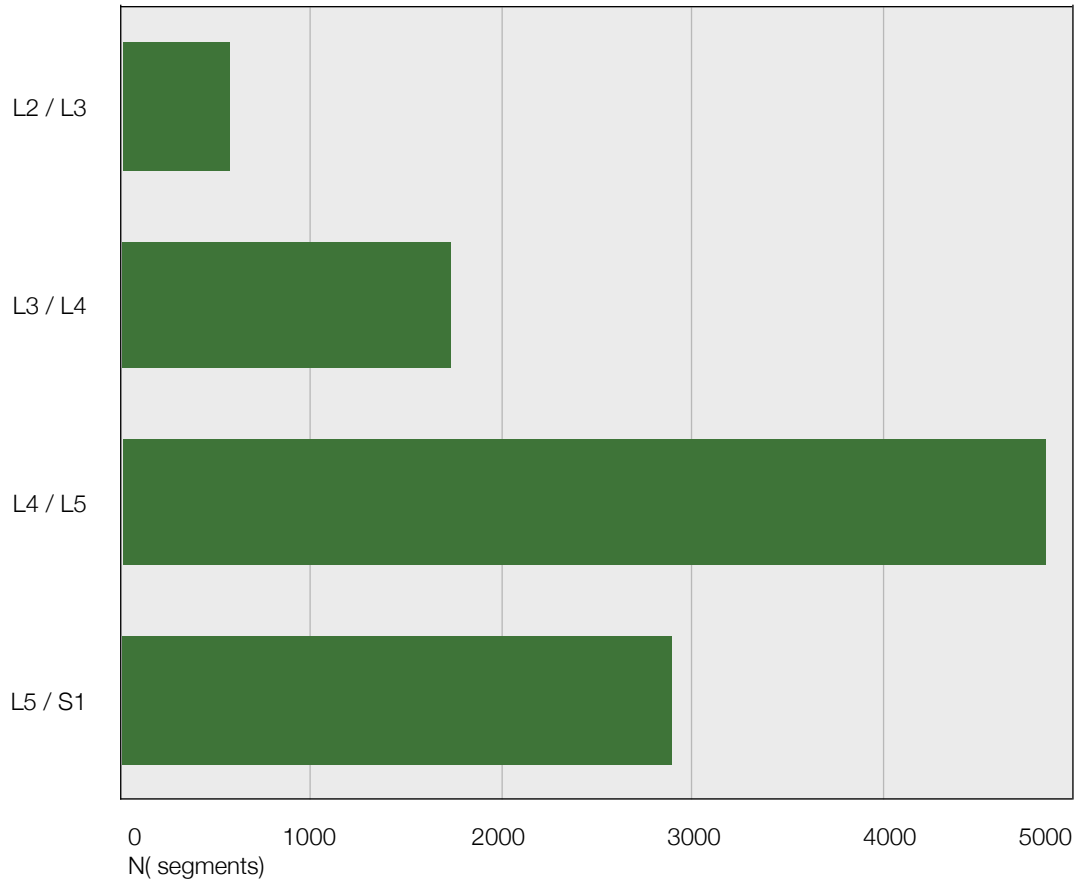
Distribution of diagnoses



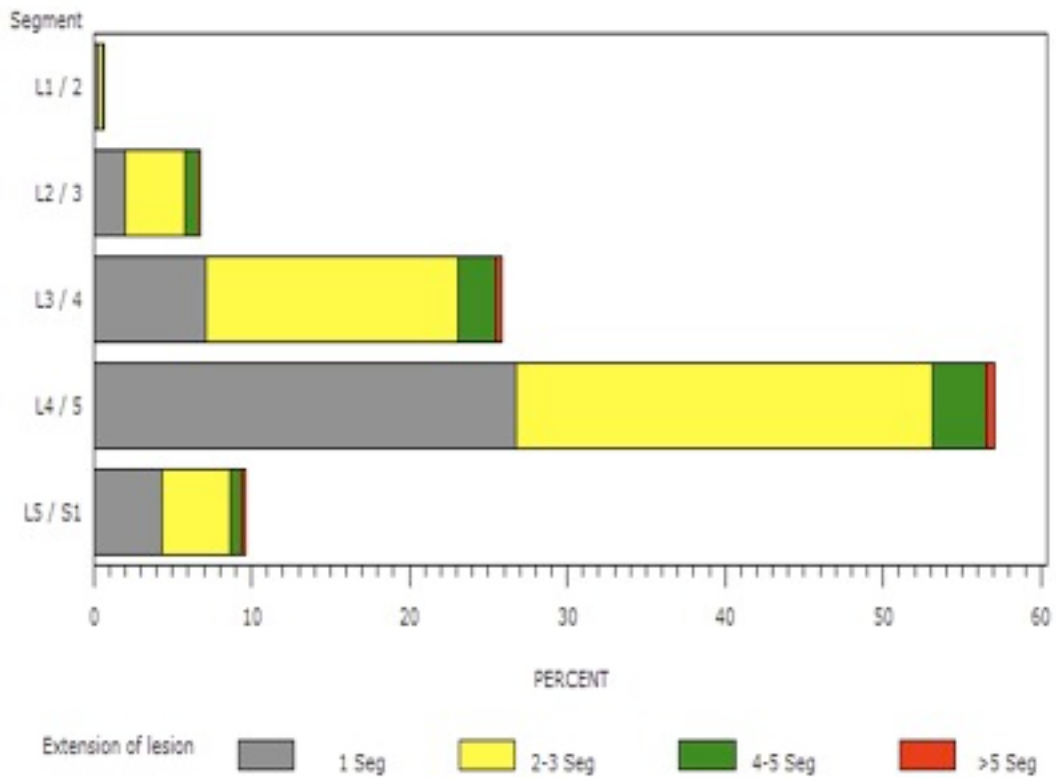
Most severely affected segment (C0/C1 to L1/L2)



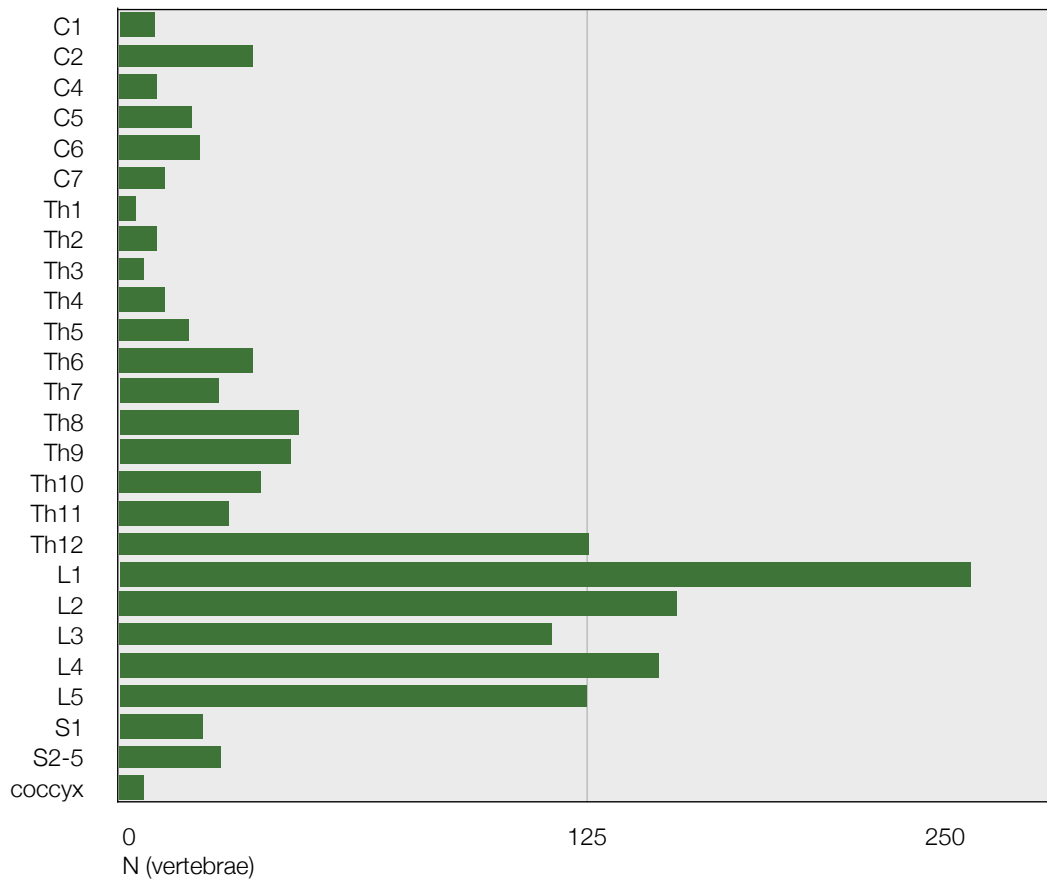
Most severely affected segment (L2/L3 to L5/S1)



Most severely affected segment by extension of lesion



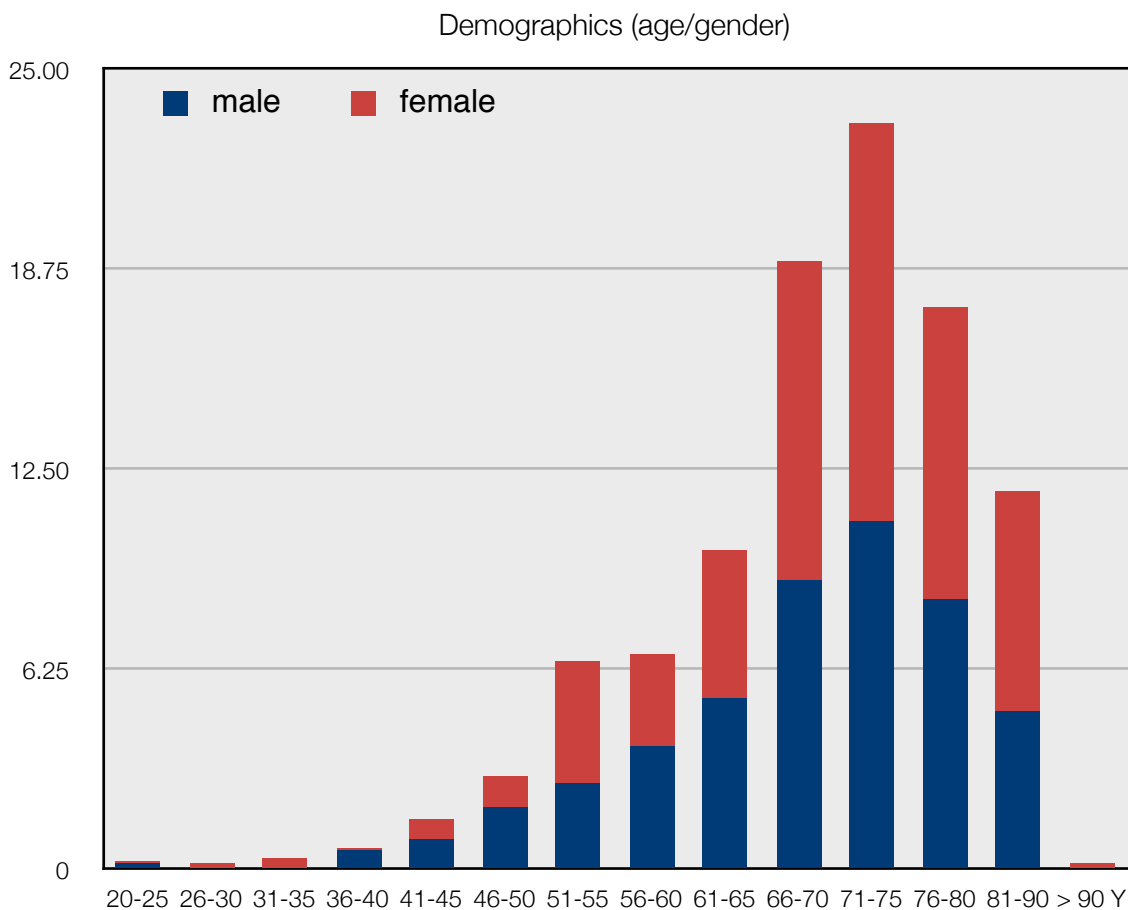
Most severely affected vertebrae



An exemplary analysis for
lumbar spinal stenosis
using the Spine Tango Pool

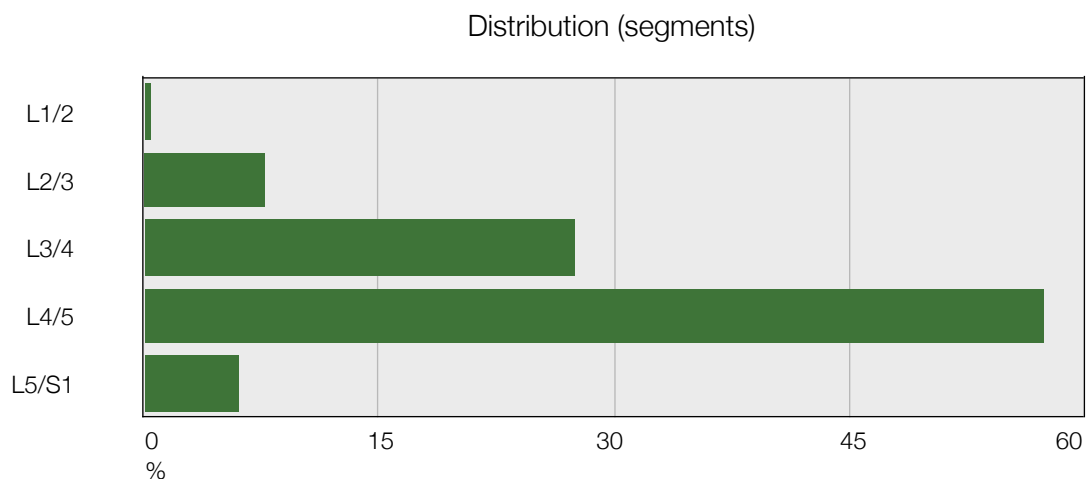
Although the diagram below only shows a sporadic annotation, it can be established that operations on patients with lumbar spinal stenosis are performed in higher ages. The wish to spend ones later years at a higher quality of life has grown in recent years. This tendency is reflected in the high proportion of patients between age 70 and 90. A paper based on data taken from the Spine Tango about complications in the elderly was published in "Der Orthopäde" in 2008 (6).

20

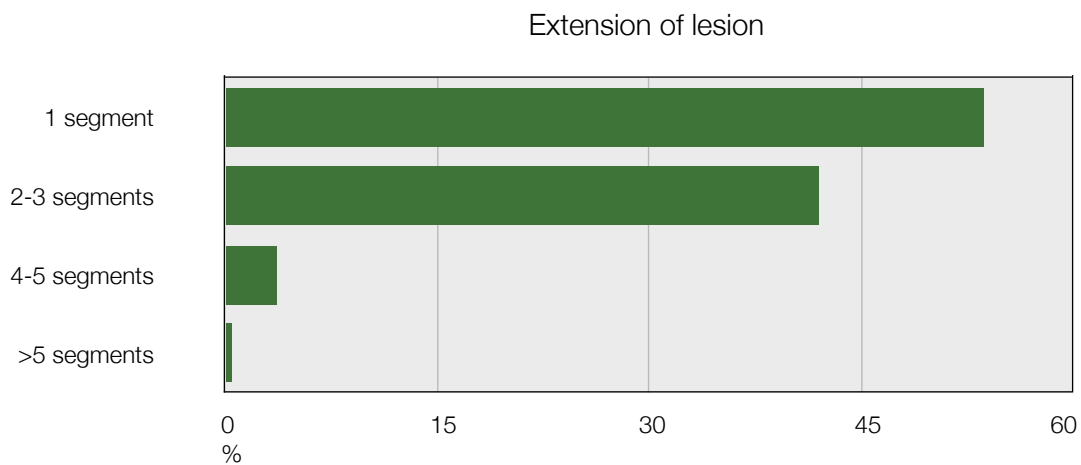


6. Spinal surgery in the elderly: does age have an influence on the complication rate?
R. Sobottke G. Csécsei, T. Kaulhausen, S. Delank, J. Franklin, E. Aghayev, T. Zweig, P. Eysel
"Der Orthopäde" 2008 DOI 10.1007/s00132-008-1233-5

Unsatisfactory results after higher lumbar interventions are observed. This has been quantified in an investigation based on Tango data (7). Segment L2/3 compared to L4/5 has a 2.7 times higher probability of a poor result ($p=0.003$). Further studies are necessary to confirm this observation and the reason thereof. It can only be presumed whether anatomically varieties (higher root density) or even vascular reasons are contributing factors.



The majority of interventions affected only 1 or 2-3 segments – this is reflected in the statistics for blood loss and operation time.

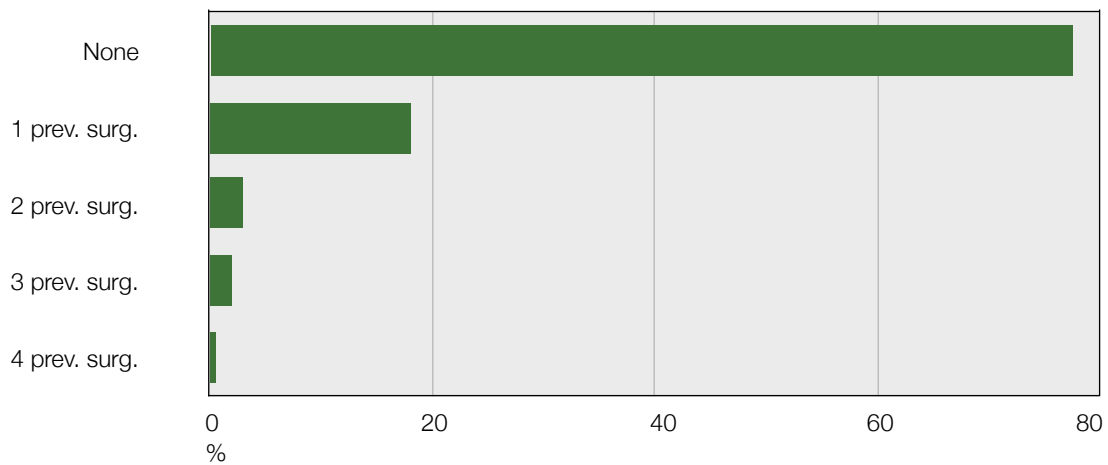


7. An analysis of the surgical treatment of lumbar spinal stenosis (LSS) – procedures, outcomes, influential factors. A prospective study of 1348 patients in the international “Spine Tango” registry. T. Zweig, E. Aghayev, M. Melloh, L. Staub, JC Theis, M. Aebi, C. Röder. German Joint Congress for Orthopaedics and Trauma 22.-25. Oct. 2008, Berlin, Germany

A notable fact is that 20% of the patients have had previous operations. This is probably a reflection of the structure of the clinics documenting with Spine Tango, which are predominantly specialist spine centers receiving referrals of failed surgery.

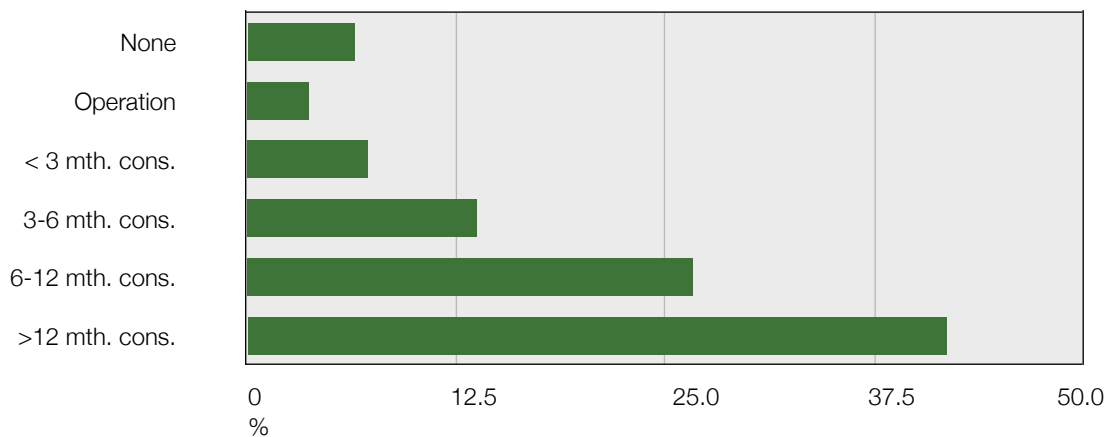
The indication for the new intervention requires further analysis. Is this due to an insufficient primary decompression or is it due to a relapse?

Previous surgery

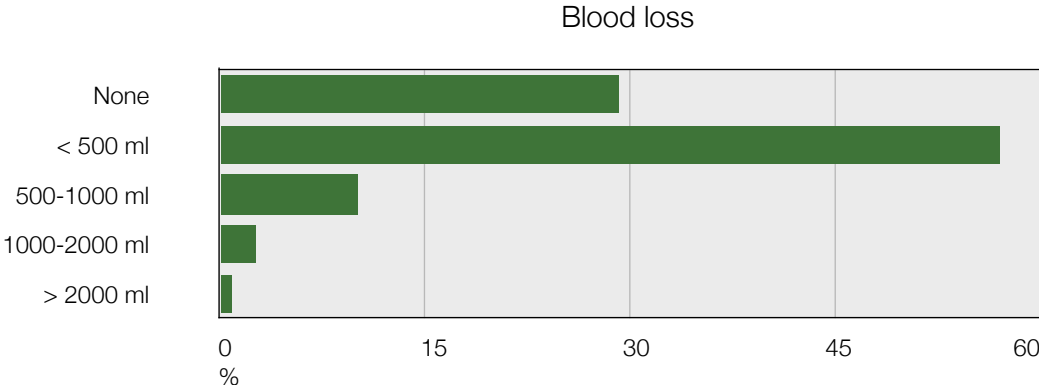


Most patients underwent conservative therapy lasting 6 to 12 months or longer. This raises several questions. Is one waiting too long in the case of clear indications? Was the conservative therapy sufficient?

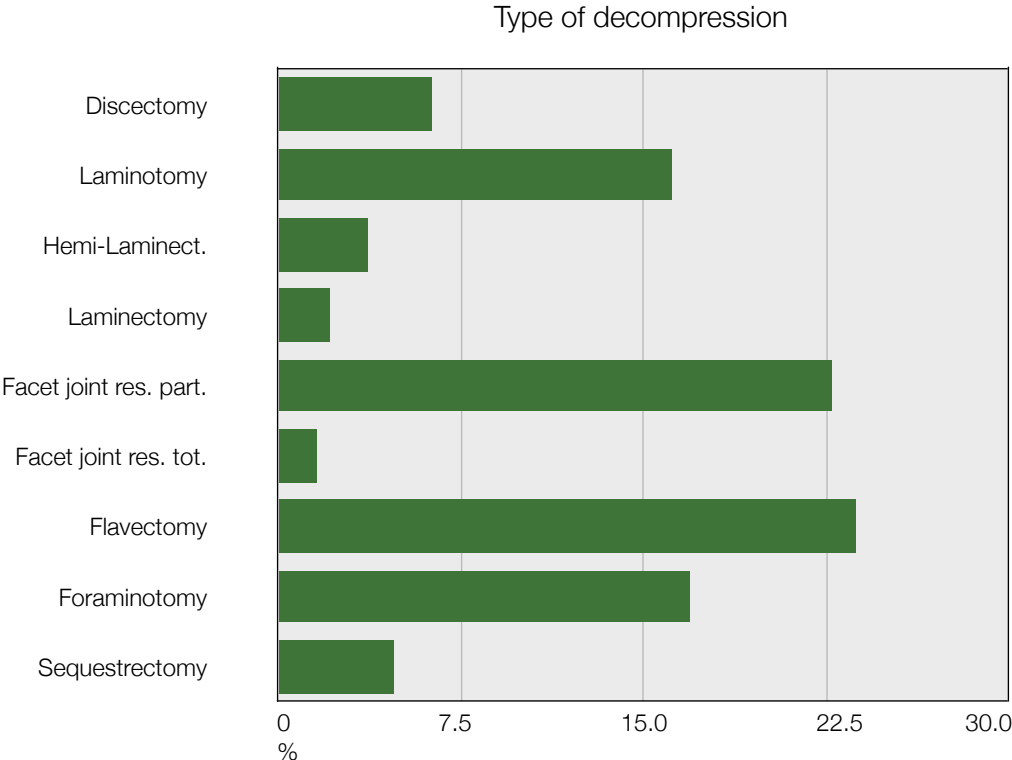
Previous therapy



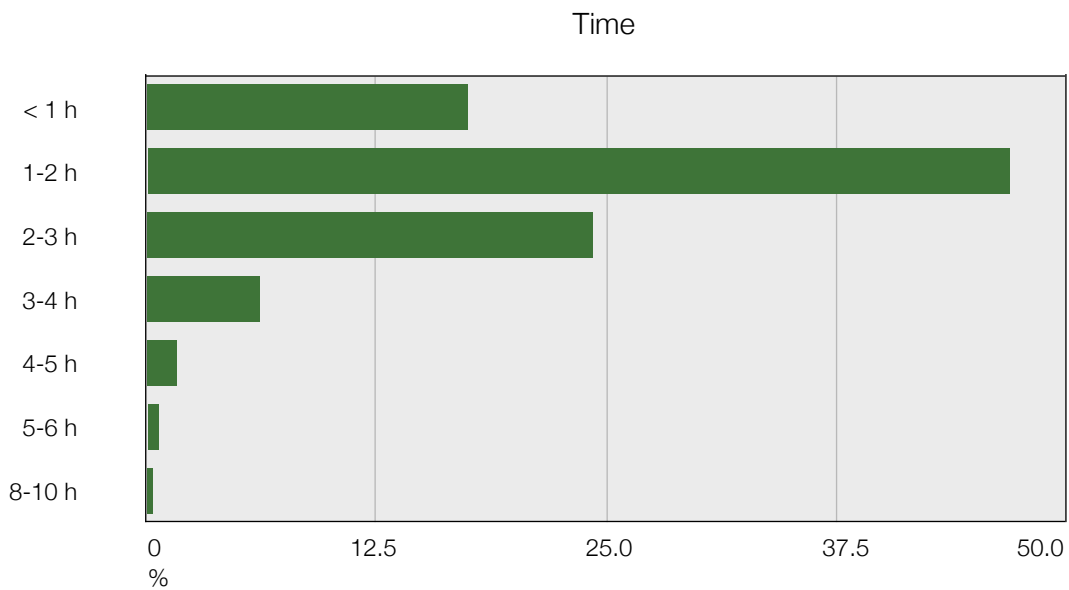
In 60% of the cases the patient blood loss is < 500ml. Without relevant secondary illness, a transfusion is therefore seldom required. Here further economical studies would be welcome. The data in Spine Tango facilitate this.



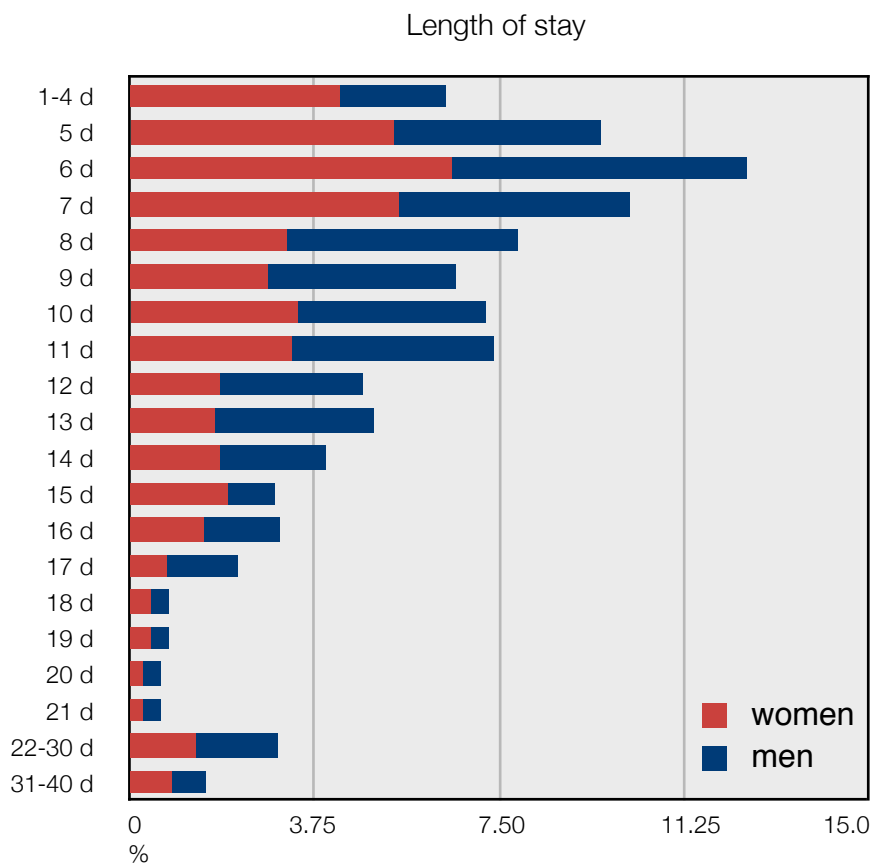
It is worth noting that in the graphic "Decompression methods" multiple answers are possible in Spine Tango for certain questions! This is also an area for further research.



Calculate the OP capacity for spine surgery in your clinic based on the required OP times.

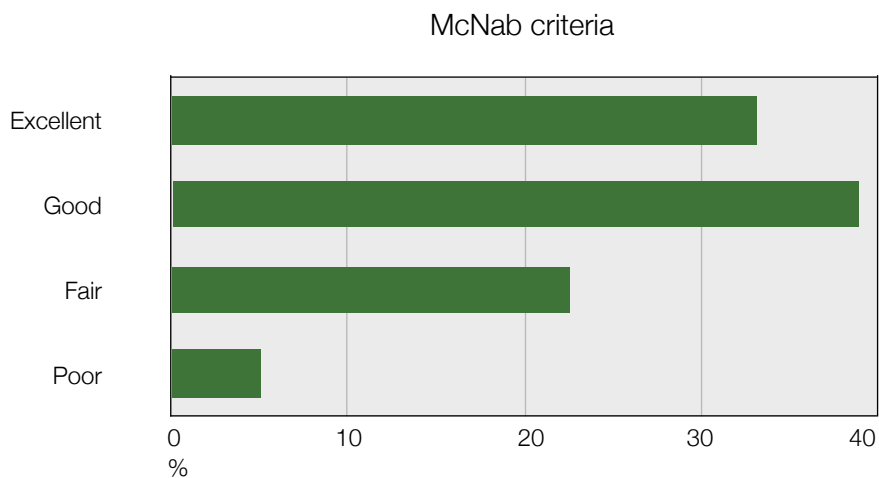


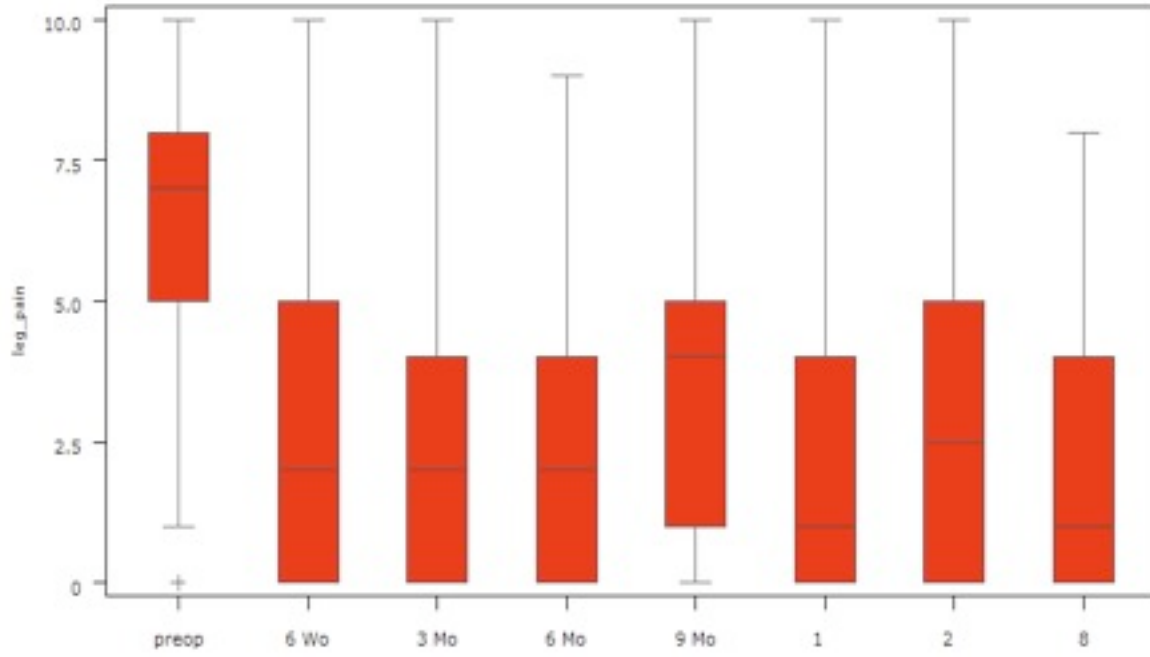
In these exemplary studies we have not stratified according to therapy methods (i.e. sole decompression vs. instrumentation). This explains the wide range of the results below concerning hospitalization time.



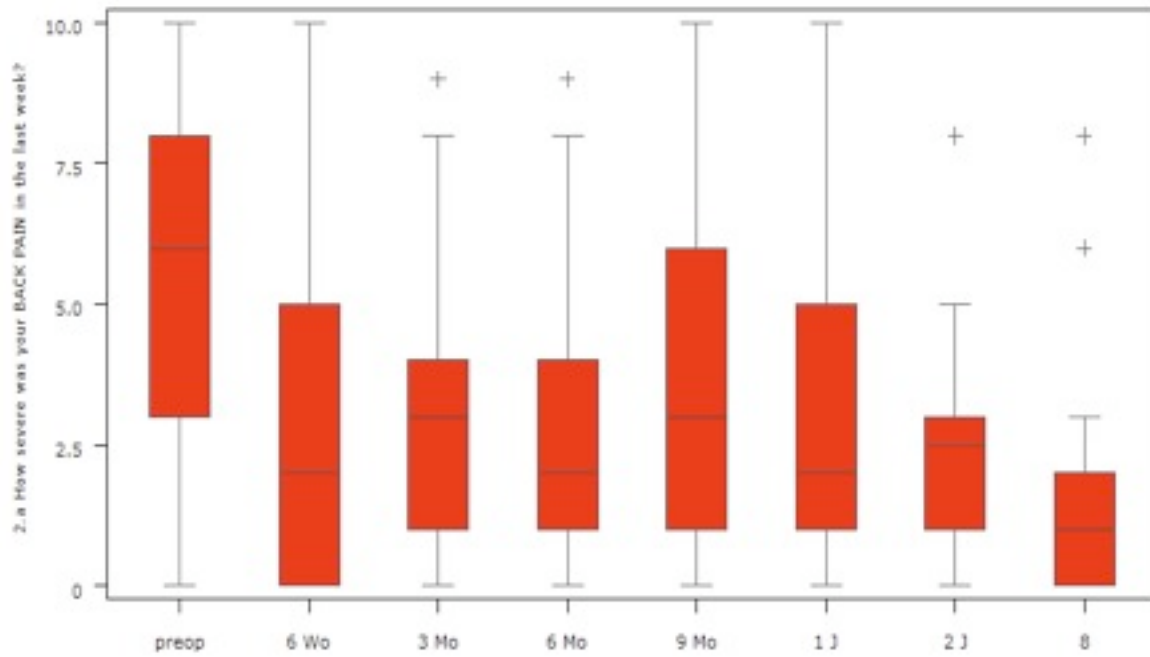
Complications	N	%
Surgical		
Wrong segment	1	0.1
<i>Root injury</i>	3	0.4
Hematoma cauda	2	0.3
Hematoma canal	2	0.3
Implant malposition	7	0.4
<i>Dura lesion</i>	51	3.2
Wound infection	15	0.9
Implant failure	1	0.1
General		
Anaesthesiological	2	0.1
Cardio-vascular	18	1.1
Pulmonary	10	0.6
Cerebral	8	0.5
Kidney/Urinary tract	29	1.8
Gastro-intestinal	14	0.8
Exitus	1	0.1
Others	3	0.4

The table above lists complications. The high number of *dura lesions* compared to the number of *root injuries* is unusual. We might assume here that not all root injuries have been registered (ward). An external audit is planned for the Spine Tango in the future. In addition a patient based outcome assessment will be rated higher than the surgeon based outcome. Following: evaluation according to Mc Nab together with the evaluation of back and leg pain according to visual analog scale (VAS).





Here we see comparable curves for leg- and back pain which is not reflected in the literature. This observation could be due to the small number of follow-ups.





PARTICIPANTS

Country	N (clinics)
Austria	3
Belgium	3
Canada	1
Finland	2
Germany	11
Italy	1
Mexico	1
UK	1
USA	1
Switzerland	5
Singapore	1

In the year 2008 promising new clinics in several countries started to document and are joining Spine Tango: Netherlands, Slovenia, Brazil, Hungary.

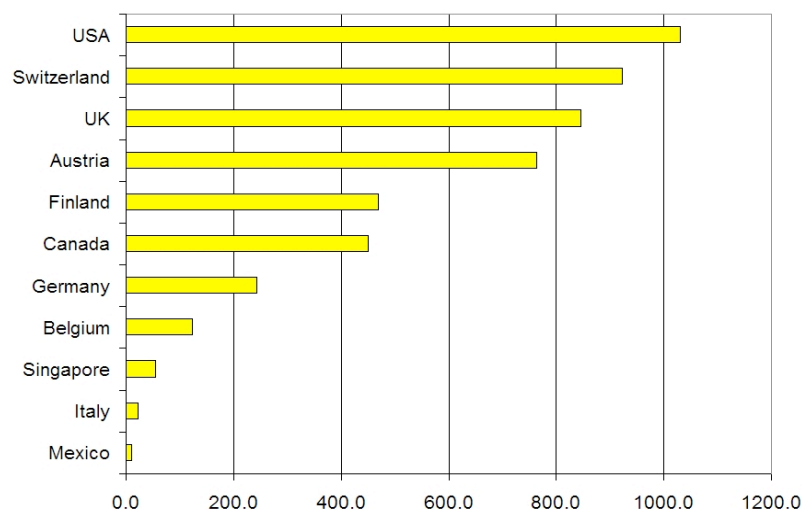
Please note that the participant community is subject to a certain dynamic but is constantly growing.

Bound to non disclosure agreements we cannot name some institutions therefore here only some figures.

Spine Tango is an independent and non-commercial project and freely available for all members of EuroSpine.

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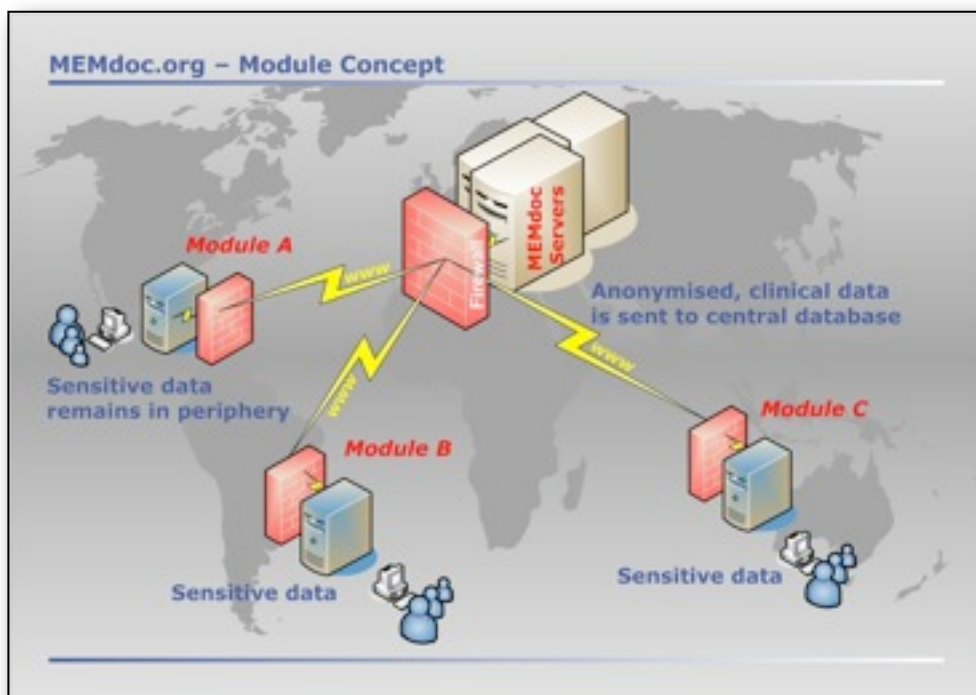
This rating shows the load of forms divided by the number of clinics per country (i.e. "documentation density")



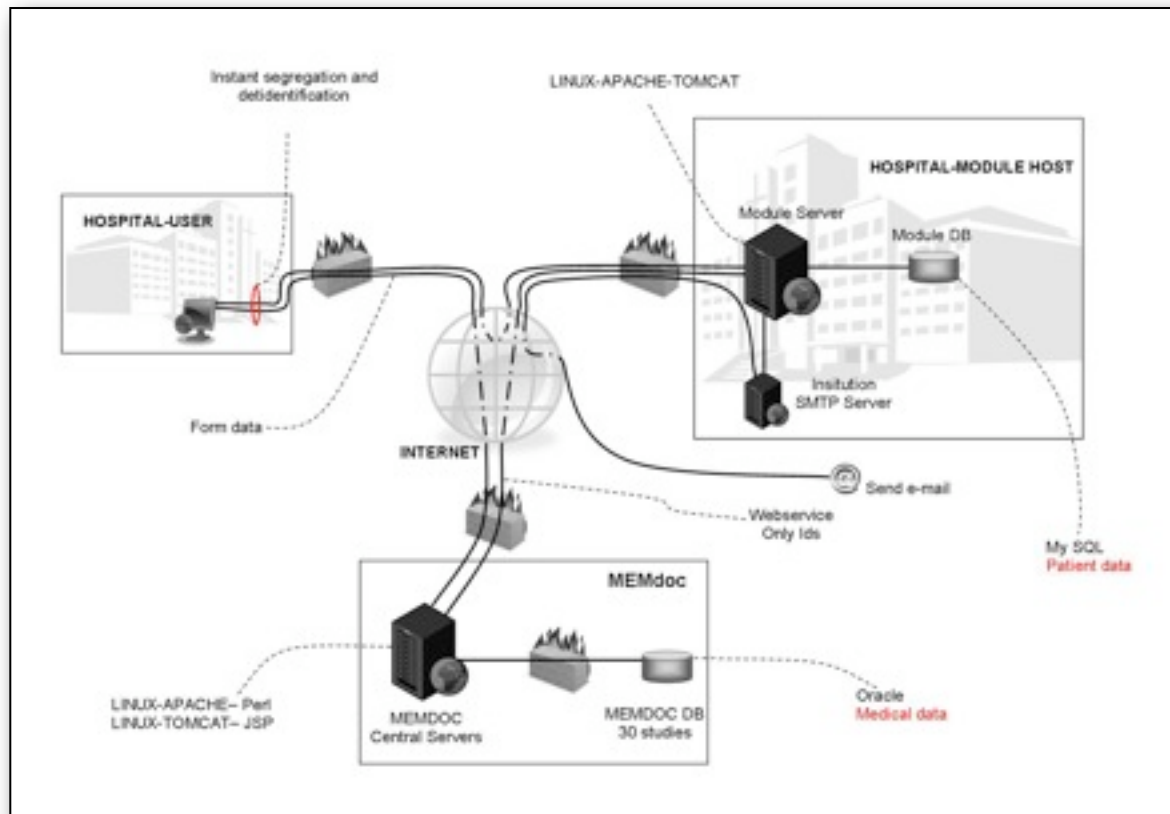
SECURITY

The model of the MEMdoc and MEMdoc-Module (module) system is designed around the principle of data separation. Users in local hospitals connect directly to a module server. This server consists of a local MySQL database, an Apache web server and the custom MEMdoc-Module application. This server can sit within the same clinic as the user or in some remote location depending on the needs of the group hosting the module. The physical and network security of this server is left up to the hosting entity. Some groups choose to restrict access to the module to users within the local subnet while others allow open access from anywhere. The module database contains all user and clinic information as well as the basic demographic data of patients. No medical data is stored on the module server. Users connect to the module with a standard web browser using the HTTP (port 80) protocol. This protocol is sufficient for most installations since access to modules is normally restricted by the firewall of the hosting entity and the data stored on the module server does not contain any medical related data. It is, however, possible to run the entire module in HTTPS (secure-HTTP) mode.

The second part of the MEMdoc-Module system is the MEMdoc central server. Whenever module users create or access medical data (e.g. documentation forms) they are automatically redirected to the MEMdoc central server. This connection is transparent to the users. The link between the user's web browser and the MEMdoc central server is made through the MEMdoc module controller. The only data passed through the module controller to the MEMdoc central server are internal ID's for the user, patient, clinic, department and module. Additionally, the birth year and gender of the patient is also sent for doing statistics. These parameters are passed using the HTTP (port 80) protocol. Once the user has been redirected to the MEMdoc central server then all further data entered (e.g. documentation forms) are sent over port 443 using HTTPS. MEMdoc uses a Thawte certified SSL web server certificate with 256-bit encryption. All medical data is retrieved from and stored directly to the MEMdoc central server. Medical data never passes through the module server and is never stored on the module server.



The physical and network security of all the MEMdoc servers is maintained by IEFO (Institute for Evaluative Research in Orthopaedic Surgery) at the MEM Research Center. This includes the MEMdoc central (web) server, the MEMdoc database server and the MEMdoc module controller. Additionally, any modules that are hosted within IEFO fall within the same security parameters. All servers are physically housed at the MEMcenter in Bern in a dedicated, locked, climate controlled and monitored server room. The network is protected by a Sonicwall Pro 2040 firewall with real-time gateway anti-virus, anti-spyware, anti-span and intrusion prevention. The firewall only allows access to the servers via ports 80, 443, 8080 and 22 (SSH). The database server is housed on the designated LAN (local area network) side of the network and only accessible through the other servers in the network. Each server is continuously monitored to log all connections and to detect any suspicious activity.



- The following hardware is recommended for a MODULE
- Midrange Tower- or 19" Rack server
 - CPU Intel Core 2 Duo or Xeon Dual Core or AMD Opteron
 - RAM > 2 GB
 - Hardware raid 1 or 5
 - Linux compatible (SUSE 10.2, ...)



**UNIVERSITÄT
BERN**

PUBLICATIONS

Papers in peer reviewed journals

Aebi M, Grob D (2004) SSE Spine Tango: a European Spine Registry promoted by the Spine Society of Europe (SSE). *Eur Spine J* 13:661-662. DOI 10.1007/s00586-004-0868-0

Melloh M, Staub L, Aghayev E, Zweig T, Barz T, Theis JC, Chavanne A, Grob D, Aebi M, Röder C (2008) The international spine registry SPINE TANGO: status quo and first results. *Eur Spine J*. 17(5): 1201-1209, DOI 10.1007/s00586-008-0665-2

Röder C, Chavanne A, Mannion AF, Grob D, Aebi M (2005) SSE Spine Tango--content, workflow, set-up. www.eurospine.org-Spine Tango. *Eur Spine J* 14:920-924. DOI 10.1007/s00586-005-1023-2

Röder C, El-Kerdi A, Grob D, Aebi M (2002) A European spine registry. *Eur Spine J* 11:303-307. DOI 10.1007/s00586-002-0453-3

Röder C, Muller U, Aebi M (2006) The rationale for a spine registry. *Eur Spine J* 15 Suppl 1:S52-56. DOI 10.1007/s00586-005-1050-z

Röder C, Staub LP, Dietrich D, Zweig T, Melloh M, Aebi M., Benchmarking with Spine Tango: potentials and pitfalls, *Eur Spine J*, epub ahead of print

Sobottke R, Csécséi G, Kaulhausen T, Delank KS, Franklin J, Aghayev E, Zweig T, Eysel P (2008) Spine surgery in the elderly, *Orthopäde* 37: 367–373

Zweig T, Mannion AF, Grob D, Melloh M, Munting E, Tuschel A, Aebi M, Röder C (2009) How to Tango – a manual for implementing Spine Tango. *Eur Spine J*, Epub ahead of print

Impellizzeri FM, Bizzini M, Leunig M, Maffioletti NA, Mannion AF. Money matters: exploiting the data from outcomes research for quality improvement initiatives. *Eur Spine J*. 2009 Mar 18. Epub ahead of print

Porchet F, Bartanusz V, Kleinstueck FS, Lattig F, Jeszenszky D, Grob D, Mannion AF. Microdiscectomy compared with standard discectomy: an old problem revisited with new outcome measures within the framework of a spine surgical registry. *Eur Spine J*. 2009 Mar 3. Epub ahead of print

Abstracts in peer reviewed journals

Melloh M, Staub L, Röder C, Sommer S, Rieger P, Barz T. Anterior lumbar interbody fusion (ALIF) vs. instrumented posterolateral fusion (PLF): Are there advantages of the two methods regarding complications and rehabilitation? *JBJS Br*. 2009 Mar; 91-B(Suppl 1): 147

Zweig T, Dietrich D, Diel P, Aghayev E, Melloh M, Sobottke R, Domanja S, Röder C. A detailed exemplary analysis of dura lesions in 7 clinics. Quality control and benchmarking in spinal surgery - a real task! *Eur Spine J*. 2008;17(11):1577; DOI 10.1007/s00586-008-0803-x.

Melloh M, Staub L, Aghayev E, Schuessmann E, Bach B, Barz T, Theis JC, Röder C. The international spine register SPINE TANGO – Status quo and first results. *Eur Spine J*. 2007;16(11):1979; DOI 10.1007/s00586-007-0524-6.

Melloh M, Staub L, Aghayev E, Schuessmann E, Bach B, Barz T, Theis JC, Röder C. Predictors of dural tears in posterior spinal fusion. *Eur Spine J*. 2007;16(11):2019; DOI 10.1007/s00586-007-0524-6.

Melloh M, Staub L, Aghayev E, Schuessmann E, Bach B, Barz T, Theis JC, Röder C. Co-variates of length of hospital stay in posterior spinal fusion. *Eur Spine J*. 2007;16(11):2019; DOI 10.1007/s00586-007-0524-6.

Melloh M, Staub L, Barz T, Rieger P, Röder C. Co-variates of length of hospital stay in posterior spinal fusion. *Eur Spine J*. 2007;16(Suppl. 1):S58; DOI 10.1007/s00586-007-0448-1.

Melloh M, Staub L, Barz T, Rieger P, Röder C. Predictors of dura lesions in posterior spinal fusion. *Eur Spine J*. 2007;16(Suppl. 1):S58; DOI 10.1007/s00586-007-0448-1.

Melloh M, Staub L, Barz T, Sommer S, Röder C. Complications and rehabilitation after treatment of the degenerated lumbar spine: a comparison of anterior lumbar interbody fusion (ALIF) vs instrumented posterolateral fusion (PLF). *Eur Spine J*. 2006;15(Suppl. 4):S516.

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Melloh M, Staub L, Barz T, Sommer S, Röder C. Decompression vs decompression plus fusion in lumbar spinal stenosis: a comparison of complications and rehabilitation. *Eur Spine J.* 2006;15(Suppl. 4):S515.

Vieweg U, Liner M, Melloh M, Röder C. Internal and external quality controls in spine surgery. *Eur Spine J.* 2006;15(10):1561-1632.

Zweig T, Aghayev E, Delank KS, Vieweg U, Melloh M, Röder C, Aebi M. SPINE TANGO Report, Germany 2006-2008. MEM/IEFO press. December 2008.

Melloh M. Predictive factors of physician-based outcomes after posterior lumbar fusion in the SPINE TANGO registry. *Spinal News International.* 2008;3(8):14.

Zweig T. Spine Tango – International Registry of the European Spine Society
Leading Opinions Orthopaedics, Austria 3/2008

Zweig T, Melloh M, Aghayev E, Aebi A, Grob D, Röder C. Spine Tango Report 2008. Congress edition. *Spineweek* 05/2008.

Melloh M. Das internationale Wirbelsäulenregister Spine Tango. www.bvou.net. 2007;16th October 2007.

Rieger P, Barz T, Melloh M. Internationales Wirbelsäulenregister – Möglichkeiten und Grenzen. *Orthopädische Nachrichten.* 2007; Congress edition 1, 10/2007:4.

Melloh M. Das internationale Wirbelsäulenregister SPINE TANGO. *Leading Opinions Orthopädie.* 2007;2(3):54-55.

Melloh M. The European Spine Registry. *Spine Daily.* 2006; 2nd issue, 26th October 2006.

Delank KS. Spine Tango – one year German module, *Orthopaedic news* 04/2008 Congress edition 2

Vieweg U, M Lühn. SSE Spine Tango - ein praktikables Assessment-Tool in der Wirbelsäulenchirurgie, *Orthopädische Praxis* 44, 10, 2008

Oral presentations

Zweig T, Aghayev E, Melloh M, Staub L, Theis JC, Aebi M, Röder C. An analysis of the surgical treatment of lumbar spinal stenosis (LSS) – procedures, outcomes, influential factors. A prospective study of 1348 patients in the international “Spine Tango” registry, German Joint Congress for Orthopaedics and Trauma, Berlin, Germany, Oct. 22-25, 2008

Sobottke, Csécsei G, Kaulhausen T, Zarghooni K, Delank KS, Aghayev E, Zweig T, Eysel P. Spinal surgery in the elderly: does age have an influence on the complication rate? German Joint Congress for Orthopaedics and Trauma, Berlin, Germany, Oct. 22-25, 2008

Delank KS. The time after data acquisition– How to publish with Spine Tango, German Joint Congress for Orthopaedics and Trauma, Berlin, Germany, Oct. 22-25, 2008

Grob D. Spine Tango - From the development to the complete implementations, German Joint Congress for Orthopaedics and Trauma, Berlin, Germany, Oct. 22-25, 2008

Vieweg U. Evaluation of methods and collaboration with the industrial partners, German Joint Congress for Orthopaedics and Trauma, Berlin, Germany, Oct. 22-25, 2008

Ogon M, Tuschel A. A detailed analysis of workflow in Speising/Vienna, Austria, German Joint Congress for Orthopaedics and Trauma, Berlin, Germany, Oct. 22-25, 2008

Zweig T. The German Spine Tango module - status quo, German Spine Tango user meeting, Cologne, Germany, Sept. 22, 2008

Melloh M, Röder C, Zweig T, Barz T, Theis JC. Benchmarking in spinal surgery: An analysis from the International spine registry Spine Tango. NZOA Annual Scientific Meeting, Hastings, October 19-22, 2008

Melloh M, Aghayev E, Zweig T, Barz T, Theis JC. Predictive factors of physician-based outcomes after posterior lumbar fusion. NZOA Annual Scientific Meeting, Hastings, October 19-22, 2008

Melloh M. Challenges in establishing an international spine registry and benchmarking in spinal surgery. AMOCK Research Seminar, University of Otago, Dunedin, September 30, 2008

Oral presentations (cont.)

Melloh M. Challenges in establishing an international spine registry and benchmarking in spinal surgery. Jeffrey Shields Meeting, University of Otago, Dunedin, September 25, 2008

Melloh M, Zweig T, Staub L, Aghayev E, Barz T, Rieger P, Theis JC, Röder C. Predictive factors of physician-based outcomes after posterior lumbar fusion in the Spine Tango registry. XXIV Triennial World Congress SICOT/SIROT, Hong Kong, China, Aug. 24-28, 2008

Aghayev E, Melloh M, Zweig T, Staub L, Barz T, Rieger P, Theis JC, Röder C. Co-variables of referral for rehabilitation after posterior lumbar fusion. XXIV Triennial World Congress SICOT/SIROT, Hong Kong, China, Aug. 24-28, 2008

Melloh M, Zweig T, Staub L, Aghayev E, Barz T, Rieger P, Theis JC, Röder C. Lumbar spinal stenosis: Baseline characteristics, surgical measures, and outcomes in the Spine Tango registry, XXIV Triennial World Congress SICOT/SIROT, Hong Kong, China, Aug. 24-28, 2008

Zweig T, Melloh M, Staub L, Aghayev E, Barz T, Rieger P, Theis JC, Röder C. The international spine registry Spine Tango - status quo and first results. XXIV Triennial World Congress SICOT/SIROT, Hong Kong, China, Aug. 24-28, 2008

Zweig T, Melloh M, Staub L, Aghayev E, Barz T, Rieger P, Theis JC, Röder C. Predictors of dural tears in posterior spinal fusion, XXIV Triennial World Congress SICOT/SIROT, Hong Kong, China, Aug. 24-28, 2008

Sobottke R, Csécsei G, Kaulhausen T, Delank KS, Aghayev E, Zweig T, Eysel P. A comprehensive analysis of complications in the operative therapy of disc herniations, 57. Jahrestagung der Norddeutschen Orthopädenvereinigung, Hamburg, Germany, June 12-14, 2008

Melloh M, Staub L, Aghayev E, Barz T, Theis JC, Röder C. Co-variables of length of hospital stay in posterior spinal fusion. 9th EFORT Congress, Nice, May 29 – June 1, 2008

Zweig T. Spine Tango – Great efforts, what is the reward. 31. Congress, GIS (Societa Italiana di Chirurgia Vertebrale G.I.S) Milano, Italy, May 22-24, 2008

Aghayev E, Melloh M, Staub L, Zweig T, Barz T, Rieger P, Theis JC, Röder C. Lumbar spinal stenosis: Baseline characteristics, surgical measures, and outcomes in the SPINE TANGO registry Spine Week, Geneva, Switzerland, May 26-31, 2008

Melloh M, Aghayev E, Staub L, Zweig T, Barz T, Rieger P, Theis JC, Röder C. Predictive factors of physician-based outcomes after posterior lumbar fusion in the SPINE TANGO registry. SpineWeek Congress, Geneva, May 26-31, 2008

Delank KS, Kaulhausen T, Sobottke R, Röder C, Eysel P. Spine Tango – 1 Year German Module: Presentation first outcomes for lumbar spinal stenosis, 56th Congress "Süddeutscher Orthopäden", Baden-Baden, Germany, May 3, 2008

Vieweg U. SSE-Spine Tango, assessment tool in spine surgery, 56th Congress "Süddeutscher Orthopäden", Baden-Baden, Germany, May 3, 2008

Melloh M. Challenges in establishing an international spine register and benchmarking in spinal surgery. Research Day University of Otago, Dunedin, April 24, 2008

Melloh M, Barz T, Rieger P, Staub L, Aghayev E, Röder C, Zweig T, Theis JC. Challenges in establishing the International Spine Registry SPINE TANGO. Spine Society of Australia Annual Scientific Meeting, Adelaide, April 18-20, 2008

Melloh M, Barz T, Rieger P, Staub L, Aghayev E, Röder C, Zweig T, Theis JC. Benchmarking in spinal surgery – an analysis from the International Spine Registry SPINE TANGO. Spine Society of Australia Annual Scientific Meeting, Adelaide, April 18-20, 2008

Oral presentations (cont.)

Melloh M, Staub L, Aghayev E, Schuessmann E, Bach B, Barz T, Theis JC, Röder C. Das internationale Wirbelsäulenregister SPINE TANGO – Status quo und erste Auswertungs-Ergebnisse. German Spine Congress, Mannheim, December 13-15, 2007

Röder C, Melloh M. Spine Tango Kliniken in Deutschland und International. 1. Spine Tango Anwendertreffen Deutschland, Cologne, November 6, 2007

Röder C, Melloh M. Analysen von Spine Tango Daten. 1. Spine Tango Anwendertreffen Deutschland, Cologne, November 6, 2007

Melloh M, Staub L, Barz T, Rieger P, Röder C. Prädiktive Faktoren von Duraverletzungen bei posterioren Fusionsverfahren der Wirbelsäule. Joint German Congress of Orthopaedic and Trauma Surgery, Berlin, October 24-27, 2007

Rieger P, Melloh M, Staub L, Barz T, Röder C. Komplikationen und Rehabilitationsprozess bei der operativen Behandlung degenerativer lumbaler Wirbelsäulenerkrankungen: Anterior Lumbar Interbody Fusion (ALIF) vs. instrumentierte posterolaterale Fusion (PLF). Joint German Congress of Orthopaedic and Trauma Surgery, Berlin, October 24-27, 2007

Rieger P, Melloh M, Staub L, Barz T, Röder C. Dekompression vs. Dekompression plus Fusion bei degenerativer lumbaler Spinalkanalstenose: ein Vergleich von Komplikationen und Rehabilitationsprozess. Joint German Congress of Orthopaedic and Trauma Surgery, Berlin, October 24-27, 2007

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Melloh M, Status quo and first results from the international spine registry SPINE TANGO. Workshop. EuroSpine Congress, Brussels, October 2-6, 2007

Melloh M, Staub L, Röder C, Sommer S, Rieger P, Barz T. Anterior lumbar interbody fusion (ALIF) vs. instrumented posterolateral fusion (PLF): are there advantages for one of the two methods regarding complications and rehabilitation? 8th EFORT Congress, Florence, May 11-15, 2007

Melloh M, Spine Tango Clinics in Europe. Workshop. Spine Tango Consensus Meeting, Munich, February 26, 2007

Melloh M, First Results of Spine Tango Data. Workshop. Spine Tango Consensus Meeting, Munich, February 26 2007

Melloh M. SSE Spine Tango. Workshop. Spine Tango Meeting, Cologne, January 12, 2007

Vieweg U, Liner M, Melloh M, Röder C. Benchmarking as quality assessment in spinal surgery. German Spine Congress, Munich, November 30 - December 2, 2006

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Melloh M, Staub L, Barz T, Rieger P, Röder C. Minimal invasive vs. conventional technologies in spinal surgery. Joint German Congress of Orthopaedic and Trauma Surgery, Berlin, October 2-6, 2006

Melloh M, Staub L, Barz T, Rieger P, Röder C. Early complications of vertebro- vs. kyphoplasty. Joint German Congress of Orthopaedic and Trauma Surgery, Berlin, October 2/6, 2006

Vieweg U, Liner M, Melloh M, Röder C. SSE Spine Tango: A valid and highly practicable quality assessment tool in spinal surgery. Annual Meeting of German Society of Neurosurgery, Karlsruhe, September 29-30, 2006

Oral presentations (cont.)

Melloh M, Staub L, Barz T, Sommer S, Röder C. Anterior lumbar interbody fusion (ALIF) vs. instrumented posterolateral fusion (PLF): Are there advantages for one of the two methods regarding complications and rehabilitation? Annual Swiss Congress of Orthopaedic and Trauma Surgery, Luzern, September 20-22, 2006

Melloh M, Staub L, Barz T, Sommer S, Röder C. Is decompression superior to decompression/ fusion in lumbar spinal stenosis regarding complications and rehabilitation? Annual Swiss Congress of Orthopaedic and Trauma Surgery, Luzern, September 20-22, 2006

Melloh M. SSE Spine Tango. Workshop. Spine Tango Meeting, Greifswald, July 3, 2006

Melloh M. The European spine registry. Spine Tango Meeting, Schwedt/Oder, February 17, 2006

Melloh M. Actual situation of the European spine registry and outlook. Workshop. Spine Tango Meeting, Munich, February 3, 2006

Melloh M. Financing of a spine registry documentation. Workshop. Spine Tango Meeting, Munich, February 3, 2006

Melloh M. First Results of Spine Tango Data. Workshop. EuroSpine Congress, Istanbul, October 25-28, 2006

Posters

Zweig T, Dietrich D, Diel P, Aghayev E, Melloh M, Sobottke R, Domanja S, Röder R, Röder C. A detailed exemplary analysis of dura lesions in 7 clinics. Quality control and benchmarking in spinal surgery - a real task! German Spine Congress, Ulm, November 27-29, 2008

Kaulhausen T., Sobottke R., Delank KS, Röder C., Eysel P. Spine Tango, 1 Jahr deutsches Modul – Vorstellung der deutschlandweiten Ergebnisse der Spondylolisthese, Vereinigung Süddeutscher Orthopäden e.V. 56. Jahrestagung, Baden-Baden, May 1-4, 2008

Sobottke R, Kaulhausen TM, Zweig T, Aghayev E, Delank KS, Eysel P. Postervortrag "Spine Tango: Presentation of the European Results of Operative Therapy of Lumbar Spinal Stenosis (LSS), Spine Week, Geneva, May 26-31, 2008

Kaulhausen TM, Sobottke R, Delank KS, Zweig T, Aghayev E, Eysel P. Spine Tango: Presentation of the International Results of Operative Therapy of Spondylolisthesis. Spine Week, Geneva, May 26-31, 2008

Melloh M, Staub L, Zweig T, Barz T, Theis JC. Co-variables of length of hospital stay in posterior spinal fusion. NZOA Annual Scientific Meeting, Hastings, October 19-22, 2008

Melloh M, Aghayev E, Zweig T, Barz T, Theis JC. Lumbar spinal stenosis: Baseline characteristics, surgical measures, and outcomes. NZOA Annual Scientific Meeting, Hastings, October 19-22, 2008

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Melloh M, Staub L, Aghayev E, Barz T, Theis JC, Röder C. The International Spine Register Spine Tango – Status Quo and First Results. 9th EFORT Congress, Nice, May 29 - June 1, 2008

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Posters (cont.)

Melloh M, Staub L, Röder C, Barz T, Theis JC. Predictors of Dural Tears in Posterior Spinal Fusion. NZOA Annual Scientific Meeting, Auckland, October 14-17, 2007

Melloh M, Staub L, Barz T, Rieger P, Röder C. Predictors of dura lesions in posterior spinal fusion. EuroSpine Congress, Brussels, October 2-6, 2007

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Melloh M, Staub L, Röder C, Sommer S, Rieger P, Barz T. Is decompression superior to decompression plus fusion in lumbar spinal stenosis regarding complications and rehabilitation? 8th EFORT Congress, Florence, May 11-15, 2007

Melloh M, Staub L, Barz T. Anterior Lumbar Interbody Fusion (ALIF) vs. instrumentierte posterolaterale Fusion (PLF): Komplikationen und Rehabilitationsprozess. 10th Orthopaedic Symposium, Schwedt/ Oder, March 21, 2007

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Melloh M, Barz T, Knoefler. Stellenwert der Wirbelsäulenchirurgie in Uniklinik Greifswald/ Asklepios Klinikum Uckermark: Benchmarking mit dem Spine Tango Datenpool. 10th Orthopaedic Symposium, Schwedt/Oder, March 21, 2007

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Melloh M, Staub L, Barz T, Sommer S, Röder C. Complications and rehabilitation after treatment of the degenerated lumbar spine: a comparison of anterior lumbar interbody fusion (ALIF) vs instrumented posterolateral fusion (PLF). EuroSpine Congress, Istanbul, October 25-28, 2006

Melloh M, Staub L, Barz T, Sommer S, Röder C. Decompression vs decompression plus fusion in lumbar spinal stenosis: a comparison of complications and rehabilitation. EuroSpine Congress, Istanbul, October 25-28, 2006

Doctoral candidates

Mrs Ling Wisgien and Mr Jimson Arampankudy
Outcomes and radiologic assessment in operative treatment of spondylolisthesis
Doctoral adviser: PD Dr. K.-St. Delank

Mrs Ayla Yagdiran and Mr Marcus Spangenberg
Outcomes and radiologic assessment in operative treatment of lumbar spinal stenosis
Doctoral adviser: PD Dr. K.-St. Delank

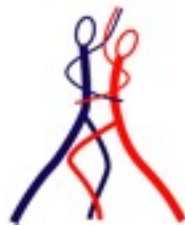
Mrs Silvia Gerighausen
Comparison of outcomes and radiographic findings of conservative and operative treatment of spondylodiscitis
Doctoral adviser: PD Dr. K.-St. Delank

Mr Marcus Meixner
Evaluation of Spine Tango conservative in a general practice setting
Doctoral adviser: Prof. Aebi, Th. Zweig

MPH thesis

Mr Johnny Kessler
The development and validation of a documentation system for the conservative treatment of spinal disorders
Advisers: C. Röder, M. Melloh





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Notes



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