

Computerized follow-up after surgery for degenerative lumbar spine diseases

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It is undisputable that for scientific evaluation of the impact of surgical measures on degenerative lumbar spine diseases, strict and sophisticated follow-up models must be used. Thorough information on preoperative clinical, neuroradiological, psychological and work related circumstances must be included, and the follow-up should preferably be performed at a minimum of 2-year postoperatively and by an independent observer. The significance of these aspects has been clearly pointed out in this symposium on evaluation of results after lumbar spine surgery.

At our department, a prospective and consecutive registration of all patients undergoing surgery for degenerative lumbar spine diseases, was initiated in 1986, and today contains more than 700 patients operated on. On admission to hospital, a computer adapted protocol is filled in, and this protocol is used at follow-up at 4, 12 and 24 months postoperatively. In total 150 parameters are registered for each patient and computer analysis is performed repeatedly. This study has become the source of a number of scientific publications (see reference list).

Through central funding, we were given the task by Landstingsförbundet/Socialstyrelsen (Federation of County Councils/Swedish National Board of Health and Welfare) in 1991 to make a computer adapted follow-up protocol for surgery for degenerative lumbar spine diseases, possible to use in any orthopedic department in our or other countries. The aim of this protocol is to give every orthopedic department dealing with spinal surgery a possibility to evaluate its own results and also, if desired, to enable comparison between different departments. The protocol, elaborated before and modified during the State of the Art Conference in Lund 1992, is a condensation of our previous protocol and is mainly aimed at product control information but might also be suitable for scientific evaluation.

The information according to the protocol, which is enclosed as an appendix, can be subdivided under five subheadings.

1. Anamnestic information

Patient related parameters included are age, sex, previous episodes of low back pain and sciatica and data on previous spine operations, number and type. Also working conditions are included: type of work, duration of sick-listing and compensation claims.

2. Current spine problem

The duration of low back pain as well as sciatica related to the spine problem in question is registered as well as the consumption of analgesics, the walking distance and the level of function. Pain grading is performed according to the visual analogue scale (VAS) concerning back as well as leg pain.

3. Objective signs

A standardized clinical/neurological investigation is performed, registering straight leg raising test, motor, sensory and sphincter deficit as well as Waddell signs and Waddell symptoms.

4. Surgical data

Diagnosis, type and level of operation, and the use of antibiotic prophylaxis are registered. Further, complications, hospitalization time, performing surgeon and the time of sick-listing postoperatively are included.

5. Follow-up

The follow-up intervals may be chosen by the individual departments, but a 2-year follow-up is desirable and, if possible, by an independent observer. Low back pain and sciatica at time of follow-up is registered as well as type of work, consumption of analgesics, walking distance and level of function. The patient's opinion on the results of operation is included and the same objective parameters as preoperatively are registered, as are also repeat operations on the spine during the follow-up period.

The data are recorded on a Macintosh computer using the FileMaker Pro 2.0 program. However, the program will soon be released for use on PC. The application can be obtained without charge from the department of orthopedics in Lund and is currently in use in a few selected departments.

Conclusion


With the immense expansion of spinal surgery for degenerative diseases and the sometimes questionable results, it seems mandatory with careful clinical follow-up. This follow-up should preferably be performed by any department dealing with spinal surgery. The protocol proposed in this manuscript is simple and easy to follow in clinical practice and can be used by anyone interested. It is not designed with the purpose of central registration but is meant to be utilized by individual departments dealing with spinal surgery. However, it may also form the basis for comparative investigations. The authors welcome contacts in the future concerning aspects of improvement.

Acknowledgements

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References

1. Jönsson B, Strömqvist B, Egund N. Anomalous lumbosacral articulations and low-back pain. Evaluation and treatment. *Spine* 1989; 14: 831–834.
2. Annertz M, Holtås S, Cronqvist S, Jönsson B, Strömqvist B. Isthmic lumbar spondylolisthesis-MR imaging vs myelography. *Acta Radiol* 1990; 5: 449–453.
3. Strömqvist B, Jönsson B, Annertz M, Holtås S. Cauda equina syndrom caused by migrating fat graft after lumbar spinal decompression. A case report demonstrated with MRI. *Spine* 1991; 16: 100–101.
4. Jönsson B, Söderholm R, Strömqvist B. Erythrocyte sedimentation rate after lumbar spine surgery. *Spine* 1991; 16: 1049–1050.
5. Jönsson B, Strömqvist B, Annertz M, Holtås S, Sundén G. Diagnostic lumbar nerve root block. *J Spinal Disorders* 1988; 3: 232–235.
6. Annertz M, Häggglund G, Holtås S, Jönsson B, Strömqvist B. Contrast enhanced MRI versus myelography and contrast enhanced CT in postdiscectomy problems. *Eur Spine J* 1992; 1: 84–88.
7. Jönsson B, Åkesson M, Jonsson K, Strömqvist B. Low risk for vertebral slipping after decompression with facet-joint preserving technique for lumbar spinal stenosis. *Eur Spine J* 1992; 1: 100–104.
8. Jönsson B, Strömqvist B. Symptoms and signs in degenerative disorders of the lumbar spine. A prospective, consecutive study of 300 operated patients. *J Bone Joint Surg* (in press).
9. Jönsson B, Strömqvist B. Decompression guided by lumbar nerve root block. a prospective 2-year evaluation by an independent observer. Submitted.
10. Jönsson B, Strömqvist B. Lumbar spine surgery in the elderly—complications and surgical results. Submitted.



Outcome study
Lumbar spine surgery – Lund
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Date of birth (social security no)

Name

Reviewer (initials)

Form 1a. Running no: _____

Previous spine problems

Previous episodes of LBP, no

Previous lumbar spine operations No

Disc
 Spinal stenosis
 Other type.....

Varia

Sex Woman Man

Smoker Yes No

Employment status

Sick-listed from
 (year-month-day) _____

or in total _____ months

Compensation claims Yes No

Type of work Retired
 Disability pension
 Sedentary
 Moderately heavy
 Heavy

Current spine problems

LBP since
 (year-month-day) _____

or in total _____ months

Consumption of analgesics Regular
 Intermittent
 None

Sciatica since
 (year-month-day) _____

or in total _____ months

Walking ability < 0,5 km
 0,5–1,0 km
 1–5 km
 > 5 km

Pain grading, VAS (0–100)

Back pain _____

Sciatica _____

Level of function Manages daily and leisure activities
 Manages daily activities
 Dependent on other person

Hospitalization


Date (year-month-day)

Admitted _____

Discharged _____

Date of operation
 (year-month-day) _____

Surgeon (initials)



Outcome study
Lumbar spine surgery – Lund
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Date of birth (social security no)

Name

Reviewer (initials)

Form 1b. Running no: _____

Signs

SLR (Lasegue; degrees)

Right _____

Left _____

Relevant motor deficit Yes No

Relevant sensory deficit Yes No

Sphincter affection Yes No

Neurologic deficit other level Yes No

Waddell signs, n:o positive _____

Unphysiologic symptoms Yes No

Superficial tenderness Yes No

Simulated loading Yes No

Distraction Lasegue Yes No

General overreaction Yes No

Waddell symptoms, n:o positive _____

Pelvic/coccygeal pain Yes No

Whole leg pain Yes No

Whole leg numbness Yes No

Whole leg giving away Yes No

Emergency admission for LBP Yes No

Surgical data

Diagnosis

Disc herniation

Central spinal stenosis

Lateral spinal stenosis

Spondylolysis/olistothesis

Other:.....

Operation

Traditional discectomy

Microscopic discectomy

Percutaneous nucleotomy

Decompression

Decompression + fusion

Fusion, uninstrumented

Fusion, instrumented

Other:

Level operated on (from – to)

(i.e. nerve root: L4 – L4) Proximally _____

(i.e. disc: L5 – S1) Distally _____

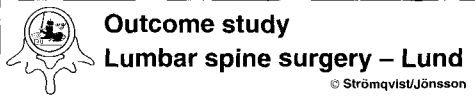
Side Right

Bilateral Left

Antibiotic prophylaxis Yes No

Postoperative complication No

Yes, type:.....



Form 2. Running no: _____

Reoperation

Date of (year-month-day)
reoperation _____

Type of reoperation Disc excision
 Decompression
 Fusion
 Combination of above

Follow-up

Follow-up 1- 2- 3-year

Grading of LBP compared with preop. Pain free
 Significantly improved
 Slightly improved
 Unchanged
 Deteriorated

Grading of sciatic pain compared with preop. Pain free
 Significantly improved
 Slightly improved
 Unchanged
 Deteriorated

Working conditions Same as preoperatively
 Modified work
 Sick listed for spine problems
 Sick listed, other reason
 Disability pension
 Retired

Consumption of analgesics Regular
 Intermittent
 None

Walking ability < 0,5 km
 0,5-1,0 km
 1-5 km
 > 5 km

Date of birth (social security no) _____

Name _____

Reviewer (initials) _____

Return to work

Sick-listed to (year-month-day) _____
or in total _____ months

Date of (year-month-day)
follow-up _____

Level of function Manages daily and leisure activities
 Manages daily activities
 Dependent on other person

Patient satisfaction with outcome of operation Yes
 Uncertain
 No

Pain grading, VAS (0-100)
Back pain _____
Sciatica _____

Sphincter affection Yes No

SLR (Lasegue; degrees)
Right _____
Left _____

Motor deficit compared with preop. Abolished / No deficit
 Decreased
 Unchanged
 Increased

Sensory deficit compared with preop. Abolished / No deficit
 Decreased
 Unchanged
 Increased