

Patient-related factors predicting the outcome of decompressive surgery

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The proper selection of patients to decompressive lumbar surgery is important and a number of factors affecting the outcome of surgical treatment have been identified.

Probably the most important factor is the preoperative demonstration of a pathologic condition responsible for the distribution of pain which is possible to treat surgically. The description of the pain pattern by the patient and the results from physical and neurological examinations indicate the possibility of a true lumbar nerve root compression syndrome. Apart from a thorough neuroradiological examination, a diagnostic nerve root infiltration might be utilized in order to verify the correct pain-producing level and to minimize the extent of the surgical procedure.

The importance of psychological disturbances and psychosocial problems as described by Waddell et al (1984, 1986) are now generally acknowledged as negative prognostic factors.

During the last decade, work-related compensation claims have gained an increasing interest, and it's now recognized by for example Greenough's and Fraser's (1989) studies that surgical treatment in patients with compensational claims seems to be less favorable.

Also, a number of surgical factors may influence the result, as is obvious from other manuscripts in this supplement.

Apart from these factors a number of other patient-related factors and their influence on surgical results have been studied. In the majority of these reports, patients with lumbar disc herniation have been studied; in spinal stenosis there are no corresponding thorough evaluations to our knowledge.

A study of prognostic factors in lumbar disc herniation by Weber (1978) comprised 280 patients with a lumbar disc herniation verified by myelography. The patients were divided into 3 groups: one with randomized treatment, one with conservative treatment, and one surgically treated group. In the complete study group, factors associated with unfavorable results at a 4-year follow-up were: female sex, high age, psycho-

social stress-situation, prolonged sick-leave, and physical inactivity.

In other, later studies the age and sex-related differences in outcome has not been verified.

The importance of preoperative symptom duration is unclear and in some studies inferior results have been noted in patients with a prolonged preoperative history of sciatica. In some studies inferior results have been noted in patients with a preoperative duration exceeding 4 months while other have noted a difference at 6 or 12 months.

We have correlated some common patient factors to the 2-year result in patients operated on for disc herniation as well as spinal stenosis (Jönsson and Strömqvist; in prep).

Patients and methods

280 patients operated on with decompressive surgery of the lumbar spine were included in a prospective and consecutive study. 120 patients were operated on for disc herniation, 80 for central spinal stenosis and 80 for lateral spinal stenosis.

The patients with disc herniation had a mean age of 43 (20–75) years and the female/male ratio was 45/55. The mean preoperative duration of leg pain was 13 months and the mean preoperative sick-leave was 5 months.

The patients with central spinal stenosis had a mean age of 65 (37–85) years and the female/male ratio was 45/55. The mean preoperative duration of leg symptoms was 3.5 years.

The patients with lateral spinal stenosis had a mean age of 48 (23–75) years and the female/male ratio 65/35. The mean preoperative duration of sciatica was 2.5 years and of sick-leave was 13 months. The majority of the operations were one level unilateral L5 decompressions.

On admission to hospital a protocol adapted for computer analysis was filled in and the following vari-

ables were studied: age, sex, preoperative duration of back pain, preoperative duration of leg pain, time off work, work load, walking distance, and consumption of analgesics.

At the follow-up examination 2 years postoperatively the patients graded their sciatic pain into one of the following categories: pain free, almost pain-free, improved but with significant residual pain, unchanged compared to preoperatively, and worse than preoperatively.

Statistics

A dichotomy was performed and patients who were almost or totally pain free were regarded as successful and the remainder as failures.

The preoperative variables were compared with the 2-year outcome using the Mann-Whitney nonparametric test. For the variables describing durations individual dose-response analysis were also performed.

Results

In the patient group with disc herniation the following factors had a significantly negative influence on the 2-year result: long preoperative duration of sciatica, long time off work preoperatively, regular consumption of analgesics, and long walking distance.

For central spinal stenosis the only preoperative factor associated with an unfavorable outcome was regular consumption of analgesics preoperatively.

For lateral spinal stenosis a long preoperative duration of sciatica was associated with a poor outcome.

The dose-response analysis of the time factors yielded similar results; the risk of having a poor outcome increased continuously with time and it was not possible to identify a threshold value.

Conclusion

The most important predicting factors, often used in preoperative rating scales, are the findings from the neurological, radiological, and psychological evaluations.

Our study has demonstrated that other factors markedly influenced the long-term results, notably preoperative duration of sciatica, time off work, and consumption of analgesics.

References

1. Greenough C G, Fraser R D. The effects on compensation on recovery from low-back injury. *Spine* 1989; 14: 947-955.
2. Jönsson B, Strömqvist B. Prognostic factors in decompressive surgery of the lumbar spine. In preparation.
3. Waddell G, Main C, Morris E W, et al. Chronic lowback pain, psychologic distress, and illness behavior. *Spine* 1984; 9: 209-213.
4. Waddell G, Morris E W, Di Paola M P, et al. A concept of illness tested as an improved basis for surgical decisions in low-back disorders. *Spine* 1986; 11: 712-719.
5. Weber H. Lumbar disc herniation: A prospective study of prognostic factors including a controlled trial: Part I. *J Oslo City Hosp* 1978; 28: 33-64.
6. Weber H. Lumbar disc herniation. Part II. *J Oslo City Hosp* 1978; 28: 89-120.