Outcome after lumbar spinal fusion

Predictive factors for functional outcome and fusion rates.
Type and amount of pain at long term follow-up

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The PhD dissertation was accepted by the Faculty of Health Sciences, Aarhus University, and defenden on May 17, 2006.

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Dan Med Bull 2006;53:357

ABSTRACT

This PhD-dissertation includes 3 studies on outcome after lumbar spinal fusion. Outcome is measured using fusion rates determined from radiographs, patient satisfaction and functional outcome as assessed by the Dallas Pain Questionnaire.

The first study investigates the effect of smoking on fusion rates and functional outcome after lumbar spinal fusion. It is a questionnaire study in 426 prospectively followed patients. They were asked about their smoking habits prior and after the operation as well as present smoking status. Fifty-five percent smoked before the operation. Smoking was found to double the risk of a non-union, an effect that could be avoided by discontinuing smoking for the first 6 months after the operation. No negative effect on functional outcome as assessed by the Dallas Pain Questionnaire was observed, although a trend towards smokers being more dissatisfied with the result was found.

The second study evaluates a newly published classification of degree of disability and presence of psychological distress based on the Dallas Pain Questionnaire in a sample of 566 spinal fusion patients. The classification was developed using a sample of low back pain patients still at work. It classifies patients into four groups. Minor, intermediate and major disability and major disability together with psychological distress. The classification was evaluated both as a predictive instrument and as an outcome variable. Degree of disability and especially presence of psychological distress preoperatively was found to be correlated to outcome, and the classification was found to be a valuable tool with respect to this. As an outcome instrument it was slightly less responsive than the original continuous scales of the Dallas Pain Questionnaire.

The third study is a 5-year follow-up on a randomised clinical trial investigating outcome after lumbar spinal fusion with and without pedicle screw instrumentation. It assesses the type and amount of pain present at 5-year follow-up using pain drawings, as well as it classifies the pain drawings as organic or non-organic. Non-organic pain drawings are thought to reflect a substantial amount of psychological disturbance in the patients. Furthermore it assesses the presence of donor site pain, which is pain arising from the iliac crest at the place where autograft bone has been harvested for the fusion procedure. No difference in amount, type and localisation of pain was found between the two groups. Thirty-eighth percent of the patients were classified as having non-organic pain five years after their fusion procedure (no difference between the two treatment groups). This was heavily correlated to inferior outcome. Ten percent of the patients were classified as having donor site pain at this long term follow-up time point.