Can You Predict Complications With Back Surgery? Preoperative Factors Increase Risk

For older adults undergoing surgery for spinal stenosis, some simple indicators of poor preoperative health predict a high risk of major medical complications, reports a study in the September 1 issue of *Spine* [1]. The journal is published by Lippincott Williams & Wilkins [2], a part of Wolters Kluwer Health [3].

In combination, these risk factors may help in identifying patients at increased risk of heart attack and other serious events after spinal stenosis surgery, according to the report by Dr Richard A. Deyo and colleagues of Oregon Health and Science University, Portland. They write, "These factors may help in selecting patients and planning procedures, improving patient safety."

Information on Risk Factors for Major Medical Complications…

The researchers analyzed data on more than 12,000 patients undergoing surgery for spinal stenosis in the lower (lumbar) spine at Veterans Affairs (VA) medical centers between 1998 and 2009. Patients with spinal stenosis have narrowing of the spinal canal, causing back pain, leg pain, and other symptoms. It is the most common reason for spine surgery in older adults.

The analysis focused on identifying risk factors for major medical complications such as myocardial infarction, stroke, pneumonia, and sepsis. The overall rate of such major medical complications was 2.1 percent, along with a 0.6 percent risk of death within 90 days. By comparison, the rate of surgical wound-related complications was 3.2 percent.

Risk of major medical complications increased steadily with age: from less than one percent for patients under 50 to four percent for those aged 80 or older. In contrast, the risk of wound complications was similar across age groups.

A key risk factor for was the American Society of Anesthesiologists (ASA) class—a standard score for assessing patients' fitness for surgery. After adjustment for other factors, risk of major medical problems was three times higher for patients in ASA class 4 (indicating some type of serious medical condition) versus class 1 (no or mild disease).

More extensive surgery for spinal stenosis was also a significant risk factor. Major medical complications were three times more likely for patients undergoing surgery with spinal fusion (joining together two vertebrae), compared to less-extensive spinal decompression procedures.

…May Help Improve Safety of Spinal Stenosis Surgery

Risk was also increased for patients using certain medications for chronic diseases: insulin treatment for diabetes or long-term steroid use for conditions such as chronic lung disease. Lower preoperative functional status was also a risk factor for major medical complications.

Dr Deyo and colleagues created a model incorporating these factors to help in identifying patients at high risk of major medical complications. The model showed "moderate" predictive value—similar to that of certain other common medical tests and examinations.

"Surgery for spinal stenosis is concentrated among older adults, for whom complications are more frequent than among middle-aged patients," according to Dr Deyo and coauthors. Many studies have looked at complications related to infections or problems with surgical hardware after spinal stenosis, but few have focused on the risk of major, potentially life-threatening medical complications.

The authors note some important limitations of their study—including the use of VA patient population, which was almost exclusively male and had a high rate of additional health problems.

However, the results show some important risk factors for major medical complications after spinal stenosis surgery—especially older age, ASA class, more extensive spinal surgery, and insulin and steroid use. "Prediction rules" based on such easily assessable risk factors "might improve surgical planning, the patient consent process, and strategies for reducing risk," Dr Deyo and colleagues conclude.

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