

New model predicts complication risks in surgery for spinal cord compression

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A simple model consisting of four risk factors can help surgeons to predict the risk of complications after surgery for cervical spondylotic myelopathy (CSM)—a common condition causing compression of the spinal cord in the neck, reports a study in the July issue of *Neurosurgery*, official journal of the Congress of Neurological Surgeons.

The presence of other medical conditions, particularly diabetes, is among the factors associated with a higher risk of complications, according to the report by Dr. Michael G. Fehlings of Toronto Western Hospital and colleagues.

Clinical and Surgical Factors Predict Complications after Surgery for CSM

Patients with CSM have neck pain and stiffness, and sometimes numbness and weakness in the arms and legs, caused by pressure on either the spinal cord or major nerve roots. Patients with persistent or severe symptoms may need surgery, which carries a small but definite risk of complications.

Dr. Fehlings and colleagues analyzed data on 479 [patients](#) who underwent surgery for CSM as part of an international study. They identified a total of 89 surgery-related complications in 78 patients—a rate of 16.25 percent.

The researchers compared a wide range of clinical and surgical factors for patients with and without surgery. These factors were then incorporated into a "complication prediction rule" to identify those factors associated with an increased risk of complications related to CSM surgery.

Factors related to an increased risk of complications included a condition called "ossification of the posterior longitudinal ligament" (OPLL), where the ligament connecting the bones of the spine becomes calcified, causing compression of the spinal cord. Complications were also more common for patients who had other medical conditions, including diabetes and cardiovascular disease; and for those with a longer duration of surgery or a two-stage operation.

After adjusting for all of these factors together, the final prediction model included four factors. The strongest [risk factors](#) were diabetes and the presence of OPLL. The overall number of other medical problems and a longer duration of surgery were also significant predictors of risk.

Caused by several age-related changes, CSM is the most common cause of [spinal cord](#) dysfunction in the elderly. Surgery is increasingly recommended because it can halt disease progression and improve patients' function and quality of life.

"Although surgery is generally safe and effective, complications still occur in 11 to 38 percent of patients," Dr. Fehlings and coauthors write. Having a better idea of which patients are at higher risk will help surgeons better anticipate these complications, take preventive steps, and monitor patients during and after surgery.

Based on the new findings, the key risk factors for [complications](#) related to CSM surgery are diabetes and other medical problems, OPLL, and a longer duration of surgery. The researchers conclude, "Surgeons can use

this information to discuss the risks and benefits of [surgery](#) with patients, to plan case-specific preventive strategies, and to ensure appropriate management in the perioperative period."

More information: W. Bradley Jacobs et al. Commentary, *Neurosurgery* (2016). [DOI: 10.1227/NEU.0000000000001216](https://doi.org/10.1227/NEU.0000000000001216)

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