

# New method of closing the incision during scoliosis surgery nearly eliminates infections

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Patients with scoliosis who undergo surgery may be less likely to develop an infection or other complications after the procedure when a novel wound closure technique pioneered at NYU Langone Medical Center is utilized, according to new research. The study was published online this past July in the *Journal of Pediatric Orthopaedics*.

In this new technique, surgeons use a multilayered flap closure that enables doctors to close several layers of muscle and fascia while maintaining blood supply from the donor site to the recipient site. The researchers believe this new method reduces complication rates by eliminating "dead space," or pockets around spinal hardware and fusion sites where infection can start. The technique also creates a better barrier to separate surgical hardware and bone grafts from the skin's surface.

"This game-changing method for closing incisions after surgery can benefit all [patients](#) with [scoliosis](#), especially those most at risk for complications depending on the cause of their spine problems," says corresponding study author David S. Feldman, MD, professor of [orthopaedic surgery](#) and pediatrics at NYU Langone. "All of our patients with scoliosis - from the basic to most complex cases - can feel confident knowing their safety is our top priority."

A conventional, non-standardized closure method after [scoliosis surgery](#) often involves a bulk skin closure performed by an orthopaedic surgeon where no flaps are mobilized.

In this retrospective study, NYU Langone researchers reviewed 76 charts of patients aged 8 to 25 years, with non-idiopathic scoliosis - a type of scoliosis caused by an underlying syndrome or neuromuscular disease—who had undergone a posterior spinal fusion surgery. Forty-two patients had their incisions closed using conventional techniques, while 34 underwent the new, multilayered flap technique.

Approximately 19 percent of patients who underwent the conventional, non-standardized closure methods experienced a wound complication, which was in line with previous estimates of infection rates for people with non-idiopathic scoliosis. However, patients who underwent the novel, multilayered muscle flap closure method experienced a 0 percent complication rate.

The new closure method has been increasingly used at NYU Langone since 2009, and is a collaborative effort between the Departments of Orthopaedic Surgery and Plastic Surgery.

"The success of this procedure speaks to our Medical Center's commitment to collaborate with other medical specialties to ensure our patients receive optimal patient care," says senior study author Michael S. Margiotta, MD, assistant professor of plastic surgery and neurosurgery at NYU Langone.

Scoliosis is a disorder in which there is an S-shaped or C-shaped, sideways curve of the spine. Severe cases are often treated with spinal fusion surgery, where a surgeon will repair the abnormal curving of the spine by fusing steel rods, hooks, screws or other metal devices to straighten the spine and support the bones of the spine. Bone grafts are placed to hold the spine in the correct position and prevent it from curving again.

In most people with scoliosis, there is no known cause for this curve,

which is known as idiopathic scoliosis. However, a small subset of scoliosis cases are non-idiopathic, meaning the curvature was caused by an underlying disease, such as a neurological condition like cerebral palsy. These patients are between 25 and 76 percent more likely to experience complications following [spinal fusion surgery](#) and between 4 and 23 percent more likely to have an infection, compared to those with idiopathic scoliosis. This is because these patients are generally sicker and more likely to experience complications overall. Patients with [idiopathic scoliosis](#) face a lower complication rate at 1 to 2 percent of cases.

These infections can be debilitating to patients and their families, and place significant burdens on the health care system through follow-up wound care, additional treatments or possible surgical procedures.

But until now, there has been little published about the best technique for spinal wound closure after surgery to prevent complications for patients, especially those at highest risk due to scoliosis caused by an underlying condition.

"There was a time when complex scoliosis cases, including revision [surgery](#), had infection rates approaching double digits," says study co-author Thomas Errico, MD, chief of the Division of Spine Surgery at NYU Langone. "We have now lowered infection rates to under 1 percent, a remarkable accomplishment thanks to attention to detail and teamwork of the dedicated surgeons in our Orthopaedic Surgery and Plastic Surgery departments."

**More information:** "Wound Closure in Nonidiopathic Scoliosis: Does Closure Matter?" [journals.lww.com/pedorthopaedi...=99444&type=abstract](http://journals.lww.com/pedorthopaedi...=99444&type=abstract)

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