

Herniated disks in children and teens linked to lower spine malformations

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Most children and adolescents with herniated disks in the lower (lumbar) spine have some sort of malformation of the spinal vertebrae, reports a study in the December issue of *Neurosurgery*, official journal of the Congress of Neurological Surgeons.

The study by Dr. Zhongjun Liu and colleagues of Peking University Third Hospital, Beijing, China, helps in understanding how children and teens develop lumbar disk herniation (LDH)—without the "wear and tear" that causes herniated disks in older [patients](#). The results also suggest that surgery on the disk alone, without [spinal fusion](#), is likely to be effective in young patients with low back pain from herniated disks.

Differences in Lumbar Spine Anatomy for Kids with Herniated Disks

To look for structural malformations that might predispose to herniated disks in children and teens, the researchers analyzed x-rays of 63 patients under age 20 with LDH. The patients were 37 males and 26 females, average age 17 years. All required surgery for severe, disabling back pain that didn't respond to other treatments.

In nearly all patients, x-rays showed at least one type of malformation involving the lumbar spine and sacrum (the base of the spine, located at the rear of the pelvis). "Malformations were completely absent in only three cases," according to Dr. Liu and colleagues.

Some patients had an abnormally "high" pelvis, with long side projections (transverse processes) of the lowest lumbar vertebra (L5). These patients were most likely to have herniation of the disk between the two lowest lumbar vertebrae (L4/L5). In contrast, patients with an abnormally "low" pelvis were more likely to have herniation of the disk between the lumbar spine and sacrum (L5/S1).

Other patients had "transitional vertebrae" between the lumbar spine and sacrum. This malformation also affected the rate of L4/L5 versus L5/S1 herniation, depending on the location of the transitional vertebra.

The researchers also looked at how patients responded to surgery for LDH. In 36 patients, surgery consisted only of removal of the damaged portion of the disk (discectomy). Twenty-seven patients also underwent fusion (arthrodesis) of the involved vertebrae.

In all patients, surgery led to significant reduction in back pain and disability. Outcomes were similar with discectomy alone versus discectomy plus arthrodesis.

Herniated disks in the lumbar spine are common in adults, typically related to repetitive overloading and age-related degeneration. But this type of wear and tear can't explain the uncommon occurrence of LDH in children and teens.

Based on their findings, Dr. Liu and coauthors write, "Congenital lumbosacral malformations are significantly associated with LDH in children and adolescents." The malformations may be associated with abnormalities of the iliolumbar ligaments—the short, strong ligaments connecting the lumbar spine to the pelvis—leading to impaired stability of the lower spine.

The experience also suggests that pediatric patients with LDH get

significant pain relief from surgery on the involved disk only; performing spinal fusion of the malformed vertebrae doesn't seem to add additional improvement. Dr. Liu and colleagues note some important limitations of their study—especially the fact that it didn't assess the rate of spinal malformations in a control group of young patients without herniated disks.

More information: Lei Dang et al. Lumbar Disk Herniation in Children and Adolescents, *Neurosurgery* (2015). [DOI: 10.1227/NEU.0000000000000983](https://doi.org/10.1227/NEU.0000000000000983)

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