Scientists on Hunt for Better Ways to Treat Slipped Discs

Aging, Lifestyle Damage Spine; Endoscopic Spine Surgeon Dr. Kaixuan Liu with Atlantic Spine Center Offers Prevention Tips


Dr. Kaixuan Liu

WEST ORANGE, NJ, UNITED STATES, January 27, 2023 /EINPresswire.com/ -- They bulge, they slip, they rupture. But scientists continue searching for novel ways of diagnosing and treating diseased spinal and cervical discs that can cause debilitating pain, lower quality of life, and affect as many as 20 of every 1,000 adults in the United States, says renowned spinal surgeon Dr. Kaixuan Liu.

Dr. Liu refers to at least two recent studies, one, in a 2021 issue of Nature Communications (https://www.nature.com/articles/s41467-021-25453-2), suggesting a cocktail of drugs that remove age-associated cells and prevent disc deterioration, and a 2022 article, published in Biomaterials (https://www.sciencedirect.com/science/article/pii/S0142961222001302?via%3Dihub), proposing use of human stem cells – regenerative therapy – for rejuvenating discs.

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> *Dr. Kaixuan Liu*

Aging is a prime culprit in disc disease, says Dr. Liu, founder of Atlantic Spine Center in New Jersey and New York. "The aging process dries out spinal and cervical discs. It makes them brittle and sometimes forces them out of their normal positions in the spinal column, causing them to protrude (bulge), slip, and rupture."

But aging is not the only villain. "Back injuries; undue spinal stress from heavy lifting, sports, and various repetitive activities; years of poor posture; genetics; and, of course, obesity – too much weight in the abdomen pulling on the spine – are all causative factors for disc disease," Dr. Liu says.

Indeed, some experts even blame evolution -- from four-footed to bipedal movement -- on the human tendency to break spinal discs. In a presentation at an annual meeting of the American Association for the Advancement of Science, a scientist from Case Western University noted that just normal walking – moving a foot and leg forward while swinging the opposite arm – results in a twisting of the spine, and this twisting, after millions of steps, eventually causes wear and tear and an eventual breakdown of the intervertebral discs.

Dr. Liu describes discs as “rubbery, elliptical pads” located between vertebrae in the neck and back. They serve as natural “shock absorbers,” protecting the spine and cervix from stressors and giving it flexibility. Each disc consists of a tough outer shell – the annulus fibrosus, which surrounds a soft, gel-like center – nucleus pulposus. A disc may “slip” if the tissue connection between disc and spinal bone is torn. Rupture occurs when the tough outer membrane of cartilage cracks, and a portion of the disc’s inner core material leaks out.

Although often asymptomatic, slipped and herniated discs can compress spinal nerves, cause nerve and tissue inflammation, and lead to development of multiple complications, such as spinal stenosis (narrowing of the spinal canal); spondylolisthesis (resulting in lower back pain); and sciatica. With sciatica, a patient may experience intense pain radiating down a leg or arm; the pain follows the pathway of the nerve irritated by the deteriorated disc. The sciatica patient also may complain of numbness, burning and tingling, and muscle spasms and weakness. In extreme cases, the herniation may impact a patient’s bladder and bowel control.

“The spine is a complex system of nerves, muscles, cartilage, ligaments, and bone, so pinpointing the source of a patient’s neck or back pain is not always a straightforward process. But disc herniation is frequently the underlying cause of the discomfort,” notes Dr. Liu, who combines current imaging technology – CT, MRI, and myelogram – with careful neurological examination to determine the source of a person’s pain.

Meanwhile, researchers are seeking more advanced imaging methods and analyses to pinpoint disc disease even earlier in its course. Authors of a study appearing in a 2022 issue of European Radiology indicate “the diagnostic sensitivity of MRI for cervical ruptured disc is [currently] very low (about 35-45 percent)” when health professionals use only “the standardized definition of lumbar disc nomenclature.” However, these same scientists evaluated “two novel [preoperative] MRI signs,” which, they suggest offer “a more accurate diagnosis…of ruptured disc in the cervical spine.”

Many disc tears and herniations will clear up on their own without treatment, but Dr. Liu advises conservative measures first for patients who do develop painful symptoms. “These measures can include prescribed or over-the-counter non-steroidal anti-inflammatory medications, physical therapy, and light aerobic exercises like swimming, yoga, and walking.”

Some patients may require second-line therapies, including pulsed radiofrequency or injections

of epidural corticosteroids, which temporarily block pain signals coming from irritated nerves and limit the body's natural release of inflammatory biochemicals, Dr. Liu says.

He adds that surgery, like discectomy, endoscopic microdiscectomy, or laser disc decompression, becomes an option only when all non-surgical approaches have failed, and the patient continues struggling after six weeks to eight weeks of conservative care.

The optimal approach, of course, is to protect the overall health of the spinal column. Dr. Liu offers these prevention tips:

- Maintain a height- and age-appropriate weight. Obesity exaggerates the natural curvature of the spine by forcing the pelvis to tilt too far forward and taxes spinal joints.
- Keep fit. Exercise regularly, especially engaging in activities that strengthen back and abdominal muscles. Strong core (trunk) muscles provide important support to the spine.
- Practice good posture when standing or sitting and limit the amount of time spent sitting.
- Use proper lifting techniques for heavy objects and follow recommendations for minimizing back and neck stress and twisting when snow shoveling, gardening, working in tight spaces, or performing other strenuous, repetitive activities.
- Eat nutritiously and stop smoking.

"Most importantly, if you are experiencing serious back pain that is not clearing up on its own, contact an orthopedic spine specialist. Significant treatment delays could lead to nerve damage or other complications," Dr. Liu warns.

Kaixuan Liu, MD, PhD, is a board-certified physician who is fellowship-trained in minimally invasive spine surgery. He is the founder of Atlantic Spine Center.

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