

Artificial Disc A Viable Alternative To Fusion

When two adjacent discs in the low back wear out, become compressed and cause unmanageable pain, numbness or other symptoms, replacement with artificial discs can be a viable alternative to standard fusion surgery, based on two-year post-surgery data from a randomized, multicenter trial recently published in the *Journal of Bone and Joint Surgery*.

Previous studies have compared single-disc replacement with fusion but this is believed the first to evaluate the two forms of treatment for two contiguous discs, said Rick B. Delamarter, MD, vice chair for Spine Services in the Department of Surgery and co-medical director of the Spine Center at Cedars-Sinai Medical Center. He is the article's first author.

As part of the approval process for a specific artificial disc (the ProDisc-L), the study was designed to meet Food and Drug Administration criteria comparing overall results from a disc replacement patient group with those of a fusion group. Those comparisons found the two therapies comparable in terms of outcomes deemed favorable, but Delamarter said individual patient outcomes suggest the disc replacement operation may have advantages.

"Overall, 24 months after surgery, patients in both groups had less pain and were able to reduce their use of medication, but the percentages were higher in the disc replacement group. Seventy-three percent of disc replacement patients met the study's pain improvement criteria, compared with less than 60 percent of the fusion patients. Of these, only 19 percent in the disc replacement group continued to need narcotics for pain, compared with 40 percent in the fusion group. Also, more disc replacement patients said they were satisfied with their outcomes and would choose to have the surgery again," Delamarter said.

The article reported that disc replacement operations were quicker and resulted in less blood loss, hospital stays were shorter and patients experienced more rapid improvement.

Discs act as cushions between the bones (vertebrae) of the spine. When healthy, they have enough "give" to allow the back to be flexible but they are firm enough to provide stability. With age or injury, they can lose their pliability and density. Nerves may become pinched between the bones, causing pain not just in the spine but in other parts of the body.

Fusion surgery is intended to relieve symptoms of degenerative disc disease by removing the damaged disc and replacing it with bone. Rods and screws are attached to the spine to hold the bones in place while the vertebrae grow together (fuse). Studies show these procedures often can be effective in certain situations but there can be drawbacks: fused sections of the spine can lose their flexibility,

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potentially impeding normal movement and putting greater stress on the surrounding discs. The adjacent discs then can be prone to injury, often requiring more fusion surgery.

Artificial discs are designed to maintain natural spine movement. They may reduce the need for follow-up surgery.

"Although our data extend two years out from surgery, fully evaluating the benefits or disadvantages of either procedure will require longer follow-up to detect adjacent-level disc degeneration and possible device wear," said Delamarter, who joined Cedars-Sinai in 2009.

In a commentary on the article in the same journal, Andrew J. Schoenfeld, MD, of the William Beaumont Army Medical Center in El Paso, Texas, said the authors "are to be commended for an important work that contributes substantially to the growing literature regarding total disc replacement. While it has limitations, the work of Delamarter et al. should be recognized as the first prospective, randomized study on two-level total disc replacement and one that highlights short-term clinical advantages for the procedure, such as accelerated rehabilitation and enhanced pain relief."

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