

Total Intervertebral Disc Replacement

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Over 31 million Americans suffer from some type of back pain and one third of over 18 year olds will seek professional help to eliminate the pain (3). Patients who suffer from degenerative disc disease and have undergone at least 6 months of physical therapy, taken medications and still see no improvement in their back pain may be eligible for total intervertebral disc replacement (6).

A healthy disc functions as a spacer, shock absorber and motion unit. The height of the disc maintains a certain distance between the vertebral bodies so that nerve roots are not squeezed between the bones. The disc also allows us to run and jump, cushioning the forces, and yet still has elasticity to it, which allows us to bend forward and side-to-side (6).

When a patient suffers from degenerative disc disease, the disc is no longer able to perform its functions, which results in back pain.

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Spine has developed a disc prosthesis that can be implanted into the body, which is designed to mimic a normal intervertebral disc (1). The Charite was developed in Germany by orthopedic surgeons Kurt Schellnack and Karin Buttner-Janzen and has been implanted into patients in Europe since 1987 (5). It was FDA approved in October 2004 for the US (1). The prosthesis uses two metal endplates, which are tapped into the vertebral bodies, and a special core which helps the endplates pivot, similar to a human flexing and bending normally. The disc is designed to maintain disc space height and flexibility,



intervertebral discs (1). The disc lasts up to 20 years, however, does not guarantee complete pain relief. Furthermore, other complications such as dislocation of the implant, breakage of the endplate and various infections can occur (4).

Disc Replacement surgery takes one to two hours and a hospital stay of about four days follows. Patients may be asked to wear a back brace for a couple days, but will be able to fully continue normal activities after a few weeks (5). Insurance covers the operation which usually costs between \$35,000 and \$50,000 (2).

Future innovations include a technique called electrospinning, to replicate the structure of the annulus. Polyvinylidene fluoride nanofibers are used as the material for the annulus.

Works Cited

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reduce back pain from pinched nerves and prevent disc degeneration at adjacent