

Intervertebral Disc Replacement

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Back pain is one of the most common ailments of the working-age adult, affecting over 4 million individuals each year in the USA and weighing an economic burden on our health care system of up to \$100 billion.



Between each vertebra is a soft and gel-like cushion called the **intervertebral disc**. It is a round and flat cushion-like structure that acts as a shock absorber. They help absorb pressure and keep the backbones from rubbing against each other.

Each disc has a strong outer ring made of fibers (the annulus) and a soft, jelly-like center called the nucleus pulposus. The annulus is the strongest area of the disc. It helps keep the disc's center intact. The annulus is actually a strong ligament that connects each vertebra together. The weakest portion of the disc is the posterolateral (back outside) portion.

The mushy nucleus of the disc functions as the main shock absorber. The nucleus is made of moist tissue that has high water content. The water content is what helps the disc function as the absorber.

The causes of lower back pain are mainly due to structural instability and dysfunction of the disc. This common ailment is called Degenerative Disc Disease and it is most effectively treated when the disc function can be restored.

Examples of disc problems include a degenerated disc, a bulging disc, a herniated disc, a thinning disc and disc degeneration with osteophyte formation.

There are many treatments for lower back pain that do not include total disc replacement. Examples include physical therapy (for mild cases), massage therapy, exercise and weight loss, pain killers, muscle relaxants, spinal injections, facet joint

that are added) These procedures are performed to stabilize the spine. Spinal fusion is a very common treatment and has increased over 600% between 1979-1990.



PRODISC®



CHARITÉ™ Artificial Disc

Two devices that serve to replace the disc are the PRODISC® and the CHARITÉ™. Both devices are designed with a cobalt chromium alloy endplate and an ultra high molecular weight polyethylene core. Each has been used in Europe for over 10 years, with similar results in retrospective evaluations. Dr. Bradford reported good or better results in 68% of patients in a review of five years after implantation of the Charité disc replacement. Similarly, a review of the work of Drs. Marnay and Villette using the PRODISC® in 64 patients with a minimum of seven years of follow-up demonstrated a significant improvement of back pain and leg pain in about 92.7% of patients.

Indications for disc replacement:

- 1) Degenerative disc disease in one or two adjacent vertebral levels between L3 and S1
- 2) Age between 18 and 60
- 3) Failed at least 6 months of conservative therapy

Advantages of intervertebral disc replacement over fusion of the spine include preservation and restoration of segmental motion in the spine, restoration of intervertebral architecture and foraminal height, sparing of adjacent segments from abnormal stresses, and restoration of normal biomechanics across the lumbar spine.

<http://www.spine-health.com/research/discupdate/artificial/artificial04.html>

<http://www.spineuniverse.com>

<http://www.charitedisc.com>

<http://www.spineuniverse.com>

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