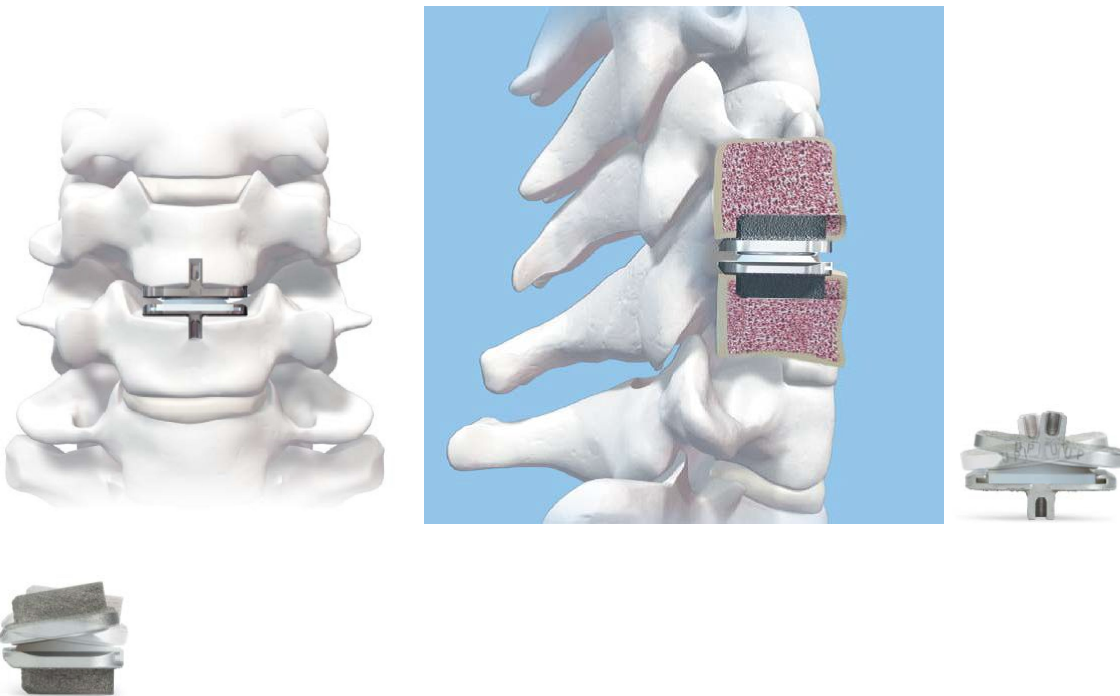


## What is disc Replacement Surgery?

A disc replacement surgery is performed to resolve pain or discomfort in the back, neck, or extremities due to a diseased or degenerated spinal disc or discs. Total disc replacement (TDR) may be a solution for some patients with degenerative disc disease as an alternative to spinal fusion. Early research into artificial disc replacement began in the 1960s because of the complications sometimes caused by spinal fusion.

The goal of disc replacement surgery is to remove a diseased, often dehydrated disc and replace it with a device that enables motion within the diseased segment of the spine. By removing the diseased disc and implanting a disc replacement, your surgeon can remove the source of pain or discomfort generated from a nerve that is being pinched or compressed. The goals of total disc replacement surgery are to maintain spinal balance and motion, reduce adjacent level degeneration and allow patients to get back to activities of daily living.



## Disc Replacement Surgery

Disc replacement surgery is performed by a spine surgeon in either the cervical or neck region of the spine, or in the lumbar or lower back region. The surgical approach for the

neck and lower back is through the front, referred to as an anterior approach. Disc replacement surgery starts with surgical access to the spine, followed by removal of the patient's diseased disc. Once at the location of the degenerated disc, the surgeon will remove the problem disc along with any other areas of concern and replace it with a spinal device to restore the height of the disc space, which usually frees a pinched or compressed nerve. Once the diseased disc has been removed, the total disc replacement is implanted. A disc replacement device consists of two cobalt chrome endplates containing and articulating over a domed polyethylene core to restore stable motion to the spine. The clinical trials on disc replacement proved the effectiveness of this option—specifically a reduction in pain and improvement in a patient's quality of life. Disc replacement is not appropriate for all patients. Please consult your physician to find out if this procedure is right for you.

### Maintain Spinal Balance and Motion

Degenerative disc disease can destabilize segments over time. In addition, performing the surgical discectomy is inherently destabilizing, as it involves the removal of the Anterior Longitudinal Ligament, the disc, and often, the Posterior Longitudinal Ligament. In the absence of these restricting structures, it is important for a disc replacement to have constraints in order to protect the facet joints.

In order to provide constraint, the artificial disc mechanism of action enables movement with a fixed center of motion, enabling A/P translation only with flexion / extension.

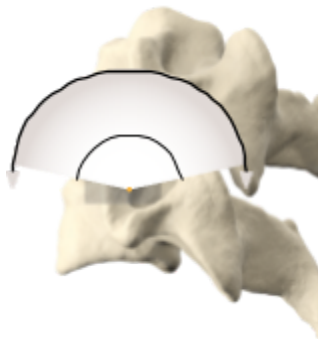


Above: (A)

Lateral Bending (B) Flexion / Extension (C) Axial Rotation.

### Controlled and Predictable Motion

- Allows a normal range of motion while providing segmental stability through controlled translation.
- Highly conforming surfaces of the superior endplate and UHMWPE inlay prevent the endplates from translating independently.
- Translation is provided by rotation of the superior endplate around the ball on the inferior endplate.



## Decelerate Adjacent Level Reoperations

The historical treatment for degenerative disc disease is to conduct a fusion of the involved joint. However, immobilizing a segment of the spine has been shown to increase the rate of adjacent-level degeneration. By enabling motion, an artificial disc is intended to decelerate adjacent level degeneration. Published studies on the results with the US IDE PMA clinical study on artificial disc such as the Prodisc showed that, at seven years follow-up, patients had four times fewer reoperations of adjacent segments, compared to patients that received an anterior cervical discectomy and fusion.

To find out more about artificial disc treatment strategies, call Dr. Pawel Jankowski today or book an appointment online.