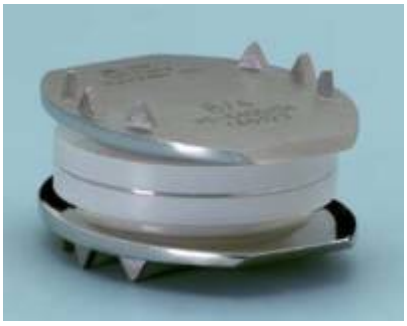
Charité artificial disc



The origins of lumbar disc replacement started in 1966 with Fernström [1] who implanted a stainless-steel ball within 191 lumbar and 13 cervical discs spaces of 125 patients with clinical outcomes similar to fusion. However, the ball was associated with significant complications caused by subsidence and extrusions. A couple of decades later, in the early 1980s, at Charité Hospital, Dr Karin Buettner-Janz, an orthopedic spine surgeon as well as former Olympic gymnast, and Kurt Schellnack, an engineer, published their first experience with the original Charité artificial disc for the lumbar spine, which ushered in the modern era for lumbar arthroplasty [2].

The Charité artificial disc went through revisions over 6 years, resulting in the SB Charité III, and the first clinical experience was published in 1994 using the final version of the SB Charité III (DePuy Spine Inc, Raynham, Massachusetts) [3].

The clinical trial in the United States for Food and Drug Administration (FDA) approval began in 2000, and the device was cleared for use in 2004. Since then, multiple other lumbar arthroplasty devices have been developed and have become available in the United States and Europe [4].

The second generation of artificial disc design, ProDisc-L (Centinel Spine, West Chester, Pennsylvania), was granted FDA approval in 2006, followed by a third-generation artificial disc design, activL (Aesculap Implant Systems, Center Valley, Pennsylvania) in 2015.

In addition to these devices, Acroflex (Acromed Corporation, Cleveland, Ohio), the Maverick (Medtronic, Dublin, Ireland), Kineflex (Spinal Motion, Mountainview, California), FlexiCore (Stryker, Kalamazoo, Michigan), LP-ESP (FH Orthopedics, Heimsbrunn, France), and M6-L (Orthofix, Lewisville, Texas) lumbar discs have either completed their trials, are actively ongoing or have been discontinued or withdrawn without FDA approval. All of these devices are available outside of the United States. Additionally, XL TDR (NuVasive, San Diego, California) and Triumph (Globus Medical, Audubon, Pennsylvania), which offered insertion techniques via lateral and posterior approaches, respectively, are only investigational at this point or available outside the United States [5].

The CHARITE and the PRODISC-L artificial disc do not present an additional hazard or risk to a patient undergoing an MRI procedure using a scanner operating with a static magnetic field of 1.5 T or lower. Image artefacts from the implants may present problems if the anatomical region of interest is in or near the area where these implants are located (e.g., vertebral canal at affected segment).

Unclassified

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