

## The myths and the facts of disc arthroplasty surgery

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The idea to replace the intervertebral disc by a mechanical prosthesis has long been around and many attempts have been made in the last century already to find a clinical viable solution.

It's only in the last good 10 years that disc replacement has become a clinical issue, first in Europe with the development of models, which seemed to yield acceptable clinical results. It's only in the last 5 years and with the fact of the outcomes in FDA studies in the United States, when disc replacement became a major issue in spine surgery. This is exemplified in the fact that there is a spine arthroplasty society, which within a few years grew up to a society with almost 1500 members, and with the occurrence of a big number of companies developing and producing disc arthroplasty devices, aspiring to participate in a market, which is estimated between 1 and 3 billion US\$ in the next few years worldwide.

Although the concept to maintain a mobile segment instead of fusing it, specifically in degenerative spine disease is very appealing, there are major mechanical as well as biological issues, which are still poorly understood, and scientifically not well supported. Furthermore prospective randomized studies do mostly not have a longer follow-up than of 2-4 years, most of them only 2 years, where disc arthroplasty is usually compared in the endpoint outcome with spinal intervertebral fusions. Even in the classical studies the disc replacement has been compared with a non-ideal anterior intervertebral fusion, after two years most of the parameters seemed to be approximately the same, independent whether there was a disc replacement or a fusion.

support the enthusiasm for disc replacement with reliable data in order not to be driven by marketing issues but by well-documented science. The dream to have a maintenance of a mobile lumbar and cervical spine in spite of degenerative disease is very valid and the endeavors in science and clinical development are justified.

The ultimate solution may not be a mechanical disc replacement but much more a biological disc replacement with options to induce regeneration of a degenerated disc and intervertebral joints.

It remains to good clinical science with well-designed studies and to the basic scientists to