

Can dynamic cervical disc replacement compete with to ACDF?

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Introduction: The aim of most new implants for cervical disc replacement is to maintain or restore function. The Dynamic Cervical Implant (DCI™, Paradigm Spine) aims at combining the advantages of the gold standard fusion technique with the motion preservation philosophy. DCI has a limited motion: it works like a shock absorbing spring and may help to slow down adjacent segment degeneration.

Methods: Between 2007 and 2010 we selected 86 patients aged 32 to 73 years for treatment with DCI at either one or two levels (10 patients). Indications were radiculopathies (n=49), axial pain (n=5) or spondylotic spinal stenosis (n=32) without chronic myelopathy. Patients are followed up at 3, 6, 12, and 24 months after surgery using NDI, pain and satisfaction questionnaires as well as SF12.

Results: Disc surgery was performed at C3/C4 (n=2), C4/5 (n=7), at C5/6 (n=45), C6/7 (n=41) and at C7/T1 (n=1). In flexion/extension radiographs motion rapidly increased after surgery. However, 5 of 19 segments treated during the initial phase of our study were fused (seen at 6 or 12 months). After implant footprint was changed and larger sizes were provided only 2 of 67 segments fused within 12 months (<3%). Still 97% of the patients rated their clinical result as excellent or good. There were no implant related complications or revision surgery. Neck pain, arm pain, and NDI continuously decreased in successive follow-ups. Correspondingly all satisfaction scores continuously increased.

Conclusions: Disc replacement with DCI is a new strategy that is positioned in between anterior cervical fusion and disc prosthesis. The change of implant footprint has significantly reduced fusion-rate. Clinical results are as good as in anterior cervical fusion until 12 months follow-up. They tend to be better than fusion at 24 months follow-up. Possibly adjacent segment protection is liable for this improvement. We will continue to follow-up DCI-patients for the next years in order to validate these findings.