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Clinical Outcomes after Cervical Disc Arthroplasty for Axial Neck Pain vs. Radiculopathy/Myelopathy
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Introduction: Evidence from several large prospective, randomized multicenter trials confirms that cervical disc arthroplasty (CDA) is at least as safe and effective as anterior cervical discectomy and fusion for appropriately selected patients with symptomatic cervical disc disease with radiculopathy and/or myelopathy. Less evident, however, is the efficacy of CDA for patients in this group with predominant axial neck pain. The purpose of this study is to compare clinical outcomes after cervical disc arthroplasty for patients in two primary diagnosis groups.

Methods: This is a prospective study of 87 CDA patients treated in either of two FDA investigational device exemption studies at a single site between 2003 and 2008. This study reports outcomes for patients with symptomatic cervical degenerative disease unresponsive to nonoperative measures, who were operated at a single level from C3 to C7 with a cervical artificial disc prosthesis. Patients were divided into two groups for this analysis on the basis of their primary diagnosis: predominant axial neck pain (AX) or radiculopathy/myelopathy (RM). Clinical and functional outcome measures including Neck Disability Index (NDI), numerical pain scores for neck pain and arm pain, and return to work were collected preoperatively and at 1.5, 3, 6, 12, and 24 months.

Results: Patients in the AX (n=37) and RM (n=50) groups were similar with respect to gender, age, weight and smoking status. Patients in the AX group had significantly higher mean NDI scores (65.2±15.5) than the RM group (54.0±15.9) prior to surgery (p=0.001); neck pain and arm pain scores were not significantly different. Surgical level, operative time, blood loss, hospital stay, and medications usage were similar for both groups. Both AX and RM patients had statistically significant improvement from baseline to 1 year and 2 years post-op for NDI, neck pain and arm pain scores, but differences between groups were not significant at 1 or 2 years. AX patients improved a mean 41.9±19.8 (n=33) and 39.5±19.7 (n=23) points in NDI vs. 36.3±20.6 (n=40) and 31.9±18.6 (n=36) points in RM patients at one (p=0.241) and two (p=0.082) years post-op; mean NDI for patients in both groups improved about 60% vs. pre-op at 2 years. Median time to return to work for AX patients was 6.9 weeks vs. 10.7 weeks for RM patients (p=0.175).

Conclusions: Appropriately selected patients with predominant axial neck pain may achieve clinical and functional outcomes comparable to patients with a primary diagnosis of radiculopathy/myelopathy after cervical disc arthroplasty.