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Metanalysis of Class I and II Data on Results of Anterior Cervical Decompression and Fusion

K.A. Pettine¹, L. Eisermann²

¹The Spine Institute, Loveland, CO, USA, ²NuVasive, Inc, San Diego, CA, USA

Purpose: The purpose of this paper is to determine what the true clinical results are of anterior cervical discectomy and fusion (ACDF). ACDF is perceived by the spinal surgery community to be one of the most efficacious of all spinal surgeries. If asked, most spine surgeons would answer a one-level ACDF is associated with a 95% fusion rate and 95% excellent clinical results for relief of neck and arm pain. All of the literature quoted is class III or class IV data. They are all retrospective reviews typically by a spine fellow or resident on a senior author's surgical series.

Materials and methods: This abstract is a metanalysis of all class I and class II data available from five FDA IDE studies involving ACDF. The five studies include: the BAK-C cage and Affinity cage filled with local reaming of autogenous bone, versus intervertebral allograft without plating (two studies). The Prestige artificial disc, ProDisc artificial disc, and the Bryan artificial disc versus intervertebral allograft with plating (three studies).

Results: At two year follow up the BAK-C had a 12% reoperation rate, the BAK-C control allograft without plating had a 17.5% reoperation rate, the Affinity cage had a 9.2% reoperation rate, the Affinity allograft control without plating had an 18.1% reoperation rate. This resulted in an overall reoperation rate of 12.7% of ACDF without plating. The studies involving an allograft with plating included the Bryan control, which had a 4.1% reoperation rate, the Prestige control had a 19.9% reoperation rate, and the ProDisc control had an 8.5% reoperation rate for an overall reoperation rate of 9.5% of ACDF with plating.

Clinical success based on greater than 15 points improvement in neck disability index, no reoperation at index or adjacent level and no neurologic deterioration was achieved in all of the plated studies with a range of 67.8%-72.7% for an overall average of 70% success.

Conclusions: Based on a metanalysis of class I and class II data, the true results of ACDF are a 10% reoperation rate at two-year follow-up due to pseudoarthrosis, adjacent level degeneration or revision of the index surgical site and a 70% clinical success. The importance of this abstract is to determine the true clinical results of ACDF based on class I and class II data. These results emphasize the importance in differentiating the validity of information gained from class I and II versus class III and IV data.