

Abstract #1790.docx

EVALUATION OF SAFETY OF CERVICAL TOTAL DISC REPLACEMENT COMPARED WITH ANTERIOR CERVICAL DISCECTOMY AND FUSION: A META-ANALYSIS

Introduction

Total cervical disc arthroplasty (TDR) is an alternative to fusion with theoretical benefits such as less adjacent segment degeneration due to preservation of normal disc kinematics. Despite early evidence suggesting at least equivalency of arthroplasty to fusion, long-term safety of arthroplasty remains unclear. The purpose of this study is to determine the safety of cervical total disc arthroplasty relative to anterior cervical discectomy and fusion (ACDF) in patients with symptomatic cervical radiculopathy or myelopathy using a meta-analysis technique.

Methods

A systematic literature review of prospective randomized controlled trials (RCT) comparing cervical TDR and (ACDF) was performed. Rates of reported adverse events were compared between the two groups via calculation of relative risk. Separate rate analyses were performed for short-term, long-term and combined follow up time periods when possible. Meta-analysis was performed using a random-effects model where appropriate.

Results

Our search yielded fifteen eligible RCT's including 2715 patients. The follow-up was 12 months in one, 24 months in eight, 36 months in one, and between 48 and 60 months in three studies. Rates of dysphagia, neurological deficits, vascular events, and intraoperative technical difficulties were not significantly different between the two groups. Rates of medical-related adverse events were 20% lower in the fusion group, which was statistically significant. However, medical event reporting was highly heterogeneous which precluded more detailed analyses of individual events. The relative risk of a serious surgical-related adverse event of ACDF compared to TDR was 1.30 (95%CI: 0.93,1.81), which was not statistically significant. In contrast, total and index level reoperation rates had relative risks of 1.97 and 2.26 respectively, which were statistically significant. The adjacent segment reoperation rates favored arthroplasty over fusion; however the relative risk (1.37) was not statistically significant.

Conclusion

Cervical TDR appears to be as safe as ACDF for the treatment of symptomatic cervical radiculopathy and myelopathy. Significant benefits of arthroplasty over fusion with regards to adverse events are primarily due to lower index level and total reoperation rates. There was no evidence that adjacent segment re-operation was prevented by TDR.