

A Comparison of Anterior Cervical Discectomy and Fusion Versus Fusion Combined with Artificial Disc Replacement for Treating Patients with 3-level Cervical Spondylotic Disease

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Introduction

The purpose of this study is to evaluate the efficacy and safety of 3-level hybrid surgery, which combines fusion and cervical disc replacement (CDR), compared to 3-level ACDF in patient with cervical spondylosis (CS) involving 3 levels.

Methods

From January 2010 to January 2014, 49 patients that underwent 3-level anterior cervical spine surgery were included in this study. These patients were divided into two groups; the 30 patients in the ACDF group underwent 3-level ACDF and the 19 patients in the HS group underwent combined surgery with fusion and TDR. Clinical outcomes were evaluated using the visual analogue scale (VAS) for the arm, the neck disability index (NDI), Odom criteria and postoperative complications. The cervical range of motion (ROM) was evaluated at routine postoperative intervals of 1, 6, 12, and 24 months. Additionally, the radiological change of adjacent segments and the fusion rate at last follow up were assessed.

Results

Significant improvements in arm pain relief and functional outcome were observed in ACDF and HS group. The NDI of patients in the HS group showed better improvement 6 months after surgery than that of the ACDF group. The ACDF group had a lower fusion rate, higher incidence of device related complications and radiological changes in adjacent segments compared with the HS group. The postoperative cervical ROM in the HS group was slightly decreased compared to the preoperative value but gradually recovered during the follow up periods. However, that of the ACDF group was significantly decreased and did not recover. Radiological changes in adjacent segments were more commonly observed in the ACDF group than the HS group.

Conclusions

The HS group was better than the ACDF group in terms of NDI, cervical ROM, fusion rate incidence of postoperative complications and adjacent segment degeneration.

Learning Objectives

By the conclusion of this session, in patients with multilevel cervical spondylosis, participants should be considered surgical options (cervical fusion or total disc replacement) first according to the degree of degeneration at each level and the location of the pathology.

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