

Is C2/3 Anterior Cervical Discectomy and Fusion a Viable Surgical Treatment Option?

Ardalan Zolnourian¹, Hashim Wakil¹, Susruta Manivannan¹, Mohammad Baraka¹, Ali Nader-Sepahi¹, Emad Shenouda¹

¹*University Hospital Southampton, Neurosurgery, Southampton, United Kingdom*

Background: Anterior cervical discectomy and fusion (ACDF) is a standard procedure for cervical spine pathologies. However, ACDF at the C2/3 level is technically challenging due to the high cervical spine's unique anatomy.

Research Questions: This study evaluates the outcomes and feasibility of primary C2/3 ACDF with plating for myelopathy, radiculopathy, and trauma.

Design: A retrospective review of clinical and radiological data (2011–2024) was conducted. Patients undergoing C2/3 ACDF for myelopathy, radiculopathy, or trauma were included. Variables included comorbidities, surgical implants, complications, and pre- and post-operative functional outcomes (mJOA and Nurick grading).

Methods: Data were collected on patient demographics, indications, and outcomes. Post-operative imaging (X-ray or CT) at three months assessed fusion. Complications such as dysphagia, neuralgia, adjacent level disease, and infection were recorded. Functional outcomes were evaluated using mJOA and Nurick grading.

Results: Nine patients (5 male, 4 female; mean age 52 years, range 33–69) were included. Indications were myelopathy (n=4), radiculopathy (n=1), and Hangman's fracture (n=4). One trauma patient required multilevel ACDF (C2–5). Complications included dysphagia (n=1), C2 neuralgia (n=1), adjacent level disease (n=1), and infection (n=1). Post-operative imaging (n=7) showed fusion in five cases. Myelopathy patients improved by an average of 1 point on the Nurick scale.

Discussion: C2/3 ACDF is effective for selected patients with myelopathy, radiculopathy, and trauma. Despite technical challenges, fusion rates are comparable to other cervical levels. Dysphagia is more prevalent in high cervical cases, but outcomes are satisfactory. C2/3 ACDF is a viable option for carefully selected patients.