

# Fusion Rate, Dysphagia and Patient Satisfaction for 4-Level Anterior Cervical Discectomy and Fusion (ACDF)

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## Introduction

The literature on ACDF > 3 levels remains controversial. Combined anterior posterior cervical fusion leads to increased morbidity and loss of cervical mobility. We investigated fusion rate, incidence of dysphagia and patient satisfaction in 4-level ACDF in order to demonstrate that multi-level ACDF >3 levels is a reasonable option.

## Methods

Radiographic and chart review were done for consecutive patients who underwent elective 4-level ACDF from 2006-2011. Fusion rate was evaluated for patients with postoperative cervical radiographs/CT at 6 months or more. We excluded patients with a planned staged anterior-posterior cervical fusion. Fusion is determined by neuroradiologists who evaluated post-operative standing radiographs and CT. The criteria are lucency around the hardware, absence of spinous process movement on flexion/extension films, and bone bridging. Patients completed a dysphagia and satisfaction survey by phone. Descriptive statistics were used.

Table 1: Patient Demographics		N=82
Gender: M/F (%)		
Male		51.8%
Female		48.2%
Age at surgery/yr (Mean ± SD)		
Age Range		41-83
BMI (Mean ± SD)		
30.2 ± 5.6		
Perioperative steroids (% Y)		
Yes		5.63%
No		94.4%
Diabetes (%)		
Yes		8.4%
No		91.6%
Tobacco use (%)		
Yes		22.5%
No		77.5%
Postop interval: XR date/months (Mean ± SD)		
10.3 ± 8.3		
Duration of OR in min (Mean ± SD)		
165 ± 36		

Table 2. Levels		N=82
C23		2
C34		75
C45		83
C56		83
C67		81
C7T1		8

Table 3: Fusion rate	
Fusion/interspace (%) N=316	96.80%
Fusion/patient (%) N=82	93.90%

Table 4: Patient Satisfaction and Neck Pain		N=60
Are you satisfied with your experience? (% Y)		88.3%
Would you have the surgery again? (% Y)		65.0%
Are you still having neck pain? (% Y)		33.3%

## Results

Ninety-three patients were included in the study and eleven later excluded due to unavailable imaging. Eighty-two patients had postoperative imaging at 6 months or more meeting the inclusion criteria (Table 1 demographics). There were a total of 328 interspaces; 316 interspaces were adequate for fusion evaluation. Ten interspaces either had failed fusion or indeterminate fusion status (Table 2). Fusion rate per interspace is 96.8%. Seventy-seven patients had successful fusion. Fusion rate per patient is 93.9% (Table 3). Patient satisfaction surveys were completed in 60 out of 93 (64.5%) patients. Fifty-three (88%) out of 60 patients were satisfied with the results of the surgery and thirty-nine out of 60 (65%) would have surgery again. Twenty out of 60 (33%) reported some degree of residual neck pain (Table 4). Postoperative dysphagia resolved within 4-30 days with an average of 13 days. All patients surveyed regained normal swallowing function (Table 5).

Table 5: Dysphagia		N=60
Rate of postop dysphagia (%)		100
Rate of Resolution (%)		100
Postop interval for complete resolution (Median, Range)		13 (4-30)

## Conclusions

Four-level ACDF achieves a very high fusion rate in our institution with a very high satisfaction rate and comparable dysphagia rate. ACDF has proved to be a viable alternative for patients with surgical pathology of >3 levels.

## References

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