

Flexible Nasolaryngoscopy in Revision Anterior Cervical Discectomy and Fusion: Does Preoperative Otolaryngology Evaluation Matter?

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**Introduction:** Anterior cervical discectomy is associated with several complications that can severely impact quality of life, including dysphagia, hematoma, worsening myelopathy/radiculopathy, and recurrent laryngeal nerve injury.<sup>1-4</sup> Injury to the recurrent laryngeal (RLN) or RLN palsy remains a significant complication in ACDF and revisions. Revision ACDF further places these patients at a risk of bilateral injury. The objective of this study was to analyze the utility of preoperative otolaryngology (ENT) evaluation prior to revision ACDF in guiding the laterality of ACDF approach.

**Methods:** This was a single institution retrospective case series of patients who underwent ENT flexible nasolaryngoscopy (FNL) evaluation prior revision ACDF between 2017 and 2022 to evaluate vocal cord function. Patient demographics, comorbidities, pre-revision symptoms, number of levels, ENT diagnoses and recommendations were queried.

**Results:** A total 42 revision ACDF patients who underwent preoperative ENT evaluation were identified. Mean age and BMI were 57 years and 30.5 respectively, and patients were predominantly females (66.7%). Of this population, 52%, 38%, 4.8%, and 2.4% underwent a single level, two-level, three-level, and four-level ACDF respectively for their primary ACDF. Additionally, 35.7% of patients had dysphagia after primary ACDF with 14.3% requiring speech language pathology evaluation. Ultimately, 100% of patients underwent a FNL with 76% of patients having a normal cord function. 4.8% (2) patients were diagnosed with vocal cord paralysis, 4.8% with vocal cord edema and post-cricoid thickening, and 2.4% with leukoplakia, polypoid corditis, globus pharyngeus, and esophageal dysphagia. Finally, 17.1% of patients had a side specific recommendation post ENT evaluation and 83% of patients were cleared for either laterality. Patients with side specific recommendation by ENT had a significantly higher rate of dysphagia compared to those with recommendation of either laterality (50% v. 32.4%,  $P=0.010$ ). There was an 85.7% adherence to ENT's recommendation by operating surgeons.

**Discussion:** While the authors of this study do not draw any definitive conclusions from our findings, this study seeks to highlight findings, diagnoses, and recommendations on ACDF surgical laterality after ENT preoperative evaluation. Thus far, our data shows that 83% of patients undergoing revision ACDF did not have a preferred laterality of approach based on FNL findings, with 76.2% having normal vocal cord function and 4.8% with vocal cord paralysis. Further research with larger sample size will be necessary to provide evidence on factors that could aid in screening for revision ACDF candidates that require preoperative ENT evaluation.

## Appendix:

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		ENT Recommended Either Side  N= 34		ENT Recommended Specific Side  N= 8		P-value
# of Levels of Primary Surgery	1	18	52.9%	4	50.0%	0.200
	2	13	38.2%	3	37.5%	
	3	2	5.9%	0	0%	
	4	0	0%	1	12.5%	
Pre- Revision Symptoms	Dysphagia	11	32.4%	4	50.0%	<b>0.010</b>
	Speech Evaluation	4	11.8%	2	25.0%	0.688
	Airway Issues	1	2.9%	1	12.5%	0.826
Pre- Revision Diagnosis	Cervical stenosis	11	32.4%	1	12.5%	0.823
	Cervical myelopathy	3	8.8%	1	12.5%	
	Cervical radiculopathy	2	5.9%	1	12.5%	
	Neck pain and/or arm pain	7	20.6%	2	25.0%	
	Injury	2	5.9%	0	0%	
	Not specified	9	26.5%	3	37.5%	
Side of Revision Surgery	Right	10	29.4%	5	62.5%	0.277
	Left	20	58.9%	3	37.5%	
	Not specified	4	11.8%	0	0%	