



Duration of Anesthesia as a Risk Factor for Postoperative Complications in Patients Undergoing Anterior Cervical Discectomy and Fusion

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Introduction

Anesthesia duration may effect outcomes after anterior cervical discectomy and fusion (ACDF).

Methods

Adult patients undergoing ACDF from 2005-2012 were identified by the Current Procedural Terminology (CPT) codes in the ACS NSQIP database. Patients were subdivided into quintiles of anesthesia time (Group 1, 48-129 minutes, Group 2, 129-156 minutes, Group 3, 156-190 minutes, Group 4, 190-245 minutes, and Group 5, 245-1025 minutes). Univariate and multivariate analyses were performed to assess the impact of anesthesia duration on 30-day postoperative complications.

Results

3,801 patients undergoing ACDF were identified. Mean anesthesia duration was 192.5 +/- 85.31 minutes. 122 (3.21%) had a postoperative complication. In univariate analysis, as anesthesia duration increased, there was a statistically significant increase in overall complications (6.3% in Group 5, compared to 3.0% in Group 4, 2.6% in Group 3, 2.5% in Group 2, 1.6% in Group 1). Specifically, pulmonary complications, intraoperative and postoperative blood transfusions, return to the operating room, and length of stay greater than 5 days were all increased in the groups of longer anesthesia duration. In multivariate analyses, patients in the highest group of anesthesia duration (>245 minutes) had statistically significant increased risk of overall complications (OR 2.71, 95% CI 1.33-5.53, p=0.012), venous thromboembolism (OR 2.69, 95% CI 0.71-10.2, p=0.011), and return to the operating room (OR 2.92, 95% CI 1.24-6.88, p=0.004). The two groups with the longest anesthesia durations (quintiles 4 and 5) had increased total length of stay more than five days (for quintile 4, OR 3.10, 95% CI 1.70-5.64, p=0.0004, for quintile 5, OR 3.61, 95% CI 1.93-6.73, p<0.0001). There was no statistically significant effect of increased anesthesia time on blood transfusions or wound complications.

Conclusions

Patients with significantly increased anesthesia duration have increased risk of overall complications, venous thromboembolisms, increased length of stays, and return to the operating room.

Multivariate Logistic Regression of 30 Day Outcomes After ACDF By Anesthesia Cohorts								
Anesthesia Groups (min)	Any Complications				Pulmonary Complication			
	OR	95% CI	p value	OR	95% CI	p value		
1 (48-129)	reference				reference			
2 (129-156)	1.556	0.746	3.246	0.774	2.746	0.545	13.84	0.982
3 (156-190)	1.613	0.778	3.345	0.905	2.26	0.431	11.852	0.620
4 (290-245)	1.815	0.891	3.698	0.635	5.621	1.242	25.448	0.023
5 (245-1025)	2.711	1.33	5.526	0.012	4.675	0.968	22.568	0.140
Anesthesia Groups (min)	Intra/Postoperative Blood Transfusion				VTE			
	OR	95% CI	p value	OR	95% CI	p value		
1 (48-129)	reference				reference			
2 (129-156)	0.78	0.047	12.912	0.696	0.333	0.035	3.207	0.204
3 (156-190)	0.855	0.052	14.122	0.774	0.667	0.111	4.001	0.564
4 (290-245)	2.147	0.215	21.491	0.279	1.337	0.298	5.993	0.493
5 (245-1025)	1.132	0.083	15.494	0.971	2.688	0.71	10.171	0.011
Anesthesia Groups (min)	Wound Complication				Total Length of Stay > 5 Days			
	OR	95% CI	p value	OR	95% CI	p value		
1 (48-129)	reference				reference			
2 (129-156)	<0.001	<0.001	>999.999	0.9414	1.162	0.586	2.302	0.025
3 (156-190)	1.203	0.366	3.959	0.944	1.533	0.792	2.967	0.359
4 (290-245)	1.001	0.289	3.473	0.9488	3.101	1.704	5.643	0.0004
5 (245-1025)	2.838	1.017	7.917	0.9237	3.606	1.933	6.727	<0.0001
Anesthesia Groups (min)	Return to OR							
	OR	95% CI	p value					
1 (48-129)	reference							
2 (129-156)	1.389	0.53	3.639	0.605				
3 (156-190)	1.674	0.658	4.259	0.861				
4 (290-245)	1.547	0.61	3.924	0.894				
5 (245-1025)	2.916	1.236	6.878	0.0041				