

Introduction

- Anterior cervical discectomy and fusion (ACDF) is performed to treat a variety of cervical pathologies. (1)
- The possibility of episode-based bundled payments for spine surgery necessitates analysis of factors predicting readmissions and postoperative complications. (2)
- Discharge destination to nonhome destinations has been shown to be associated with higher rates of post-discharge complications in other procedural cohorts. (3)

Learning Objectives

- Following this presentation, viewers should be able to understand the association between discharge to a nonhome destination and readmission and severe adverse event rates.

Methods

- Patients undergoing ACDF in the American College of Surgeons National Surgical Quality Improvement Program were queried via Current Procedural Terminology codes 63075, 22554, and 22551.
- Patients were grouped based on discharge destination, either to home/home-healthcare or to a facility. Those who expired before discharge were excluded.
- Relevant demographics, comorbidities, perioperative statistics, and pre- and post-discharge complications were compared.
- Multivariable logistic regression models for severe post-discharge complications and 30-day readmissions were created, with the exposure of non-home discharge.

Results

Table 1. Patient Characteristics of Patients Undergoing Anterior Cervical Discectomy and Fusion by Discharge Destination

	Home (n=30428)	Nonhome (n=1759)	P-value
Age	53.57 (11.32)	63.96 (12.66)	<0.0001
Gender (Male)	15802 (49.57%)	903 (51.34%)	0.15
Functional status (Dependent)	333 (1.09%)	244 (13.87%)	<0.0001
BMI > 40	2284 (7.51%)	165 (9.38%)	0.004
History of smoking	8798 (28.91%)	448 (25.47%)	0.002
History of diabetes	4456 (14.64%)	522 (29.68%)	<0.0001
History of pulmonary disease	1239 (4.07%)	148 (8.41%)	<0.0001
History of cardiac disease	135 (0.44%)	36 (2.05%)	<0.0001
Hypertension	13232 (43.49%)	1159 (65.89%)	<0.0001
History of stroke	25 (0.08%)	7 (0.40%)	<0.0001
History of renal disease	11 (0.04%)	6 (0.34%)	<0.0001
Steroids for chronic condition	961 (3.16%)	115 (6.54%)	<0.0001
Bleeding-causing disorders	322 (1.06%)	81 (4.60%)	<0.0001
ASA Class Greater than 2	12039 (39.57%)	1370 (77.89%)	<0.0001
Operative time (mean)	128 (73.27)	190.6 (119.0)	<0.0001

Table 2. Outcomes of patients undergoing anterior cervical discectomy and fusion who were discharged to home vs. nonhome destinations

Pre-discharge Adverse Events			
	Home (n=30428)	Nonhome (n=1759)	P-value
Severe adverse event	282 (0.93%)	254 (14.44%)	<0.0001
Minor adverse event	74 (0.24%)	127 (7.22%)	<0.0001
Infectious complication	40 (0.13%)	63 (3.58%)	<0.0001
Total length of stay (mean)	1.76 (5.67)	8.81 (9.03)	<0.0001
Post-discharge Adverse Events			
Severe adverse event	408 (1.34%)	112 (6.37%)	<0.0001
Minor adverse event	224 (0.74%)	72 (4.09%)	<0.0001
Infectious complication	160 (0.53%)	38 (2.16%)	<0.0001
Unplanned readmission	931 (3.06%)	178 (10.12%)	<0.0001

Table 3. Risk Factors for Nonhome Discharge Destination

Outcome / Risk Factor	Odds Ratio (95% CI)	P-value
Age	1.06 (1.06-1.07)	<0.0001
Operative Time	1.00 (1.00-1.01)	<0.0001
Male Sex	0.84 (0.75-0.94)	0.002
Dependent Functional Status	5.98 (4.84-7.38)	<0.0001
BMI > 40	1.15 (0.95-1.40)	0.15
Diabetes	1.23 (1.08-1.40)	0.002
Severe Complication Before Discharge	3.07 (2.39-3.93)	<0.0001
Bleeding Disorder	1.71 (1.26-2.34)	0.0007
Total Length of Stay	1.13 (1.12-1.15)	<0.0001
ASA Class Greater Than 2	2.38 (2.08-2.72)	<0.0001

c-statistic=0.89

Results, Continued

Table 4. Risk Factors for Severe Adverse Event After Discharge and

Outcome / Risk Factor	Odds Ratio (95% CI)	P Value
Severe Adverse Event After Discharge		
Non-home Discharge	2.40 (1.87-3.07)	<0.0001
Severe Adverse Event Before Discharge	1.61 (1.10-2.37)	0.01
Age	1.03 (1.02-1.03)	<0.0001
Operative Time	1.00 (1.00-1.00)	<0.0001
Male Sex	1.23 (1.03-1.46)	0.02
History of Pulmonary Disease	1.76 (1.30-2.37)	0.0002
History of Stroke	2.65 (0.62-11.36)	0.19
History of Renal Disease	9.18 (2.86-29.47)	0.0002
ASA Class Greater Than 2	1.64 (1.34-1.99)	<0.0001
Readmission		
Non-home Discharge	1.77 (1.46-2.14)	<0.0001
Severe Adverse Event Before Discharge	1.67 (1.24-2.25)	0.0008
Age	1.02 (1.02-1.03)	<0.0001
Operative Time	1.00 (1.00-1.00)	<0.0001
History of Diabetes	1.20 (1.04-1.39)	0.01
History of Pulmonary Disease	1.74 (1.41-2.15)	<0.0001
History of Heart Disease	1.46 (0.87-2.46)	0.15
History of Stroke	2.60 (0.90-7.52)	0.08
History of Renal Disease	2.52 (0.69-9.21)	0.16
Bleeding Disorder	1.31 (0.90-1.92)	0.16
ASA Class Greater Than 2	1.79 (1.56-2.06)	<0.0001

Conclusions

- There are significant differences in the characteristics and comorbidity burdens of patients discharged to home vs. nonhome destinations.
- Nonhome discharge patients suffered from higher rates of adverse events and 30-day readmissions following discharge, even after controlling for various comorbidity and demographic factors.
- Further investigation of these differences is needed.

References

1. Robinson RA, Smith GW. Anterolateral cervical disc removal and interbody fusion for cervical disc syndrome. Bull Johns Hopkins Hosp 1955;96:223.
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3. Keswani A, Tasi MC, Fields A, et al. Discharge Destination After Total Joint Arthroplasty: An Analysis of Postdischarge Outcomes, Placement Risk Factors, and Recent Trends. J Arthroplasty 2016;31:1155-62.