

Pre-Assessment Surgical Screening (PASS) clinics provide a reliable preoperative clearance pathway for elective spine surgery

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BACKGROUND

- Pre-assessment surgical screening (PASS) clinics have been developed to provide a standardized, multidisciplinary approach to preoperative evaluation.
- These clinics aim to reduce delays and improve access when primary care physician (PCP) appointments are limited.
- In arthroplasty populations, the PASS pathway has demonstrated outcomes comparable to PCP clearance, with similar cancellation and 90-day complication rates.
- However, these observations have not yet been defined in relation to elective spine surgery, where medical comorbidities and pain management are prominent concerns.

PURPOSE & HYPOTHESIS

- Purpose:** To compare short-term outcomes and cancellation rates between PASS and PCP preoperative clearance pathways among patients undergoing elective spine surgery.
- Hypothesis:** We hypothesized that no differences in outcomes would be observed between preoperative clearance pathways.

METHODOLOGY

- Study Design:** Retrospective cohort study
- Patient Population:** 10,453 patients who underwent elective lumbar, thoracic, or cervical spine surgery at a Trinity Health of NE hospital between January 2014 and December 2024.
- Grouping:** Patients were grouped by preoperative clearance pathway (PCP=9,814; PASS=639).
- Statistical Analysis:**
 - Continuous variables were checked for normality and compared using independent samples t-test or Mann-Whitney U test.
 - Categorical variables were compared using χ^2 analysis or Fisher’s exact test when cell counts were <5.
 - Outcomes were analyzed using multivariable logistic or linear regression.
- Outcome Measures:**
 - Binary outcomes included surgical cancellations, 90-day complications, reoperations, and readmissions, and 30-day emergency department (ED) visits .
 - Continuous outcomes included length of stay (LOS), daily inpatient maximum numeric rating scale (NRS), and inpatient opioid exposure (morphine milligram equivalents (MME), morphine equivalent daily dose (MEDD)).

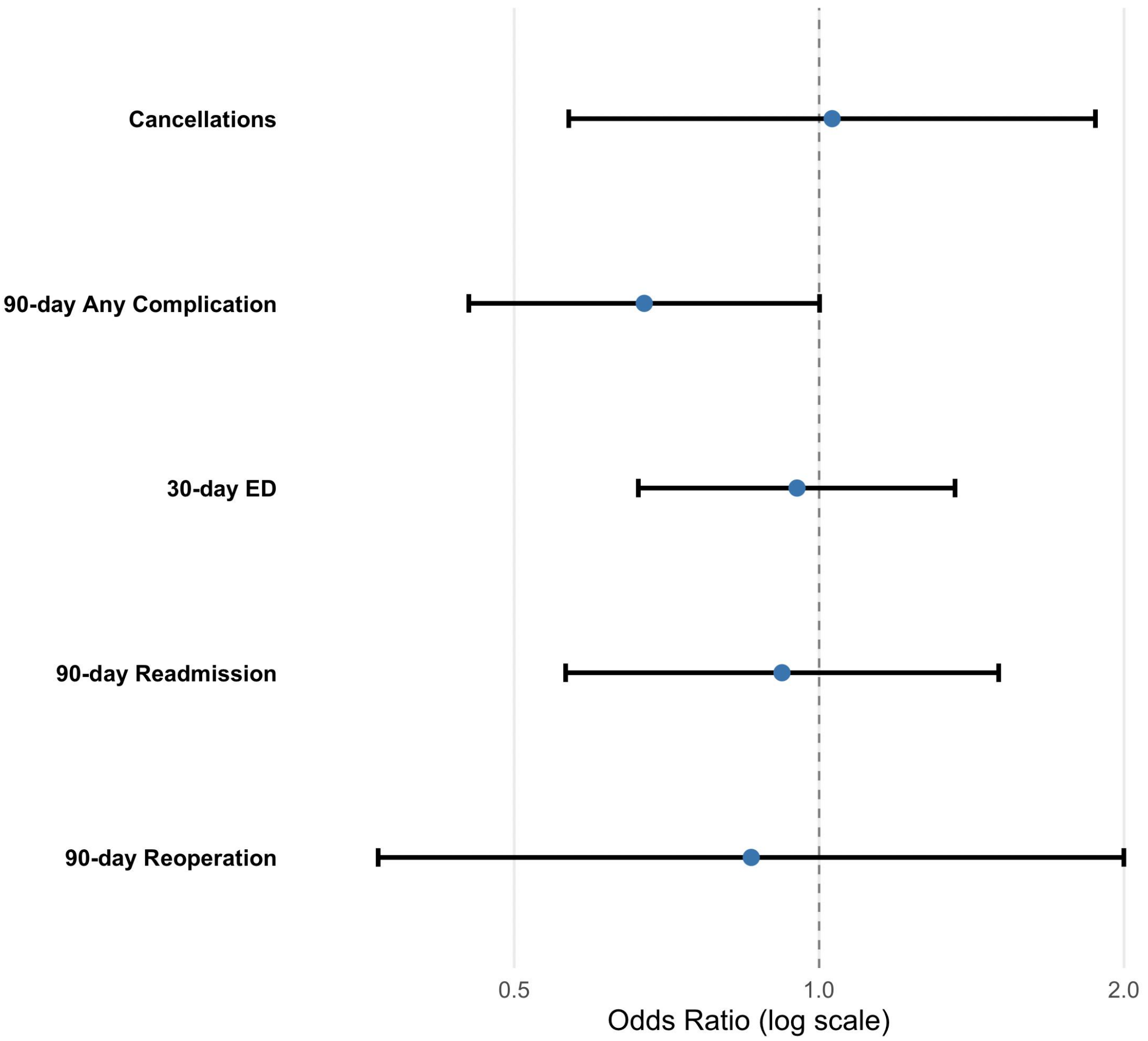
RESULTS

Comparison of Baseline Demographic and Procedural Characteristics

Variable		PCP (n=9814)	PASS (n=639)	Total (n=10453)	P-Value
BMI		30.0 ± 5.9	29.8 ± 5.9	30.0 ± 5.9	NS
Age		59 ± 14	56 ± 14	59 ± 14	NS
Male		4784 (48.7%)	301 (47.1%)	5085 (48.6%)	NS
Charlson Comorbidity Index (CCI)		2.0 ± 2.0	2.0 ± 2.0	2.0 ± 2.0	NS
LACE		22.0 ± 19.0	25.0 ± 20.0	22.0 ± 19.0	<0.001
Cardiac Disease		2094 (21.3%)	197 (30.8%)	2291 (21.9%)	<0.001
Congestive Heart Failure		540 (5.5%)	52 (8.1%)	592 (5.7%)	0.01
Chronic Kidney Disease		512 (5.2%)	57 (8.9%)	569 (5.4%)	<0.001
COPD		1849 (18.8%)	203 (31.8%)	2052 (19.6%)	<0.001
Diabetes		1696 (17.3%)	162 (25.4%)	1858 (17.8%)	<0.001
Hypertension		4122 (42.0%)	384 (60.1%)	4506 (43.1%)	<0.001
Smoking Status	Every Day	1321 (13.5%)	98 (15.1%)	1419 (13.6%)	0.003
	Former	3836 (39.1%)	252 (38.7%)	4088 (39.1%)	
	Heavy Smoker	17 (0.2%)	3 (0.5%)	20 (0.2%)	
	Light Smoker	65 (0.7%)	10 (1.5%)	75 (0.7%)	
	Never	4218 (43.0%)	250 (38.4%)	4468 (42.7%)	
	Never Assessed	24 (0.2%)	4 (0.6%)	24 (0.2%)	
	Passive Smoke Exposure - Never Smoker	18 (0.2%)	4 (0.6%)	18 (0.2%)	
	Some Days	297 (3.0%)	24 (3.7%)	321 (3.1%)	
	Unknown	16 (0.2%)	2 (0.3%)	18 (0.2%)	
ASA	1 - Healthy	272 (2.8%)	9 (1.4%)	281 (2.7%)	<0.001
	2 - Mild Systemic Disease	6492 (66.3%)	376 (58.9%)	6868 (65.8%)	
	3 - Severe Systemic Disease	2979 (30.4%)	243 (38.1%)	3222 (30.9%)	
	4 - Severe Systemic - Life Threatening	55 (0.6%)	10 (1.6%)	65 (0.6%)	
Number of Spine Levels Treated	1	6841 (69.7%)	470 (71.3%)	7311 (69.9%)	<0.001
	2	2127 (21.7%)	128 (19.4%)	2255 (21.6%)	
	3	599 (6.1%)	26 (3.9%)	625 (6.0%)	
	4	176 (1.8%)	9 (1.4%)	185 (1.8%)	
	5	37 (0.4%)	1 (0.2%)	38 (0.4%)	
	6	14 (0.1%)	4 (0.6%)	14 (0.1%)	
	7	3 (0.0%)	1 (0.2%)	4 (0.1%)	
	8	9 (0.1%)	2 (0.3%)	11 (0.1%)	
	9	1 (0.0%)	4 (0.6%)	5 (0.1%)	
	10	3 (0.0%)	1 (0.2%)	4 (0.1%)	
	11	2 (0.0%)	4 (0.6%)	6 (0.1%)	
	13	1 (0.0%)	4 (0.6%)	5 (0.1%)	
	14	1 (0.0%)	4 (0.6%)	5 (0.1%)	
Surgical Approach	Anterior	2439 (24.9%)	189 (29.6%)	2628 (25.1%)	<0.001
	Anterior + Lateral	2 (0.0%)	1 (0.2%)	3 (0.0%)	
	Anterior + Posterior	145 (1.5%)	15 (2.3%)	160 (1.5%)	
	Lateral	180 (1.8%)	22 (3.4%)	202 (1.9%)	
	Posterior	7047 (71.8%)	412 (64.5%)	7459 (71.4%)	
Spine Region	Cervical	2684 (27.3%)	190 (29.7%)	2874 (27.5%)	<0.001
	Cervical + Thoracic	17 (0.2%)	2 (0.3%)	19 (0.2%)	
	Lumbar	6965 (71.0%)	431 (67.4%)	7396 (70.8%)	
	Sacral	12 (0.1%)	5 (0.8%)	17 (0.2%)	
	Thoracic	133 (1.4%)	7 (1.1%)	140 (1.3%)	
	Thoracis + Lumbar	3 (0.0%)	4 (0.6%)	7 (0.1%)	

Multivariable Logistic Regression Analysis of Outcomes

Variable	OR	95% CI	P-value
Cancellations	1.030	0.566-1.874	0.923
90-day Any Complication	0.672	0.451-1.001	0.051
30-day ED	0.951	0.663-1.362	0.783
90-day Readmission	0.919	0.562-1.504	0.737
90-day Reoperation	0.857	0.367-1.999	0.720



Reference Group: PCP

- Covariates:** age, sex, BMI, CCI, spine region, surgical approach, procedure type, surgeon, and specific comorbidities including congestive heart failure, cardiac disease, chronic kidney disease, hypertension, and diabetes.

Multivariable Linear Regression Analysis of Pain Outcomes

Variable	Beta	Std. Error	P-value
Length of Hospital Stay (hours)	0.761	1.286	0.554
MEDD (mg)	20.186	19.798	0.308
MME (mg)	10.974	73.911	0.882
Average Daily Max Pain Score (Numeric Rating Scale) (0-10)	3.051	2.17	0.160

Reference Group: PCP

- Covariates:** age, sex, BMI, CCI, spine region, surgical approach, procedure type, surgeon, preoperative ODI, and specific comorbidities including congestive heart failure, cardiac disease, chronic kidney disease, hypertension, and diabetes.

CONCLUSION

- Despite screening a more medically complex cohort, the PASS clinic demonstrated comparable outcomes to traditional PCP clearance in elective spine surgery. These findings, aligning with prior arthroplasty literature, support PASS clinics as a scalable and equitable alternative to PCP screening that may expand timely access to surgery while maintaining safety and quality.

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