

Limited English Proficiency and Postoperative Complications after Total Knee Arthroplasty

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BACKGROUND

- 1 in 15 people living in the US have limited English proficiency (LEP)
- Patients with LEP undergoing total knee arthroplasty (TKA) have poorer perioperative outcomes
- In this study, we explore the relationship between LEP status and rates of medical and arthroplasty-specific complications after TKA**

METHODS

Study Participants

This was a retrospective cohort study of elective TKA patients ≥18 years of age between January 2013 and December 2021 at a single academic medical center.

Study Design

The primary predictor variable was self-reported English proficiency status. Primary outcome variables were rates of 30-day deep vein thrombosis (DVT), 30-day venous thromboembolism (VTE), 90-day surgical site infection, 7-day pneumonia, 7-day sepsis, and 1-day encephalopathy. Arthroplasty specific complications included periprosthetic fracture, implant fracture, instability, implant loosening, and stiffness.

Statistical Analysis

Multivariable logistic regression modelling, adjusted for age, patient-reported gender, BMI, ASA rating, smoking status, and length of hospitalization, was used to calculate adjusted odds ratios of postoperative complications.

RESULTS

- From 3,450 TKA cases, 9.2% (316) of patients were classified as having LEP
- Patients with LEP, compared to EP patients, were older, more likely to be female, and had longer lengths of hospitalization
- In multivariable analysis, patients with LEP had higher rates of 30-day DVT (aOR: 2.84, CI:1.19-6.79, p=.02) and 30-day VTE (aOR: 2.10 CI:1.06-4.12, p=.03) than their EP counterparts

DISCUSSION

- LEP patients, compared to EP patients, have increased rates of 30-day DVT and 30-day VTE after TKA, even after adjusting for possible confounders
- Language barriers may lead to inadequate pain control for LEP patients, increasing time to first mobilization and and increasing risk of developing postoperative DVT and VTE
- Higher rates of postoperative complications may contribute to poorer recovery, requiring extended hospitalizations for inpatient management



Knee arthroplasty patients with limited English proficiency have more postoperative complications.

Table 1. TKA patient characteristics by English proficiency

	Total Knee Arthroplasty Patients (N=3450)	English Proficient (n=3134)	Limited English Proficiency (n=316)	P value
Gender, % Female (n) ^a	60% (2068)	59% (1840)	72% (228)	<.001
Age, years (SD) ^b	66 (10)	65 (10)	71 (10)	<.001
Race/Ethnicity, % (n) ^a				<.001
Non-Hispanic white	63.6% (2195)	68.9% (2160)	11.1 % (35)	
Hispanic/Latinx	10.7% (370)	8.3% (259)	35.1% (111)	
AAPI	10.6% (365)	7.4% (233)	41.8% (132)	
Black	7.9% (274)	8.7% (273)	0.3% (1)	
Indigenous	0.6% (22)	0.7% (22)	0.0% (0)	
Multiracial	4.4% (151)	3.6% (114)	11.7% (37)	
Not reported	2.1% (73)	2.3% (73)	0.0% (0)	
Language Spoken, % (n) ^a				<.001
English	90.8% (3134)	100% (3134)	0% (0)	
Spanish	3.3% (115)	0% (0)	36.4% (115)	
Chinese	2.8% (95)	0% (0)	30.1% (95)	
Russian	0.7% (25)	0% (0)	7.9% (25)	
Other Non-English	2.3% (81)	0% (0)	25.6% (81)	
ASA Rating, % (n) ^a				.07
ASA 1	4.1% (140)	4.3% (135)	1.6% (5)	
ASA 2	67.5% (2322)	67.5% (2109)	67.6% (213)	
ASA 3	28.2% (969)	27.9% (872)	30.8% (97)	
ASA 4	0.2% (7)	0.2% (7)	0% (0)	
BMI, kg/m ² (SD) ^b	30 (6)	30 (6)	30 (5)	1.0
Length of Stay, days (SD) ^b	2.3 (1.8)	2.3 (1.7)	2.8 (2.1)	<.001

^aFisher's exact test ^bTwo sample t-test.

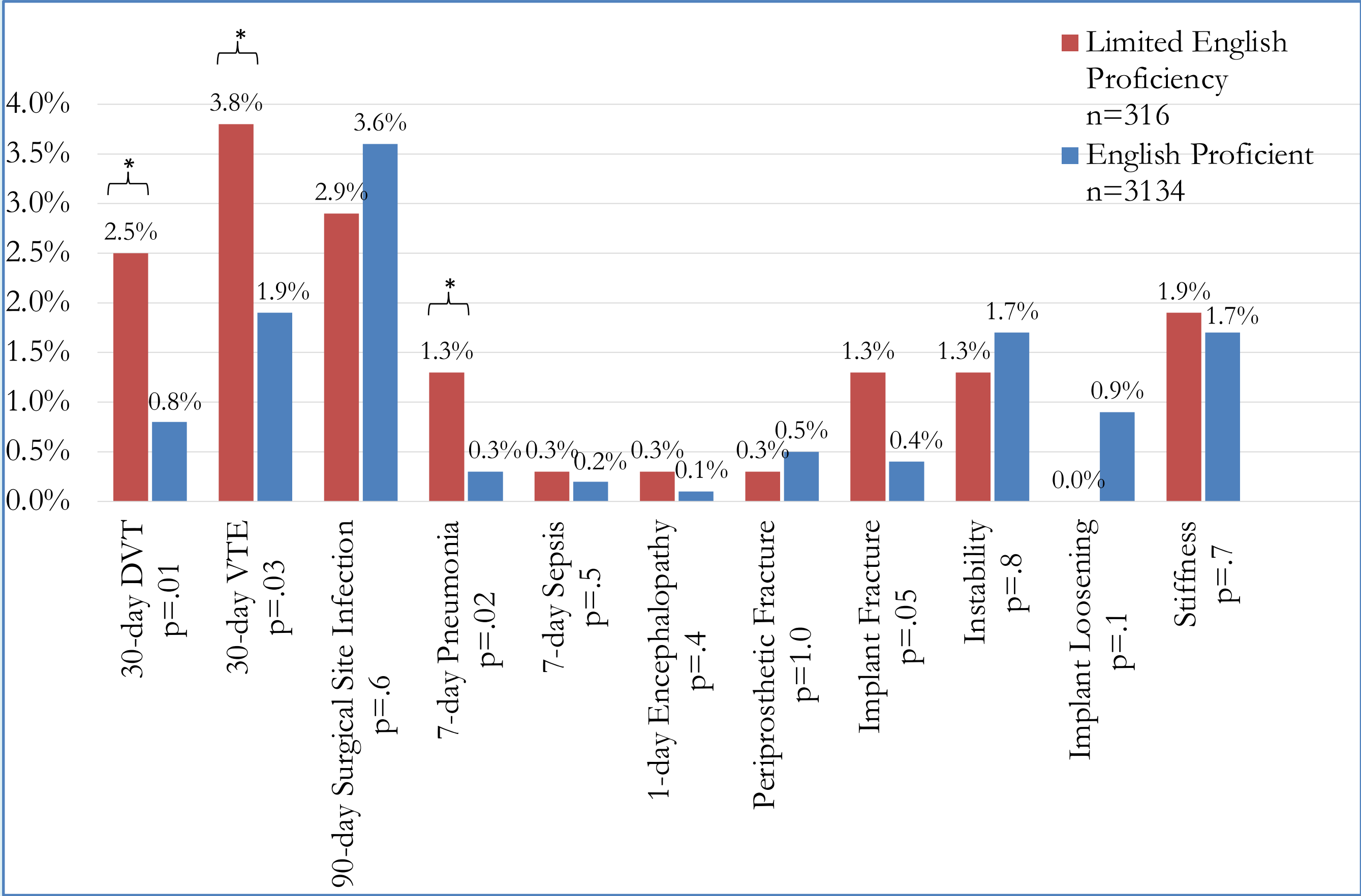


Fig 1. Post-TKA Complication Rates based on English Proficiency Status

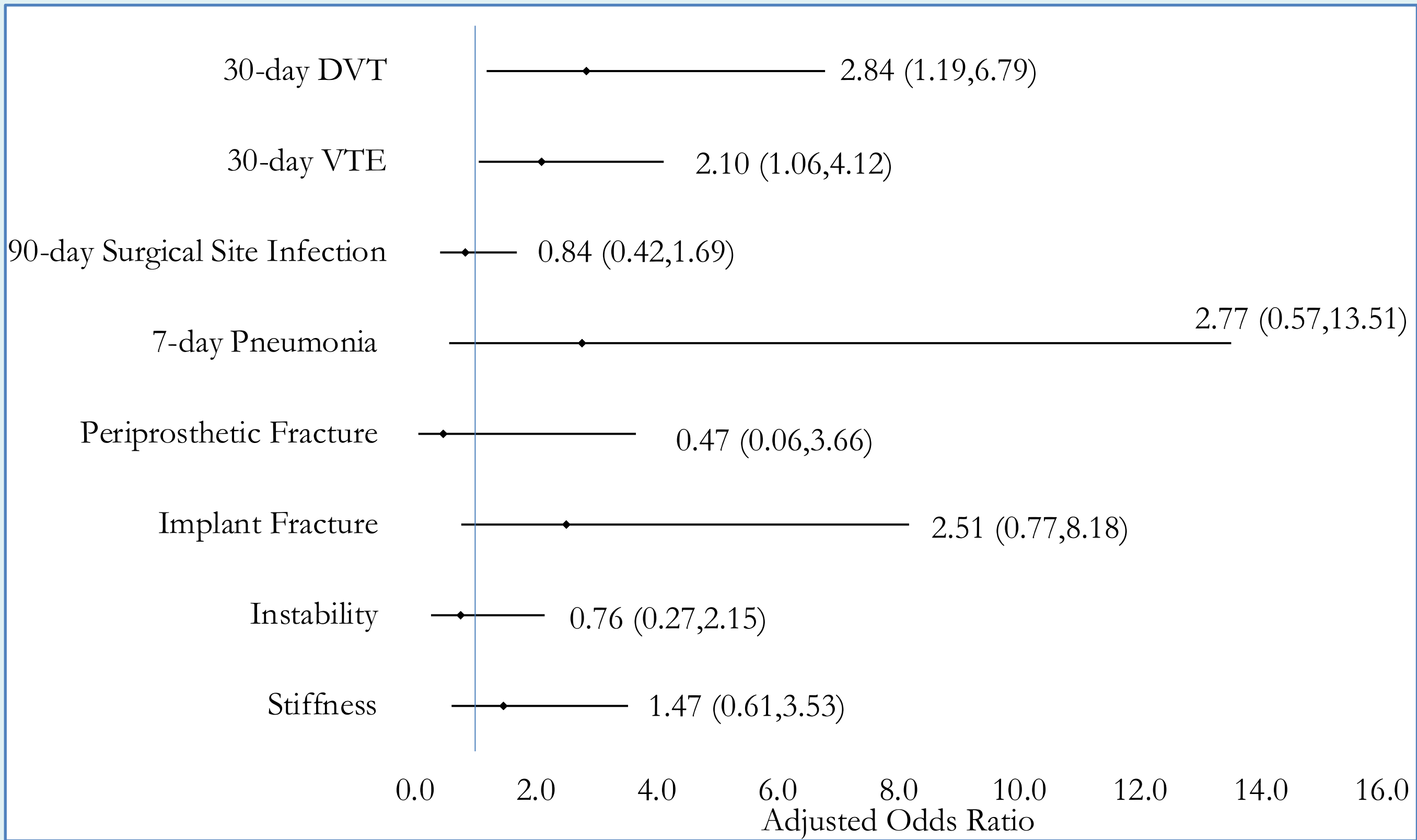


Fig 2. Adjusted Odds Ratios of Post-TKA Complications for LEP Patients

*Adjusted for age, patient-reported gender, body mass index, ASA rating, smoking status and length of hospitalization.