

# The Impact of Sex on Atherectomy Outcomes for Different Anatomic Regions

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## BACKGROUND

This study examines the impact of sex on atherectomy outcomes for different anatomic regions.

## METHODS

- The Vascular Quality Initiative (VQI) Peripheral Vascular Intervention (PVI) database from 2010-2022 was utilized
- Only patients who had received an atherectomy were included (20,132 Females vs. 31,042 Males)
- Analysis was stratified by sex and anatomic region
- Primary longitudinal outcomes included reintervention and amputation-free survival
- Logistic regression was performed for one-year reintervention
- Kaplan-Meier curves used for time-to-event analysis
- All analyses controlled for demographics, comorbidities, and preoperative surgical characteristics

## RESULTS

Table 1 displays demographic, comorbidity, preoperative, operative, and postoperative characteristics of patients in this study.

Women were:

- Older
- More likely Black or African American and have history of previous PVI and COPD
- Less likely to be smokers, have diabetes, CAD and be treated for claudication
- Women had a lower reintervention-free survival for all infrainguinal and femoral-popliteal lesions, but not for tibial lesions (Figures 1a, 2a, 3a).

## RESULTS

Table 1: Demographic, Preoperative, Operative, and Post-Operative Characteristics of Study Patients

Characteristic	Male, N = 31,042 <sup>1</sup>	Female, N = 20,132 <sup>1</sup>	p-value <sup>2</sup>
Femoral-Popliteal Atherectomies	20,190 (65.0%)	14,466 (71.9%)	<0.001
Tibial Subgroup Atherectomies	5,858 (18.9%)	2,346 (11.7%)	<0.001
Age	69.0 (± 10.37)	70.8 (± 11.65)	<0.001
BMI (metric)	28.2 (± 5.62)	28.1 (± 6.76)	<0.001
Race			
American Indian or Alaskan Native	149 (0.5%)	133 (0.7%)	
Asian	286 (1.0%)	158 (0.8%)	
Black or African American	4,832 (16.3%)	4,285 (22.4%)	
Native Hawaiian or other Pacific Islander	44 (0.1%)	27 (0.1%)	
White	24,324 (82.1%)	14,522 (75.9%)	
Hypertension	27,756 (89.7%)	17,999 (89.8%)	>0.9
Diabetes	18,533 (59.7%)	11,047 (54.9%)	<0.001
Smoking History	24,852 (80.2%)	13,136 (65.3%)	<0.001
COPD	6,852 (22.1%)	4,887 (24.3%)	<0.001
CAD	12,052 (38.9%)	5,894 (29.3%)	<0.001
CHF	6,718 (21.7%)	3,898 (19.4%)	<0.001
History of CABG	7,888 (27.1%)	2,804 (14.8%)	<0.001
History of PCI	8,618 (29.6%)	4,370 (23.0%)	<0.001
Dialysis	2,852 (9.2%)	1,650 (8.2%)	<0.001
Previous History of Bypass	1,323 (4.3%)	785 (3.9%)	0.044
Previous History of PVI	10,079 (32.5%)	7,255 (36.1%)	<0.001
History of Carotid Intervention	1,827 (6.4%)	1,113 (6.0%)	0.082
Indication			
Asymptomatic	970 (3.2%)	650 (3.4%)	
Claudication	14,062 (47.0%)	8,534 (44.4%)	
Not Treated	82 (0.3%)	61 (0.3%)	
Rest Pain	3,354 (11.2%)	3,241 (16.9%)	
Tissue Loss	11,423 (38.2%)	6,744 (35.1%)	
Preoperative ABI	0.8 (± 0.48)	0.7 (± 0.42)	<0.001
Bailout Stenting	711 (2.3%)	506 (2.5%)	0.11

<sup>1</sup> n (%); Mean (± SD)

<sup>2</sup> Pearson's Chi-squared test; Wilcoxon rank sum test

Figure 1a: Kaplan-Meier Curve for Reintervention-Free Survival in Infrainguinal Atherectomy

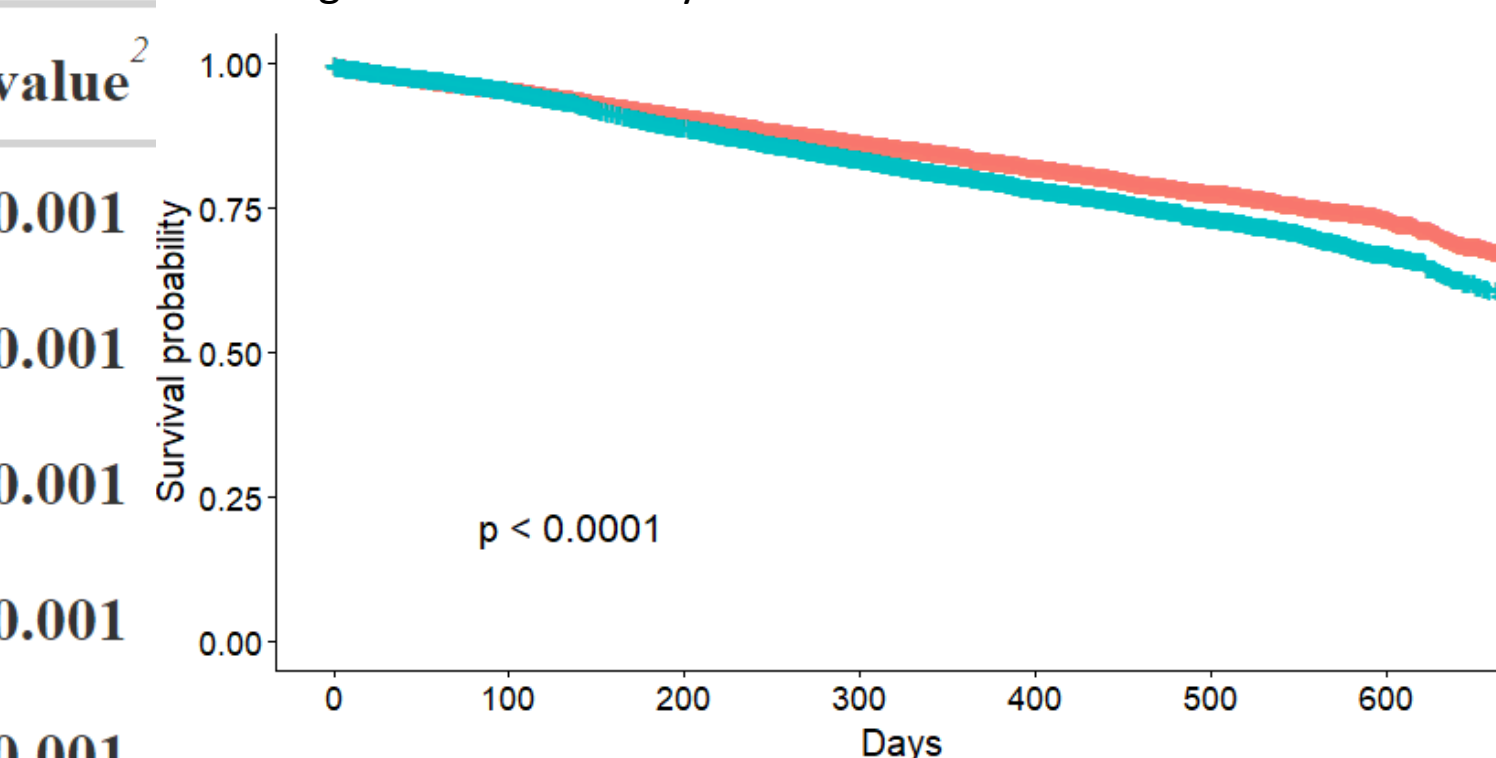


Figure 2a: Kaplan-Meier Curve for Reintervention-Free Survival in Femoral-Popliteal Atherectomy

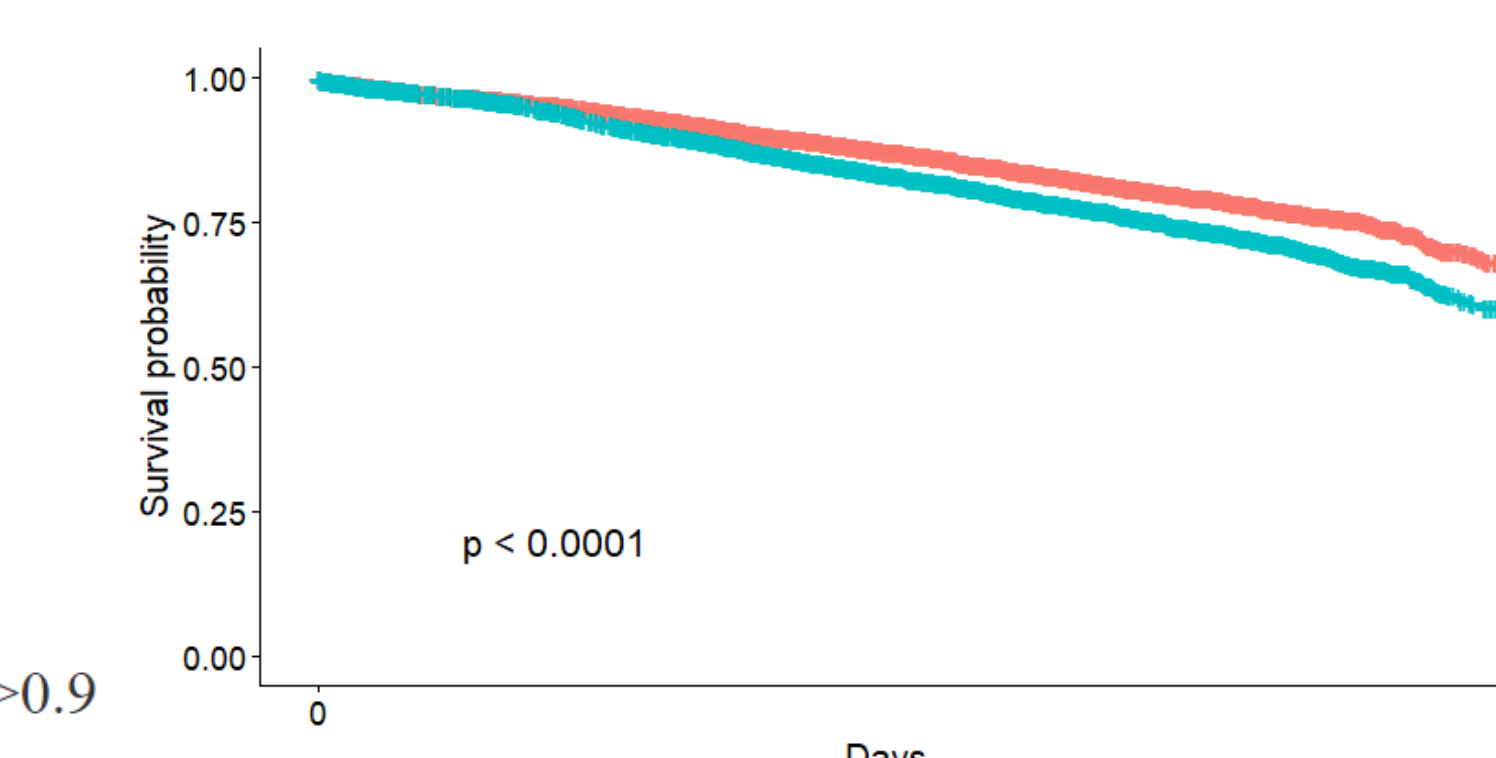


Figure 3a: Kaplan-Meier Curve for Reintervention-Free survival for Tibial atherectomy

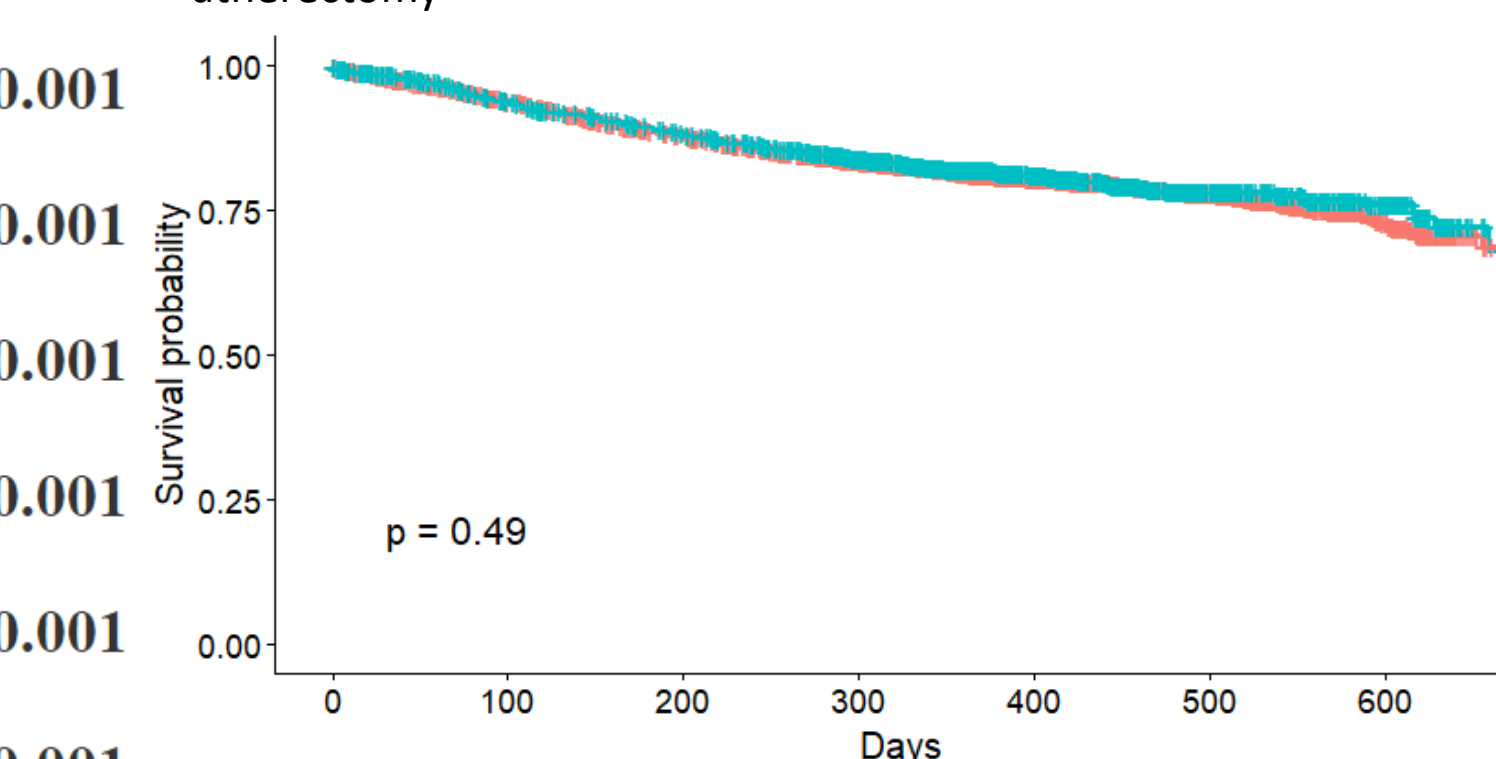


Figure 1b: Forest Plot for Reintervention in Combined Infrainguinal Atherectomy

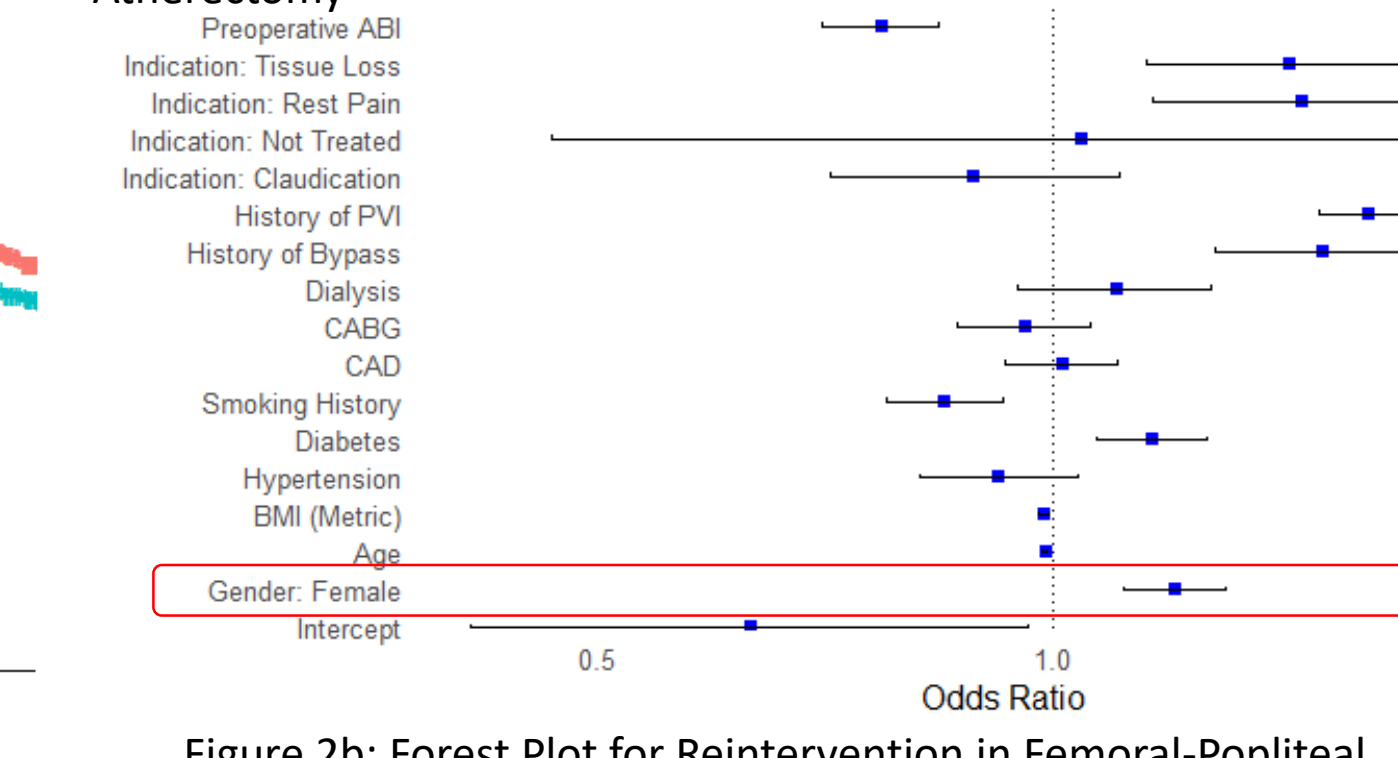


Figure 2b: Forest Plot for Reintervention in Femoral-Popliteal Atherectomy

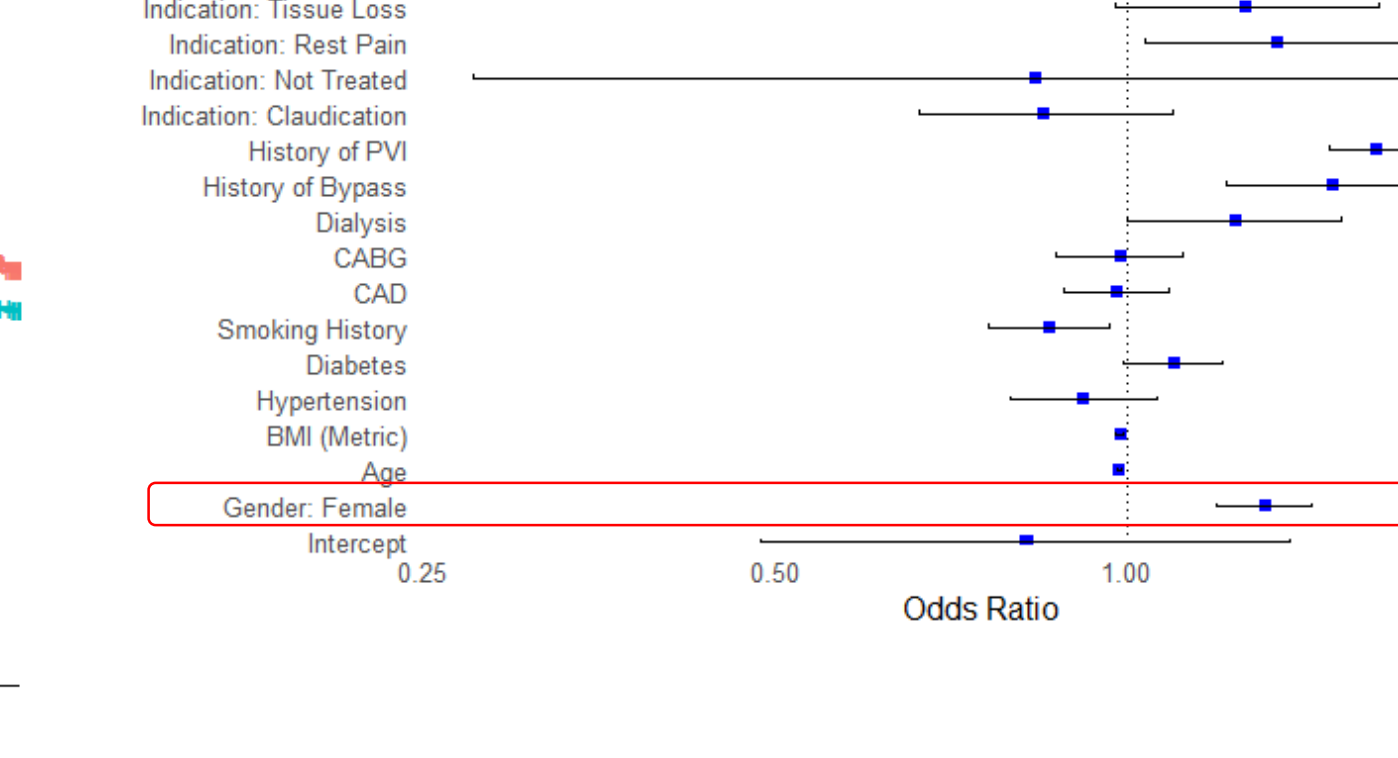


Figure 3b: Forest Plot for Reintervention in Tibial Atherectomy

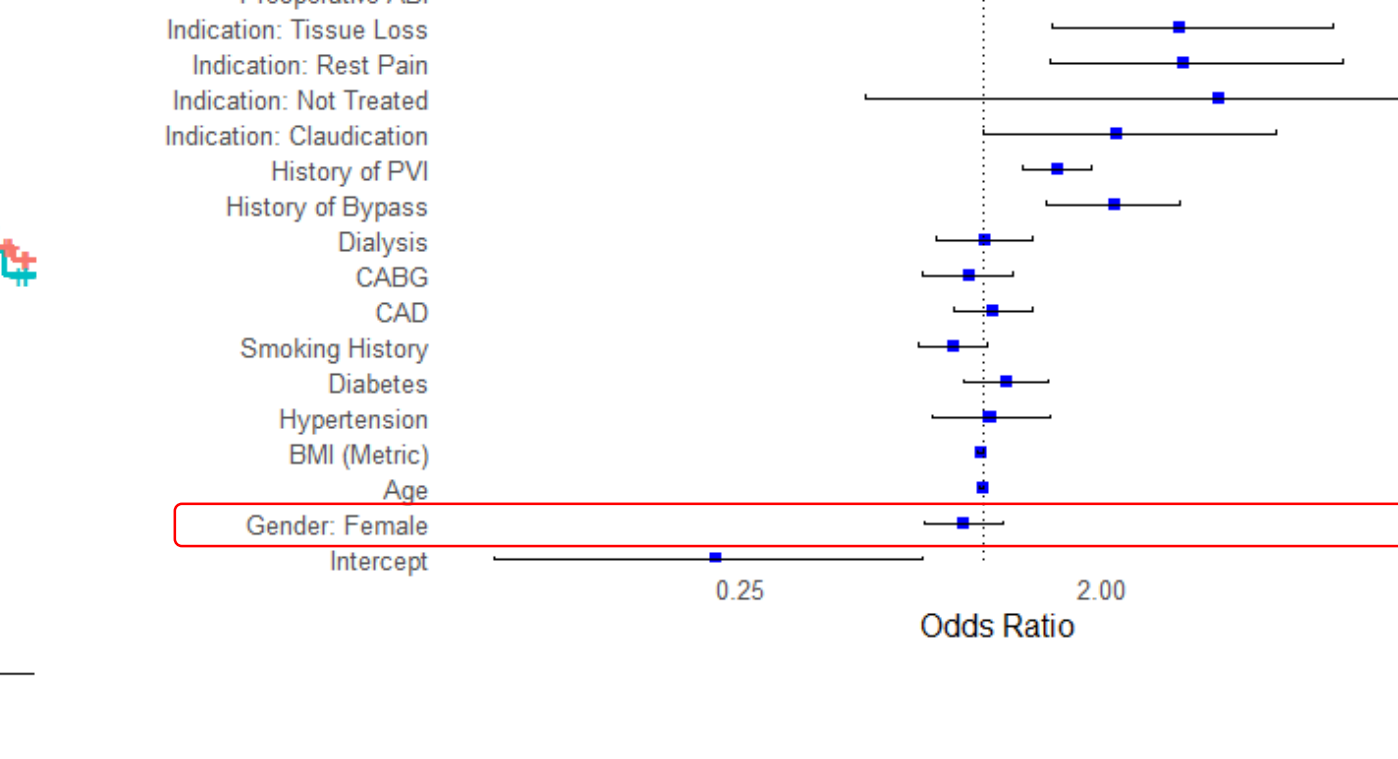


Figure 4a: Kaplan-Meier Curve for Amputation-Free Survival for Infrainguinal Atherectomy

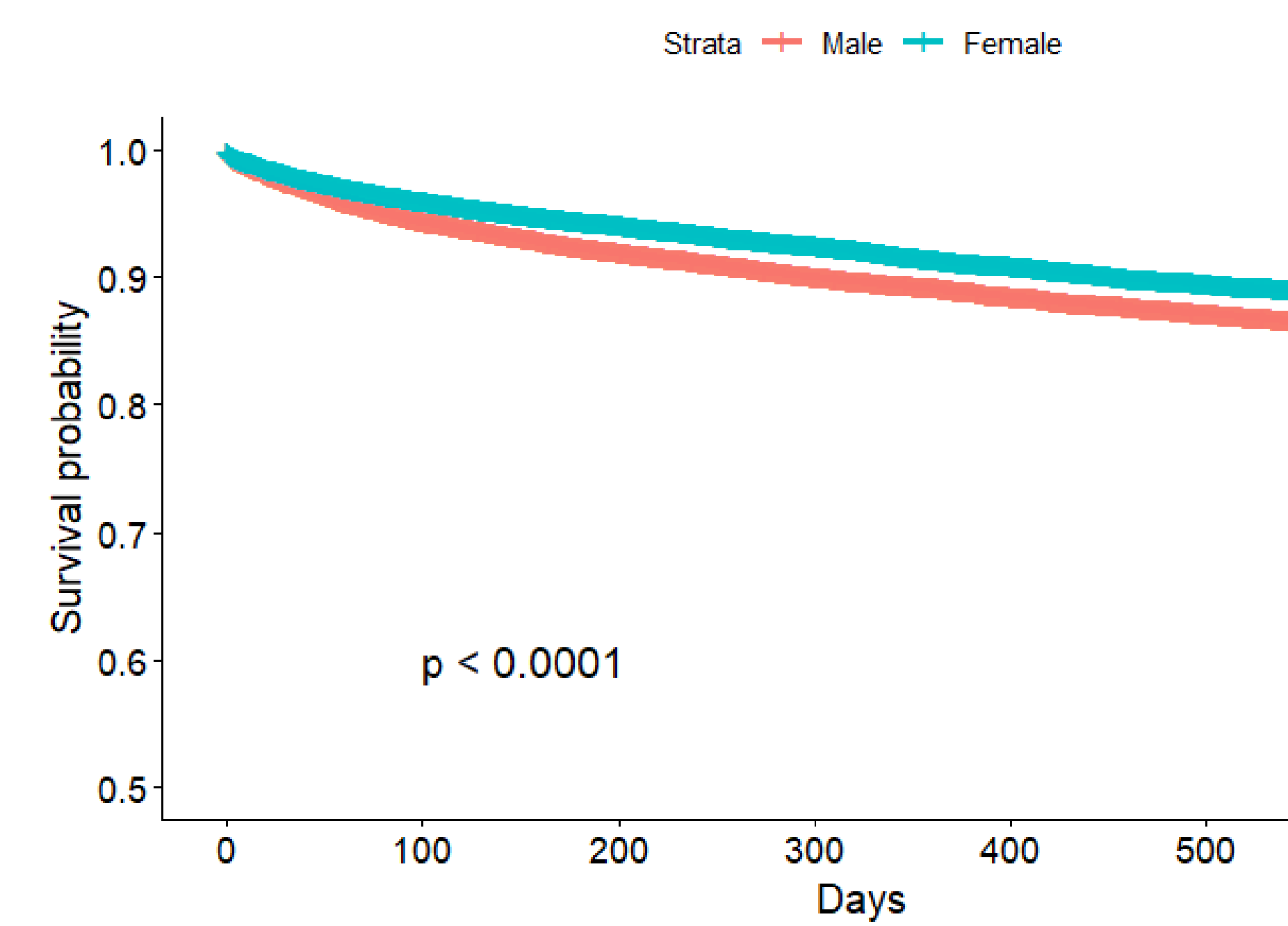


Figure 5a: Kaplan-Meier Curve for Amputation-Free Survival in Femoral-Popliteal Atherectomy

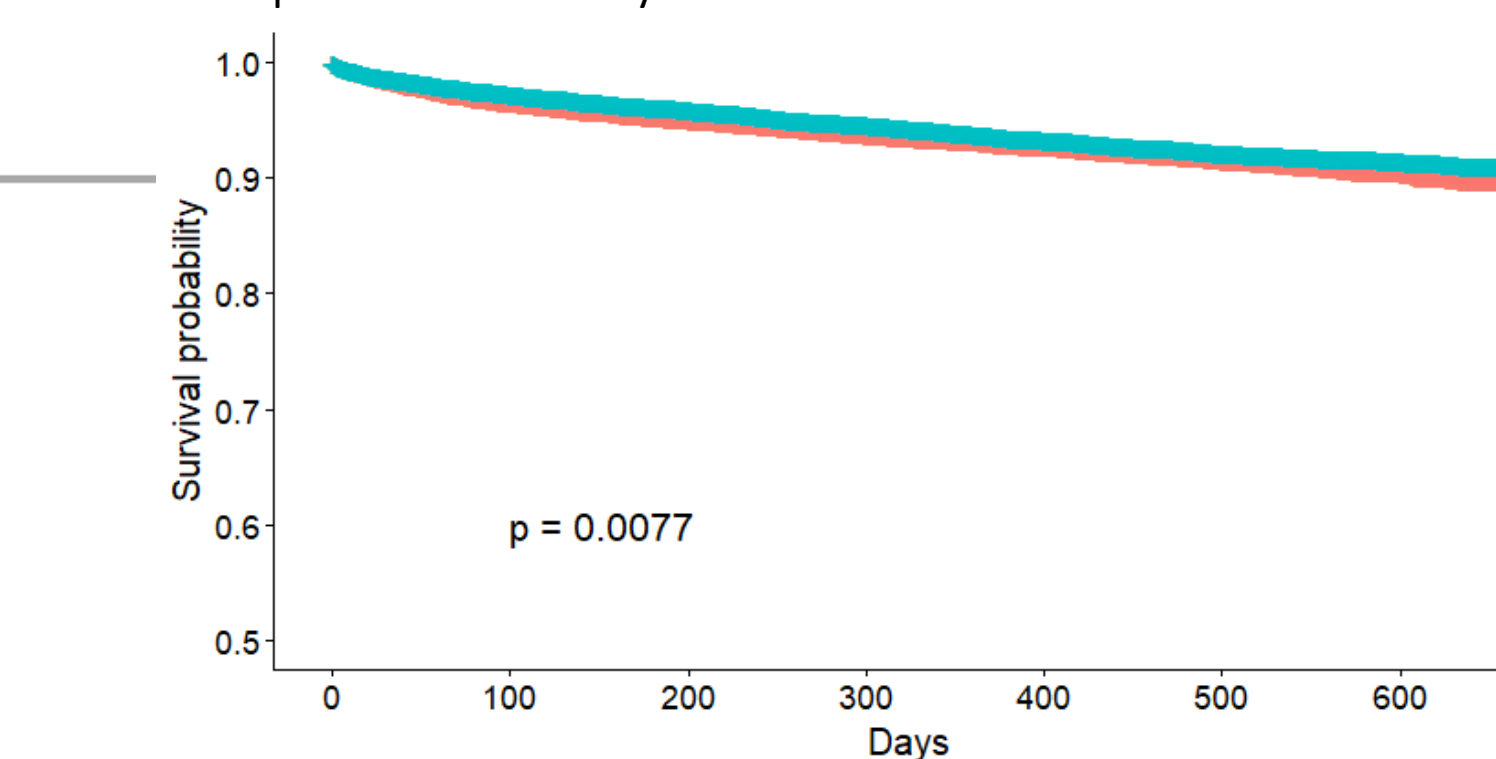
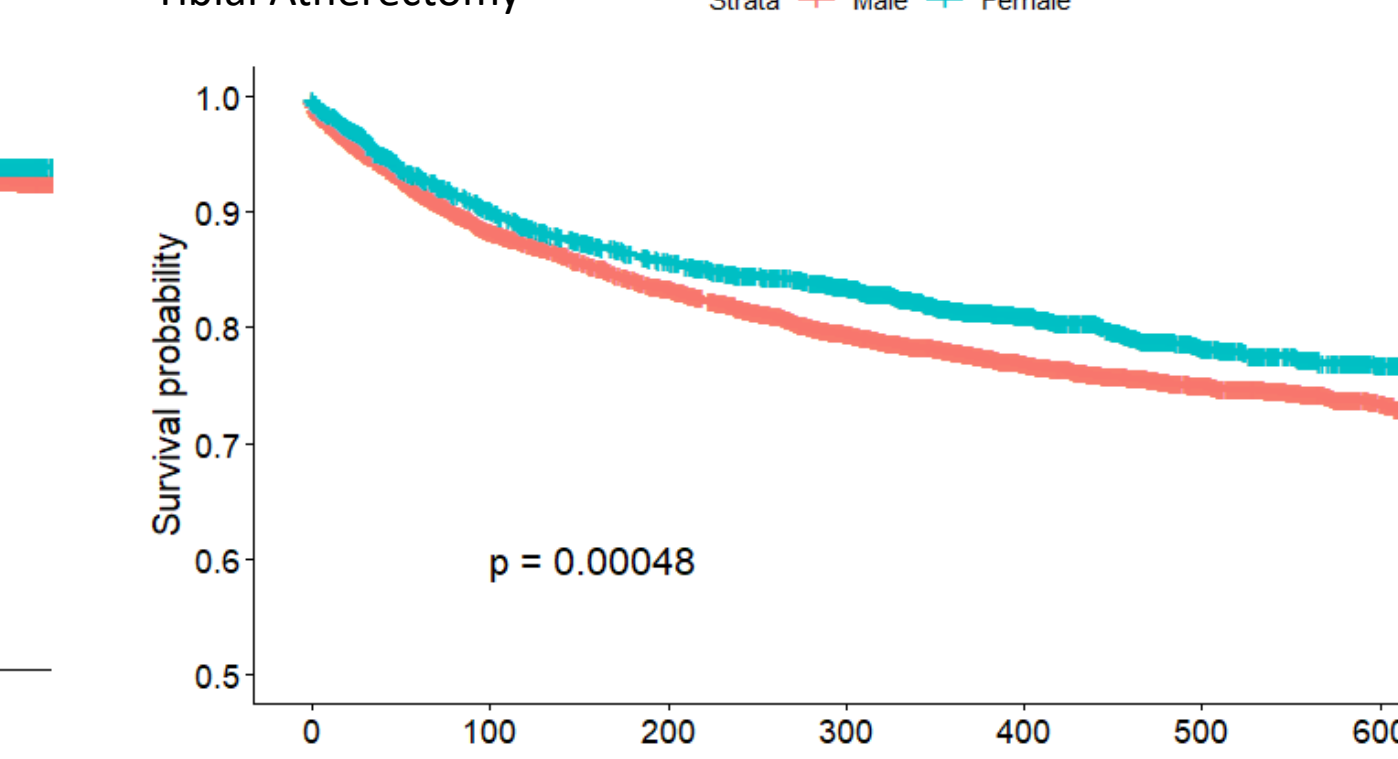


Figure 6a: Kaplan-Meier Curve for Amputation-Free Survival in Tibial Atherectomy



## RESULTS (CONT.)

- Women had better amputation-free survival compared to male patients for all anatomic lesions.
- Forest plot analysis: female sex was associated with a higher odds ratio for re-intervention compared to male sex for all infrainguinal lesions and femoral-popliteal lesions, but not for tibial lesions (Figures 1b, 2b, 3b). There was no such sex related association with amputation risk (data not shown)
- 21.9% of all women (N = 20,132) vs 18.1% of all men (N = 31,042) underwent **re-intervention**
- Average time for re-intervention was 356 days from index procedure for men and 349 days from index procedure for women
- 18.2% of all women vs 15.0% of all men in the study underwent **endovascular re-intervention**
- 3.7% of women vs. to 3.1% of men underwent **surgical re-intervention**
- Finally, 8.2% of women vs 10.4% of men underwent a **major amputation**
- Average time for amputation from index procedure was 115 days from index procedure for women and 111 days from index procedure for men

## CONCLUSIONS

Sex-related differences in long-term outcomes after infrainguinal atherectomy vary according to the anatomic region.

Further research is warranted to investigate the sex related discrepancy in longitudinal outcomes by anatomic region and identify patient groups that will benefit the most from this procedure.