

Impact of Sex on Outcomes of Chronic Total Occlusion Percutaneous Coronary Intervention: Insights from a Multicenter US Registry



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Objectives

To examine the effect of sex on in-hospital outcomes of chronic total occlusion (CTO) percutaneous coronary intervention (PCI)

Methods

Study population

- 1,718 consecutive patients who underwent 1,753 CTO PCIs between 2012 and 2016 at 14 experienced US centers

Analyses

- Continuous variables are presented as mean \pm standard deviation or median (interquartile range) and were compared using the t-test, or Wilcoxon rank-sum test, as appropriate.
- Categorical data are reported as frequencies or percentages and compared using the chi-square test. All statistical analyses were performed with JMP 11.0 (SAS Institute; Cary, North Carolina).
- Two-sided p-values of 0.05 were considered statistically significant.

Results

Men composed 84.7% of the study population.

Table 1. Baseline clinical characteristics of the study patients, classified according to sex

Variable	Women (n=263)	Men (n=1455)	P
Age (years) ^a	66.8 \pm 11	65.0 \pm 10	0.022
Body Mass Index (kg/m ²) ^a	31.0 \pm 7.1	30.5 \pm 6.0	0.438
Diabetes Mellitus	48.8%	44.2%	0.164
Hypertension	91.2%	90.2%	0.624
Dyslipidemia (%)	95.4%	94.9%	0.720
Smoking (current)	28.1%	25.6%	0.395
Left Ventricular Ejection Fraction (%) ^a	53.9 \pm 13	49.0 \pm 14	<0.001
Family History of Coronary Artery Disease	27.9%	30.4%	0.529
Congestive Heart Failure	25.6%	29.3%	0.214
Prior Myocardial Infarction (%)	42.0%	43.8%	0.591
Prior Coronary Artery Bypass Graft Surgery	30.0%	36.4%	0.046
Prior Cerebrovascular Disease	11.1%	11.1%	0.969
Prior Peripheral Vascular Disease	18.5%	16.3%	0.370
Baseline Creatinine (mg/dL) ^b	0.9 (0.7, 1.1)	1.1 (0.9, 1.3)	<0.001

^a mean \pm standard deviation; ^b median (interquartile range); CTO: chronic total occlusion

Table 2. Angiographic characteristics of the study patients, classified according to sex

Variable	Women (n=264)	Men (n=1489)	P
CTO Target coronary artery			
Right coronary artery	60.5%	54.2%	0.058
Left anterior descending artery	24.3%	23.6%	
Left circumflex artery	14.8%	21.7%	
Successful Crossing Strategy			
Antegrade wiring	54.4%	40.8%	<0.001
Retrograde	21.8%	24.8%	
Antegrade dissection and re-entry (ADR)	15.5%	22.7%	
None	8.3%	11.7%	
First Crossing Strategy			
Antegrade wiring	75.0%	69.1%	0.105
Retrograde	17.1%	18.0%	
ADR	7.9%	12.2%	
Retrograde crossing attempt	32.6%	40.1%	0.010
Japanese chronic total occlusion-score ^a	2.35 \pm 1.3	2.54 \pm 1.2	0.045
Tortuosity (moderate/severe)	28.8%	36.9%	0.016
In-stent restenosis	17.3%	14.8%	0.314
Proximal cap ambiguity	34.3%	30.9%	0.373
Prior failure to open CTO	21.0%	17.0%	0.137
Interventional Collaterals	58.7%	57.1%	0.704
Side branch at the proximal cap	42.4%	47.8%	0.189
Blunt/no stump	29.5%	33.3%	0.230
Vessel diameter (mm) ^b	2.8 (2.5, 3)	3.0 (2.5, 3)	0.469
Occlusion length (mm) ^b	28 (15, 40)	30 (20, 50)	0.297

^a mean \pm standard deviation; ^b median (interquartile range); CTO: chronic total occlusion

Figure 1. Technical Success, Procedural Success, and MACE, grouped by sex

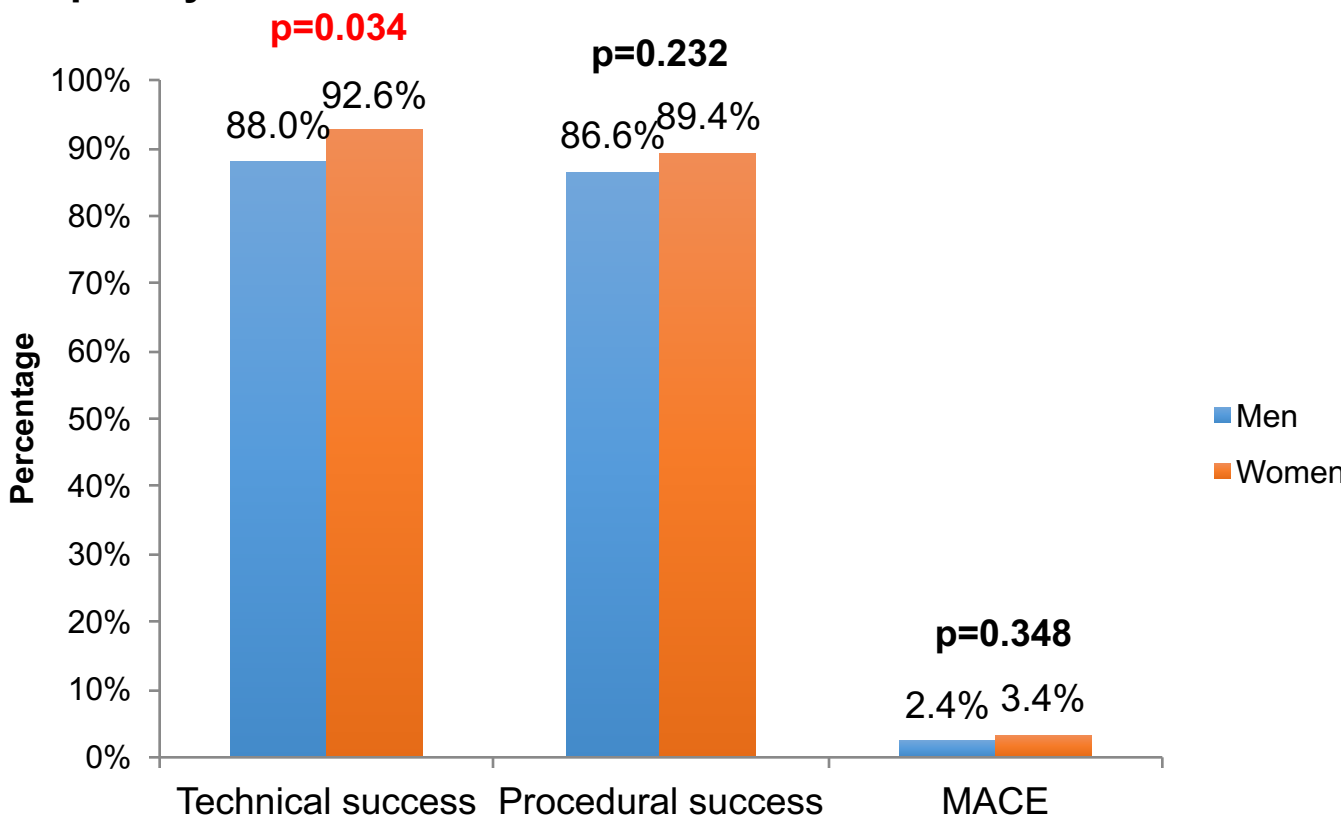


Figure 2. Successful crossing strategy classified according to sex

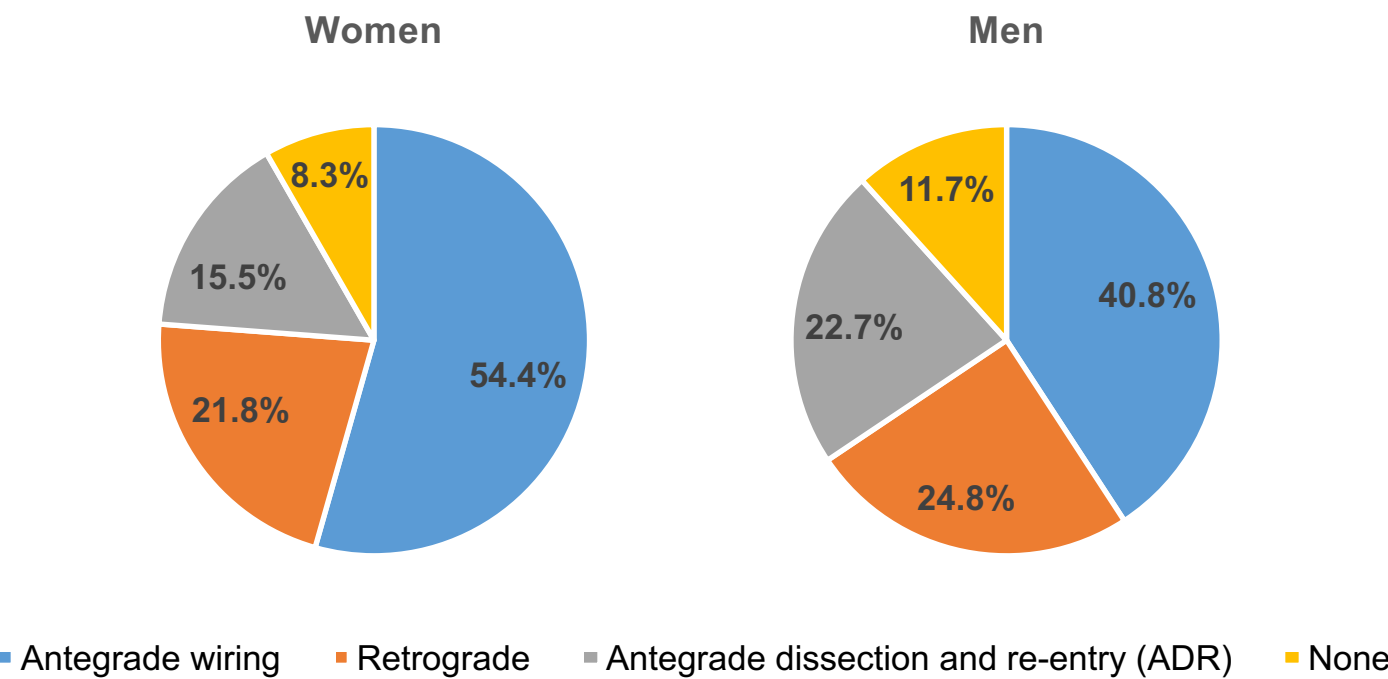


Table 3. Procedural outcomes of the study patients, classified by sex

Variable	Women (n=264)	Men (n=1489)	P
Technical Success	92.6%	88.0%	0.034
Procedural Success	89.4%	86.6%	0.232
Procedural time (min) ^b	120 (77, 173)	131 (90, 192)	0.032
Fluoroscopy time (min) ^b	40.5 (24, 73)	47.9 (30, 77)	0.019
Air kerma radiation dose (Gray) ^b	2.66 (1.5, 4.4)	3.37 (2.0, 5.3)	<0.001
Contrast volume ^b	250 (175, 335)	275 (200, 375)	<0.001
MACE	3.40%	2.40%	0.348
Death	0.40%	0.60%	0.654
Acute myocardial infarction	0.38%	1.00%	0.322
Stroke	0.76%	0.13%	0.051
Pericardiocentesis	2.30%	0.60%	0.007

^a mean \pm standard deviation; ^b median (interquartile range); CTO: chronic total occlusion; PCI: percutaneous coronary intervention; MACE: major adverse cardiac events

Conclusion

As compared with women, CTO PCI in men is associated with higher lesion complexity and lower technical success, but similar procedural success and similar incidence of major adverse cardiovascular events.

Disclosures:

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