In-Hospital and Follow-Up Outcomes after Chronic Total Occlusion Percutaneous Coronary Intervention According to Left Ventricular Ejection Fraction: Insights from the PROGRESS-CTO Registry

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BACKGROUND

Outcomes of chronic total occlusion percutaneous coronary intervention (CTO PCI) according to baseline left ventricular ejection fraction (LVEF) have received limited study.

METHODS

We compared clinical, angiographic, procedural characteristics and outcomes of 1,441 CTO PCIs performed in patients with known ejection fraction and available follow-up. We compared patients with LVEF ≥50% (N=834), LVEF 35%-49% (N=434) and LVEF <35% (N=173).

RESULTS

Left anterior descending CTO was significantly more common in the low LVEF group (24% vs 25% vs 42%, p<0.001). The J-CTO score was similar (2.4 ± 1.3 vs 2.5 ± 1.2 vs 2.4 ± 1.2, p=0.5) **(Table 1)**, as was procedural success (85% vs 83% vs 88%, p=0.5) **(Table 2)** and the incidence of in-hospital major adverse cardiovascular events (2% vs 3.5% vs. 4.6%, p=0.12). Patients with low ejection fraction received prophylactic ventricular assists device at higher rates but did not require urgent use of assist devices more frequently. The composite endpoint of death, myocardial infarction (MI) and revascularization at 1 year was more common in the low LVEF group (13% vs 17% vs 25 %, plog-rank=0.001) (**Figure 1**). There was a significant difference in 1-year mortality (12.8% vs 16.8% vs 24.6%, p<0.001), but not in MI (1.9% vs 4.4% vs 5.6%, p=0.07) and revascularization rates (7.4% vs 8.9% vs10.7%, p=0.8).

CONCLUSION

CTO PCI can be performed with high success rates and acceptable in-hospital complication rates irrespectively of the LVEF, but patients with low LVEF have worse one-year outcomes.

Decreased baseline **LVEF** is associated with similar **in-hospital outcomes** and **worse 1-year** outcomes after CTO PCI.

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TABLE 1

Technical characteristics and outcomes according to LVEF.

VARIABLE	LVEF			p value
	≥50%	35%-49%	<35%	
	N=834	N=434	N=173	
Target vessel				
RCA	55.1	53.6	46.8	
LAD	23.6	24.8	42.1	0.0002
LCX	20.7	19.9	10	
Other	0.6	1.7	1.1	
J-CTO score, mean±SD	2.4 ± 1.3	2.5 ± 1.2	2.4 ± 1.2	0.5
PROGRESS-CTO score, mean±SD	1.2 ± 1	1.2 ± 1	1 ± 1	0.05
PROGRESS-CTO complications score, %	2.6 ± 2	2.6 ± 1.9	2.7 ± 1.9	0.9
LVAD use, %	0.37	3.1	13.8	<0.0001
Prophylactic	0	1.2	12	<0.0001
Urgent	0.24	1.16	0.6	0.13
Technical success, %	86	85.2	88.7	0.5

LVEF, left ventricular ejection fraction; RCA, right coronary artery; LAD, left anterior descending; LCX, circumflex; LVAD, left ventricular assist device

TABLE 2

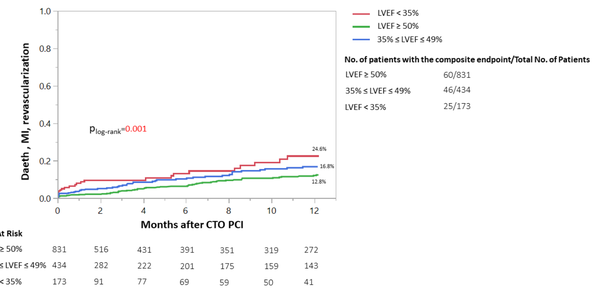
In-hospital outcomes according to LVEF.

VARIABLE	LVEF			p value
	≥50%	35%-49%	<35%	
	N=834	N=434	N=173	
Procedural success, %	85.1	83.5	87.5	0.5
Procedure time, min, median [IQR]	112 [76,162]	126 [86,185]	121 [81,177]	0.001
Fluoroscopy time, min, median [IQR]	40 [25,64]	47 [28,74]	41 [26,67]	<.0001
Contrast volume, mL, median [IQR]	220 [150,300]	240 [170,340]	220 [159,300]	0.002
In-hospital MACE,%	2	3.5	4.6	0.12
Technical success, %	86	85.2	88.7	0.5

LVEF, left ventricular ejection fraction; MACE; major adverse cardiovascular events

FIGURE 1

Cumulative incidence of 1-year death, MI and revascularization according to LVEF.



LVEF, left ventricular ejection fraction.

DISCLOSURE INFORMATION

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