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TCT-118 Comparative Analysis of Patients' Characteristics in Chronic Total Occlusion Revascularization Studies: Trials Versus Real-World Registries

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BACKGROUND The impact of proximal cap ambiguity on procedural techniques and outcomes of chronic total occlusion (CTO) percutaneous coronary intervention (PCI) has received limited study.

METHODS We examined the clinical and angiographic characteristics and procedural outcomes of 11,169 CTO PCIs performed in 10,932 patients at 42 US and non-US centers between 2012 and 2022.

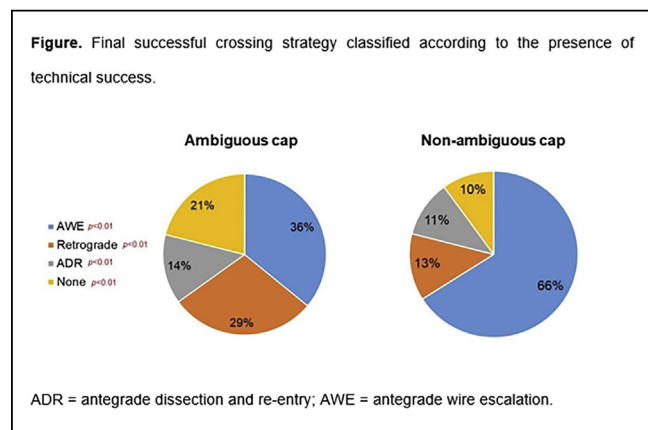
RESULTS Proximal cap ambiguity was present in 35% of CTO lesions. Patients whose lesions had proximal cap ambiguity were more likely to have had prior PCI (65% vs 59%; $P < 0.01$) and prior coronary artery bypass graft surgery (37% vs 24%; $P < 0.01$). Lesions with proximal cap ambiguity were more complex with higher J-CTO score (3.1 ± 1.0 vs 2.0 ± 1.2 ; $P < 0.01$) and lower technical (79% vs 90%; $P < 0.01$) and procedural success (77% vs 89%; $P < 0.01$) rates compared with non-ambiguous CTO lesions. The incidence of major adverse cardiovascular events (MACE) was higher in cases with proximal cap ambiguity (2.5% vs 1.7%; $P < 0.01$). The retrograde approach was more commonly used among cases with ambiguous proximal cap (51% vs 21%; $P < 0.01$) and was more likely to be the final successful crossing strategy (29% vs 13%; $P < 0.01$). PCIs of CTOs with ambiguous proximal cap required longer procedure time (140 [95-195] vs 105 [70-150] min; $P < 0.01$) and more contrast volume (225 [160-305] vs 200 [150-280] mL; $P < 0.01$).

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BACKGROUND The few randomized controlled trials (RCTs) on chronic total occlusion (CTO) percutaneous coronary interventions (PCI) are subject to selection bias.

METHODS We performed a meta-analysis of national and dedicated CTO PCI registries and compared patient characteristics and outcomes with those of RCTs that randomized patients to CTO PCI vs medical therapy. Given the large sample size differences between RCTs and registries, we focused on the absolute numbers and their clinical significance. We considered a 5% relative difference between groups to be potentially clinically relevant.

RESULTS From 2012 to 2022, 6 RCTs compared CTO PCI vs medical therapy ($n = 1,047$) and were compared with 15 registries (5 national and 10 dedicated CTO PCI registries). Compared with registry patients, RCT patients had fewer comorbidities, including diabetes, hypertension, previous myocardial infarction, and prior coronary artery bypass graft surgery. RCT patients had shorter CTO length (29.6 ± 19.7 vs 32.6 ± 23.0 mm, a relative difference of 9.2%) and lower J-CTO scores (2.0 ± 1.1 vs 2.3 ± 1.2 , a relative difference of 13%) compared with those enrolled in dedicated CTO registries. Procedural success was similar between RCTs (84.5%) and dedicated CTO registries (81.4%) but was lower in national registries (63.9%).



CONCLUSION Proximal cap ambiguity in CTO lesions is associated with higher utilization of the retrograde approach, lower technical and procedural success rates, and higher incidence of in-hospital MACE.

CATEGORIES CORONARY: Complex and Higher Risk Procedures for Indicated Patients (CHIP)

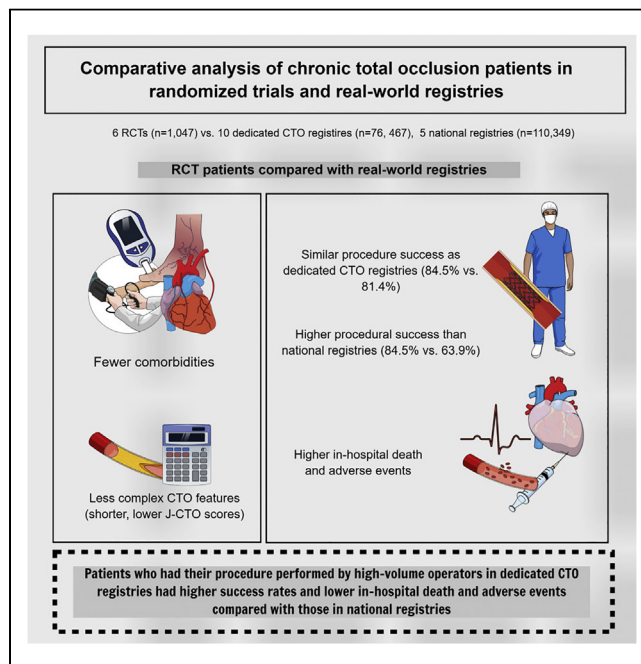
TCT-118

Comparative Analysis of Patients' Characteristics in Chronic Total Occlusion Revascularization Studies: Trials Versus Real-World Registries



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CONCLUSION There is a paucity of randomized data on CTO PCI outcomes (6 RCTs, 1,047 patients). These patients have lower-risk profiles and less complex CTOs than those in real-world registries. Current evidence from RCTs may not be representative of real-world patients and should be interpreted within its limitation.

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