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Manipulation strategy for crossing coronary chronic total occlusion: an update from the Japanese CTO-PCI expert registry

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Background: The percutaneous coronary intervention (PCI) strategy for chronic total occlusion (CTO) based on the guidewire manipulation time remains infrequent.

Purpose: We aimed to assess CTO-PCI strategy on the basis of guidewire manipulation time.

Methods: A total of 5843 patients undergoing CTO PCI between January 2014 and December 2017 and enrolled in the Japanese CTO-PCI expert registry were assessed. Their CTO-PCI strategies, procedural outcomes, and guidewire manipulation time were analysed.

Results: The primary retrograde approach was performed on 1562 patients (26.7%). The overall guidewire and technical success rates were 92.8% and 90.6%, respectively. Median guidewire manipulation time of guidewire success and failure were 56 (interquartile range [IQR]: 22 to 111) min and 176 (IQR: 130 to 229) min, respectively. The average Japanese CTO score of the primary antegrade approach with the antegrade alone,

the primary antegrade approach with the retrograde approach, and the primary retrograde approach were 1.7 ± 1.1 , 2.1 ± 1.2 , and 2.3 ± 1.1 , respectively ($p < 0.001$). Median successful guidewire crossing time of single wiring in the antegrade alone was 23 (IQR: 11 to 44) min, and that of the primary retrograde approach was significantly shorter than that of the primary antegrade approach with the retrograde approach (107 [IQR: 70 to 161] min vs. 126 [IQR: 87 to 174] min; $p < 0.001$). Reattempt, CTO length ≥ 20 mm, and proximal cap ambiguity were the predictors of guidewire failure in the primary antegrade approach with antegrade alone, but were not those in the primary retrograde approach.

Conclusions: Although successful guidewire crossing time of the primary antegrade approach with the antegrade alone is short, that of the primary retrograde approach can be shorter than that of the primary antegrade approach with the retrograde approach. Choosing an appropriate CTO-PCI strategy leads to shortening of successful guidewire crossing time.