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Long-Term Outcomes of Percutaneous Coronary Intervention for Chronic Total Occlusions with Retrograde Approach

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Background: There is a paucity of data on the long-term clinical outcomes of successful percutaneous coronary intervention (PCI) of coronary chronic total occlusions (CTOs) using the retrograde approach.

Methods: We performed a retrospective analysis of the long-term clinical outcomes of 194 consecutive patients who underwent successful CTO PCI at our institution between December 2008 and December 2011.

Results: Mean age was 63.6±8.3 years, 98% of patients were men, 42% had diabetes, 20% had prior coronary artery bypass graft (CABG) surgery and 34% had prior PCI. The retrograde approach was used in 41 patients (21.2%). The CTO target vessel was more frequently the right coronary artery among patients who underwent retrograde CTO PCI (78.1% vs. 50.0%; p=0.001). The mean stent length was longer in the retrograde group (83.3±32 vs. 64.3±32 mm, p=0.001). During a median follow-up of 2.0 years (interquartile range, 1.36 to 3.2 years), compared to antegrade CTO PCI group, patients who underwent retrograde CTO PCI had a higher target lesion revascularization (TLR) rate (45.6% vs. 25.7%, p=0.006) (Figure 1). There was no significant difference in the incidence of all-cause mortality, myocardial infarction, non-target vessel revascularization or CABG between the two groups.

Conclusions: Retrograde CTO PCI was associated with higher incidence of TLR, but similar incidence of death and myocardial infarction. These findings likely reflect the higher complexity of CTO lesions and long stent lengths needed in those treated with the retrograde approach.

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Short and Long-Term Outcomes After Retrograde Coronary Intervention for Chronic Total Occlusion: Comparison With the Antegrade Approach

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Background: Coronary chronic total occlusion (CTO) is frequently associated with multivessel disease. Large registries have shown a higher mortality in patients with unsuccessful CTO-PCI for left anterior descending artery (LAD) as compared to non-LAD-CTO. Furthermore, patients with incomplete coronary revascularization due to non attempted or failed CTO-PCI had a poor prognosis as compared to patients with a complete revascularization. No data exist about the prognostic impact of drug eluting stent (DES) supported successful PCI for LAD-CTO in patients with a complete coronary revascularization achieved by PCI.

Methods: From the prospective Florence CTO-PCI registry, since 2004 to 2010, 644 patients underwent a successful PCI for CTO (>3 months) with a complete coronary revascularization within one month. The prognostic impact of LAD-CTO on cardiac mortality was assessed by Kaplan-Meier estimation and by forward stepwise Cox regression multivariate analysis.

Results: A successful CTO-PCI with a complete coronary revascularization was achieved in 194 patients with LAD-CTO and in 450 patients with non-LAD-CTO. Baseline characteristics of patients with LAD-CTO vs. non-LAD-CTO were similar: mean age 68±11 vs. 67±11 yrs, male 83% vs. 86%, diabetes 22% vs. 23%, previous myocardial infarction 51% vs. 48%, acute coronary syndrome at admission 34% vs. 29%, 3-vessel coronary disease 43% vs. 48%, left ventricular ejection fraction (EF) 44%±13 vs. 45%±12, stent length >40 mm in LAD-CTO 51% vs. 57% in non-LAD-CTO. A multivessel PCI was performed in 70% of both groups. The clinical follow-up rate was 100% (median 1 year). The cardiac survival rate was higher in the non-LAD-CTO group as compared to LAD-CTO group (96%±2% vs. 89%±3%; p=0.004). At multivariate analysis the independent predictors related to cardiac mortality were LAD-CTO (HR 2.9; p=0.025), age (HR 1.1; p=0.002) and EF <40 (HR 1.4; p<0.001).

Conclusions: The successful treatment of non-LAD-CTO associated with a complete revascularization links with a very high survival rate. LAD-CTO is a predictor of cardiac mortality despite the completeness of coronary revascularization.