Laser atherectomy was necessary due to significant calcification and fibrosis of the occlusion. The standard coronary laser catheter was used for 5 patients and the peripheral laser catheter was used for 6 patients. Laser was used to facilitate reverse CART in 5 patients and to debulk the anagrade reentry zone in 6 patients. Average laser fluence was 66 ml/mm2 and laser time 75 ± 8 seconds. All target vessels were successfully recanalized and all patients were discharged from hospital uneventfully. One control coronary perforation and one attempt for restenosis were observed involving the reverse CART, neither of which were clinically significant. Thrombosis of the left main from the diagnostic catheter used to inject collaterals occurred in one patient. Intravascular ultrasound post-subintimal laser atherectomy showed an intact channel with surrounding medial and adventitial layers.

Conclusions: We report the first successful use of subintimal laser atherectomy for percutaneous coronary interventions. The concern for coronary perforations and rupture has limited the use of laser to intratubial debunking; however, we show that the subintimal medial layer in a chronically occluded vessel provided a safe zone for laser atherectomy, even at high energy levels.

TCT-210
Optimized Immediate Angiographic Result After Percutaneous Coronary Intervention for Chronic Total Occlusion Is Associated With Lower Restenosis Rates. A Single Centre Experience
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Background: Angiographic success of percutaneous coronary intervention (PCI) for chronic total occlusion (CTO) is most often defined as a less than 30% residual diameter stenosis with restoration of TIMI grade 3 antegrade flow. The last ACC/AHA guidelines on PCI suggest that, in the drug-eluting stent era, a minimum diameter stenosis of less than 10% with an optimal goal of to close to 0% as possible should be the goal for PCI, was treated with PCI of CTO. However, it has not been demonstrated that such an optimized immediate angiographic result (OAR) reduces restenosis rate in patients treated by PCI for CTO.

Methods: Using quantitative coronary angiography (QCA) analysis, we assessed the immediate post PCI angiographic results of 170 CTO lesions successfully treated in 165 patients who all underwent a control follow-up angiogram at 6 months. Six-month angiographic binary restenosis was defined as a stenosis ≥50% of the lumen diameter.

Results: Post-PCI immediate residual diameter stenosis was <30% in all 170 CTOs (mean 7 ± 5%, range 0-21%). Among these 170 CTOs, OAR defined as <10% residual stenosis was achieved in 133 (78%). Binary restenosis occurred in 35 cases (21%). Patients with restenosis were younger (60 ± 9 vs 65 ± 10 years, p = 0.010); CTO lesions with restenosis had a longer stenting length (89 ± 25 vs 75 ± 32 mm, p = 0.026), a higher stenting length/mean stent diameter ratio (31 ± 9 vs 27 ± 11, p = 0.03) and had a higher immediate post-PCI residual diameter stenosis (9.1 ± 7% vs 6.6 ± 4%, p = 0.007). Restenosis rate was 46% in lesions without OAR vs 14% in the OAR group (p = 0.0001). Multivariate analysis showed that both a younger age and OAR were independent factors of restenosis (p = 0.008 and p = 0.018, respectively).

Conclusions: Our study shows that an optimized immediate angiographic result after PCI of CTO lesions is associated with lower restenosis rates.

TCT-211
Long Term Clinical And Angiographic Outcome Of The Mini-STAR Technique As A Bail Out Strategy For Percutaneous Coronary Intervention Of Chronic Total Occlusion
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Background: A promising variant of the STAR technique, called mini-STAR, has been recently described as successful antegrade rescue technique after failure revascularization by conventional techniques for coronary chronic total occlusion (CTO). This study sought to assess the long-term clinical and angiographic outcome of mini-STAR as a bail-out strategy for CTO revascularization.

Methods: From March 2009 to September 2011, 100 patients (mean age 61.4 ± 10.9 years) underwent a successful revascularization for CTO lesion by mini-STAR technique as a bail-out strategy.

Results: Drug eluting stents (DES) were implanted in all cases with an angiographic success of 92%. At 2-year follow up, the MACE-free survival was 89.2% with a target-veessel revascularization rate of 6.5%. Angiographic follow-up was performed in 72% of patients. CTO target-lesion restenosis was observed in 25% of patients, whereas reocclusion rate was 12.5%. At multivariate Cox analysis, final TIMI flow < 3 was related to MACE occurrence (HR: 5.9, 95% CI: 1.4 to 24.4; p = 0.013). Final TIMI flow < 3 (OR:5.41, 95% CI: 1.05 to 27.3; p = 0.043) and CTO stent length (OR: 0.96, 95% CI: 0.93 to 0.99; p = 0.017) were independent predictors of reocclusion. The independent variables related to restenosis were first-generation DES (OR: 4.10, 95% CI: 1.23 to 13.64; p = 0.022) and CTO stent length (OR: 0.97, 95% CI: 0.95 to 1.00; p = 0.027).

Conclusions: As a bail out strategy for CTO lesions revascularization, the mini-STAR technique shows low MACE and target-lesion revascularization rates at long-term follow-up.

TCT-212
Percutaneous intervention of circumflex chronic total occlusions is associated with worse procedural outcomes: insights from a multicenter US registry
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Background: We sought to determine whether outcomes of chronic total occlusion (CTO) percutaneous coronary intervention (PCI) vary according to CTO target vessel: left anterior descending artery (LAD), left circumflex artery (LCX), and right coronary artery (RCA).

Methods: We evaluated the clinical and angiographic characteristics and procedural outcomes of 636 patients who underwent CTO PCI at six experienced centers in the United States between January 2012 and March 2014.

Results: The CTO target vessel was the RCA in 387 cases (61%), LAD in 132 (21%) and LCX in 117 (18%). LCX lesions were more tortuous and RCA lesions had higher occlusion length and J-CTO score, but were less likely to have a side branch at the proximal cap and had more developed collateral circulation. Procedural success was lower in LCX CTOs (84.6%), followed by RCA (91.7%) and LAD (94.7%) CTOs (p = 0.016). Major complications tended to occur more frequently in LCX PCI (4.3% vs. 1.0% for RCA vs. 2.3% for LAD, p = 0.07). LCX and RCA CTO PCI required higher fluoroscopy times (45 [30-74] min vs. 45 [21-69] min for RCA vs. 34 [20-60] min for LAD, p = 0.018) and LCX and LAD CTOs required more contrast administration [280 (210-370) mL vs. 250 (184-350) mL for RCA and 280 (200-400) mL for LAD].

Conclusions: In a contemporary, multicenter CTO PCI registry, LCX was the least common target vessel. Compared to LAD and RCA, PCI of LCX CTOs was associated with lower procedural success, less efficiency and higher complication rates.

TCT-213
Prospective estimation of Chronic Total Occlusion complexity based on Clinical and Anatomic (Invasive and non-invasive Angiography) characteristics
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Background: One of the reasons for the low application rates of chronic total occlusion (CTO) percutaneous coronary intervention (PCI) by most physicians, may be uncertainty concerning the safety and rate of the procedure. Improved guidelines for case selection, may favourably impact these patients.

Methods: During 2012-2014, 106 eligible patients who were scheduled for percutaneous recanalization of a true CTO were included prospectively in the study. 101