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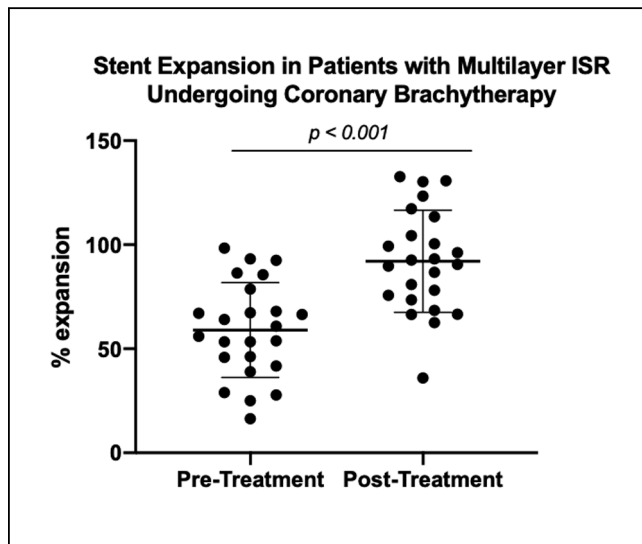
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**BACKGROUND** Greater than 12% of U.S. percutaneous coronary interventions are done to treat in-stent restenosis (ISR), and ISR rates are on the rise. This study used optical coherence tomography (OCT) to examine the mechanisms of ISR in patients with multilayer (>2 layers) stent ISR.

**METHODS** In this single-center study of patients referred for coronary brachytherapy to treat multilayer ISR from 2016 to 2020, we examined the mechanisms of stent failure by OCT. The minimal stent area (MSA) was compared with the reference area, and underexpansion was defined as MSA <80% of the reference area. Pre- and post-treatment MSA and % expansion were compared using the Wilcoxon signed rank test.

**RESULTS** Pre-treatment OCT runs were available for 86 patients treated with high-pressure angioplasty and brachytherapy without placement of additional stents (Figure). Laser atherectomy was used to facilitate stent expansion in 87.2% of cases. The median number of stent layers was 2 (IQR: 2 to 3). The median pre-treatment MSA was 5.2 mm<sup>2</sup> (interquartile range [IQR]: 3.82 to 6.44), and the median pre-treatment stent expansion was 63.9% (IQR: 53.32 to 73.8). Underexpansion was the dominant ISR mechanism, with 75.4% of patients having <80% stent expansion. In a subset of 24 patients with post-treatment OCT data, the final median MSA increased to 7.5 mm<sup>2</sup> (IQR: 6.1 to 10.4; p < 0.001), resulting in a final median expansion of 91.6% (IQR: 75.2 to 108.9; p < 0.001).



**CONCLUSION** Stent underexpansion is present in the majority of multilayer stent failures. Laser atherectomy and high-pressure balloon treatment can markedly improve multilayer stent underexpansion.

**CATEGORIES IMAGING:** Imaging: Intravascular

**TCT CONNECT-410**

**Impact of Real-Time Optical Coherence Tomography-Angio Co-Registration (OCT-ACR) on Physician Decision Making During Percutaneous Coronary Intervention: A Multicenter, Prospective Study (iOPTICO study)**



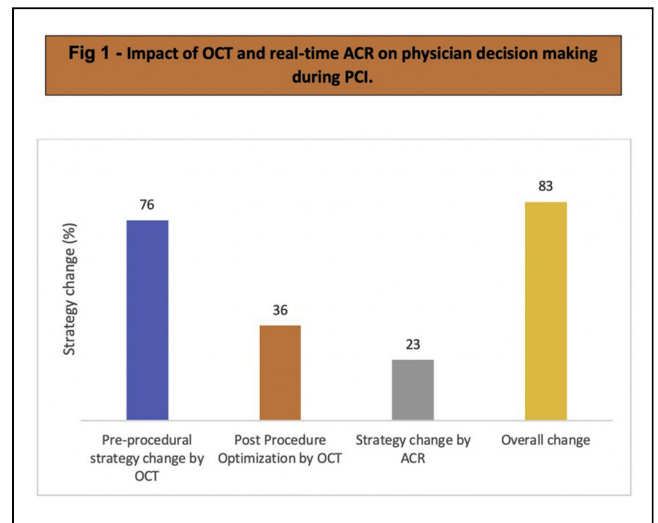
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**BACKGROUND** The use of optical coherence tomography-angio co-registration (OCT-ACR) in routine clinical practice is evolving with limited reporting of clinical outcomes. We conducted this study to evaluate the impact of OCT-ACR on clinician decision making during percutaneous coronary intervention (PCI).

**METHODS** Patients with clinically significant stenosis of >70% in at least 1 coronary artery were enrolled in the study. The pre- and post-PCI procedural strategies were prospectively assessed after angiography, OCT, and ACR with data analyzed by an independent core lab. We enrolled 500 patients from 9 centers in south Asia. Twenty-eight patients had inadequate imaging, whereas data from 75 patients are yet to be analyzed by core lab due to COVID-19.

**RESULTS** The interim results included 397 patients with a mean age of 57.8 ± 10.8 years. Pre-procedural OCT resulted in a change in PCI strategy in 76% of lesions including change in stent length (57%), diameter (34%), strategy (10%), and landing zone (57%) (Figure). The use of ACR additionally altered treatment strategy in 23% lesions. Postprocedural OCT demonstrated edge dissections (3%), underexpansion (18%), malapposition (17%), tissue/thrombus prolapse (8%), and incomplete coverage (1%), thereby requiring additional interventions for optimization in 36% lesions. No change in strategy was observed with post-procedural ACR.



**CONCLUSION** This is the first South Asian study reporting outcomes of OCT-ACR-guided PCI in patients with coronary artery disease. The use of OCT resulted in overall pre-procedural change of PCI strategy in 76% lesions compared with angiography. Real-time ACR had an additional significant impact with change in strategy in 23% of lesions.

**CATEGORIES IMAGING:** Imaging: Intravascular

**TCT CONNECT-411**

**IVUS Characteristics of Stent Edge Hematoma Associated With Acute Occlusion**



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