

Analysis compares stent expansion achieved with guidance from OCT versus IVUS

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Data from the ILUMIEN II trial found that guidance from optimal coherence tomography (OCT) was associated with comparable stent expansion as guidance from intravascular ultrasound (IVUS) in patients undergoing percutaneous coronary intervention (PCI). Results from the study were presented today at EuroPCR 2015, the official annual meeting of the European Association for Percutaneous Cardiovascular Interventions.

Coronary stents must be optimally deployed with full lesion coverage and complete stent expansion to optimize outcomes. Less than full expansion can result in stent thrombosis or restenosis. Previous studies have found that the strongest predictor of [stent thrombosis](#) and restenosis is the minimum stent area (MSA) achieved after PCI.

Advanced imaging techniques, such as IVUS and OCT, help cardiologists to measure, place, and expand the stent with optimal precision. By achieving greater stent luminal dimensions, IVUS-guidance has been associated with improved event-free survival compared to angiographic guidance alone. Compared to IVUS, OCT has superior resolution but does not penetrate as deeply into the arterial wall. Consequently it has limitations in assessing the true diameter of the native artery. It is unknown whether stent expansion, a surrogate of clinical outcomes, is as great with OCT-guidance as with IVUS-guidance.

ILUMIEN II was a prospectively planned, retrospective comparison of

OCT-guidance in ILUMIEN I and IVUS-guidance in ADAPT-DES. The overall study population initially included a total of 940 patients (one lesion randomly chosen per patient; 354 from ILUMIEN I and 586 from ADAPT-DES). After 1:1 propensity matching, 286 patients/lesions from each group were analyzed (n=572). Both the OCT and IVUS analyses were performed by the CRF Clinical Trials Center.

The primary endpoint was post-PCI stent expansion (%) defined as the minimum stent area (MSA) divided by the mean reference lumen area as assessed by OCT in ILUMIEN I and by IVUS in ADAPT-DES. The secondary endpoints were the following IVUS and OCT core lab measures:

- Mean stent expansion (defined as stent volume/stent length divided by the mean reference lumen area)
- Prevalence of major edge dissection (3 mm in length)
- Prevalence of major stent malapposition (malapposition distance/luminal diameter 20%)

The secondary endpoint using angiographic core lab measures (independent of technique) was post-PCI mean lumen diameter (MLD), percent diameter stenosis, and acute gain.

The post-PCI stent expansion was 72.8% [63.3, 81.3] in the OCT-guided group compared to 70.6% [62.3, 78.8] in the IVUS-guided group (p=0.29). Similar rates of major stent edge dissection (2.4% vs. 1.0%, p=0.29) and major stent malapposition (1.4% vs. 0.7%, p=0.69) occurred in both groups.

"In this comparison of patients undergoing OCT-guided stenting from ILUMIEN I and IVUS-guided stenting from ADAPT-DES, OCT-guidance was associated with comparable stent [expansion](#), slightly greater in-segment percent diameter stenosis, and similar rates of major

stent malapposition, tissue protrusion, and stent edge dissection as IVUS-guidance," said Gregg W. Stone, MD, the lead investigator. Dr. Stone is Co-Director of CRF's Medical Research and Education Division. He is also Professor of Medicine at Columbia University College of Physicians and Surgeons and Director of Cardiovascular Research and Education at the Center for Interventional Vascular Therapy at New York-Presbyterian Hospital/Columbia University Medical Center.

"Because this was a retrospective comparison from two separate study databases, with different patients, sites, and operators, additional research is needed to confirm these findings. The results of angiography-guided, IVUS-guided and OCT-guided stent implantation are currently being evaluated in a prospective, multicenter randomized trial - ILUMIEN III: OPTIMIZE PCI."

Provided by Cardiovascular Research Foundation

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