



# JACC

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#### CORONARY

##### Angiography Alone Versus Angiography Plus Optical Coherence Tomography to Guide Percutaneous Coronary Intervention: Outcomes From the Pan-London PCI Cohort

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Daniel A. Jones, Krishnaraj S. Rathod, Sudheer Koganti, Stephen Hamshire, Zoe Astroulakis, Pitt Lim, Alexander Sirker, Constantinos O'Mahony, Ajay K. Jain, Charles J. Knight, Miles C. Dalby, Iqbal S. Malik, Anthony Mathur, Roby Rakhit, Tim Lockie, Simon Redwood, Philip A. McCarthy, Ranil Desilva, Roshan Weerackody, Andrew Wragg, Elliot J. Smith, Christos V. Bourantas

This study investigated the impact of optical coherence tomography (OCT) on mortality following percutaneous coronary intervention (PCI) in a large observational patient cohort. A total of 87,166 patients were included, 1,149 (1.3%) underwent OCT and 10,971 underwent intravascular ultrasound (IVUS) imaging. Procedural success rates were higher and in-hospital major adverse cardiac event rates were lower with OCT guidance. Significant differences in mortality were observed between patients undergoing OCT-guided PCI compared with patients with either IVUS or angiography-guided PCI. This persisted after multivariate Cox analysis (hazard ratio [HR]: 0.48; 95% confidence interval [CI]: 0.26 to 0.81;  $p = 0.001$ ) and propensity matching (HR: 0.39; 95% CI: 0.21 to 0.77;  $p = 0.0008$ ) (OCT vs. angiography-alone cohort). OCT guidance was associated with a reduction in long-term mortality in patients undergoing PCI.



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#### EDITORIAL COMMENT

##### Will Optical Coherence Tomography Become the Standard Imaging Tool for Percutaneous Coronary Intervention Guidance?

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Carlo Di Mario, Alessio Mattesini

##### The Hybrid Approach to Chronic Total Occlusion Percutaneous Coronary Intervention: Update From the PROGRESS CTO Registry

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Peter Tajti, Dimitri Karpaliotis, Khaldoon Alaswad, Farouc A. Jaffer, Robert W. Yeh, Mitul Patel, Ehtisham Mahmud, James W. Choi, M. Nicholas Burke, Anthony H. Doing, Phil Dattilo, Catalin Toma, A.J. Conrad Smith, Barry Uretsky, Elizabeth Holper, R. Michael Wyman, David E. Kandzari, Santiago Garcia, Oleg Krestyaninov, Dmitrii Khelinskii, Michalis Koutouzis, Ioannis Tsiafoutis, Jeffrey W. Moses, Nicholas J. Lembo, Manish Parikh, Ajay J. Kirtane, Ziad A. Ali, Darshan Doshi, Bavana V. Rangan, Imre Ungi, Subhash Banerjee, Emmanouil S. Brilakis

Percutaneous coronary intervention (PCI) for chronic total occlusion (CTO) continues to evolve constantly with developing equipment and techniques. The authors report the largest experience with hybrid CTO PCI performed to date with more than 3,000 procedures performed at 20 centers between 2012 and 2017. Technical success was 87%, and the risk for in-hospital major complications was 3%, providing important benchmarks to use when discussing with patients and providers the risk/benefit ratio of CTO PCI. The final successful crossing strategy was antegrade wire escalation in 52%, retrograde in 27%, and antegrade dissection re-entry in 21%; >1 crossing strategy was required in 41%.



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#### EDITORIAL COMMENT

##### Percutaneous Coronary Intervention of Chronic Total Occlusions: Conquering the Final Frontier

1336

Gregg W. Stone



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### **Neoatherosclerosis in Patients With Coronary Stent Thrombosis: Findings From Optical Coherence Tomography Imaging (A Report of the PRESTIGE Consortium)**

**1340**

Michael Joner, Tobias Koppa, Robert A. Byrne, Maria Isabel Castellanos, Jonas Lewerich, Julia Novotny, Giulio Guagliumi, Erion Xhepa, Tom Adriaenssens, Thea C. Godschalk, Nikesh Malik, Fernando Alfonso, Tomohisa Tada, Franz-Josef Neumann, Walter Desmet, Jurrien M. ten Berg, Anthony H. Gershlick, Laurent J. Feldman, Steffen Massberg, Adnan Kastrati, on behalf of the Prevention of PRESTIGE Investigators

The aim of this study was to assess neoatherosclerosis in a registry of prospectively enrolled patients presenting with stent thrombosis (ST) using optical coherence tomography. Angiographic and intravascular optical coherence tomography was used to investigate etiologic factors of neoatherosclerosis in patients presenting with ST >1 year after implantation (very late ST). In-stent plaque rupture was the most frequent cause (31%) in all patients presenting with very late ST. Implantation of DES was significantly associated with the formation of neoatherosclerosis, whereas previous myocardial infarction on index percutaneous coronary intervention was identified as significant risk factor for plaque rupture in patients with neoatherosclerosis.

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#### ■ EDITORIAL COMMENT

### **In-Stent Neoatherosclerosis and Very Late Stent Thrombosis: An Endless Fight Against Atherosclerosis**

**1351**

Myeong-Ki Hong, Seung-Yul Lee

### **Discharge Against Medical Advice After Percutaneous Coronary Intervention in the United States**

**1354**

Chun Shing Kwok, Malcolm Bell, H. Vernon Anderson, Khaled Al Shaibi, Rajiv Gulati, Jessica Potts, Muhammad Rashid, Evangelos Kontopantelis, Rodrigo Bagur, Mamas A. Mamas

Discharge against medical advice (DAMA) in the context of percutaneous coronary intervention (PCI) has not been described in the published reports. Among the 2,021,104 patients, the proportion of patients who DAMA was 0.5% (n = 10,049). Important predictors of DAMA included diagnosis of acute myocardial infarction, smoking, and alcohol misuse. DAMA was the strongest predictor for readmission (odds ratio: 1.89, 95% confidence interval: 1.71 to 2.08;  $p < 0.001$ ). DAMA patients were more likely to have neuropsychiatric reasons for noncardiac causes of readmission and acute myocardial infarction for cardiac causes of readmission compared with patients discharged home. DAMA following PCI is rare, but it is strongly associated with readmissions within 30 days.

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#### ■ EDITORIAL COMMENT

### **Post-Percutaneous Coronary Intervention Discharge Against Medical Advice: Infrequent But Deadly**

**1365**

David P. Faxon, Natalia C. Berry

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