Title

The practicality of optical coherent tomography for coronary imaging

Journal

Catheterization and Cardiovascular Interventions, 73(1)

ISSN

1522-1946

Author

Tobis, Jonathan

Publication Date

2009

DOI

10.1002/ccd.21915

Editorial Comment

The Practicality of Optical Coherent Tomography for Coronary Imaging

Jonathan Tobis,* MD
Professor of Medicine
David Geffen School of Medicine at UCLA

The accompanying case report uses optical coherence tomography (OCT) to assess the effectiveness of apposition for a new bifurcational stent system, theTryton Side-Branch Stent. The safety and efficacy of this bifurcational stent is being tested in a separate clinical trial. The purpose of this case report is to focus on the use of OCT as a method for assessing the placement of the stent.

OCT provides cross-sectional imaging of coronary arteries. As distinguished from intravascular ultrasound imaging, the resolution of OCT is $\sim$10 μ or 10 times as high a resolution as intravascular ultrasound (IVUS). However, OCT uses a visible light frequency that is absorbed in blood and therefore OCT needs to be performed either through a balloon, during flushing with saline, or in this case with contrast. In addition, OCT is significantly limited by its depth of penetration, which is quoted as 1-3 mm, but judging from the images that I have seen, the penetration of usable information appears to be closer to 0.5 mm. There is also no information provided distal to the stent struts because of the severe amount of shadowing that they produce in OCT images. It is true that OCT provides better resolution of stent struts, which perhaps may be useful as a research tool for assessing new devices. I think it is appropriate to continue assessing this technology in the hope of improving it and to better understand where it might be utilized effectively. However, from what I have seen of OCT, I am not convinced that there are any benefits over what we already have with optimal grayscale intravascular ultrasound images provided by the mechanically rotating catheters. The penetration of IVUS images provides cross-sectional information of the entire plaque through to the media. The high resolution of OCT is not worth the price of insufficient cross-sectional imaging of the coronary arteries.

Conflict of interest: Nothing to report.

*Correspondence to: Jonathan Tobis, MD, B-976 Factor Bldg CHS, 10833 LeConte Ave., Los Angeles, CA 90095.
E-mail: jtobis@mednet.ucla.edu

Received 30 October 2008; Revision accepted 10 November 2008

DOI 10.1002/ccd.21915
Published online 22 December 2008 in Wiley InterScience (www.interscience.wiley.com).