

Corporate Medical Policy

Optical Coherence Topography

File Name:	optical_coherence_topography
Origination:	12/2011
Last CAP Review:	Not Applicable
Next CAP Review:	4/2012
Last Review:	12/2011

Description of Procedure or Service

Optical coherence tomography (OCT) is an imaging technique that uses near-infrared light to image the coronary arteries. Potential applications in cardiology include evaluating the characteristics of coronary artery plaques for the purpose of risk stratification, and following coronary stenting to determine the success of the procedure.

OCT has important similarities to intravascular ultrasound (IVUS), and also important differences. Ultrasound uses acoustic waves for imaging while OCT uses near-infrared electromagnetic light waves. OCT generates cross-sectional images by using the time delay and intensity of light reflected from internal tissue structures. The main obstacle to OCT is the difficulty of imaging through blood, necessitating saline flushes or occlusion techniques to obtain images. Frequency-domain OCT is a newer generation device that partially alleviates this problem by allowing faster scanning and less need for blood clearing.

OCT has higher resolution than ultrasound, but more shallow penetration of tissue. Tissue resolution of up to 5-10 μ m has been achieved, which is approximately ten times greater than ultrasound. However, the technique is limited by its inability to penetrate more than several millimeters in depth. This is compared to IVUS which has a penetration depth of approximately 10mm. One goal of intravascular imaging has been to risk stratify atherosclerotic plaques regarding their risk of rupture. Intravascular ultrasound has defined a “vulnerable” coronary plaque that may be at higher risk for rupture. Characteristics of the vulnerable coronary plaque include a lipid-rich atheroma with a thin fibrous cap. Other features of vulnerable plaques include a large lipid pool within the vessel wall, a fibrous cap of 6 μ m or less, and macrophages positioned near the fibrous cap.

Another goal of intravascular imaging is as an adjunct to percutaneous coronary intervention (PCI) with stent placement. Stent features that are often evaluated immediately post-procedure include the position of the stent, apposition of the struts to the vessel wall, and presence of thrombus or intimal flaps. These features are a measure of procedural success and optimal stent placement. Subsequent follow-up intravascular imaging at several months to one year post-stenting can be used to evaluate neoendothelialization on the endoluminal surface of the stent. The presence of neo-intimal coverage of drug eluting stents and the absence of stent thrombosis have been correlated with favorable outcomes. Therefore, the adequacy of neo-intimal coverage has been proposed as an intermediate outcome in clinical trials of stenting.

There are several OCT systems that have been cleared for marketing through the U.S. Food and Drug Administration’s (FDA’s) 510(k) program. For example, Lightlab Imaging, Inc. received FDA marketing clearance in April 2010 for its C7 Xr® Imaging System, and in August 2011 for its next generation frequency domain C7 Xr® Imaging System.

*****Note: This Medical Policy is complex and technical. For questions concerning the technical**

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language and/or specific clinical indications for its use, please consult your physician.

Policy

Optical Coherence Topography is considered investigational for all applications including but not limited to, risk stratification of intracoronary atherosclerotic plaques and follow-up evaluation of stenting. BCBSNC does not provide coverage for investigational services or procedures.

Benefits Application

This medical policy relates only to the services or supplies described herein. Please refer to the Member's Benefit Booklet for availability of benefits. Member's benefits may vary according to benefit design; therefore member benefit language should be reviewed before applying the terms of this medical policy.

When Optical Coherence Topography is covered

Not Applicable

When Optical Coherence Topography is not covered

Optical coherence tomography is considered investigational in all situations, including but not limited to, as an adjunct to percutaneous coronary interventions with stenting, risk stratification of intracoronary atherosclerotic plaques and follow-up evaluation of stenting.

Policy Guidelines

OCT is expected to be more accurate than IVUS for imaging of superficial structures. However, the clinical utility of OCT has not been demonstrated, since test results do not lead to changes in management that improve outcomes.

Billing/Coding/Physician Documentation Information

This policy may apply to the following codes. Inclusion of a code in this section does not guarantee that it will be reimbursed. For further information on reimbursement guidelines, please see Administrative Policies on the Blue Cross Blue Shield of North Carolina web site at www.bcbsnc.com. They are listed in the Category Search on the Medical Policy search page.

Applicable service codes: 0291T, 0292T

BCBSNC may request medical records for determination of medical necessity. When medical records are requested, letters of support and/or explanation are often useful, but are not sufficient documentation unless all specific information needed to make a medical necessity determination is included.

Scientific Background and Reference Sources

Inoue T, Shite J, Yoon J, Shinke T, Otake H, Sawada T, Kawamori H, Katoh H, Miyoshi N, Yoshino N, Kozuki A, Hariki H, Hirata K. Optical coherence evaluation of everolimus-eluting stents 8 months after implantation. Heart.

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2011 Sep;97(17):1379-84. Epub 2010 Nov 4.

Inoue T, Shite J, Yoon J et al. Optical coherence evaluation of everolimus-eluting stents 8 months after implantation. Heart 2011; 97(17):1379-84.

Kawamori H, Shite J, Shinke T et al. The ability of optical coherence tomography to monitor percutaneous coronary intervention: detailed comparison with intravascular ultrasound. J Invasive Cardiol 2010; 22(11):541-5.

Policy Implementation/Update Information

12/30/2011 New policy developed. Optical coherence tomography is considered investigational in all situations, including but not limited to, as an adjunct to percutaneous coronary interventions with stenting, risk stratification of intracoronary atherosclerotic plaques and follow-up evaluation of stenting. Medical Director review 12/2011. (mco)

Medical policy is not an authorization, certification, explanation of benefits or a contract. Benefits and eligibility are determined before medical guidelines and payment guidelines are applied. Benefits are determined by the group contract and subscriber certificate that is in effect at the time services are rendered. This document is solely provided for informational purposes only and is based on research of current medical literature and review of common medical practices in the treatment and diagnosis of disease. Medical practices and knowledge are constantly changing and BCBSNC reserves the right to review and revise its medical policies periodically.