**OPTICAL COHERENCE TOMOGRAPHY FOR THE DETECTION OF VULNERABLE PLAQUE**

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Optical coherence tomography (OCT) is a catheter-based imaging system that uses near-infrared light to produce cross-sectional images of coronary arteries. OCT is capable of discriminating 3 types of unstable plaque morphologies underlying coronary thrombosis such as plaque rupture, erosion, and calcified nodules. OCT has the potential to identify important features of vulnerable plaques such as large lipid-rich necrotic core, thin-fibrous cap (< 65μm thick), macrophages, vasa vasorums, cholesterol crystals, and micro-calcifications.Lipid-rich necrotic core is characterized by a signal-poor region with poorly delineated borders. Fibrous cap is identified as a signal-rich layer overlying a lipid-rich necrotic core. Macrophages accumulations are seen as signal-rich, distinct, or confluent punctate regions that exceed the intensity of background speckle noise. Vasa vasorums, which are microvessels within the intima/plaque, are seen as signal-poor voids that are sharply delineated and can usually be followed in multiple contiguous frames. Cholesterol crystals are seen as thin, linear regions of high intensity, usually associated with a fibrous cap or necrotic core. Micro-calcifications, so-called spotty calcifications, are seen as small calcium deposit within the fibrous cap. Detection of the vulnerable plaques in vivo would allow us to identify high risk patients for adverse coronary events and might have a great impact on the prevention of acute coronary syndrome.