

# Mass. General Hospital to create registry for coronary optical coherence tomography

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Massachusetts General Hospital (MGH), together with a coalition of 20 international sites in five countries, will create the world's largest registry of patients who have had optical coherence tomography (OCT) of the coronary arteries. OCT is an intravascular imaging technology that researchers hope will give doctors a better means to identify the dangerous vulnerable plaques that cause heart attacks and sudden cardiac death.

When a vulnerable plaque in the [coronary artery](#) ruptures, the result for the patient can be catastrophic. Ruptured plaques can block blood flow to the [heart muscle](#), and cardiologists estimate they cause two-thirds to three-quarters of all fatal heart attacks. Standard imaging technologies are not able to identify the microscopic characteristics of vulnerable plaques.

Twenty sites in five countries — Australia, China, Japan, Korea, and the United States — will collect data from 3,000 patients who have had OCT of the coronary arteries during a [cardiac catheterization procedure](#) and follow them for five years. MGH researchers will gather the data in a central database. Researchers hope the data will help determine the efficacy of OCT in identifying vulnerable plaques in patients as well as its benefits as a follow-up procedure to stent placement.

"The Massachusetts General Hospital OCT Registry is the first time an international effort has formed to share information about OCT use in cardiac care," said Ik-Kyung Jang, MD, PhD, an interventional

cardiologist at MGH and the principal investigator of the project. "In 2009, more than 10,000 OCT cases were performed. This collaborative effort will bring together this wealth of information and help us facilitate scientific advancement in the field of OCT."

The registry was launched during the first MGH OCT Registry Symposium held March 13, 2010, in Boston. The symposium, sponsored by LightLab Imaging, Inc., was the first gathering of OCT experts held in the United States and was a forum for physicians to share the latest work in the field. International sites will begin enrolling patient in the MGH OCT Registry in June. Enrollment in the United States will begin pending clearance of OCT by the U.S. Food and Drug Administration.

OCT technology offers the promise of visualizing the microscopic characteristics of a vulnerable plaque — such as a large lipid pool covered by a thin fibrous cap — by creating extremely high-resolution images from within the coronary artery. Using near-infrared light, OCT bounces light off the vessel wall and collects details down to 10 microns, a resolution at least 20 times better than computed tomography. The resulting image of the coronary artery — captured in a matter of seconds — offers a clear depiction of the plaque's architecture.

In addition to its potential for identifying vulnerable plaques, the technology may also be used to determine optimal stent placement. In Japan, OCT imaging is a standard follow up to stenting procedures to determine if the stent has effectively widened the affected artery and the area is free of blood clots.

"The development of OCT and its rapid adoption for intravascular imaging is enabling the ability of clinicians to capture in vivo what was previously seen only through a pathologist's microscope," says Jang. "Of course, the long-term goal is to identify plaques and prevent [sudden cardiac death](#) and heart attacks."

Provided by Massachusetts General Hospital

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