

# Mayo Clinic estimates new, tiny, super-sensitive probe could cut colon polyp removal in half

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Based on results of a landmark study, researchers at Mayo Clinic's Florida campus see a future in which virtual biopsies will eliminate the need to remove colon polyps that are not cancerous or will not morph into the disease.

Currently one-third to one-half of the polyps removed during colonoscopies end up being harmless, but they need to be examined by pathologists, and this increases time, expense and the potential for complications to the beneficial screening.

At the annual meeting of the American College of Gastroenterology, Mayo Clinic gastroenterologists will present final details of a study testing a probe so sensitive that it can tell if a cell in the colon is becoming cancerous or not.

They specifically found that the system, known as probe-based confocal laser endomicroscopy (pCLE), was 90 percent accurate in identifying benign or harmless polyps in patients. With further tweaking, the researchers believe pCLE can reach about 100 percent accuracy.

"Our goal is to remove only cancerous or precancerous polyps from patients during a colonoscopy, and I think we are close to that," says the study's lead investigator, Michael Wallace, M.D., M.P.H., professor of medicine at Mayo Clinic.

Mayo Clinic has been the U.S. leader in testing pCLE, among other endoscopic imaging technologies, and is one of three international institutions to have tested it in colon polyps. The system has been used under a research protocol for several years at Mayo. Now, physicians are starting to use it more broadly, especially to re-examine the colon in patients who previously had large, precancerous polyps removed and in pre-cancerous conditions elsewhere in the GI tract, such as Barrett's esophagus, Dr. Wallace says.

In this study, the researchers tested two different new imaging systems against the gold standard, which is examination of a removed polyp by a pathologist. "Using the expertise of a pathologist has been a great way to determine if a polyp is dangerous, but because half of these growths are not dangerous, we are seeking an equally effective and more efficient way to determine who is at risk of colon cancer," says the study's lead research fellow, Anna M. Buchner, M.D., who will present the results.

The pCLE system is a fiber-optic probe 2 millimeters in diameter that can be passed through a normal endoscope and can see structures as small as 1 micron, such as single cells or the nucleus within a cell. "This is essentially a miniaturized microscope that can be placed inside the body, so the tissue doesn't need to be removed and placed under a traditional microscope," Dr. Wallace says.

The pCLE system, which was developed by Mauna Kea Technologies (Paris, France), was tested against the Fujinon color enhancement system (FICE), which uses optical filters to look at a larger area of tissue. "This is like looking at the forest using FICE or the trees with pLCE," Dr. Wallace says.

A total of 57 polyps from 38 patients were examined. The FICE technique correctly diagnosed 41 of 57 polyps as benign, whereas pLCE picked up 51 of the benign lesions.

The researchers believe that the best use of these advanced technologies is to use FICE to provide a first look at suspicious areas of a colon during a colonoscopy and then to use pCLE to zero in on polyps in question.

"These new probes will change how colonoscopies and other procedures using endoscopes will be done in the future," says Dr. Buchner. "We will be able to perform real-time virtual biopsies, which will be more efficient in every way." One major advantage is that the pCLE system allows doctors to make a specific diagnosis at the time of the procedure and thus go directly to treatment instead of waiting two to three days for biopsy results to return. This should allow patients to avoid repeat procedures, Dr. Wallace says.

Source: Mayo Clinic

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