

Virtual biopsy can tell whether colon polyp is benign without removal

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A probe so sensitive that it can tell whether or not a cell living within the human body is veering towards cancer development may revolutionize how future colonoscopies are done, say researchers from the Mayo Clinic in Jacksonville, Fla.

Investigators have found that technology known as a high resolution confocal endomicroscopy probe system can determine whether a colon polyp is benign (not precancerous) - without having to remove it for examination by a pathologist.

Their study, to be presented at the Digestive Disease Week, a scientific meeting of gastrointestinal specialists and researchers held in San Diego, shows that using the probe system was 89 percent accurate in identifying whether polyps were either precancerous or benign. But more importantly, it was correct 98 percent of the time in flagging polyps that were benign, which would then not need to be removed for biopsy. The Mayo researchers, who are the first in the U.S. to comprehensively test the system in the colon, believe they can push accuracy close to 100 percent with more research.

What this means is that the probe system can be used to during a colonoscopy to rule out removal of polyps that are not harmful, says the study's senior author, Michael Wallace, M.D., M.P.H., Professor of Medicine at Mayo Clinic.

"Today, half of all polyps surgically removed during colonoscopy procedures are benign, and so this virtual biopsy will save time and expense, and reduce complications that can occur," he says.

The device is a tiny imaging tool, only 1/16th of an inch in diameter, which can be attached to a variety of endoscopes that are already being used during colonoscopies, Dr. Wallace says. When a suspicious polyp is seen during a colonoscopy, a physician can use the probe to look closely at the

lesion. To do this, a small amount of fluorescent contrast is used to illuminate the area, and the probe magnifies it by 1,000 times – enough to see a single red blood cell as it moves through a blood vessel.

In this study, the researchers first tested 10 precancerous ("adenomatous") lesions as well as 10 benign ("hyperplastic") lesions using the probe system in order to understand the differences in appearance between the two. (The status of the polyps was later verified by pathologists.) Among other things, they looked at changes in cell color and size, how nuclei within the cells looked, and whether cells were crowded within tissue, or fused.

They then, without knowledge of the pathologists' diagnosis, used their new grading system to determine the status of 37 polyps within 25 patients, which were then removed. The most important clinical result is that the probe was 98 percent accurate in identifying lesions that were not cancerous. "That is what you want in a device like this," says the project's lead research fellow, Anna M. Buchner, M.D., who will be presenting the findings. "Removing a polyp that looks precancerous, but turns out to be benign, is okay, but you don't want to leave polyps intact in the colon that are actually cancerous," she says. "This probe is almost perfectly reliable in that regard and with more experience I am sure we can improve accuracy to nearly 100 percent."

Wallace says the technology, which is also being tested in the esophagus, has the capacity to fundamentally change how many different endoscopy procedures are done. "This will shift our role from one of going in and getting tissue for a pathologist to examine to one in which we can do the pathology ourselves," Dr. Wallace says. "This is instantaneous, real time pathology."

Source: Mayo Clinic

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