

“Virtual Biopsy” May Transform How we Diagnose Skin Cancer

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A tissue biopsy, in which a section of skin is surgically removed for microscopic evaluation, has long been the most effective means of diagnosing skin cancer. But biopsies are invasive and time-consuming procedures, with patients often waiting days for results, developing scars, or forgoing biopsy altogether and opting to “wait and see.” Given that one in five Americans will develop skin cancer in their lifetime, this is a dilemma many of us have experienced firsthand.

So it is with great excitement that Damon Runyon scientists Kavita Y. Sarin, MD, PhD, and Adam de la Zerda, PhD, and their colleagues at Stanford University have unveiled a new imaging tool that may allow doctors to identify cancerous tissue noninvasively, sparing patients a biopsy. Their tool employs optical coherence tomography (OCT), a method traditionally used by ophthalmologists to scan the back of the eye. OCT sends light waves into the tissue with a laser and, based on how the light waves bounce off the cells, creates a high-resolution, three-dimensional reconstruction of the tissue. Not only is this method noninvasive, it delivers more precise results more rapidly.

“We’ve not only created something that can replace the current gold-standard pathology slides for diagnosing many conditions, but we actually improved the resolution of these scans so much that we start to pick up information that would be extremely hard to see otherwise,” Dr. de la Zerda told reporters at Stanford.

As he suggests, the tool has potential uses beyond dermatology. For example, surgeons conducting lumpectomies may be able to scan the breast tissue during surgery to make sure they removed the whole tumor, preventing the need for a second surgery.

The team also devised a way to convert the OCT scans into images that resemble traditional pathology slides, to make them readable by doctors trained in standard diagnostic protocols. These efforts, they write, “should enable physicians to readily incorporate OCT imaging into their clinical practice.”

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