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Laser optics plus ultrasound imaging holds promise as a noninvasive test for prostate cancer

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Multispectral photoacoustic imaging, which combines laser optics and ultrasound imaging technologies, can reliably distinguish between benign and malignant prostate tissue, a new study indicates.

Researchers at the University of Rochester looked at 42 prostatectomy specimens using the new imaging technique. Multispectral photoacoustic imaging, still in its infancy, predicted 25 out of 26 benign tissues correctly and 13 out of 16 malignant tissues correctly, said Dr. Vikram Dogra, lead author of the study.

Lipids, water, oxyhemoglobin and deoxyhemoglobin in the blood all respond to laser light, said Dr. Dogra. "By observing increases and decreases in these four things, we can tell if the tissue is malignant or benign, he said. "Deoxyhemoglobin is the biggest distinguisher between malignant and benign. If deoxyhemoglobin increases even slightly in intensity, the odds that the tissue is malignant increases dramatically," he said.

Prostate cancer is the second leading cause of cancer death in American men. Transrectal ultrasound, the current gold standard to diagnose prostate cancer, has an overall success rate of about 70%, said Dr. Dogra. "Transrectal ultrasound is an invasive procedure and most men do not like it. There is a need for a new imaging technique," Dr. Dogra said. "We expect this technique to be clinically available in about five

years," he added.

Dr. Dogra will present his study at the ARRS annual meeting on April 18 in Washington, DC.

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