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US scientist develops virtual biopsy device

17 June 2019 | News

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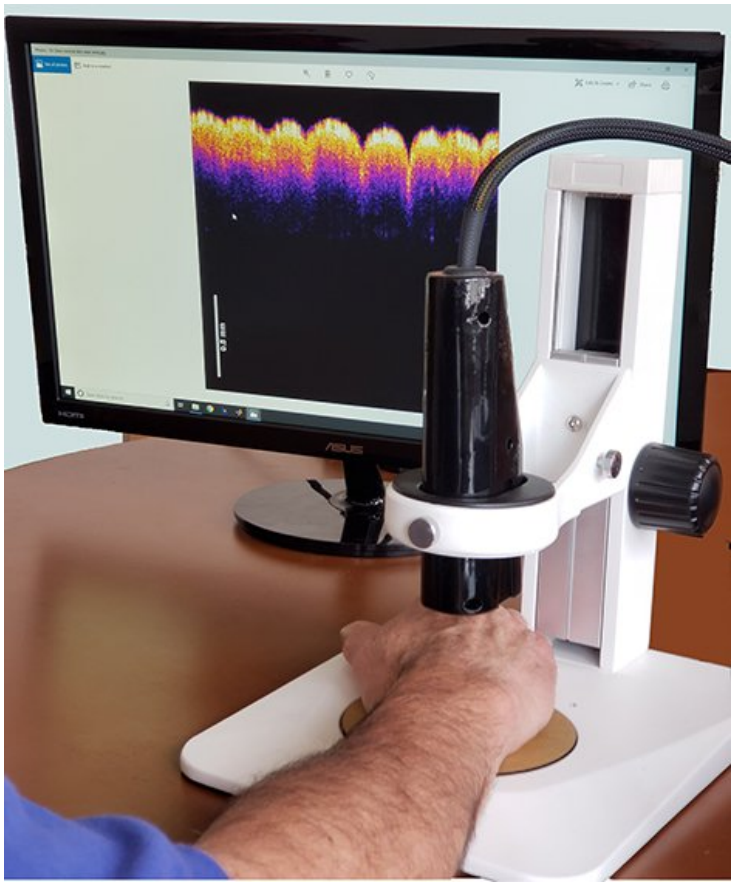

Using sound vibrations and pulses of near-infrared light, a Rutgers University scientist has developed a new “virtual biopsy” device that can quickly determine a skin lesion’s depth and potential malignancy without using a scalpel.

Currently, physicians who perform surgical biopsies often don’t know the extent of a lesion – and whether it will be necessary to refer the patient to a specialist for extensive tissue removal or plastic surgery – until surgery has already begun.

The first-of-its-kind experimental procedure, called vibrational optical coherence tomography (VOCT), creates a 3-D map of the legion’s width and depth under the skin with a tiny laser diode. It also uses soundwaves to test the lesion’s density and stiffness since cancer cells are stiffer than healthy cells. An inch-long speaker applies audible soundwaves against the skin to measure the skin’s vibrations and determine whether the lesion is malignant.

The research team tested the device over six months on four skin excisions and on eight volunteers without skin lesions. Further studies are needed to fine-tune the device’s ability to identify a lesion’s borders and areas of greatest density and stiffness, which would allow physicians to remove tumors with minimally invasive surgery.