

Does Fat Play a Role in Breast Cancer?

An innovative imaging technique developed by NYU Langone radiologists links fatty acids to breast cancer in postmenopausal women.

WHEN A SUSPICIOUS lump is detected in the breast, women typically submit to a painful biopsy and a stressful wait for the results. Sungheon Gene Kim, PhD, a researcher in NYU Langone's Department of Radiology, has developed a novel approach to imaging that he hopes will not only speed up the diagnostic process, but also improve its accuracy. Using a method called gradient-echo spectroscopic imaging, a kind of MRI that assesses the chemical content of body tissues, Dr. Kim showed for the first time that saturated fatty acids in breast adipose tissue can indicate the presence of cancer.

Dr. Kim had long wondered whether women with breast cancer might have a different composition of fat tissue. "There had not been any study to see whether differences can be detected within diagnostic breast MRI exams," he says, even though obese women or those with a higher body mass index tend to have higher rates of breast cancer. Dr. Kim and his team recruited 89 women at high risk, one-third of whom were postmenopausal. All of them were scanned with an MRI.

During the last five minutes of the routine clinical MRI exam, gradient-echo spectroscopic imaging was used to assess breast fat composition. Various types of fatty acids, including saturated fatty acids, were identifiable by their distinct patterns of chemical shift, revealed by the newly developed imaging method. The results, published in the journal *Radiology*, showed that the breast adipose tissue of postmenopausal women with invasive cancer had a higher concentration of saturated fatty acids than that of cancer-free women.

To confirm the link between saturated fatty acids and invasive breast cancer, and to understand the diagnostic role of saturated fatty acids, Dr. Kim plans to repeat his study with a larger group that includes both low-risk and high-risk patients. He also wants to study the link between breast adipose tissue composition and established risk factors for breast cancer, hoping to understand how saturated fatty acids may contribute to breast cancer development and growth. ■



WIDE AWAKE DURING HAND SURGERY

A new approach to many outpatient procedures for hand and wrist conditions offers greater convenience and better outcomes.

IN MOST HOSPITALS, surgery on the hand and wrist is usually performed using regional anesthesia and intravenous sedation, or general anesthesia. Patients

must undergo preoperative tests, fast starting the night before, and spend an hour or more in a recovery room. In September, NYU Langone became one of the first medical

centers in the US to change those protocols. At the Outpatient Surgery Center on East 38th Street, a new operating room is dedicated to "wide-awake" hand surgery, which

allows many of these surgical procedures to be performed "as quickly and easily as a trip to the dentist," explains orthopaedic surgeon S. Steven Yang, MD, who helped spearhead the new program. "When patients are done, they can go home without needing an escort."

With outpatient surgery becoming increasingly common, why is that so unusual? Traditionally, hand and wrist surgeons have used an arm tourniquet to limit bleeding, but the pressure it causes is often so uncomfortable that medication is required to make it tolerable. Alternative approaches that don't use a tourniquet have long been limited because physicians were reluctant to use epinephrine—a drug that constricts blood vessels and prolongs the effect of local anesthetics—on the hands and wrists.

But all that has changed, thanks to a flood of studies showing that epinephrine is safe, and a technique in which epinephrine blended

with a local anesthetic eliminates the need for a tourniquet. Surgery on the hand or fingers can now be performed without an IV, sedatives, or preoperative testing.

With 17 board-certified hand surgeons, NYU Langone's Division of Hand Surgery is the largest program of its kind in the country, performing more than 5,000 procedures annually. Wide-awake surgery is used for a range of operations, from the excision of a ganglion cyst or a carpal-tunnel release to more complex procedures. The new technique can also improve outcomes. A fully conscious patient can move their hand and fingers, enabling the surgeon to assess the results in real time. The surgeon can also communicate with the patient, soothing any nervousness. The only pain is the sting of the initial shot. ■

TO FIND A PHYSICIAN who performs hand surgery, call 855-698-4263 or visit nyulangone.org/handcenter.