

Test increases odds of correct surgery for thyroid cancer patients

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The routine use of a molecular testing panel developed at UPMC greatly increases the likelihood of performing the correct initial surgery for patients with thyroid nodules and cancer, report researchers from the University of Pittsburgh Cancer Institute (UPCI), partner with UPMC CancerCenter.

The test, available at the UPMC/UPCI Multidisciplinary Thyroid Center and other diagnostic testing agencies, improved the chances of patients getting the correct initial [surgery](#) by 30 percent, according to the study published this month in the *Annals of Surgery*.

"Before this test, about one in five potential thyroid cancer cases couldn't be diagnosed without an operation to remove a portion of the thyroid," said lead author Linwah Yip, M.D., assistant professor of surgery in Pitt's School of Medicine and UPMC surgical oncologist. Previously, "if the portion removed during the first surgery came back positive for cancer, a second surgery was needed to remove the rest of the thyroid. The molecular testing panel now bypasses that initial surgery, allowing us to go right to fully removing the cancer with one initial surgery. This reduces risk and stress to the patient, as well as recovery time and costs."

Cancer in the thyroid, which is located in the "Adam's apple" area of the neck, is now the fifth most common cancer diagnosed in women. Thyroid cancer is one of the few cancers that continues to increase in incidence, although the five-year survival rate is 97 percent.

Previously, the most accurate form of testing for thyroid cancer was a fine-needle aspiration biopsy, where a doctor guides a thin needle to the thyroid and removes a small tissue sample for testing. However, in 20 percent of these biopsies, cancer cannot be ruled out. A lobectomy, which is a surgical operation to remove half of the thyroid, is then needed to diagnose or rule-out thyroid cancer. In the case of a postoperative cancer diagnosis, a second surgery is required to remove the rest of the thyroid.

Researchers have identified certain gene mutations that are indicative of an increased likelihood of thyroid cancer, and the molecular testing panel developed at UPMC can be run using the sample collected through the initial, minimally invasive biopsy, rather than a lobectomy. When the panel shows these mutations, a total thyroidectomy is advised.

Dr. Yip and her colleagues followed 671 UPMC patients with suspicious thyroid nodes who received biopsies. Approximately half the biopsy samples were run through the panel, and the other half were not. Patients whose tissue samples were not tested with the panel had a 2.5-fold higher statistically significant likelihood of having an initial lobectomy and then requiring a second operation.

"We're currently refining the panel by adding tests for more genetic mutations, thereby making it even more accurate," said co-author Yuri Nikiforov, M.D., Ph.D., professor in the Department of Pathology at Pitt and director of thyroid molecular diagnostics at the UPMC/UPCI Multidisciplinary Thyroid Center. "Thyroid cancer is usually very curable, and we are getting closer to quickly and efficiently identifying and treating all cases of thyroid cancer."

In 2009, the American Thyroid Association (ATA) revised its guidelines to add that doctors may consider the use of molecular markers when the initial biopsy is inconclusive.

"The ATA is currently revising those guidelines to take into account the latest research, including our findings," said senior author Sally Carty, M.D., Pitt professor of surgery, co-director of the UPMC/UPCI Multidisciplinary Thyroid Center and recent president of the American Association of Endocrine Surgeons. "The molecular testing panel holds promise for streamlining and eliminating unnecessary surgery not just here but nationwide."

A previous study led by Dr. Yip showed the panel to be cost-saving when used to help in the diagnosis of [thyroid cancer](#).

Each year, approximately half of the 25,000 patients assessed at UPMC's Multidisciplinary Thyroid Center are found to have thyroid conditions, and more than 900 thyroid operations are performed by the center's surgeons. The center aims to provide patients with one-stop evaluation from thyroid experts in a variety of fields, including surgery and endocrinology.

Provided by University of Pittsburgh Schools of the Health Sciences

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