

## New protocol improves diagnosis of thyroid nodules



**Thyroid cancer is the fastest-rising malignancy** in the United States, with rates tripling since the 1970s. Thyroid nodules are also common. About half of adults develop one or more nodules by age 40. Most nodules are benign, but require diagnostic tests for assessment. Four percent of nodules are malignant.

Use of fine-needle biopsy is the traditional method of diagnosing thyroid nodules, but lacks adequate sensitivity and specificity in certain situations. Fine-needle biopsy performed under ultrasound guidance targets the highest-yield portion of the nodule and reduces the risk of a failed biopsy. Needle biopsy produces unambiguous results in 75 percent of cases; the other 25 percent of biopsy results are classified as suspicious. About one-quarter of suspicious results are eventually diagnosed as thyroid cancer.

Advancements at UCLA have led to a significantly improved protocol using genetic markers for assessing biopsy results with suspicious cytology in order to optimize patient care in two important ways: by avoiding unnecessary surgery in some cases, and by permitting appropriate up-front cancer treatment in other cases.

### A logical approach to clinical care

UCLA's endocrine surgeons use evidence-based protocols in making clinical decisions, says Michael W. Yeh, MD, section chief of Endocrine Surgery.

"We're applying protocols that are extremely rational," he says. "The field is always moving, and new technologies are continuously becoming available. The key for us is to stay at the forefront and determine which ones can truly help our patients. It's a continuous process."

Molecular profiling for thyroid nodules is gaining in popularity, but is applied in widely divergent ways at different centers. The step-by-step, value-based system developed at UCLA is a logical system on which to base decisions.

"In some patients, molecular profiling shows a very high likelihood of cancer," Dr. Yeh explains. "This knowledge lets us tailor our procedures to the specific patient, improving our ability to deliver definitive treatment."

## Multi-level molecular profiling

Molecular profiling is changing the way physicians treat patients with thyroid nodules. In the case of suspicious results, gene expression profiling permits the discrimination of specific types of thyroid nodules to inform clinical decision-making. The first level of molecular profiling determines if the nodule is benign. The technique provides a high degree of confidence, allowing patients with suspicious biopsy findings but reassuring molecular profiling results — approximately half of the suspicious biopsy cases — to avoid surgery and its attendant risks, costs and inconvenience in favor of observation only.

A separate genetic classifier is used as a second level of molecular testing to assess the remaining half of cases that remain suspicious and to refine the type of operation needed. The protocol used by the multidisciplinary thyroid cancer team at UCLA relies on six genetic markers that indicate malignancy. A positive result for any one of these markers may indicate the need for a complete removal of the thyroid, with possible lymph node dissection to address the very high likelihood of thyroid cancer.

This value-based system maximizes positive health outcomes while minimizing costs, eliminating errors and ensuring patients are treated appropriately.

## Dynamic parathyroid CT scanning for primary hyperparathyroidism

UCLA's endocrine surgeons are also using modified 4D-CT scanning to improve surgical outcomes for patients with primary hyperparathyroidism. The disease, which occurs in about one in 400 women, produces hypercalcemia and symptoms including kidney stones, bone-related complications, gastrointestinal problems and fatigue. A new study at UCLA shows that an abnormally high blood calcium on more than one occasion indicates a 90 percent likelihood of primary hyperparathyroidism.

The vast majority of primary hyperparathyroidism cases are resolved with surgical removal of the gland containing the adenoma. Successful minimally invasive parathyroidectomy depends on precise preoperative localization. In addition, research suggests that outcomes are highly dependent on surgical skill, with high-volume centers producing superior rates of success. Failed surgery is a significant problem requiring challenging revision surgery at an expert center down the line. If patients are not treated with corrective surgery, they endure unmitigated symptoms.

An enhanced computerized tomography imaging protocol has been developed at UCLA to address failed surgery or unsuccessful adenoma localization with standard imaging. This four-dimensional technology enhances localization of the tumor while reducing radiation exposure to the patient. Functional information obtained with dynamic CT imaging has elevated the success rate for revision surgery to 98 percent.

## Expansion of endocrine surgical services

Demand for treatment of thyroid conditions has led to an expansion of the endocrine surgical team at UCLA, shortening the wait time for consultations and treatments. Care is delivered with a multidisciplinary approach and attention to supportive services aimed at the patient's comfort and convenience.

**UCLA** Health

## Participating Physicians

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