Clinical THYROIDOLOGY



Complete Cervical Sonography Is Essential for Operative Planning in Differentiated Thyroid Cancer

Cord Sturgeon

O'Connell K, Yen TW, Quiroz F, Evans DB, Wang TS. The utility of routine preoperative cervical ultrasonography in patients undergoing thyroidectomy for differentiated thyroid cancer. Surgery 2013;154:697-730. Epub September 5, 2013; doi: 10.1016/j.surg.2013.06.040.

SUMMARY • • • • • • • • • • • • • • •

Background

Lymph-node metastases are found in 30% to 80% of cases of papillary thyroid cancer (PTC), are usually located in level VI (central compartment), and are a risk factor for disease recurrence. Cervical recurrence may be due to occult central neck metastases that were neither detected nor removed at the index operation. The ATA and the National Comprehensive Cancer Network (NCCN) both recommend preoperative cervical ultrasound for all patients with biopsy proven differentiated thyroid cancer (DTC) (1,2). This study was designed to assess the impact of preoperative cervical ultrasound on the surgical approach during an index operation for thyroid cancer. The authors hypothesized that preoperative ultrasound of the neck would identify clinically occult metastatic lymphadenopathy, which would alter the initial operative procedure in some patients with DTC.

Methods

This was a retrospective study of 70 patients with biopsy-proven DTC who underwent preoperative radiologist-performed ultrasound of the central and lateral nodal basins at a single high-volume institution in the midwestern United States. All patients underwent total thyroidectomy with appropriate lymph-node clearance. Data were collected on demographics, physical examination findings, preoperative sonographic findings, FNA results, extent of operation performed, number of lymph nodes retrieved, and final pathology.

Results

The authors found that 7% of their patients had results on physical examination that were consistent with palpable cervical adenopathy. In the remaining patients, with no palpable lymphadenopathy, 22% had sonographic evidence suspicious for lymphadenopathy. Within this subgroup of patients with sonographically suspicious nodes, 92% were confirmed to have nodal metastases on final pathology. The sensitivity of ultrasound for lateral neck metastases was 93%. A preoperative ultrasound changed the operative management in 23% of patients with biopsy-proven DTC.

Conclusions

The results of this study underscore the importance of the routine use of high-resolution preoperative cervical ultrasound in patients with DTC. The sonographic findings changed the operative management in 23% (16 of 70) of patients: 13 of the 16 patients had a more complete operation for pathologically confirmed, but clinically occult, lymph-node metastases, 2 avoided an unnecessary modified radical neck dissection, and 1 had false positive results on ultrasonography.

continued on next page

ANALYSIS AND COMMENTARY • • • • • •

Ultrasound is a key component of the preoperative workup and the postoperative surveillance for thyroid cancer. A preoperative cervical ultrasound including the thyroid and both central and lateral compartments is recommended by the ATA and NCCN guidelines (1,2). Both also recommend preoperative FNA biopsy of suspicious lymph nodes. In their longitudinal care algorithms, both the ATA and NCCN guidelines recommend periodic ultrasound (1,2). Physical examination is not sensitive for the presence of cervicalnode metastases, and postoperatively, patients will be subjected to rigorous surveillance, including cervical ultrasound. Therefore, it behooves the surgeon to have knowledge of sonographically detectable metastases prior to the index operation for thyroid cancer so that a complete resection, including appropriate lymph-node clearance, can be performed. Theoretically, this should lead to better locoregional control of disease, and may decrease recurrence (3), and possibly the need for radioiodine therapy or reoperation.

In a prior study, a group from MD Anderson Cancer Center found that cervical ultrasound detected additional sites of metastatic disease not found on physical examination in 20% of patients undergoing an index operation for thyroid cancer, in 32% undergoing reoperation for persistent disease, and in 68% undergoing reoperation for recurrent disease (4). The operation performed was altered by the sonographic data in 39% of these patients. In a study from the University of Miami, surgeon-performed preoperative ultrasound identified nonpalpable metastatic lymph nodes in 24% of patients (5). In a study from the Mayo Clinic of over 700 patients with PTC, preoperative ultrasound detected nonpalpable nodal metastases in 32.9% (6). Preoperative ultrasound findings altered the operation in 40.5% of index cases and in 42.9% of reoperative cases.

In this contribution by O'Connell et al., 23% of the total group had findings from the preoperative ultrasound that changed the operative management. These findings are similar to those of other researchers who have studied the subject and underscore the importance of preoperative high-resolution sonographic imaging for patients with thyroid cancer. Taken together, these studies indicate that preoperative ultrasound has a high sensitivity for nodal disease and will detect nonpalpable nodal metastases in roughly 20% to 40% of patients with DTC and will alter the index operation in a similar percentage of patients. For these reasons, complete cervical sonography is an essential component of the preoperative workup and operative planning for patients with thyroid cancer.

References

- 1. Cooper DS, Doherty GM, Haugen BR, et al. Revised American Thyroid Association management guidelines for patients with thyroid nodules and differentiated thyroid cancer. Thyroid 2009;19:1167-214.
- 2. National Comprehensive Cancer Network Clinical Practice Guidelines in Oncology: Thyroid Carcinoma Version 2.2013, 2013 (http://www.nccn.org/ professionals/physician_gls/pdf/thyroid.pdf).
- 3. Marshall CL, Lee JE, Xing Y, et al. Routine preoperative ultrasonography for papillary thyroid cancer: effects on cervical recurrence. Surgery 2009;146:1063-72.

- Kouvaraki MA, Shapiro SE, Fornage BD, et al. Role of preoperative ultrasonography in the surgical management of patients with thyroid cancer. Surgery 2003;134:946-55.
- 5. Solorzano CC, Carneiro DM, Ramirez M, et al. Surgeon-performed ultrasound in the management of thyroid malignancy. Am Surg 2004;70:576-82.
- 6. Stulak JM, Grant CS, Farley DR, et al. Value of preoperative ultrasonography in the surgical management of initial and reoperative papillary thyroid cancer. Arch Surg 2006;141:489-96.