Writing Sample Seth Karten
Audience: Surgeons

Abstract for the Web site for the American College of Surgeons (summary of a research article published in the surgical literature)

Does Routine Consultation of Thyroid Fine-Needle Aspiration Cytology Change Surgical Management?

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I. Scope of Study: Retrospective study to determine the value of reviewing thyroid FNA cytology for patients referred from other medical centers before proceeding with surgery; the authors compared interpretations of fine-needle aspirations (FNA) at the their institution with the interpretation from the referring institution and the final histologic diagnois, 147 patients (pts), June 2000-August 2004

A. Patient characteristics: Median age 43 years (y; range 17-89 y); 117 female; mean size of thyroid nodule 27 mm (range 6-80 mm); pts with core biopsies or evaluations for cancer recurrence were excluded
B. Procedure characteristics: thyroidectomy performed in 122 pts (thyroid lobectomy in 44 pts, total thyroidectomy in 75 pts, subtotal thryroidectomy in 1 pt, isthmusectomyin 1 pt, open biopsy in 1 pt)

Cytopathologists at the authors' institution were aware of the diagnosis from the referring institution.

Procedure: After mobilization of the part of the colon with tumor, 2-4 mL of Patent Blue dye were injected into the subserosal layer around the tumor; lymph nodes that appeared blue within 10 minutes were tagged and then removed after tumor resection; as many non-SLN nodes as could be identified were then dissected; if these non-SLN nodes were free of tumor, the SLN underwent stepwise sectioning, hemotoxylin and eosin staining, and immunohistochemical staining

Patient and procedure characteristics: Median age was 67 (range 21-89); 59% of pts were male; 293 (93%) procedures were open surgery, 22 (7%) were laparoscopic

Factors affecting successful SLNB: the detection rate (number of pts with successfully retrieved SLN/number of pts enrolled) significantly correlated with (in order of importance) center experience (number of pts enrolled at each center) (P = .027), BMI (P = .037), lymphovascular invasion (P = .021), and learning curve (a grouping of pts

according to the order of enrollment at each center)(P = .037); a BMI $\leq$ 25 kg/m^2 correlated with a 92.5% detection rate, a BMI >25 kg/m^2 correlated with an 80% detection rate (P = .003); detection rate did not significantly correlate with tumor infiltration depth, age, sex, vascular invasion, number of involved lymph nodes, and tumor localization

Sensitivity to predict macrometastases: Sensitivity was 53%: 44 of 88 pts with macrometasteses in the SLN or non-SLN had a positive SLN (46% false negative rate); sensitivity inversely correlated with BMI (P = .009), and thus was 80% for pts with BMI $\leq$ 24 kg/m^2, and 42% for pts with a BMI > 24 kg/m^2 (P < .0001); sensitivity was also correlated with number of tumor-involved lymph nodes but not with age, sex, lymphovascular/vascular invasion, grading, depth of tumor infiltration, center experience, learning curve, location of tumor, number of examined lymph nodes

Optimized sensitivity: Sensitivity was 88% on a re-analysis selecting only those pts with BMI $\leq$ 24 kg/m^2 at an experienced center (>22 enrolled pts)

Sensitivity to detect previously undetected nodal metastases: Of 141 pts with negative nodes by hematoxylin and eosin staining, 30 (21.3%) had micrometastases or isolated tumor cells detected on SLNB**;** 21 (24.2%) of 91 such pts with stage II cancer and initially negative nodes were upstaged (clinically important)

Negative predictive value: Negative predictive value for the predicting absence of macrometastases was 80.0%

II. Conclusions: (A) SLNB with the blue dye method is unable to predict nodal status with clinically acceptable accuracy (54% sensitivity), and does not affect surgery or routine nodal staging; (B) sensitivity is higher in pts with BMI less than 24 and with greater number of lymph node involvement; (C) SNL can detect micrometastases or isolated tumor cells not found on routine staining resulting in upstaging from stage II (D) successful detection of the SNL increases with experience at the medical center, greater lymphovascular invasion, and lower BMI; (E) technical problems with SNLB have to be resolved to determine if it can be clinically effective

Editor's note [by S. Karten]: Another recent article describing a meta-analysis of SNLB (World Journal of Surgery (2007 Jun;31[6]:1304-12), echoed certain findings and conlcusions in the study described above. The authors of that study state that (1) the main advantage of SLNB is the possibility of appropriately upstaging some patients; (2) the main drawback is the high false-negative rate that leads to downstaging (9% in the meta-analysis with significant heterogeneity among different studies); and (3) a learning curve is probably necessary to obtain good results from the procedure. Both articles also emphasize that the method needs to be standardized in future studies, that the causes of false-negative SLNs need to be better understood, and that the prognositic significance of micrometastases requires further evaluation. The authors of the meta-analysis also suggests that the following recommendations for breast surgeons performing SNLB be adopted for colorectal surgeons: (1) take a formal course in the technique of SNLB with

hands-on and didactic training; (2) have an experienced mentor; and (3) keep track of individual results (including the proportion of successful mappings, false-negatives, and complications). Future studies should use the blue dye method, be performed by experienced surgeons and pathologists, be prospective, and include more than 40 consecutive pts.

Many institutions review pathology from other centers before planning surgery, incurring additional costs and delaying surgery.