

# Can We Predict the Presence of Central Neck Nodal Metastasis in Patients with Papillary Thyroid Cancer?

Cord Sturgeon

Thompson AM, Turner RM, Hayen A, Aniss A, Jalaty S, Learoyd DL, Sidhu S, Delbridge L, Yeh MW, Clifton-Bligh R, Sywak M. A pre-operative nomogram for the prediction of ipsilateral central compartment lymph node metastases in papillary thyroid cancer. *Thyroid*. October 1, 2013 [Epub ahead of print].

## SUMMARY

### Background

Papillary thyroid cancer (PTC) has a high rate of central nodal metastasis at the time of diagnosis. Surgical series report an incidence of central nodal metastases of 20% to 80%. A therapeutic central neck dissection is appropriate when there is clinical suspicion or pathologic confirmation of central neck nodal metastasis. Because central nodal metastases may be difficult or impossible to detect by sonographic, radiologic, or clinical means, a method to predict the status of the central compartment using preoperative clinical characteristics may be valuable.

### Methods

Retrospective analysis of a database made up of prospectively collected data from a single institution was performed. A total of 1589 subjects who underwent an index operation for PTC between 1968 and 2012 were identified. Of these, 914 patients were identified who underwent a total thyroidectomy and removal of central neck nodes (either selectively or prophylactically). In 84% of cases the nodes were ipsilateral only. Clinical factors and tumor features were evaluated for their ability to predict the nodal status of the central compartment through a linear

regression model. Internal and external validation of the data set was performed.

### Results

The rate of central nodal metastases was 43%. The mean maximum tumor diameter was 17.4 mm. Age, sex, tumor size, and multifocality were associated with central nodal status. Young and old age were associated with nodal metastasis (U-shaped curve). Men were 2.3 times more likely to have nodal metastases than women. Tumor size had a linear positive relationship to central nodal metastases; the rate was 60% for cancers greater than 5 cm.

### Conclusions

Because prophylactic central neck dissection may increase the risk of surgical complications in exchange for marginal benefits in recurrence, and because radiologic studies and physical exam do not detect the presence of central neck nodal metastases well, there is benefit in preoperative risk stratification to guide decisions on how to manage the central compartment. Data from this study were used to create a nomogram that predicts the presence of central nodal metastases. A smart phone application was developed for the distribution of this nomogram. *continued on next page*

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## ANALYSIS AND COMMENTARY

There is considerable controversy regarding the role of prophylactic central neck dissection in PTC. Some experts believe that prophylactic nodal dissection will reduce the central compartment recurrence rate and therefore they perform it routinely. Many reports have attempted to weigh the risks of prophylactic central neck dissection (specifically an increased risk of recurrent laryngeal-nerve injury and hypoparathyroidism) with the benefits of the reduction of central compartment metastases. Reoperative central neck dissection is believed to be more risky than a central neck dissection performed during the index operation for thyroid cancer. For all of these reasons, the limitation of central neck dissection to cases in which the probability of nodal metastases is highest is a meritorious goal. The criticisms of this study are that the authors did not discriminate between macroscopic and microscopic nodal metastases, which are believed to portend different clinical risks. In addition, the

preoperative sonographic detection of multifocality may not be possible in many cases. The sonographic evaluation of the thyroid focuses on the dominant or most suspicious lesions in the thyroid and may fail to describe smaller, less clinically relevant lesions. If the application of this nomogram could reduce the probability of missing clinically significant nodal metastases and limit the number of patients who have to face the added risks of central neck dissection (including revisional central neck dissection), then it will prove to be useful in clinical practice. A number of other nomograms exist to aid the thyroid surgeon, including those that predict postoperative hypocalcemia (1), predict the need for performing FNA of a thyroid nodule (2), predict malignancy in thyroid nodules (3), and predict the probability of death from thyroid cancer (4). All nomograms should be used as a supplement to clinical knowledge and not as a substitute for clinical judgment or common sense.

## References

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