


Lymph Node Yield in Papillary Thyroid Cancer

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ABSTRACT

Papillary thyroid cancer (PTC) is the most common thyroid cancer which spreads via the lymphatic route. Lymph nodes are also the most important prognostic indicators of persistent/recurrent/progressive disease. The lymph node yield (LNY), defined as the total number of lymph nodes retrieved during dissection, has not been determined in surgical resection of PTCs, be it in adults or pediatric population.

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Papillary thyroid cancer (PTC) is the most common thyroid cancer which spreads via the lymphatic route. Lymph nodes are also the most important prognostic indicators of persistent/recurrent/progressive disease.¹ The lymph node yield (LNY), defined as the total number of lymph nodes retrieved during dissection,² has not been determined in surgical resection of PTCs, be it in adults or pediatric population.

The NCCN and ATA guidelines recommend lymph node dissection for all patients with clinically involved central compartment nodes (therapeutic) and consideration of prophylactic lymph node dissection (PCLND) for patients with advanced primary tumors or where such information might be used to plan further therapy.³

However, objective and evidence-based estimates of the adequate LNY required to determine the risk of residual occult nodal disease to help guide further treatment of patients who have undergone thyroidectomy with limited nodal sampling are missing. This is very relevant for the management of PTC, the incidence of which is increasing worldwide.

Very recently, two such studies have been done by Robinson et al.¹ and Yap et al.⁴ in the adult and pediatric population, respectively, suffering from PTC. Both studies have attempted to build advanced statistical models (truncated beta binomial distribution model) to provide empirical estimates to help determine the risk of occult nodal disease in patients with papillary thyroid cancer by as a function of primary tumor (T) stage and the number of nodes examined, using a large sample from a nationwide database of United States.

Robinson et al.¹ study estimated that in adults, six, nine, and 18 LNs would need to be retrieved to ensure a reasonably adequate LN evaluation across all clinical scenarios for patients with T1b, T2, and T3 disease, respectively. As few as three, four, and eight LNs may need to be removed in patients with T1b, T2, and T3 disease, respectively, undergoing true PCLND. These estimates are meant to help standardize the interpretation of PCLND.

Similarly, Yap et al.⁴ suggested that overall, 12 lymph nodes would be needed to estimate lymph node positivity with 90% sensitivity in the pediatric population. When LNY was estimated as a function of T-stage in children, it was found patients with larger T2 and T3 tumors, a smaller LNY of 8 and 6, respectively, can accurately determine nodal positivity with 90% sensitivity. They also found that the risks of obtaining at least 14 lymph nodes in T1 tumors outweighs the benefits of obtaining highly accurate pathologic nodal staging and thus support the practice of not performing prophylactic lymph node harvest for T1, low-risk tumors in children.

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This concept of LNY in adult and pediatric population with PTC can definitely help the thyroid surgeons in planning the extent of surgery and enhancing the disease-free survival among patients.

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