Surgical Management of Lymph Node Compartments in Papillary Thyroid Cancer

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KEYWORDS

• Papillary thyroid cancer • Lymph node dissection • Recurrent thyroid cancer
• Lymph node metastases • Central neck lymph node dissection

KEY POINTS

- When central or lateral compartment cervical lymph node metastases are clinically evident at the time of the index thyroid operation for PTC, formal surgical clearance of the affected nodal basin is the optimal management.
- Prophylactic central neck dissection for PTC is practiced by some high-volume surgeons with low complication rates, but is considered controversial because there appears to be a higher risk of complications with an uncertain clinical benefit.
- When a clinically significant recurrence is detected in a previously undissected central or lateral cervical compartment, a comprehensive surgical clearance of the lateral compartment is the preferred treatment.
- When a nodal recurrence is found in a previously dissected central or lateral neck field, the reoperation may focus on the areas where recurrence is demonstrated.

INTRODUCTION

In endocrine surgery, controversy abounds. It is difficult, in fact, to find a topic in surgical endocrinology for which there is little or no controversy. The management of cervical nodal metastases from papillary thyroid cancer (PTC) is no exception. Fortunately, there is widespread agreement regarding the management of clinically evident nodal metastases. It seems clear, based on the risks of persistent or recurrent disease, that the optimal management is formal surgical clearance of the affected nodal basin or basins when cervical nodal metastases are clinically evident at the

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time of the index thyroid operation. On the other hand, because of the high frequency and uncertain clinical significance of occult nodal metastases from PTC, considerable controversy surrounds the management of the clinically negative central compartment, and the performance of so-called prophylactic central neck dissection (CND). Likewise, there is uncertainty regarding the thresholds for recommending remedial CND, given the attendant risks of the procedure and uncertain benefits. Within this contribution to the *Surgical Oncology Clinics of North America*, the data relevant to the surgical management of the lymph nodes of the central and lateral compartments of the neck in PTC are reviewed and discussed.

NOMENCLATURE: PROPHYLACTIC VERSUS THERAPEUTIC

As defined in the American Thyroid Association (ATA) consensus statement on the terminology and classification of CND for thyroid cancer,[1] a therapeutic neck dissection is one that is performed for clinically apparent nodal metastases, whether they are recognized before or during an operation, and regardless of the methodology used to detect the nodal metastases (eg, imaging, physical examination, frozen section). A prophylactic neck dissection is one that is performed on a nodal basin for which there is no clinical or imaging study evidence of nodal metastases. Prophylactic neck dissection is also synonymous with elective neck dissection.

EPIDEMIOLOGY OF CENTRAL NECK METASTASES

Metastases from PTC are frequently found in the central compartment lymph nodes. Nodal metastases from PTC are found in the central compartment in 12% to 81% of cases, depending on the completeness of the nodal dissection by the surgeon and the level of scrutiny to identify lymph nodes by the pathologist.[2] In surgical series of patients with PTC treated with prophylactic CND, occult positive central compartment nodes are found in at least one-third, and up to two-thirds of cases.[2,3] Given the high frequency of nodal metastases in the central compartment, some experts routinely clear the central compartment in a prophylactic fashion.

CONTROVERSY REGARDING PROPHYLACTIC CENTRAL NECK DISSECTION

Routine prophylactic CND for patients with clinically node-negative PTC is controversial. The controversy is centered on the fact that there is risk associated with the performance of a prophylactic CND, and that it is unclear if there is any survival or quality-of-life benefit. Furthermore, the finding of occult nodal disease will upstage patients older than 45 and may influence the usage of radioiodine.

Given the high rate of occult nodal metastases, some experts recommend that a thyroidectomy for PTC be accompanied by at least an ipsilateral central compartment nodal dissection. Proponents of prophylactic CND argue that because of the high rate of occult central nodal metastasis, prophylactic CND should decrease the need for reoperative neck surgery by reducing locoregional recurrence and simplify follow-up by lowering postoperative serum thyroglobulin.[4–6] In a study of 134 patients with PTC wherein all patients underwent a CND, the authors found that 29% of patients undergoing primary surgery for PTC had ipsilateral central neck metastases and also 29% had ipsilateral lateral neck metastases.[3] These authors recommended routine central and ipsilateral lateral nodal compartment dissection for patients undergoing primary surgery for PTC with a T1b or larger primary tumor. Other experts cite the higher complication rate when thyroidectomy is combined with CND, with no apparent improvement in survival, as rationale against prophylactic CND.[4] They maintain that