ORIGINAL ARTICLE

Prophylactic central neck dissection in papillary carcinoma thyroid, a 14 years JPMC experience

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Abstract:

Objective:To assess the outcome of Extent of Lymph Node Dissection in Papillary Thyroid Cancer.

Methodology:It was a retrospective study. The 14 years study was performed in general surgery ward-2 Endocrine clinic, JPMC, Karachi, from February 2002 to December 2015. Total 586 operated cases of papillary carcinoma thyroid out of which 213 patients underwent modified radical neck dissection (MRND) were excluded. The study included 373 patients underwent CND which were divided in two groups: those who had received a thyroidectomy with CND (group A, n=233) and those who had received thyroidectomy without CND (group B, n=140).

Results: Among 373 Papillary Thyroid Cancer patients, Central node tumor metastasis found in 28% patients, recurrence in CND group and without CNDgroup was 3% and 12% respectively. The commonest symptom was lump and difficulty in swallowing. The duration of symptoms range between 6 months – 1 year. Average hospital stay was 3 days. Out of 373 patients, 48 (6.15%) patients had seroma, hypocalcemia (transient) 62 (7.9%), hematoma 16 (2%), wound infection 14 (1.79%) and Recurrent Laryngeal Nerve Injury was nil.

Conclusion:Our study confirms decrease rate in recurrence in patients undergoing CND than those without it, hence CND should be offered to majority of patients of papillary thyroid cancer.

Key words: Papillary carcinoma thyroid, Prophylactic Central neck dissection (CND), Complication

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Introduction:

Papillary thyroid carcinoma is the most common thyroid malignancy, comprising approximately 90% of new cases of thyroid cancer in iodine-sufficient areas of the world[1-3]. The 10-year survival among PTC patients who receive appropriate treatment is >90%[4]. Cervical lymph node metastases are common in PTC, occurring in 20% to 50% of patients using standard pathologic techniques[5]. Micro metastases are even more common in PTC. One series found micro metastases in nearly 90% of examined nodes[6]. Nodal metastases are known to correlate significantly with the persistence and recurrence of PTC[7]. The central compartment of neck, also known as level VI, is the most frequently involved[1,2,8-12]. It has traditionally been accepted that regional lymph node metastases in PTC may increase regional recurrence rates but do not ultimately affect survival[7,14].

The term ''prophylactic'' denotes complete excision of level VI lymph nodes with no evidence of nodal involvement after preoperative clinical and imaging evaluation. In contrast, ''therapeutic'' dissection denotes removal of lymph nodes that likely contain metastatic disease based on palpation or imaging studies. When neither imaging nor palpation of lymph nodes arouses the suspicion of metastatic disease, the role of prophylactic central neck dissection (CND) performed during the initial surgery also re-

Table 1: Total Thyroidectomy complications

	Total	With CND (Group A)	Without CND (Group B)	P. Value
Seroma	48 (6.15%)	28	20	<0.05
Hypocalcemia (transient)	62 (7.9%)	50	12	<0.01
Hematoma	16 (2.0%)	6	10	<0.05
Wound infection	14 (1.79%)	8	6	<0.05
Recurrent nerve injury	0	0	0	-

mains controversial[15-17]. Reoperation in the central neck compartment for recurrent PTC has greater risk of hypoparathyroidism and unintentional nerve injury than initial total thyroidectomy with or without central neck disection[18-22]. Central neck dissection to total thyroidectomy should carry no greater patient risk and probably has benefit for disease-free and possibly overall survival in patients who are at some risk of recurrence. CND allows for accurate pathologic staging of lymph nodes and treatment of micro metastases that may responsible for the recurrence or persistence of the disease[23] that may guide subsequent treatment and follow-up.

The aim of this study is to assess the outcome of extent of central neck dissection in papillary carcinoma.

Methodology:
It was a retrospective study. The 14 years study was performed in general surgery ward-2 Endocrine clinic, JPMC, Karachi, from February 2002 to December 2015. Prior permission from the institutional ethical committee was taken. The medical records were reviewed for preoperative variables such as thyroid function tests, papillary thyroid carcinoma, past surgeries, and indication for surgery. The intra-operative variables for estimated blood loss, operative time, hospital stay and complications were also documented.

Total 586 operated cases of papillary carcinoma thyroid, 213 patients underwent modified radical neck dissection (MRND) were excluded. A total of 373 patients were enrolled in this study, underwent thyroidectomy in elective theatre. Patients were divided into two groups: those who had received a thyroidectomy with CND (group A, n=233) and those who had received thyroidectomy without CND (group B, n=140). On the basis of macroscopic appearance of the tumor, tumor size, and suspicion of extracapsular invasion these patients were considered for central neck dissection. Patients were operated by a single general surgeon having more than 15 years of experience of thyroid surgeries. Preoperative diagnosis of papillary thyroid carcinoma in each patient was obtained by ultrasound (US)-guided FNAC and following previous thyroid surgery and histopathology report. The preoperative workup consisted of free thyroid hormone (FT3, FT4), thyrotropin (TSH), Tg and anti-Tg antibody (TgAb) measurements, and high resolution US of the neck by a skilled sonographer and CT scan neck for extent of tumor and lymph node status. Fibro laryngoscopy was routinely performed in all patients. Post-operative complications were recorded, including seroma, hypocalcemia, hematoma, wound infection and recurrent laryngeal. Statistical analysis analysis were performed using SPSS (Version 20.0). A p-value less than 0.05 was considered statistically significant.

Results:
Among 373 Papillary Thyroid Cancer patients, Central node tumor metastasis found in 28% patients, recurrence in CND group and without CND group was 3% and 12% respectively. The commonest symptom was lump and difficulty swallowing. The duration of symptoms range between 6 months – 1 year. Average hospital stay was 3 days. Out of 373 patients, 48 (6.15%) patients had seroma, hypocalcemia (temporary) 62 (7.9%), hematoma 16 (2%), wound infection 14 (1.79%) and recurrent Laryngeal Nerve injury was nil (Table 1)

Discussion:
There has been a recent focus on the role of operative management of cervical lymph node metastases during the initial operation for thyroid cancer[5]. Subclinical nodal disease is found histopathologically in the majority of patients with differentiated thyroid cancer; however,

the management and impact on the prognosis of this form of lymph node metastasis are unclear[24]. The spread of tumors cells occurs in a predictable pattern that initiates in the perithyroidal lymph nodes of the central neck and progresses to the lymph nodes of the lateral cervical compartments and the superior mediastinum[7,25]. Patients with nodal metastasis have higher rates of persistent and recurrent disease during postoperative surveillance[7]. The impact of nodal metastasis on overall survival remains debatable; several studies have demonstrated no difference in mortality, while two large population-based studies have shown increased mortality in patients with regional lymph node metastasis[4,13,14,26,27].Other reports indicate that nodal dissection in differentiated thyroid cancer can advantageously decrease locoregional recurrence and improve survival[2,4,23,24]. However recently, decisions regarding the extent of thyroidectomy and neck dissection to be performed have tended to be made by focusing on rates of CND-associated complications, and reducing the incidence of postsurgical complications is often prioritized if the patient survival rates with and without CND are similar[28].

There is a general consensus that either CND or another type of neck dissection is indicated when tumor-positive lymph nodes are detected by ultrasonography or palpation[5]. The established primary treatment of papillary thyroid cancer per American Thyroid Association (ATA) guidelines is total thyroidectomy for all tumors larger than 1 cm, while thyroid lobectomy is sufficient for tumors smaller than 1 cm[29]. The ATA consensus statement also recommends therapeutic central neck dissection in patients with clinically involved nodes and prophylactic central neck dissection in advanced primary tumors (T3 or T4) without evidence of nodal involvement[29].

Prophylactic CND lower the rate of morbidity as compared to reoperation. In fact, reoperative CND has the potential to be more challenging and put the recurrent laryngeal nerve and parathyroid glands at risk[11,30] due to increased scar tissue. The morbidity appears to be related to surgical skill and experience. The results of our study are in accordance with the previous studies, in that cervical node metastases is common, there is no marked difference noted in recurrence of papillary carcinoma treated with CND and without CND but higher rates of post-operative complications of with CND as compared with the complication rates seen when using total thyroidectomy alone especially transient hypocalcemia.

The role of prophylactic central lymph node dissection in the management of papillary thyroid cancer gives good results. It has a beneficial effect on recurrence which is 3% in patients with CND and 12% without CND. Tumor node metastasis is 28% in our study. The recurrence rate found in this study confirms the usefulness of prophylactic central neck dissection. However, in our experience, tumor size is related to an increased risk of recurrence, multifocality, and loco regional infiltration. It is associated with transient complications, mostly hypocalcemia, while the rate of permanent complications is very low and not significantly different from that for total thyroidectomy alone.

Conclusion:
Our study confirms decrease rate in recurrence in patients undergoing central neck disection then those without it, hence CND should be offered to majority of patients of papillary thyroid cancer.

Conflict of interest: None

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Role and contribution of authors:
Dr. M.Naseem Baloch, Associate Professor, Surgical Ward-2, JPMC, Karachi, did conceived and designed the original study

Dr. Shahneela Manzoor, Post Graduate trainee, Surgical Ward-2, JPMC, Karachi, did manuscript writing and statistical data work

Dr. Mariyah Anwer, Senior Registrar, Surgical Ward-2, JPMC, Karachi, did data collection and composed results

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