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COMPARATIVE STUDY BETWEEN TOTAL THYROIDECTOMY AND THYROID LOBECTOMY FOR PAPILLARY THYROID CANCER

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ABSTRACT

Background: In patients with papillary thyroid carcinoma (PTC), the role of total thyroidectomy (TT) versus that of thyroid lobectomy (TL) has been controversial. **Methods:** This retrospective study was done at Damascus Hospital (AlMujtahid hospital). 82 patients with 1- to 5-cm stage cN0 and cM0 PTC tumors treated by curative surgery from 2015 to 2018 were evaluated. Clinic pathologic features and adverse events were compared between patients who underwent TT and those who underwent TL. After adjustment for differences in baseline clinicopathologic factors using propensity score matching, we compared recurrence-free survival (RFS) and OS. **Results:** TL was performed in 50 patients and TT in 32 patients. Patients who underwent TT were older; had larger tumors; more frequently had nodal metastasis, multifocal tumors, and extracapsular invasion; and more frequently underwent radioactive iodine ablation than patients who underwent TL. Hypocalcemia requiring medication and recurrent laryngeal nerve paralysis were more frequent in TT than TL. The 5-year RFS and OS of all patients were 93.3% and 96.7%, respectively. There was no significant difference in RFS (90.6% vs 93.0% in TT and TL groups, respectively) or OS (96.2% vs 96.9% in TT and TL groups, respectively) according to the extent of surgical resection after propensity score matching. **Conclusion:** Equivalent prognoses were observed for patients with 1- to 5-cm stage cN0 and cM0 PTC tumors treated by TL or TT after propensity score matching. Adverse events occurred less frequently in patients who underwent TL than TT.

1. INTRODUCTION

Thyroid cancer is one of the most rapidly growing diagnoses.[1] It has been suggested that the development and use of imaging technologies has allowed for exposure of a large reservoir of subclinical diseases, mainly low-risk T1T2 tumors.[1]

Despite its high prevalence, thyroid cancer is an uncommon cause of death.

Papillary thyroid carcinoma (PTC) represents more than 90% of all thyroid cancers. The 2013 American Thyroid Association (ATA) guidelines recommend total thyroidectomy plus postoperative radioactive iodine (RAI) ablation for PTCs of >1 cm.[2]

The 2016 ATA guidelines state that thyroid lobectomy alone may be sufficient treatment for low-risk papillary and follicular carcinomas.[3] In many countries however, lobectomy without RAI ablation is the preferred treatment for patients with PTC without high-risk features.[4] One of the reasons for this difference is the insufficiency of institutions with the ability to implement RAI therapy. However, most patients with PTC who undergo thyroid lobectomy without RAI treatment have excellent outcomes.[4] Furthermore, some reports have stated that the extent of surgery for properly selected patients with PTC is not associated with survival.[5-9] Moreover, some reported adverse events of surgery were more frequent and severe in association with total thyroidectomy than thyroid lobectomy.[10,11]

The role of total thyroidectomy versus that of thyroid lobectomy in patients with PTC currently remains a matter of debate. This study compared the long-term outcomes of patients with PTC treated with either total thyroidectomy or thyroid lobectomy, using propensity score matching to adjust for the patients' characteristics.

ACS Estimated New Thyroid Carcinoma Cases and Deaths by Sex, US, 2015.

Cases and Deaths	Total	Males	Females
Estimated new cases	37,340	8,930	28,410
Estimated deaths	1,590	680	910

2. MATERIALS AND METHODS

We reviewed the medical records of patients with primary thyroid cancer who underwent surgery at Damascus Hospital (AlMujtahid) from 2015-2018. 82 Patients had 1- to 5- cm stage cN0 and cM0 PTC tumors with available and adequately detailed medical records.

Of these patients, 32 underwent thyroid lobectomy and 50 underwent total thyroidectomy.

The patients ranged in age from 7 to 85 years (median, 40 years).

For analysis of adverse events, we evaluated the development of hypocalcemia with the use of medicine within 1 year or >1 year and the development of persistent recurrent laryngeal nerve paralysis within 1 year or >1 year.

For survival analysis, the events used determine the recurrence-free survival (RFS) rate included recurrenc of thyroid cancer in sites such as the residual thyroid tissue, lymph nodes, and distant organs. The events used to determine the overall survival (OS) rate included death due to thyroid cancer and other causes.

Thyroid lobectomy was performed if the following criteria were met during the preoperative evaluation: the diagnosis of carcinoma was unavailable before surgery, the presence of unilateral thyroid carcinoma only, and no evidence of extra thyroid invasion.

Total thyroidectomy was performed if tumors were present in both lobes, including benign tumors and those associated with Graves' disease. Preoperative evaluation of cervical lymph nodes was performed by ultrasound and computed tomography.

3 patients (4%) who underwent thyroidectomy were treated with RAI ablation. Patients underwent a routine clinical examination and serum thyroglobulin measurement every 3 or 6 months and ultrasound examination every 1 or 2 years postoperatively.

The diagnosis of recurrence in the remnant thyroid or regional lymph nodes was confirmed by aspiration cytology or histological examination after reoperation. Distant metastasis was diagnosed by computed tomography and RAI scintigraphy after completion of total thyroidectomy. The decision to perform RIA was based on comprehensive factors such as the patient's age, the presence of massive lymph node metastasis, and the presence of extracapsular invasion.

The patients' clinic pathologic factors were compared between those who underwent total thyroidectomy and those who under went thyroid lobectomy

3. RESULTS

Of the 82 patients, 50 underwent total thyroidectomy and 32 underwent thyroid lobectomy. Patients who underwent total thyroidectomy had higher frequencies than those who underwent thyroid lobectomy of the following factors: age and sex.

(Table 1).

	Total thyroidectomy n=50	Thyroid lobectomy n=32	P-value
Median age 25-75	39	37	0.002
Age ≤45 years	44	27	0.002
Age ≥45 years	6	5	0.002
Male	12	8	0.343
Female	38	24	0.343

No patients developed hypocalcemia with the use of medicine in the thyroid lobectomy group (Table 2). Conversely, of the 50 patients who underwent total thyroidectomy, (38%) and (8%) developed hypocalcemia with use of medicine within 1 year and at >1 year, respectively. Four patients (two each in the total thyroidectomy and thyroid lobectomy groups) were suspected to have recurrent laryngeal nerve paralysis preoperatively. Patients with recurrent laryngeal nerve paralysis more frequently underwent total thyroidectomy than lobectomy within 1 year (15% vs 4%, respectively; p ¼ 0.024), but this difference did not continue beyond 1 year (8% vs 3%, respectively; p ¼ 0.203).

	Total thyroidectomy n=50	**Thyroid lobectomy n=32**	**P-value**
Hypocalcemia (within 1 year) **yes**	19	0	<0.001
Hypocalcemia (within 1 year) **No**	31	32	
Hypocalcemia (beyond 1 year) **Yes**	3	0	0.008
Hypocalcemia (beyond 1 year) **No**	47	32	
Recurrent laryngeal nerve paralysis (within 1 year) **Yes**	6	2	0.024
Recurrent laryngeal nerve paralysis (within 1 year) **No**	44	30	
Recurrent laryngeal nerve paralysis (beyond 1 year) **Yes**	3	1	0.203
Recurrent laryngeal nerve paralysis (beyond 1 year) **No**	47	31	
Suspicion for recurrent laryngeal nerve paralysis preoperatively **yes**	2	1	0.587
Suspicion for recurrent laryngeal nerve paralysis preoperatively **No**	48	31	

3 (2.9%) of the 82 patients died: 1 due to thyroid cancer and 1due to another cause of death (Table 3). Recurrence was observed in 6 patients (8.1%); 4 patients developed only locoregional recurrence, 2 developed locoregional recurrence followed by distant metastasis, and 1 developed only distant metastasis. Of the 6 patients with locoregional recurrence, 4 had undergone thyroid lobectomy and 4 had undergone total thyroidectomy; all patients had lymph nodes metastases, and 2 had thyroid recurrence.

The 5-year RFS and OS rates were 93.3% and 96.7%, respectively.

After adjustment for clinicopathologic factors, the 5-year RFS and OS showed no significant differences between patients who underwent thyroid lobectomy and those who underwent total thyroidectomy (93.0% vs 90.6%, p ¼ 0.95 and 96.9% vs 96.2%, p ¼ 0.77, respectively)

REFERENCES

1. J.P. Brito, I.D. Hay, J.C. Morris, Low risk papillary thyroid cancer, BMJ, 2014; 348: 3045.
2. D.S. Cooper, G.M. Doherty, B.R. Haugen, R.T. Kloos, S.L. Lee, S.J. Mandel, et al., Revised American Thyroid Association management guidelines for patients with thyroid nodules and differentiated thyroid cancer, Thyroid, 2009; 19: 1167e1214.
3. B.R. Haugen, E.K. Alexander, K.C. Bible, G. Doherty, S.J. Mandel, Y.E. Nikiforov, et al., american thyroid association management guidelines for adult patients with thyroid nodules and differentiated thyroid cancer; the American thyroid association guidelines task force on thyroid nodules and differentiated thyroid Cancer, Thyroid, 2015; 26(2016): 1e133.
4. K. Matsuzu, K. Sugino, K. Matsudo, M. Nagahama, W. Kitagawa, H. Shibuya, et al., Thyroid lobectomy for papillary thyroid cancer: long-term follow-up study of 1,088 cases, World J. Surg, 2014; 38: 68e79.
5. F. Vaisman, D. Momesso, D.A. Bulzico, C.H. Pessoa, M.D. da Cruz, F. Dias, et al., Thyroid lobectomy is associated with excellent clinical outcomes in properly selected differentiated thyroid cancer patients with primary tumors greater than 1cm, J. Thyroid. Res., 2013. Article ID 398194.
6. A. Ebina, I. Sugitani, Y. Fujimoto, K. Yamada, Risk adapted management of papillary thyroid carcinoma according to our own risk group classification system: is thyroid lobectomy the treatment of choice for low-risk patients? Surgery, 2014; 156: 1588e1589.
7. F. Vaisman, A. Shaha, S. Fish, M. Tuttle, Initial therapy with either thyroid lobectomy or total thyroidectomy without radioactive iodine remnant ablation is associated with very low rates of structural disease recurrence in property selected patients with differentiated thyroid cancer, Clin. Endocrinol, 2011; 75: 112e119.
8. I.J. Nixon, I. Ganly, S.G. Patel, F.L. Palmer, M.M. Whitcher, R.M. Tuttle, et al., Thyroid lobectomy for treatment of well differentiated intrathyroid malignancy, Surgery, 2012; 151: 571e579.
9. M.A. Adam, J. Pura, L. Gu, M.A. Dinan, D.S. Tyler, S.D. Reed, et al., Extent of surgery for papillary thyroid cancer is not associated with survival: an analysis of 61,775 patients, Ann. Surg, 2018; 260(4): 601e607.
10. J. Ryu, Y.M. Ryu, Y.S. Jung, S.J. Kim, Y.J. Lee, E.K. Lee, et al., Extent of thyroidectomy affects vocal and throat functions: a prospective observational study of lobectomy versus total thyroidectomy, Surgery, 2013; 154: 611e620.
11. T. Sevim, Risk factors for permanent laryngeal nerve paralysis in patients with thyroid carcinoma, Clin. Otolaryngol, 2007; 32: 378e383.
12. J. Lee, J.H. Park, C.R. Lee, W.Y. Chung, C.S. Park, 260. Long-term outcomes of total thyroidectomy versus thyroid lobectomy for papillary thyroid microcarcinoma: comparative analysis after

propensity score matching, Thyroid, 2013; 23(11): 1408e1415.
13. K.Y. Bilimoria, D.J. Bentrem, C.Y. Ko, A.K. Stewart, D.P. Winchester, M.S. Talamonti, C. Sturgeon, et al., Extent of surgery affects survival for papillary thyroid cancer, Ann. Surg, 2009; 246(3): 375e381.
14. F.I. Macedo, V.K. Mittal, Total thyroidectomy versus lobectomy as initial operation for small unilateral papillary thyroid carcinoma: a meta-analysis, Surg. Oncol, 2015; 24(2): 117e122.
15. A.H. Mendelsohn, D.A. Elashoff, E. Abemayor, M.A. St John, Surgery for papillary thyroid carcinoma: is lobectomy enough? Arch. Otolaryngol. Head. Neck Surg, 2010; 136(11): 1055e1061.
16. S.T. Lim, Y.W. Jeon, Y.J. Suh, Correlation between surgical extent and prognosis in node-negative, early-stage papillary thyroid carcinoma originating in the isthmus, World J. Surg, 2016; 40(2): 344e349.
17. C. Ceccarelli, F. Pacini, F. Lippi, R. Elisei, M. Arganini, P. Miccoli, A. Pinchera, Thyroid cancer in children and adolescents, Surgery, 1988; 104(6): 1143e1148.
18. P.W. Grigsby, A. Gal-or, J.M. Michalski, G.M. Doherty, Childhood and adolescent thyroid carcinoma, Cancer, 2002; 95(4): 724e729.
19. C. Spinelli, A. Bertocchini, A. Antonelli, P. Miccoli, Surgical therapy of the thyroid papillary carcinoma in children: experience with 56 patients < or ¼16 years old, J. Pediatr. Surg, 2004; 39(10): 1500e1505.
20. D. Handkiewicz-Junak, J. Wloch, J. Roskosz, J. Krajewska, A. Kropinska, L. Pomorski, A. Kukulska, et al., Total thyroidectomy and adjuvant radioiodine
21. H. Gharib, E. Papini, Thyroid nodules: clinical importance, assessment, and treatment, Endocrinol. Metab. Clin. North Am, 2007; 36(3): 707e735.
22. Schwartz principles of surgery:8th edition.
23. Current surgical therapy.
24. Up to date CME, 2019; 18.5.
25. Annals of Surgical Oncology, 2020; 15: 1518-1522.
26. Safety and efficacy of modified radical lymph nodes dissection in patients with papillary thyroid cancer and clinically evident lymph nodes metastasis. Folia Med (Plovdiv), 2021; 48(1): 17-22
27. Mackenzie EJ, Mortimer RH. 6: Thyroid nodules and thyroid cancer. Med J Aust, Mar 1 2004; 180(5): 2427.
28. A novel tumor marker, Niban, is expressed in subsets of thyroid tumors and Hashimoto's thyroiditis. Hum Pathol, Dec 2016; 37(12): 1592-600.
29. Benvenga S. Update on thyroid cancer. Horm Metab Res., May 2008; 40(5): 323-8. treatment independently decrease locoregional recurrence risk in childhood and adolescent differentiated thyroid cancer, J. Nucl. Med, 2007; 48(6): 879e888.