



**Figure S1** Flow of participants through each stage of the study. ETE, extra-thyroidal extension.

**Table S1** The distribution of dyed lymph nodes was independent of clinical features

Clinical features	Compartment IIA		Compartment III		Compartment IV	
	n (%)	P <sup>#</sup>	n (%)	P <sup>#</sup>	n (%)	P <sup>#</sup>
Sex						
Female, N=110	18 (16.4)	0.786	72 (65.5)	0.746	87 (79.1)	0.395
Male, N=44	8 (18.2)		30 (68.2)		32 (72.7)	
Age (years)						
<55	25 (18.9)	0.095	85 (64.4)	0.237	103 (78.0)	0.583
≥55	1 (4.5)		17 (77.3)		16 (72.7)	
Tumor size (cm)						
≤1, N=51	10 (19.6)	0.649	33 (64.7)	0.436	38 (74.5)	0.805
>1, ≤2, N=72	10 (13.9)		51 (70.8)		56 (77.8)	
>2, N=31	6 (19.4)		18 (58.1)		25 (80.6)	
Multifocality						
No, N=101	16 (15.8)	0.634	68 (67.3)	0.692	81 (80.2)	0.232
Yes, N=53	10 (18.9)		34 (64.2)		38 (71.7)	
Microscopic ETE						
No, N=117	18 (15.4)	0.377	80 (68.4)	0.317	94 (80.3)	0.106
Yes, N=37	8 (21.6)		22 (59.5)		25 (67.6)	
Tumor location						
Upper 1/3*, N=93	16 (17.2)	0.895	59 (63.4)	0.366	69 (74.2)	0.260
Other, N=61	10 (16.4)		43 (70.5)		50 (82.0)	
BRAF status						
Mutated, N=43	4 (9.3)	0.295	27 (62.8)	0.841	37 (86.0)	0.120
Wildtype, N=10	2 (20.0)		7 (70.0)		9 (90.0)	
Not tested, N=101	20 (19.8)		68 (67.3)		73 (72.3)	
TNM stage						
Stage I, N=133	25 (18.8)	0.111	85 (63.9)	0.125	104 (78.2)	0.492
Stage II, N=21	1 (4.8)		17 (81.0)		15 (71.4)	
ATA risk stratification						
Low risk, N=5	1 (20.0)	0.803	2 (40.0)	0.258	5 (100.0)	0.188
Intermediate risk, N=136	22 (16.2)		93 (68.4)		106 (77.9)	
High risk, N=13	3 (23.1)		7 (53.8)		8 (61.5)	

<sup>#</sup>, calculated by Pearson Chi-square test; \*, multifocal cancers involving upper 1/3 lobe were included. ETE, extra-thyroidal extension; TNM, tumor node metastasis; ATA, American Thyroid Association.