

Table S1 Bivariate analysis of clinicopathologic characteristics by initial location of surgery

Characteristics	IUSCCC (n = 94)		OSH (n = 84)		P value
	n	%	n	%	
Age (years) (median [IQR])	60.5 (47.3–67.7)		53.1 (44.0–61.7)		<0.001***
Sex					
Male	51	54	28	33	0.008**
Female	43	46	56	67	
BMI					
Non-obese	47	50	46	55	0.628
Obese	47	50	38	45	
CCI					
>50% est. 10-yr survival	60	64	69	82	0.010*
<50% est. 10-yr survival	34	36	15	18	
Smoking Status					
Never	56	60	54	64	0.118
Former	25	27	26	31	
Current	13	14	4	5	
Biopsy prior to surgery					
None	61	65	51	61	0.012*
FNA/Core	28	30	17	20	
Surgical	5	5	16	19	
Myasthenia Gravis	23	24	24	29	0.653
Surgical Approach					
OT	75	80	54	64	0.032*
MIS	19	20	30	36	
Masaoka-Koga stage					
I	49	52	21	25	<0.001***
IIA	30	32	26	31	
IIB	8	9	15	18	
III	7	7	22	26	
WHO classification					
A/AB/Micronodular	44	47	24	29	0.023*
B1/B2	36	38	37	44	
B3	14	15	23	27	
Resection margins					
Complete (R0)	90	96	56	67	<0.001***
Incomplete (R1)	4	4	28	33	
pT size (cm) (median [IQR])	5.0 (3.6–7.5)		7.0 (5.0–9.9)		<0.001***
Adjuvant therapy					
No	86	91	53	63	<0.001***
Yes	8	9	31	37	
XRT	6	6	23	27	
Chemotx	2	2	0	--	
Both	0	--	8	10	
Follow-up (months) (median [IQR])	59.5 (25.0–103.0)		71.5 (34.0–117.8)		0.205
Status at Last Follow-Up					
No Evidence of Disease	69	73	31	37	<0.001***
Alive with Disease†	11	12	37	44	
Died	14	15	16	19	

Values are n (%) or median (IQR), as indicated. IUSCCC = Indiana University Simon Comprehensive Cancer Center; OSH = outside hospital; IQR = interquartile range; BMI = body mass index; CCI = Charleston Comorbidity Index; FNA = fine needle aspiration; OT = open technique; MIS = minimally invasive surgery; WHO = World Health Organization; pT size = pathologic tumor size; XRT = radiation; Chemotx = chemotherapy. p < 0.05 = *, p < 0.01 = **, p < 0.001 = ***. †: defined as recurrence or R1 resection at initial surgery.

Table S2 Characteristics of OSH patients at time of referral stratified by surgical approach

Characteristics	Overall		OT (n = 54)		MIS (n = 30)		P value
	n	%	n	%	n	%	
Time from surgery to IUSCCC referral (months) (median [IQR])	9.5 (1.0–38.3)		12.0 (1.0–41.3)		7.5 (1.25–28.0)		0.796
Status at First IUSCCC Evaluation							
No evidence of disease	41	49	26	48	15	50	0.980
Disease present (R1 resection)	11	13	7	13	4	13	
Recurrence present	32	38	21	39	11	37	

Values are n (%) or median (IQR), as indicated. OSH = outside hospital; OT = open technique; MIS = minimally invasive surgery; IUSCCC = Indiana University Simon Comprehensive Cancer Center; IQR = interquartile range; R1 = incomplete resection with microscopically positive margins.

Table S3 Cox Regression Univariable Analysis of Predictors of (A) Disease-Free Survival and (B) Overall Survival

A			B		
Variables	HR (95% CI)	P value	Variables	HR (95% CI)	P-value
CCI			CCI		
>50% est. 10-yr survival	Ref		>50% est. 10-yr survival	Ref	
<50% est. 10-yr survival	0.937 (0.53–1.66)	0.82	<50% est. 10-yr survival	2.543 (1.20–5.39)	0.01*
Biopsy prior to surgery			Biopsy prior to surgery		
None	Ref		None	Ref	
FNA/Core	1.826 (1.04–3.21)	0.04*	FNA/Core	1.169 (0.51–2.66)	0.71
Surgical	2.193 (1.14–4.23)	0.02*	Surgical	0.755 (0.22–2.54)	0.65
Location of Surgery			Location of Surgery		
IU	Ref		IU	Ref	
OSH	2.856 (1.70–4.81)	<0.001***	OSH	0.860 (0.42–1.75)	0.68
Surgical Approach			Surgical Approach		
OT	Ref		OT	Ref	
MIS	1.400 (0.83–2.36)	0.21	MIS	0.695 (0.28–1.70)	0.43
Masaoka-Koga stage			Masaoka-Koga stage		
I	Ref		I	Ref	
IIA	0.947 (0.49–1.85)	0.87	IIA	0.343 (0.11–1.04)	0.06
IIB	2.793 (1.34–5.83)	0.006**	IIB	1.246 (0.45–3.46)	0.67
III	3.835 (1.99–7.40)	<0.001***	III	1.312 (0.53–3.22)	0.55
WHO histology type			WHO histology type		
A/AB/Micro	Ref		A/AB/Micro	Ref	
B1/B2	2.008 (1.11–3.64)	0.02*	B1/B2	1.295 (0.59–2.86)	0.52
B3	2.146 (1.11–4.17)	0.02*	B3	0.813 (0.28–2.39)	0.71
pT Size (cm)	1.134 (1.06–1.22)	<0.001***	pT Size (cm)	1.025 (0.93–1.14)	0.64
Final resection margins			Final resection margins		
Complete (R0)	Ref		Complete (R0)	Ref	
Incomplete (R1)	3.240 (1.89–5.54)	<0.001***	Incomplete (R1)	1.149 (0.49–2.67)	0.75

CCI = Charleston Comorbidity Index; IU = Indiana University; OSH = outside hospital; OT = open technique; MIS = minimally invasive surgery; FNA = fine needle aspiration; WHO = World Health Organization; pT size = pathologic tumor size. *, P<0.05; **, P<0.01; ***, P<0.001.

Table S4 Table S4 Sensitivity Analyses of Cox Regression of Disease-Free Survival (A) with inclusion of further demographic variables and (B) excluding patients with incomplete (R1) resections

A			B		
Variables	HR (95% CI)	P value	Variables	HR (95% CI)	P value
Age	1.013 (0.99–1.04)	0.32	CCI		
Sex			>50% est. 10-yr survival	Ref	
Male	Ref		<50% est. 10-yr survival	1.669 (0.85–3.26)	0.13
Female	0.670 (0.38–1.19)	0.17	Biopsy prior to surgery		
BMI			None	Ref	
Non-obese	Ref		FNA/Core	2.629 (1.23–5.63)	0.01*
Obese	0.708 (0.42–1.20)	0.20	Surgical	3.040 (1.19–7.77)	0.02*
CCI			Location of Surgery		
>50% est. 10-yr survival	Ref		IU	Ref	
<50% est. 10-yr survival	1.075 (0.48–2.41)	0.86	OSH	1.468 (0.73–2.95)	0.28
Biopsy prior to surgery			Surgical Approach		
None	Ref		OT	Ref	
FNA/Core	2.642 (1.38–5.04)	0.003**	MIS	2.443 (1.19–5.03)	0.02*
Surgical	2.717 (1.19–6.21)	0.02*	Masaoka-Koga stage		
Location of Surgery			I	Ref	
IU	Ref		IIA	0.871 (0.41–1.84)	0.72
OSH	1.428 (0.73–2.78)	0.29	IIB	1.620 (0.60–4.38)	0.34
Surgical Approach			III	3.415 (1.32–8.80)	0.02*
OT	Ref		WHO histology type		
MIS	2.147 (1.11–4.13)	0.02*	A/AB/Micro	Ref	
Masaoka-Koga stage			B1/B2	1.231 (0.60–2.55)	0.57
I	Ref		B3	0.922 (0.40–2.11)	0.85
IIA	0.728 (0.35–1.52)	0.40	pT Size (cm)	1.073 (0.96–1.20)	0.21
IIB	1.853 (0.78–4.38)	0.16			
III	2.822 (1.27–6.28)	0.01*			
pT Size (cm)	1.094 (0.997–1.20)	0.06			
Final resection margins					
Complete (R0)	Ref				
Incomplete (R1)	2.330 (1.20–4.52)	0.01*			

BMI = body mass index; CCI = Charleston Comorbidity Index; IU = Indiana University; OSH = outside hospital; OT = open technique; MIS = minimally invasive surgery; FNA = fine needle aspiration; WHO = World Health Organization; pT size = pathologic tumor size. *, P<0.05; **, P<0.01; ***, P<0.001.

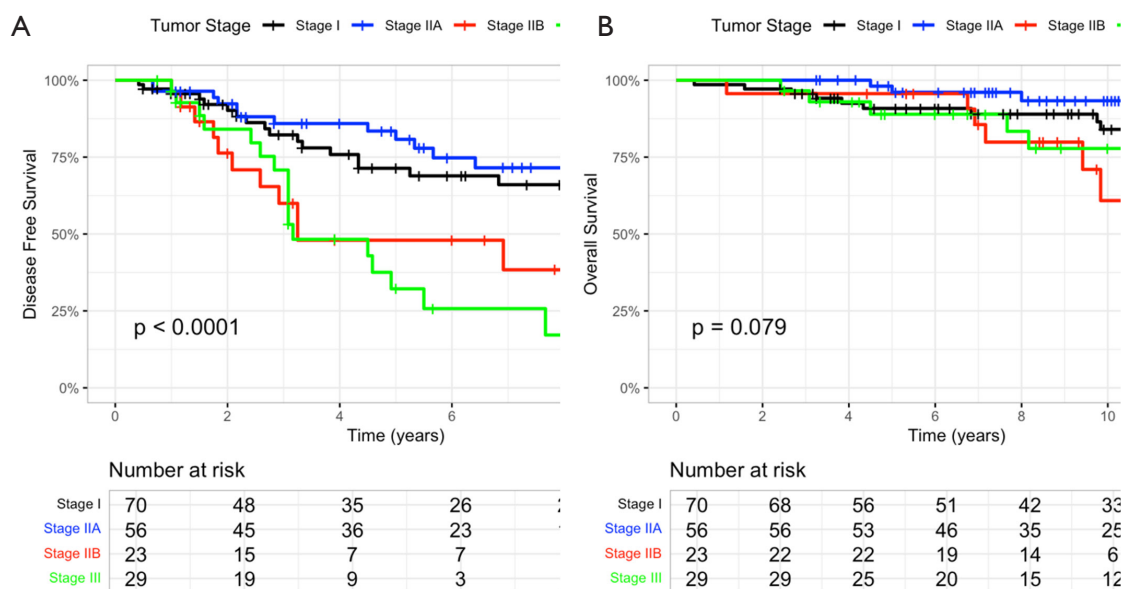


Figure S1 Disease-free (A) and overall survival (B) curves stratified by tumor stage.