

Supplementary

Table S1 Estimation of the number of tumor cells and effective tumor burden for each T and N stages

T/N stages	Number of tumor cells*	Effective tumor burden [#]
T1	1×10 ⁹	1
T2	42.875×10 ⁹	42.875
T3	125×10 ⁹	125
N0	0	0
N1	0.25×10 ⁹	25
N2	0.75×10 ⁹	75
N3	2.5×10 ⁹	250

*, to estimate tumor burden, the number of tumor cells in T1 was estimated as 1×10⁹ by assuming a cubic tumor with a size of 1 cm³. The number of tumor cells in T2 and T3 was estimated to be 42.875×10⁹ and 125×10⁹, respectively, by assuming tumor sizes of 3.5 and 5 cm. The number of tumor cells in N1 was estimated to be 0.25×10⁹ and that in N2 and N3 were estimated as 0.75×10⁹ and 2.5×10⁹, respectively; [#], in the final calculation, effective tumor burden was used instead of the estimated number of tumor cells. Since several studies showed that cancer cells in metastatic LNs harbor higher metastatic capacity than those in primary lesions, the effective tumor burden for LNs was estimated via model fitting to be 100 times the original cell number. LNs, lymph nodes.

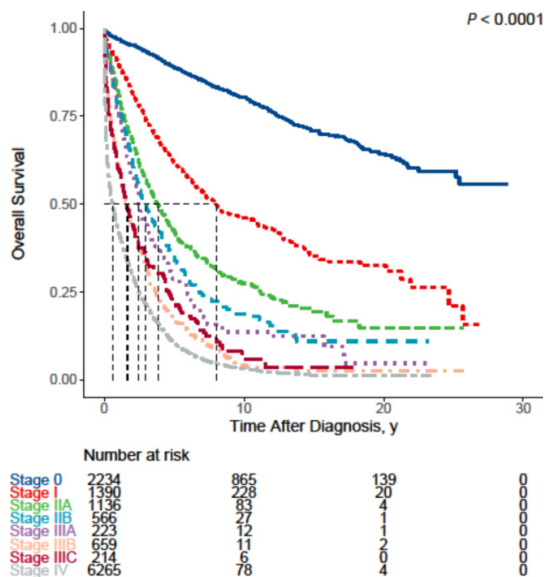
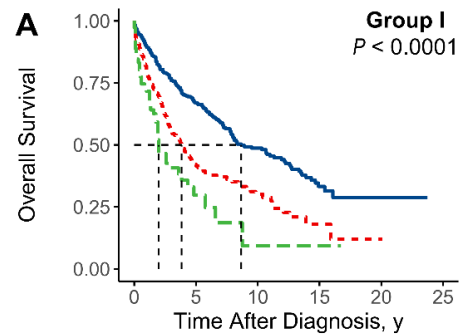
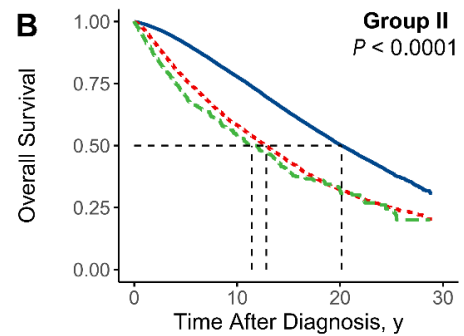


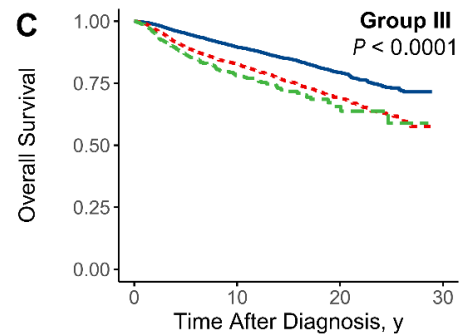
Figure S1 Survival analysis and comparison by clinical stage in untreated patients. The median survival time is marked as a dotted black line.



	0	5	10	15	20	25
T1N0M0	461	186	80	25	4	0
T2N0M0	304	64	25	4	1	0
T3N0M0	73	9	1	1	0	0

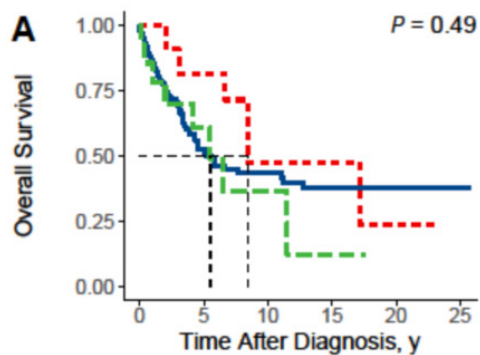


	0	10	20	30
T1N0M0	40792	18216	4409	0
T2N0M0	8668	2961	802	0
T3N0M0	802	247	71	0



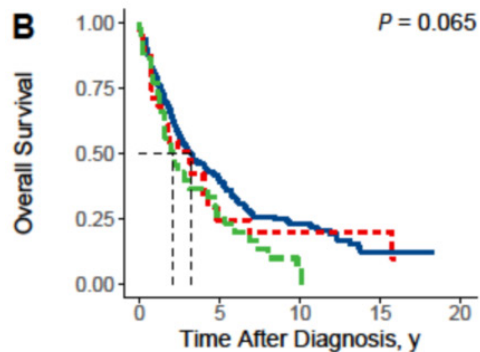
	0	10	20	30
T1N0M0	9528	4438	869	0
T2N0M0	6502	2576	541	0
T3N0M0	744	243	36	0

Figure S2 Survival analysis and comparison by T status in three groups of patients. (A) Kaplan-Meier survival curves of untreated patients (Group I) stratified by tumor size. (B) Kaplan-Meier survival curves of patients who received only locoregional treatment (Group II) stratified by tumor size. (C) Kaplan-Meier survival curves of patients who received systemic treatment (Group III) stratified by tumor size. The median survival time is marked as a dotted black line.



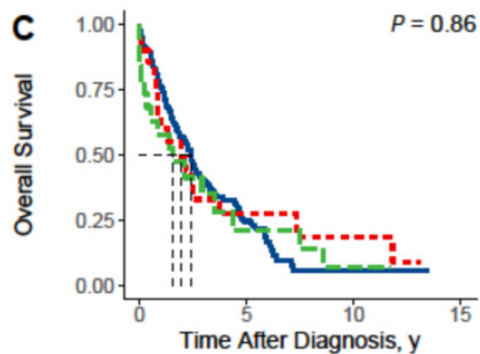
Number at risk

T1N1M0	151	45	24	9	2	1
T1N2M0	12	8	4	2	1	0
T1N3M0	14	7	3	1	0	0



Number at risk

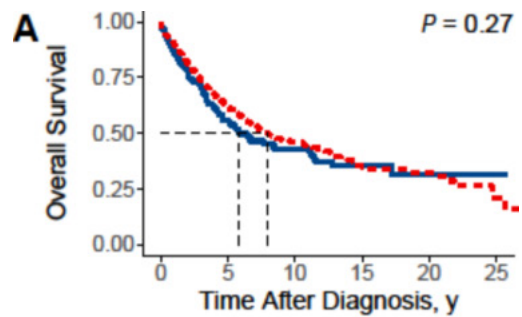
T2N1M0	356	69	23	5	0
T2N2M0	32	5	4	2	0
T2N3M0	45	8	1	0	0



Number at risk

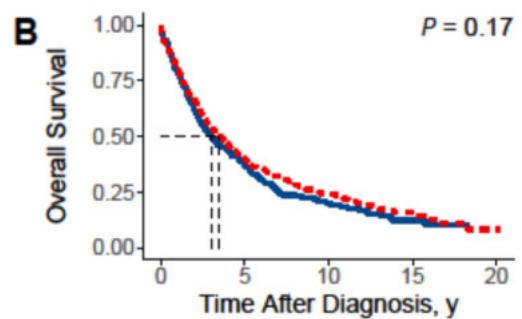
T3N1M0	158	20	2	0
T3N2M0	21	4	2	0
T3N3M0	19	3	1	0

Figure S3 Survival analysis and comparison by nodal status in untreated patients. (A-C) Kaplan-Meier survival curves of untreated patients stratified by nodal status from the T1 to T3 groups. The median survival time is marked as a dotted black line.



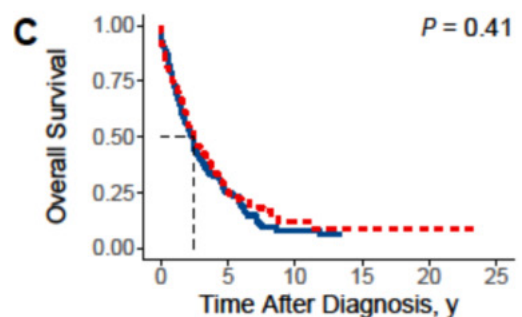
Number at risk

T1N+M0	177	60	31	12	3	1
T1N0M0	1390	515	228	86	20	4



Number at risk

T2N+M0	433	82	28	7	0
T2N0M0	968	198	56	11	2



Number at risk

T3N+M0	198	27	5	0	0	0
T3N0M0	210	29	4	3	1	0

Figure S4 Survival analysis and comparison by N status in untreated patients. (A) Kaplan-Meier survival curves of T1N+(N1–N3)M0 and T1N0M0 patients. (B) Kaplan-Meier survival curves of T2N+M0 and T2N0M0 patients. (C) Kaplan-Meier survival curves of T3N+M0 and T3N0M0 patients. The median survival time is marked as a dotted black line.

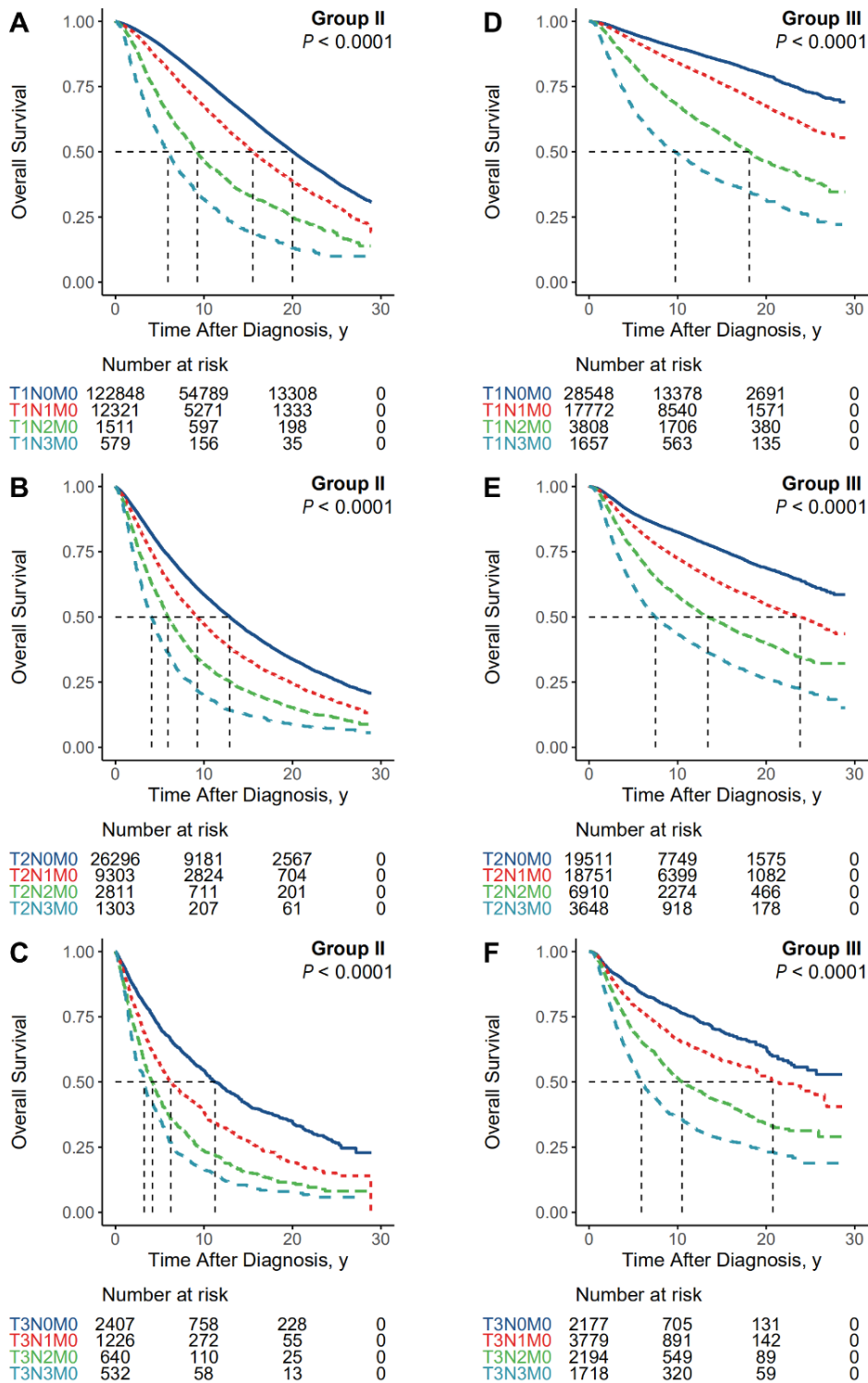


Figure S5 Survival analysis and comparison by N status in patients who received treatment. (A-C) Kaplan-Meier survival curves of patients who received only locoregional treatment (Group II) were stratified by nodal status within each T stage. (D-F) Kaplan-Meier survival curves of patients who received systemic treatment (Group III) stratified by nodal status within each T stage. The median survival time is marked as a dotted black line.