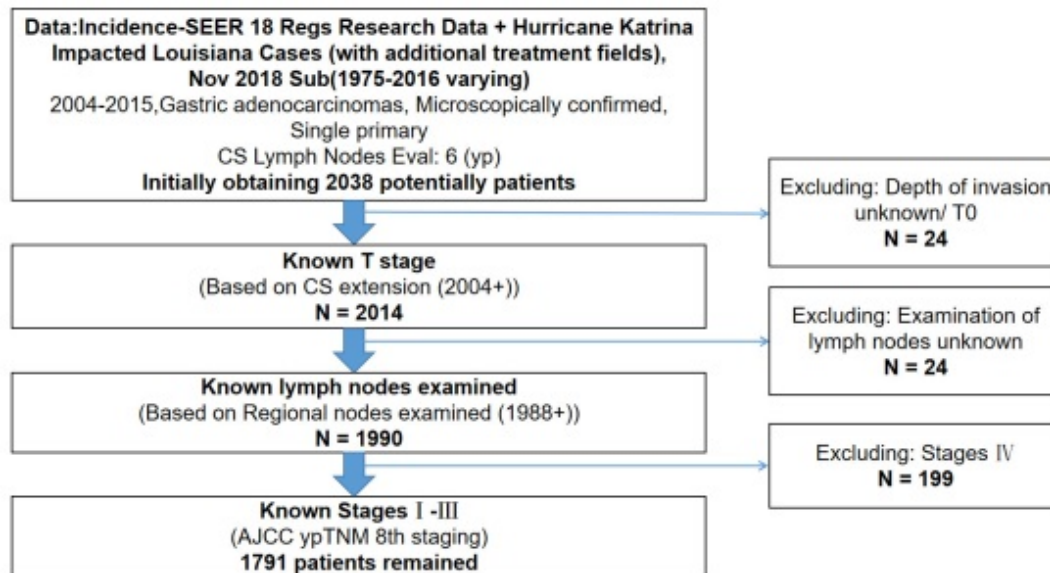Supplemental Figures for:
Modified ypTNM Staging Classification for Gastric Cancer after Neoadjuvant Therapy: A Multi-institutional Study
Chang-ming Huang et al.

Supplemental Fig. 1. Comparison of the AJCC 8th ypTNM staging system with the AJCC 7th pTNM staging system.

ypTNM staging (AJCC 8th)

	N0	N1	N2	N3
T1	I	I	II	II
T2	I	II	II	III
T3	II	II	III	III
T4a	II	III	III	III
T4b	III	III	III	III

pTNM staging (AJCC 7th)

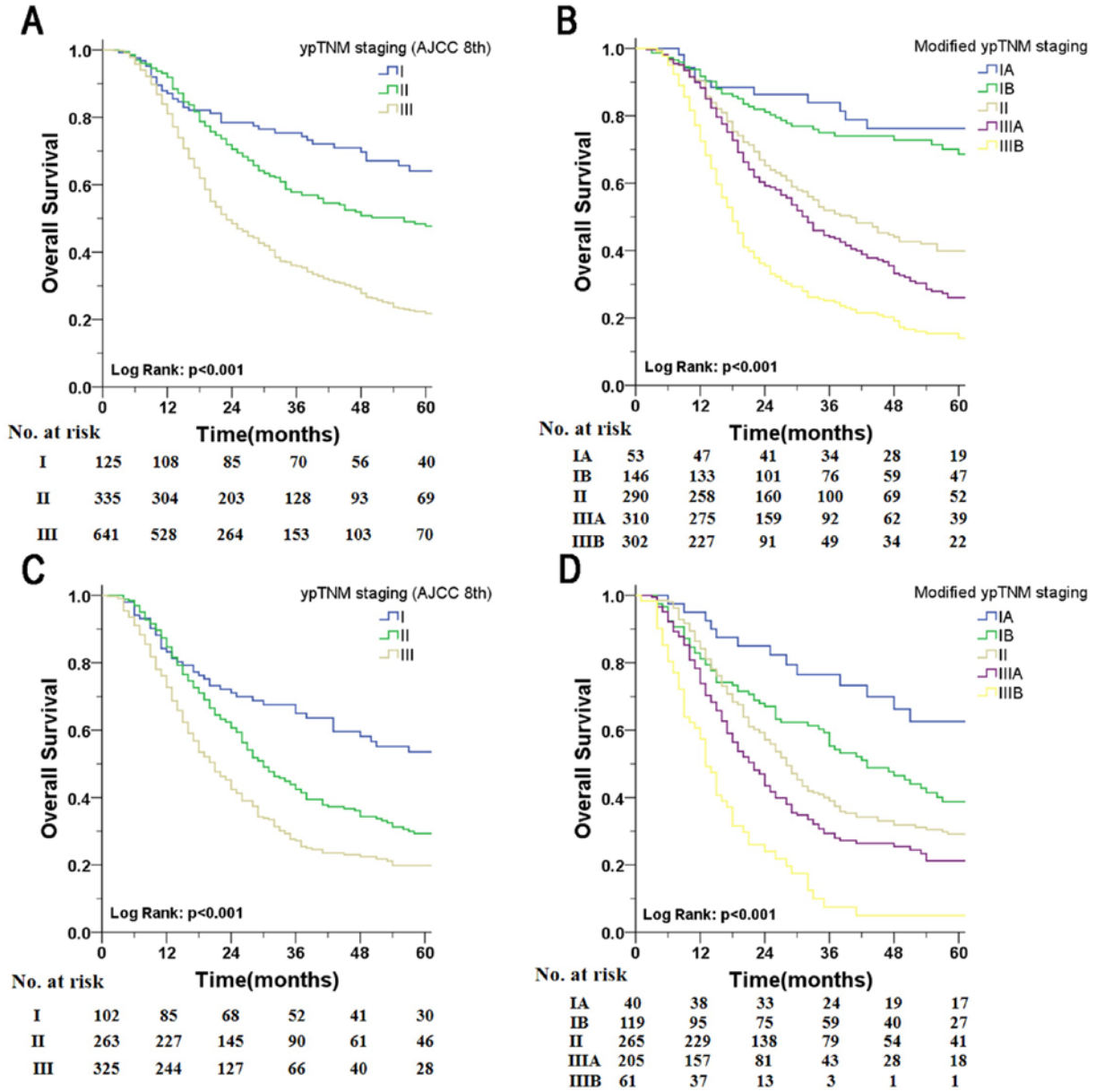|	N0	N1	N2	N3
T1	IA	IB	IIA	IIB
T2	IB	IIA	IIB	IIIA
T3	IIA	IIB	IIIA	IIIB
T4a	IIB	IIIA	IIIB	IIIC
T4b	IIIA	IIIB	IIIC	IIIC

Supplemental Fig. 1. Comparison of the AJCC 8th ypTNM staging system with the AJCC 7th pTNM staging system.

Supplemental Fig. 2. Development cohort selection from the SEER registry.

Data:Incidence-SEER 18 Regs Research Data + Hurricane Katrina Impacted Louisiana Cases (with additional treatment fields), Nov 2018 Sub(1975-2016 varying)
2004-2015,Gastric adenocarcinomas, Microscopically confirmed, Single primary
CS Lymph Nodes Eval: 6 (yp)
Initially obtaining 2038 potentially patients

Excluding: Depth of invasion unknown/ T0
N = 24

Known T stage
(Based on CS extension (2004+))
N = 2014

Excluding: Examination of lymph nodes unknown
N = 24

Known lymph nodes examined
(Based on Regional nodes examined (1988+))
N = 1990

Excluding: Stages IV
N = 199

Known Stages I -III
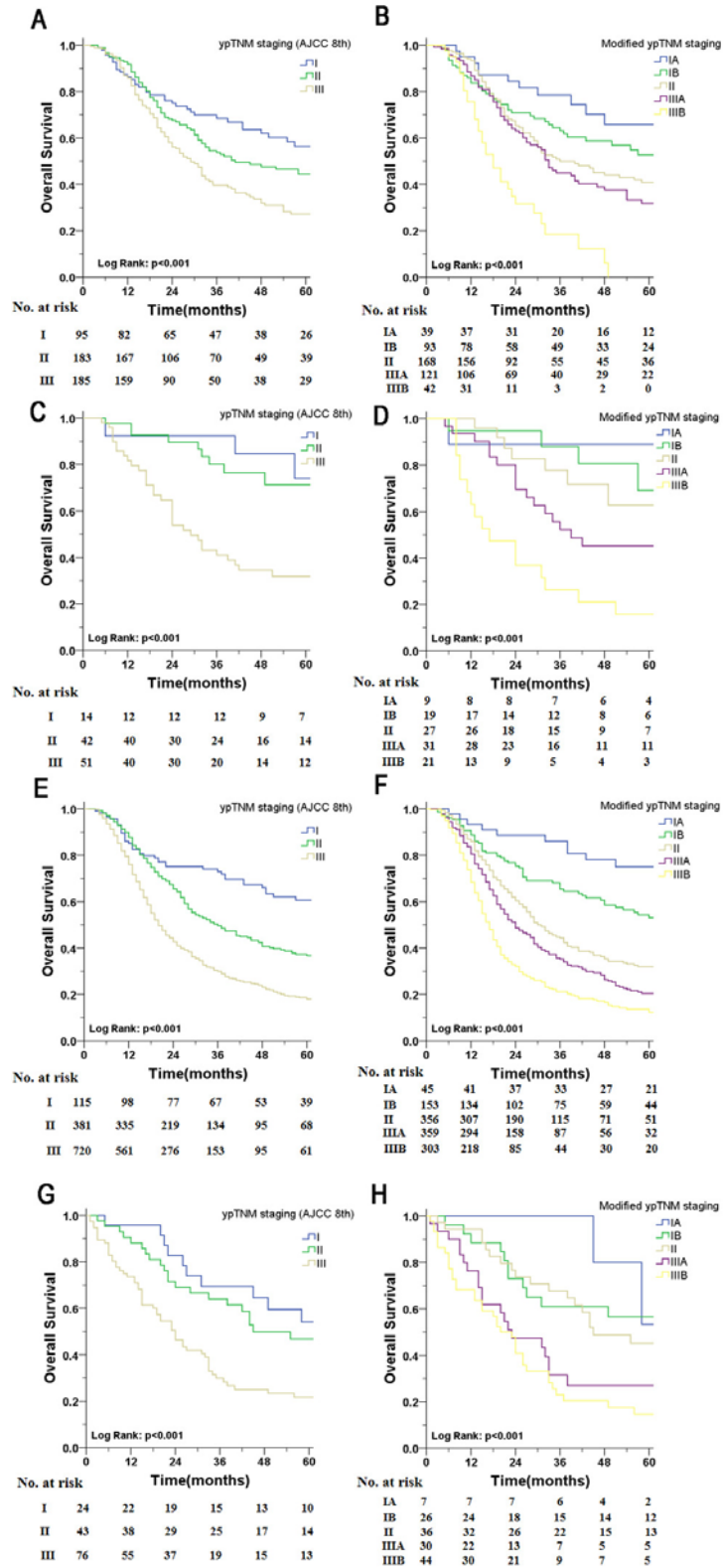(AJCC ypTNM 8th staging)
1791 patients remained

Supplemental Fig. 2. Development cohort selection from the SEER registry.

Supplemental Fig. 3. Kaplan-Meier survival curves of the different staging systems for patients after neoadjuvant therapy in the development cohort, stratified by adequate lymph nodes (≥15): (A) the AJCC 8th ypTNM staging system and (B) the modified ypTNM staging system; inadequate lymph nodes (<15): (C) the AJCC 8th ypTNM staging system, and (D) the modified ypTNM staging system.

A — ypTNM staging (AJCC 8th); Log Rank: $p < 0.001$

No. at risk

	0	12	24	36	48	60
I	125	108	85	70	56	40
II	335	304	203	128	93	69
III	641	528	264	153	103	70

B — Modified ypTNM staging; Log Rank: $p < 0.001$

No. at risk

	0	12	24	36	48	60
IA	53	47	41	34	28	19
IB	146	133	101	76	59	47
II	290	258	160	100	69	52
IIIA	310	275	159	92	62	39
IIIB	302	227	91	49	34	22

C — ypTNM staging (AJCC 8th); Log Rank: $p < 0.001$

No. at risk

	0	12	24	36	48	60
I	102	85	68	52	41	30
II	263	227	145	90	61	46
III	325	244	127	66	40	28

D — Modified ypTNM staging; Log Rank: $p < 0.001$

No. at risk

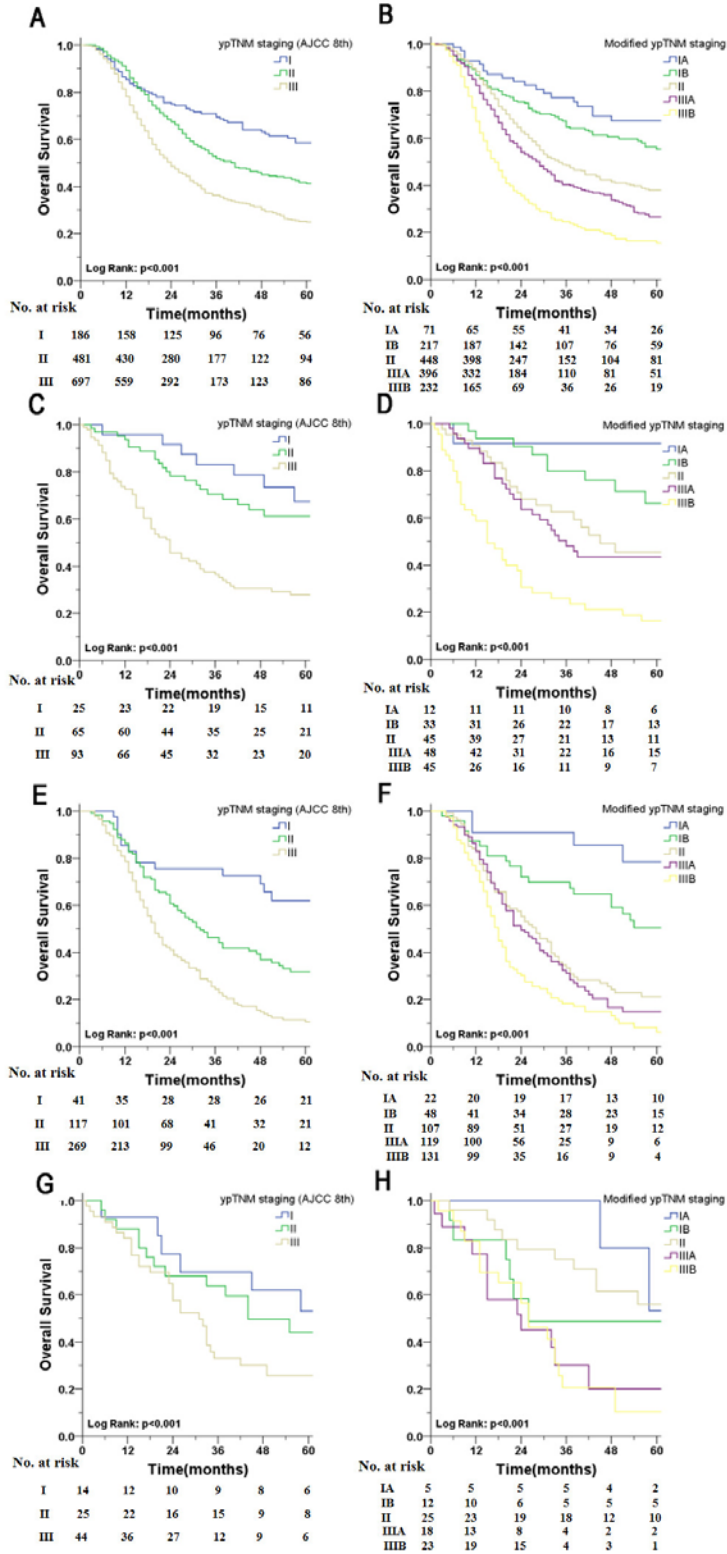|	0	12	24	36	48	60
IA	40	38	33	24	19	17
IB	119	95	75	59	40	27
II	265	229	138	79	54	41
IIIA	205	157	81	43	28	18
IIIB	61	37	13	3	1	1

Supplemental Fig. 3. Kaplan-Meier survival curves of the different staging systems for patients after neoadjuvant therapy in the development cohort, stratified by adequate lymph nodes (≥15): (A) the AJCC 8th ypTNM staging system and (B) the modified ypTNM staging system; inadequate lymph nodes (<15): (C) the AJCC 8th ypTNM staging system, and (D) the modified ypTNM staging system.

Supplemental Fig. 4. Kaplan-Meier survival curves of different staging systems for patients after neoadjuvant therapy, stratified by low grade: (A) the AJCC 8th ypTNM staging system and (B) the modified ypTNM staging system in the development cohort; (C) the AJCC 8th ypTNM staging system and (D) the modified ypTNM staging system in the validation cohort; high grade: (E) the AJCC 8th ypTNM staging system and (F) the modified ypTNM staging system in the development cohort; (G) the AJCC 8th ypTNM staging system and (H) the modified ypTNM staging system in the validation cohort.

A — ypTNM staging (AJCC 8th)

Overall Survival vs Time(months)

Legend: I, II, III

Log Rank: p<0.001

No. at risk

I	95	82	65	47	38	26
II	183	167	106	70	49	39
III	185	159	90	50	38	29

B — Modified ypTNM staging

Overall Survival vs Time(months)

Legend: IA, IB, II, IIIA, IIIB

Log Rank: p<0.001

No. at risk

IA	39	37	31	20	16	12
IB	93	78	58	49	33	24
II	168	156	92	55	45	36
IIIA	121	106	69	40	29	22
IIIB	42	31	11	3	2	0

C — ypTNM staging (AJCC 8th)

Overall Survival vs Time(months)

Legend: I, II, III

Log Rank: p<0.001

No. at risk

I	14	12	12	12	9	7
II	42	40	30	24	16	14
III	51	40	30	20	14	12

D — Modified ypTNM staging

Overall Survival vs Time(months)

Legend: IA, IB, II, IIIA, IIIB

Log Rank: p<0.001

No. at risk

IA	9	8	8	7	6	4
IB	19	17	14	12	8	6
II	27	26	18	15	9	7
IIIA	31	28	23	16	11	11
IIIB	21	13	9	5	4	3

E — ypTNM staging (AJCC 8th)

Overall Survival vs Time(months)

Legend: I, II, III

Log Rank: p<0.001

No. at risk

I	115	98	77	67	53	39
II	381	335	219	134	95	68
III	720	561	276	153	95	61

F — Modified ypTNM staging

Overall Survival vs Time(months)

Legend: IA, IB, II, IIIA, IIIB

Log Rank: p<0.001

No. at risk

IA	45	41	37	33	27	21
IB	153	134	102	75	59	44
II	356	307	190	115	71	51
IIIA	359	294	158	87	56	32
IIIB	303	218	85	44	30	20

G — ypTNM staging (AJCC 8th)

Overall Survival vs Time(months)

Legend: I, II, III

Log Rank: p<0.001

No. at risk

I	24	22	19	15	13	10
II	43	38	29	25	17	14
III	76	55	37	19	15	13

H — Modified ypTNM staging

Overall Survival vs Time(months)

Legend: IA, IB, II, IIIA, IIIB

Log Rank: p<0.001

No. at risk

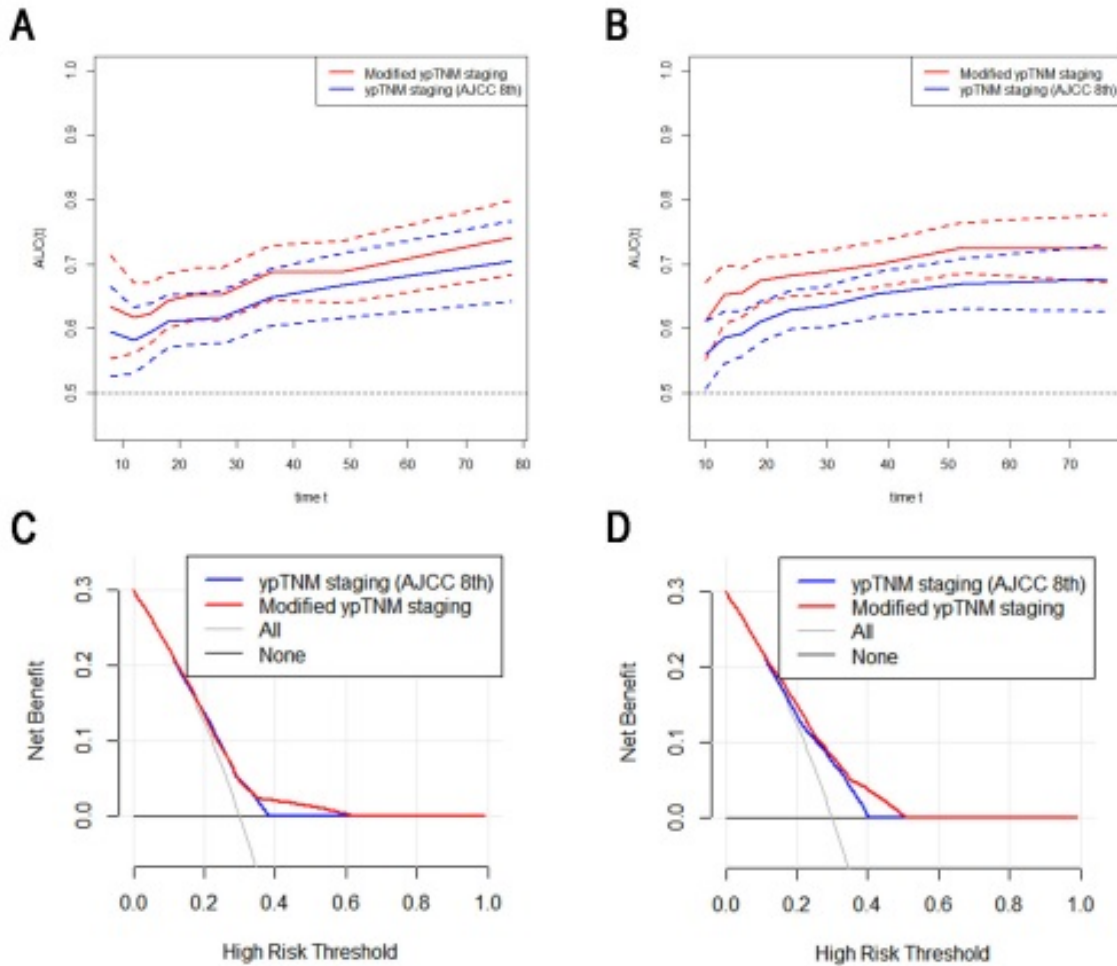|						
IA	7	7	7	6	4	2
IB	26	24	18	15	14	12
II	36	32	26	22	15	13
IIIA	30	22	13	7	5	5
IIIB	44	30	21	9	7	5

Supplemental Fig. 4. Kaplan-Meier survival curves of different staging systems for patients after neoadjuvant therapy, stratified by low grade: (A) the AJCC 8th ypTNM staging system and (B) the modified ypTNM staging system in the development cohort; (C) the AJCC 8th ypTNM staging system and (D) the modified ypTNM staging system in the validation cohort; high grade: (E) the AJCC 8th ypTNM staging system and (F) the modified ypTNM staging system in the development cohort; (G) the AJCC 8th ypTNM staging system and (H) the modified ypTNM staging system in the validation cohort.
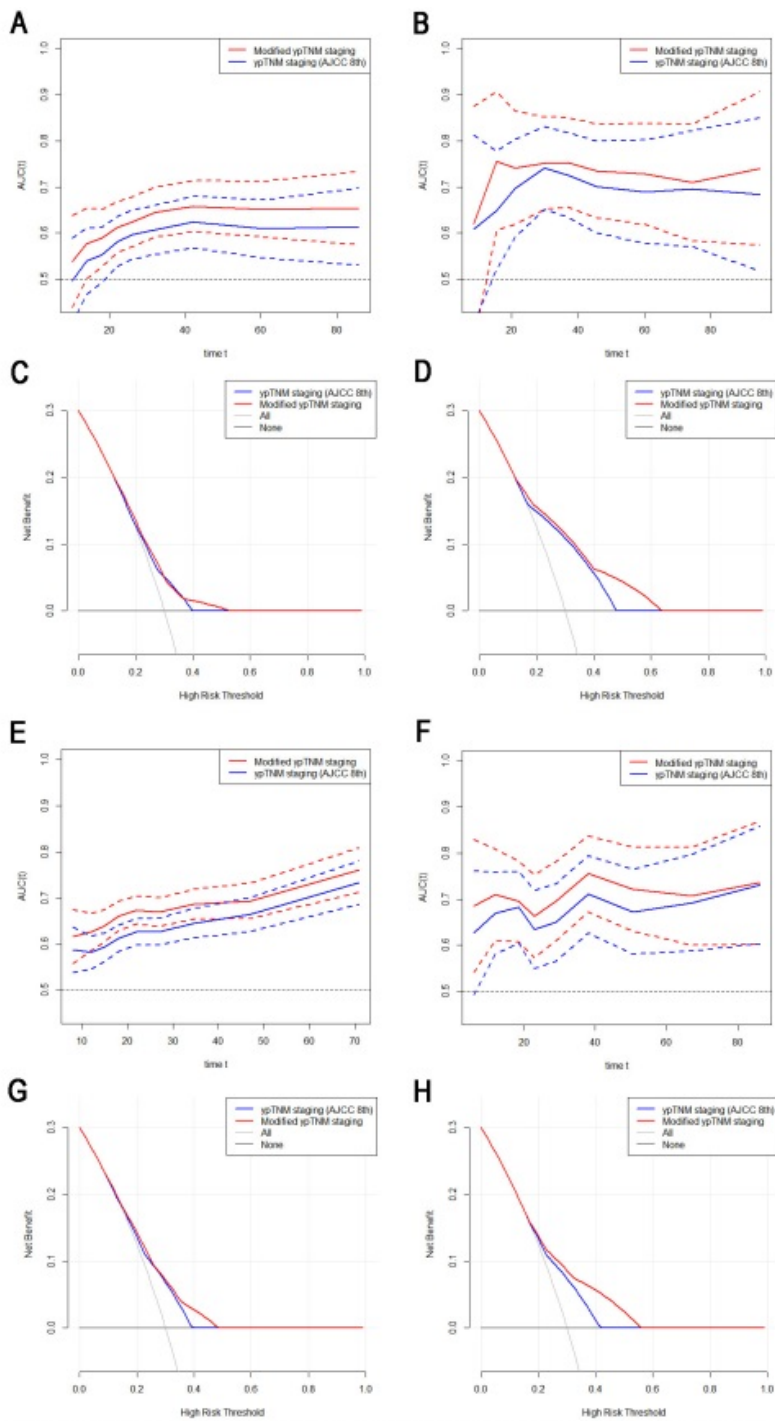
Supplemental Fig. 5. Kaplan-Meier survival curves of the different staging systems for patients after neoadjuvant therapy, stratified by general type: (A) the AJCC 8th ypTNM staging system and (B) the modified ypTNM staging system in the development cohort; (C) the AJCC 8th ypTNM staging system and (D) the modified ypTNM staging system in the validation cohort; special type: (E) the AJCC 8th ypTNM staging system and (F) the modified ypTNM staging system in the development cohort; (G) the AJCC 8th ypTNM staging system and (H) the modified ypTNM staging system in the validation cohort.

A ypTNM staging (AJCC 8th)
I
II
III

Overall Survival
Log Rank: p<0.001
Time(months)

No. at risk

	0	12	24	36	48	60
I	186	158	125	96	76	56
II	481	430	280	177	122	94
III	697	559	292	173	123	86

B Modified ypTNM staging
IA
IB
II
IIIA
IIIB

Overall Survival
Log Rank: p<0.001
Time(months)

No. at risk

IA	71	65	55	41	34	26
IB	217	187	142	107	76	59
II	448	398	247	152	104	81
IIIA	396	332	184	110	81	51
IIIB	232	165	69	36	26	19

C ypTNM staging (AJCC 8th)
I
II
III

Overall Survival
Log Rank: p<0.001
Time(months)

No. at risk

I	25	23	22	19	15	11
II	65	60	44	35	25	21
III	93	66	45	32	23	20

D Modified ypTNM staging
IA
IB
II
IIIA
IIIB

Overall Survival
Log Rank: p<0.001
Time(months)

No. at risk

IA	12	11	11	10	8	6
IB	33	31	26	22	17	13
II	45	39	27	21	13	11
IIIA	48	42	31	22	16	15
IIIB	45	26	16	11	9	7

E ypTNM staging (AJCC 8th)
I
II
III

Overall Survival
Log Rank: p<0.001
Time(months)

No. at risk

I	41	35	28	28	26	21
II	117	101	68	41	32	21
III	269	213	99	46	20	12

F Modified ypTNM staging
IA
IB
II
IIIA
IIIB

Overall Survival
Log Rank: p<0.001
Time(months)

No. at risk

IA	22	20	19	17	13	10
IB	48	41	34	28	23	15
II	107	89	51	27	19	12
IIIA	119	100	56	25	9	6
IIIB	131	99	35	16	9	4

G ypTNM staging (AJCC 8th)
I
II
III

Overall Survival
Log Rank: p<0.001
Time(months)

No. at risk

I	14	12	10	9	8	6
II	25	22	16	15	9	8
III	44	36	27	12	9	6

H Modified ypTNM staging
IA
IB
II
IIIA
IIIB

Overall Survival
Log Rank: p<0.001
Time(months)

No. at risk

IA	5	5	5	5	4	2
IB	12	10	6	5	5	5
II	25	23	19	18	12	10
IIIA	18	13	8	4	2	2
IIIB	23	19	15	4	3	1

Supplemental Fig. 5. Kaplan-Meier survival curves of the different staging systems for patients after neoadjuvant therapy, stratified by general type: (A) the AJCC 8th ypTNM staging system and (B) the modified ypTNM staging system in the development cohort; (C) the AJCC 8th ypTNM staging system and (D) the modified ypTNM staging system in the validation cohort; special type: (E) the AJCC 8th ypTNM staging system and (F) the modified ypTNM staging system in the development cohort; (G) the AJCC 8th ypTNM staging system and (H) the modified ypTNM staging system in the validation cohort.
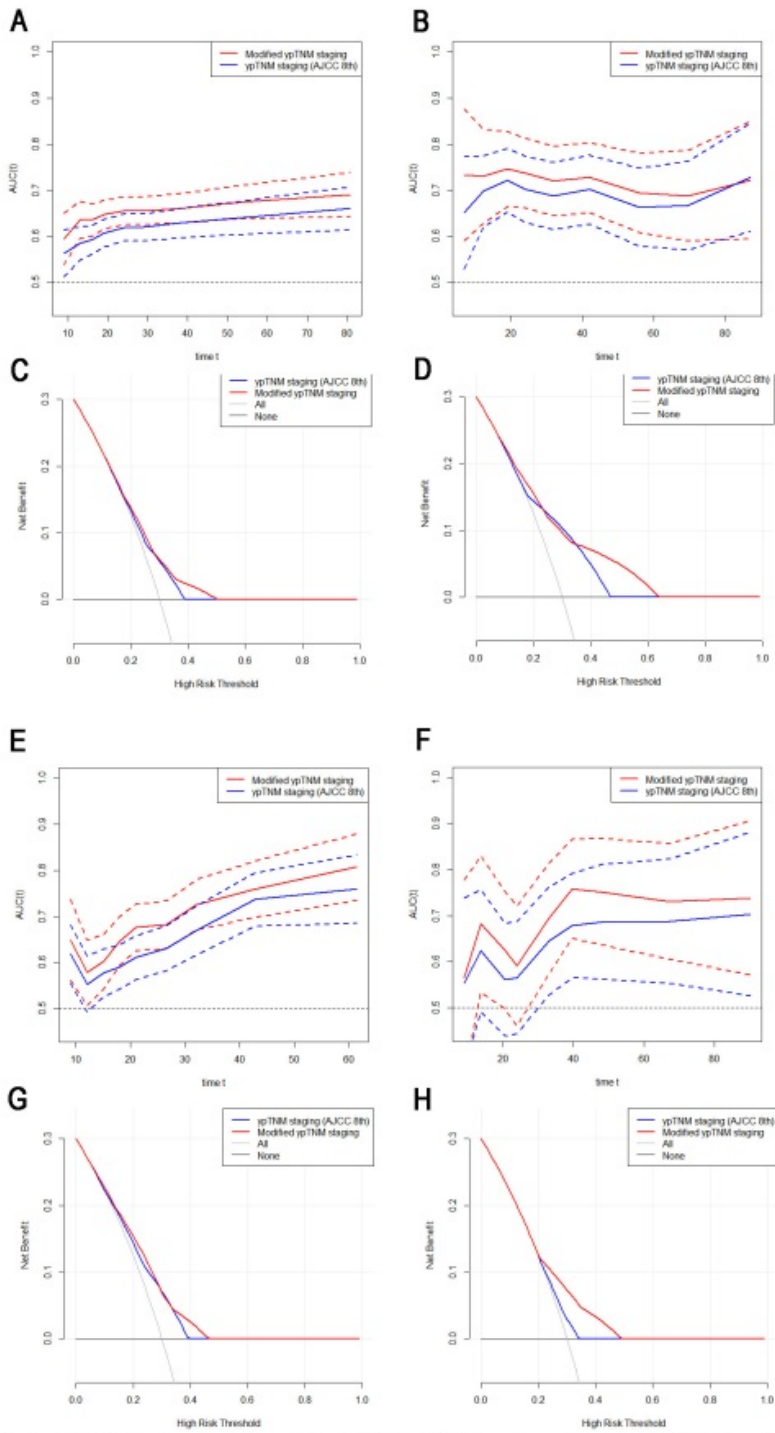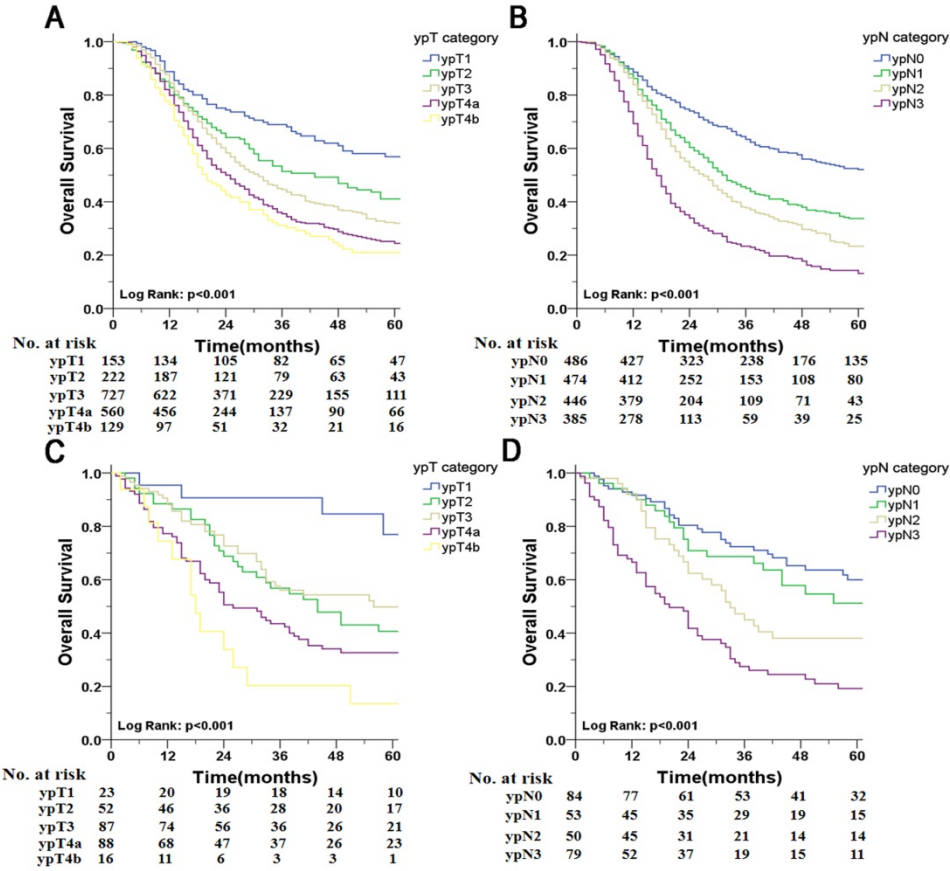
Supplemental Fig. 6. Time-dependent ROC curves for the AJCC 8th ypTNM staging system and the modified ypTNM staging system in the development cohort: (A) inadequate lymph nodes (<15) retrieved and (B) adequate lymph nodes (≥15) retrieved. Decision curve analysis (DCA) for overall survival after surgery in the development cohort: (C) inadequate lymph nodes (<15) retrieved and (D) adequate lymph nodes (≥15) retrieved.

Supplemental Fig. 6. Time-dependent ROC curves for the AJCC 8th ypTNM staging system and the modified ypTNM staging system in the development cohort: (A) inadequate lymph nodes (<15) re-trieved and (B) adequate lymph nodes (≥15) retrieved. Decision curve analysis (DCA) for overall sur-vival after surgery in the development cohort: (C) inadequate lymph nodes (<15) retrieved and (D) adequate lymph nodes (≥15) retrieved.

Supplemental Fig. 7. Time-dependent ROC curves for the AJCC 8th ypTNM staging system and the modified ypTNM staging system for patients with low-grade tumors in (A) the development cohort and (B) the validation cohort. Decision curve analysis (DCA) for overall survival after surgery for patients with low-grade tumors in (C) the development cohort and (D) the validation cohort. Time-dependent ROC curves for the AJCC 8th ypTNM staging system and the modified ypTNM staging system for patients with high-grade tumors in (E) the development cohort and (F) the validation cohort. Decision curve analysis (DCA) for overall survival after surgery for patients with high-grade tumors in (G) the development cohort and (H) the validation cohort.

Supplemental Fig. 7. Time-dependent ROC curves for the AJCC 8th ypTNM staging system and the modified ypTNM staging system for patients with low-grade tumors in (A) the development cohort and (B) the validation cohort. Decision curve analysis (DCA) for overall survival after surgery for patients with low-grade tumors in (C) the development cohort and (D) the validation cohort. Time-dependent ROC curves for the AJCC 8th ypTNM staging system and the modified ypTNM staging system for patients with high-grade tumors in (E) the development cohort and (F) the validation cohort. Decision curve analysis (DCA) for overall survival after surgery for patients with high-grade tumors in (G) the development cohort and (H) the validation cohort.
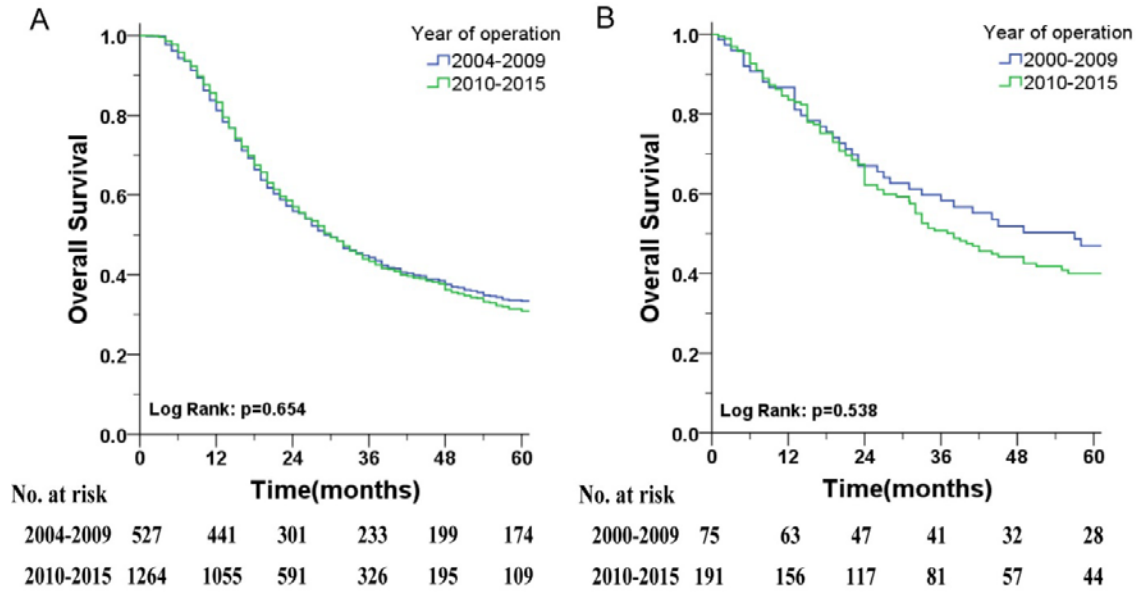
Supplemental Fig. 8. Time-dependent ROC curves for the AJCC 8th ypTNM staging system and the modified ypTNM staging system for patients with general histological types in (A) the development cohort and (B) the validation cohort. Decision curve analysis (DCA) for overall survival after surgery for patients with general histological types in (C) the development cohort and (D) the validation cohort. Time-dependent ROC curves for the AJCC 8th ypTNM staging system and the modified ypTNM staging system for patients with special histological types in (E) the development cohort and (F) the validation cohort. Decision curve analysis (DCA) for overall survival after surgery for patients with special histological types in (G) the development cohort and (H) the validation cohort.

Supplemental Fig. 8. Time-dependent ROC curves for the AJCC 8th ypTNM staging system and the modified ypTNM staging system for patients with general histological types in (A) the development cohort and (B) the validation cohort. Decision curve analysis (DCA) for overall survival after surgery for patients with general histological types in (C) the development cohort and (D) the validation cohort. Time-dependent ROC curves for the AJCC 8th ypTNM staging system and the modified ypTNM staging system for patients with special histological types in (E) the development cohort and (F) the validation cohort. Decision curve analysis (DCA) for overall survival after surgery for patients with special histological types in (G) the development cohort and (H) the validation cohort.

Supplemental Fig. 9. Kaplan-Meier survival curves for patients after neoadjuvant therapy in the development cohort, stratified by (A) ypT stage and (B) ypN stage; Kaplan-Meier survival curves for patients after neoadjuvant therapy in the validation cohort, stratified by (C) ypT stage and (D) ypN stage.

A

No. at risk	0	12	24	36	48	60
ypT1	153	134	105	82	65	47
ypT2	222	187	121	79	63	43
ypT3	727	622	371	229	155	111
ypT4a	560	456	244	137	90	66
ypT4b	129	97	51	32	21	16

B

No. at risk	0	12	24	36	48	60
ypN0	486	427	323	238	176	135
ypN1	474	412	252	153	108	80
ypN2	446	379	204	109	71	43
ypN3	385	278	113	59	39	25

C

No. at risk	0	12	24	36	48	60
ypT1	23	20	19	18	14	10
ypT2	52	46	36	28	20	17
ypT3	87	74	56	36	26	21
ypT4a	88	68	47	37	26	23
ypT4b	16	11	6	3	3	1

D

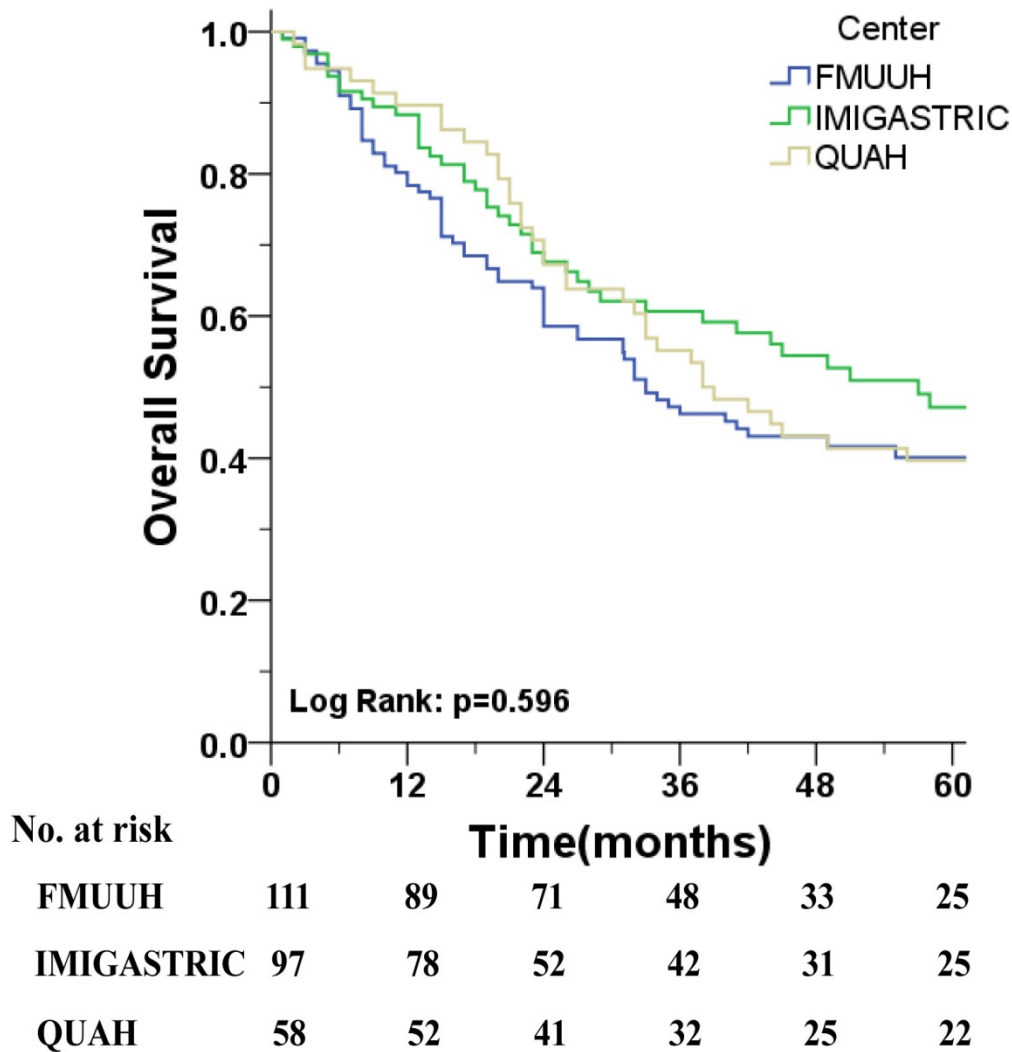| No. at risk	0	12	24	36	48	60
ypN0	84	77	61	53	41	32
ypN1	53	45	35	29	19	15
ypN2	50	45	31	21	14	14
ypN3	79	52	37	19	15	11

Supplemental Fig. 9. Kaplan-Meier survival curves for patients after neoadjuvant therapy in the development cohort, stratified by (A) ypT stage and (B) ypN stage; Kaplan-Meier survival curves for patients after neoadjuvant therapy in the validation cohort, stratified by (C) ypT stage and (D) ypN stage.

Supplemental Fig. 10. Kaplan-Meier survival curves for patients after neoadjuvant therapy according to the year of operation (A) in the development cohort, and (B) in the validation cohort.

Supplemental Fig. 10. Kaplan-Meier survival curves for patients after neoadjuvant therapy according to the year of operation (A) in the development cohort, and (B) in the validation cohort.

Supplemental Fig. 11. Kaplan-Meier survival curves for patients after neoadjuvant therapy according to the treatment center.

No. at risk						
FMUUH	111	89	71	48	33	25
IMIGASTRIC	97	78	52	42	31	25
QUAH	58	52	41	32	25	22

Supplemental Fig. 11. Kaplan-Meier survival curves for patients after neoadjuvant therapy according to the treatment center.