Supplementary Material

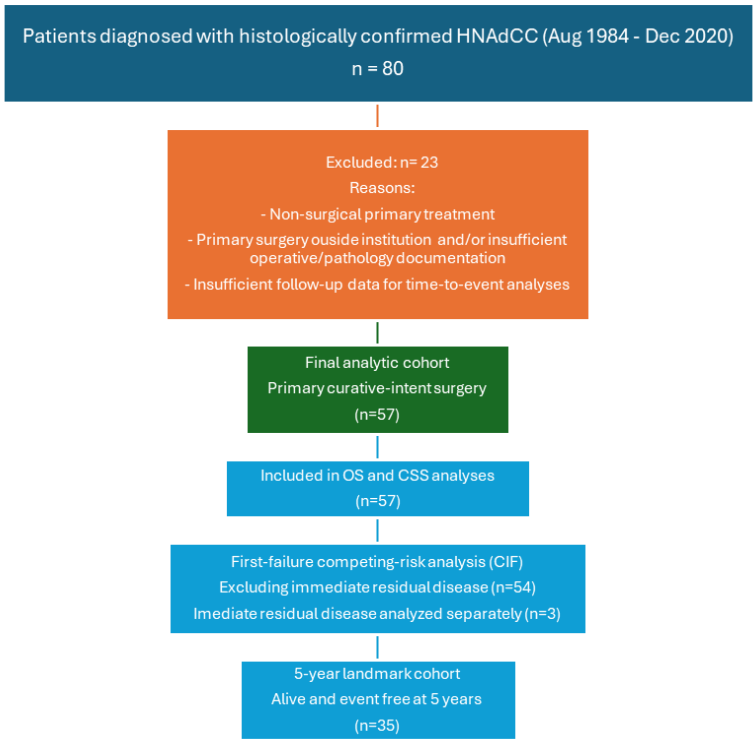


Figure S1. STROBE-style flow diagram of cohort assembly and analytic datasets.

Table S1. Follow-up, status at last contact, and patterns/timing of first failure.

Variable	Value
Follow-up and status	
Follow-up, months	147.4 ± 111.3; median 133 (38–236); range 1–470
Follow-up among survivors, months	217.2 ± 94.2; median 212 (134–287)
Status at last follow-up: Alive, no evidence of disease	26 (45.6%)
Status at last follow-up: Alive with disease	1 (1.8%)
Status at last follow-up: Dead of disease	20 (35.1%)
Status at last follow-up: Dead of other causes	10 (17.5%)
Deaths (all-cause), n (%)	30 (52.6%)
Cancer-specific deaths, n (%)	20 (35.1%)
Deaths from other causes, n (%)	10 (17.5%)
Recurrence/metastasis	Recurrence/metastasis
Any first failure (local/regional/distant), n (%)	19 (33.3%)
Local residual disease after primary treatment, n (%)	3 (5.3%)
Local recurrence (any), n (%)	8 (14.0%)
Regional recurrence (any), n (%)	3 (5.3%)
Distant metastasis as first failure, n (%)	9 (15.8%)
First failure pattern among failures (n=19)	
Local recurrence	7 (36.8%)
Regional recurrence	2 (10.5%)
Local + regional	1 (5.3%)
Distant metastasis	9 (47.4%)
First distant metastasis site (n=9)	
Lung	8 (88.9%)
Bone	1 (11.1%)
Time to first failure, months (n=19)	49.5 ± 55.2; median 14 (8–88); range 0–204
Late failures >5 years, n (%)	7 (36.8%)
Late failures >10 years, n (%)	1 (5.3%)
Second local recurrence, n (%)	4 (7.0%)
Second distant metastasis, n (%)	1 (1.8%)
Residual local disease after treatment of first recurrence, n (%)	1 (1.8%)
Any salvage surgery (recurrence/residual/metastasis), n (%)	13 (22.8%)
Salvage surgery among failures (n=19), n (%)	11 (57.9%)

Table S2. Univariable Cox regression results for overall survival (OS) and cancer-specific survival (CSS).

Variable	OS HR (95% CI)	p	CSS HR (95% CI)	*p*
Age (per 10 years)	1.89 (1.38–2.60)	<0.001	1.68 (1.14–2.48)	0.008
Female vs male	1.15 (0.55–2.39)	0.705	1.36 (0.55–3.37)	0.502
Minor vs major salivary gland origin	1.88 (0.84–4.25)	0.127	2.76 (0.92–8.30)	0.070
T3–4 vs T1–2	3.28 (1.49–7.20)	0.003	3.37 (1.28–8.83)	0.014
pN+ vs pN0	2.38 (1.01–5.60)	0.048	2.04 (0.67–6.16)	0.209
Perineural invasion (PNI+)	2.85 (1.26–6.45)	0.012	5.95 (1.73–20.44)	0.005
Perivascular invasion (PVI+)	2.08 (1.00–4.34)	0.051	2.66 (1.09–6.45)	0.031
Positive margins	1.06 (0.51–2.24)	0.873	1.22 (0.50–2.99)	0.661
Extranodal extension (ENE+)	5.16 (1.69–15.76)	0.004	4.14 (0.89–19.28)	0.070
Mandible resection	2.20 (0.94–5.15)	0.070	1.95 (0.64–5.87)	0.238
No adjuvant RT vs adjuvant RT	1.81 (0.87–3.77)	0.112	1.52 (0.60–3.82)	0.374
Tumor size (per 10 mm)	1.46 (1.12–1.91)	0.005	1.50 (1.10–2.06)	0.011

Table S3. Conditional survival and conditional long-term mortality.

Interval (years)	Conditional OS (%)	Conditional CSS (%)
0–5	68.4	78.9
5–10	94.8	94.8
10–15	86.0	86.0
15–20	73.9	88.4
20–25	90.9	90.9

Landmark survivors	Conditional disease-related death by 25y (%)	Conditional other-cause death by 25y (%)
Alive at 5 years	32.7	12.5
Alive at 10 years	29.0	13.2
Alive at 15 years	17.4	15.4

Table S4. Competing-risk analysis of first failure patterns (excluding immediate residual disease) and 5-year landmark analysis.

Time (years)	Locoregional recurrence CIF (%)	Distant metastasis CIF (%)	Death without failure CIF (%)	Event-free (%)
5	11.1	11.1	13.0	64.8
10	18.9	15.1	14.9	51.1
15	18.9	15.1	14.9	51.1
20	18.9	18.2	24.9	38.1
25	18.9	18.2	24.9	38.1

5-year landmark cohort (n = 35)	Locoregional CIF (%)	Distant CIF (%)	Death without failure CIF (%)	Event-free (%)
10 years (additional 5 years)	12.0	6.2	2.9	78.8
20 years (additional 15 years)	12.0	10.9	18.4	58.7

Table S5. Post-failure survival (time from first failure to death or last follow-up).

Group	n	Median post-failure OS (months)	Post-failure OS at 5 years (%)	Post-failure OS at 10 years (%)
All first failures	19	39	41.4	29.6
Distant metastasis	9	39	29.6	14.8
Locoregional failure	10	37	50.0	40.0
Salvage surgery	11	85	54.5	43.6
No salvage surgery	8	8	25.0	12.5

Table S6. Restricted mean survival time (RMST) for overall survival up to 25 years.

Comparison	Group A	Group B	RMST A (months)	RMST B (months)	Difference (months)	95% CI (months)
PNI	PNI–	PNI+	228.8	140.5	88.3	25.3 to 146.9
T category	T1–2	T3–4	226.1	131.3	94.9	36.0 to 151.8