

**Supplemental Table 1.** Clinical and demographic information of patients with metastatic HPV+ oropharyngeal cancer

ID	Age at Dx	Gender	Smoking	Primary	Initial Staging	MPS	MPS Site	Metastatic site(s)	ID	Age at Dx	Gender	Smoking	Primary	Initial Staging	MPS	MPS Site	Metastatic site(s)
41	64	M	N	T	IVA	X	P	P	72	72	M	N	T	IVA	X	M	EP
42	45	M	F	T	II	X	P	P	74	66	M	N	T	IVA	X	M	EP
43	50	M	N	C	IVB				75	60	M	F	B	IVA	X	P	EP
44	51	M	F	T	IVA	X	M	EP	76	51	M	N	T	IVA	X	M	EP
47	32	M	N	B	IVA	X	P	EP	77	64	M	F	T	IVA	X	M	P
49	54	M	F	T	IVA	X	M	P	78	50	M	N	T	IVA			
50	62	M	N	B	IVA	X	M	EP	80	65	M	N	B	IVA	X	P, M	EP
51	54	M	N	T	IVB	X	M	EP	81	39	M	F	T	IVA	X	P	EP
52	64	M	F	T	IVB	X	P	P	82	56	M	N	B	IVA	X	M	P
53	57	M	F	T	IVA	X	M	EP	83	70	M	F	B	IVA	X	P	EP
55	56	M	N	B	IVC	X	P	EP	84	55	M	N	B	IVA	X	M	P
56	63	F	N	B	IVA	X	M	P	85	47	M	N	B	IVA	X	M	EP
57	50	M	F	B	IVA	X	M	EP	86	61	M	F	C	IVC			
59	45	M	N	C	IVA	X	M	P	87	62	M	F	T	IVA	X	P	EP
60	68	M	F	T	IVA				88	56	M	F	C	IVA			
61	48	M	N	B	IVA	X	P	P	89	59	M	N	B	IVA	X	P	EP
62	55	M	F	T	IVA				90	48	M	F	T	IVA			
63	57	M	F	T	II	X	M	P	91	60	M	N	B	IVA	X	P	EP
64	49	M	F	C	IVA				92	54	M	N	T	IVA	X	M	EP
65	61	F	F	T	IVA	X	M	P	93	47	M	F	B	IVA	X	M	EP
66	56	M	N	B	IVA				94	55	M	F	T	IVA	X	M	P
67	53	M	N	T	IVA	X	P	P	95	57	M	F	T	IVA	X	M	P
68	55	M	N	T	IVB	X	M	P	97	57	M	N	B	IVC			
69	43	M	N	B	IVA	X	P	P	99	53	M	N	B	IVC	X	P, M	EP
70	65	M	N	B	IVA	X	M	EP	100	75	M	N	T	IVA	X	P	P
71	68	M	F	T	IVA	X	M	P	101	74	M	N	C	IVC	X	M	P

Dx = diagnosis; gender: M = male, F = female; smoking: N = never smoker, F = former or current smoker (> 10 pack-years); primary: T = tonsil, B = base of tongue, C = carcinoma of unknown primary; initial staging: using American Joint Committee on Cancer (AJCC) 7<sup>th</sup> edition staging; MPS = massively parallel sequencing; MPS site: P = primary tumor, M = metastatic focus; metastatic site(s): P = pulmonary-only metastases, EP = at least one site of extra-pulmonary distant disease.

**Supplemental Table 2.** The effect of clinicopathologic features on survival outcomes in metastatic HPV+ oropharyngeal cancer patients

Variable	Total (n = 52)		
	HR	[95% CI]	p-value
Younger age	0.94	0.85-0.96	<b>&lt;0.01</b>
Gender	--	--	--
Smoking history	1.76	0.71-4.34	0.21
ECOG performance status	1.17	0.56-2.44	0.66
Primary tumor subsite	0.79	0.37-1.70	0.56
Initial stage of disease	--	--	--
Site of distant disease	5.54	2.44-8.15	<b>0.02</b>
Higher tumor mutational burden	0.88	0.78-0.93	<b>0.04</b>

HR = hazard ratio, CI = confidence interval, ECOG = European Cooperative Oncology Group. Multivariate Cox proportional hazard modeling was only performed if n  $\geq$  15 patients were available in each subgroup. Testing of proportional-hazards assumption yielded: Gonen and Heller's K = 0.7298 (SE = 0.04).