

Supplementary File

Year of surgery	Radical resection	Non-radical surgery	Total	p-value	
2007	4 (80%)	1 (20%)	5 (4.3%)	0.494	
2008	1 (50%)	1 (50%)	2 (1.7%)		
2009	1 (100%)	0 (0%)	1 (0.9%)		
2010	3 (60%)	2 (40%)	5 (4.3%)		
2011	5 (56%)	4 (44%)	9 (7.7%)		
2012	4 (67%)	2 (33%)	6 (5.1%)		
2013	2 (100%)	0 (0%)	2 (1.7%)		
2014	9 (100%)	0 (0%)	9 (7.7%)		
2015	12 (86%)	2 (14%)	14 (12%)		
2016	13 (72%)	5 (28%)	18 (15%)		
2017	13 (87%)	2 (13%)	15 (13%)		
2018	13 (76%)	4 (24%)	17 (15%)		
2019	12 (86%)	2 (14%)	14 (12%)		
2007-2012	18 (64%)	10 (36%)	28 (24%)		0.110
2013-2015	23 (92%)	2 (8.0%)	25 (21%)		
2016-2017	26 (79%)	7 (21%)	33 (28%)		
2018-2019	25 (81%)	6 (19%)	31 (26%)		
Total	92 (79%)	25 (21%)	117 (100%)		

Table S1. Extent of resection in different periods, Fisher's exact test.

Variable	WBRT, N = 70	Other, N = 48
RT schedule		
10x3	41 (59%)	1 (2.1%)
10x3.5	0 (0%)	1 (2.1%)
10x4	0 (0%)	1 (2.1%)
12x3	0 (0%)	3 (6.2%)
14x2.5	1 (1.4%)	0 (0%)
15x2	2 (2.9%)	0 (0%)
15x2.5	2 (2.9%)	0 (0%)
1x14	0 (0%)	1 (2.1%)
1x17	0 (0%)	1 (2.1%)
1x18	0 (0%)	2 (4.2%)
1x20	0 (0%)	1 (2.1%)
1x21	0 (0%)	1 (2.1%)
1x5	1 (1.4%)	0 (0%)
3x7	0 (0%)	2 (4.2%)
3x8	0 (0%)	1 (2.1%)
3x9	0 (0%)	2 (4.2%)
4x4	3 (4.3%)	0 (0%)
4x5.5	0 (0%)	1 (2.1%)
5x3	1 (1.4%)	0 (0%)
5x4	14 (20%)	1 (2.1%)
5x4.5	0 (0%)	1 (2.1%)
5x5	0 (0%)	19 (40%)

Variable	WBRT, N = 70	Other, N = 48
5x5.5	0 (0%)	2 (4.2%)
5x6	0 (0%)	3 (6.2%)
6x5	0 (0%)	1 (2.1%)
7x3	1 (1.4%)	1 (2.1%)
7x3.4	0 (0%)	1 (2.1%)
8x3	0 (0%)	1 (2.1%)
8x3.2	1 (1.4%)	0 (0%)
9x3	3 (4.3%)	0 (0%)

Table S2. Detailed list of radiotherapy schedules (doses in Gray). Abbreviations: RT, radiotherapy; N, number; WBRT, whole brain radiotherapy

Variable	WBRT, N = 70	Stereotactic RT, N = 48	p-value
Radionecrosis	9 (23%)	8 (21%)	0.830
G1	7 (78%)	7 (88%)	
G2	2 (22%)	1 (12%)	
Unknown	31	10	

Table S3. Incidence of post-treatment radionecrosis. Abbreviations: RT, radiotherapy; N, number; WBRT, whole brain radiotherapy; G, grade

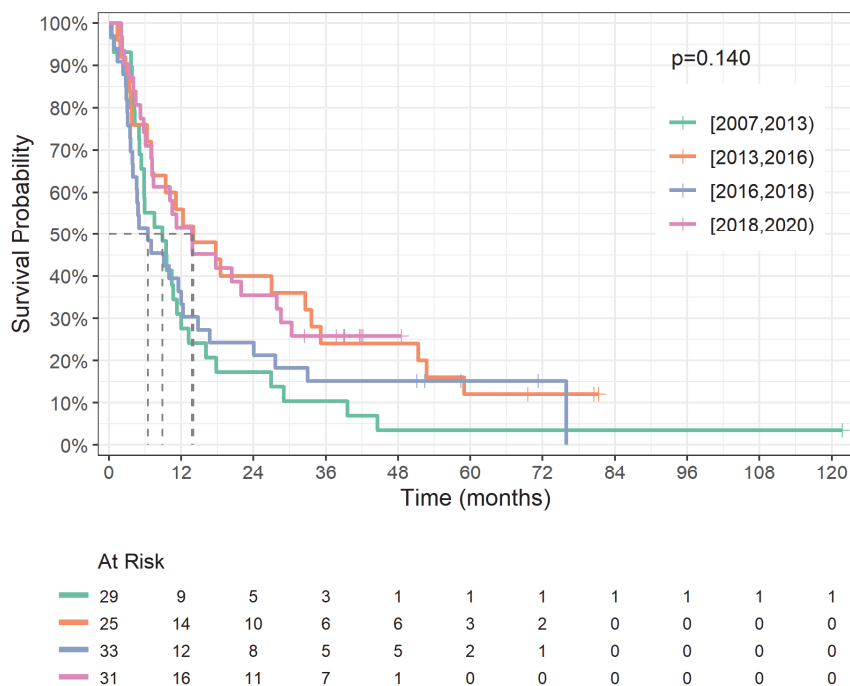


Figure S1. Overall survival according to the year of surgery

Characteristic	OS				LC			distC			
	N	HR	95% CI	p-value	HR	95% CI	p-value	HR	95% CI	p-value	
Sex				0.549			0.142			0.321	
Female	64	—	—		—	—		—	—		
Male	54	1.13	0.76, 1.67		0.54	0.24, 1.23		0.74	0.40, 1.35		
Age (years)	118	1.00	0.98, 1.01	0.656	0.94	0.91, 0.98	<0.001	0.95	0.93, 0.98	0.001	
KPS				<0.001			0.066			0.040	
≤70	32	—	—		—	—		—	—		
80	49	0.53	0.33, 0.85		5.57	1.21, 25.6		2.62	0.95, 7.22		
90-100	36	0.35	0.20, 0.59		3.45	0.75, 15.9		3.70	1.33, 10.3		
Year of surgery				0.144			0.707			0.561	
2007-2012	29	—	—		—	—		—	—		
2012-2015	25	0.61	0.35, 1.08		1.04	0.39, 2.83		0.98	0.40, 2.39		
2016-2017	33	0.90	0.53, 1.52		0.59	0.21, 1.67		1.28	0.54, 3.01		
2018-2019	31	0.59	0.34, 1.02		0.98	0.39, 2.45		1.59	0.73, 3.47		
Scope of surgery				0.356			0.841			0.380	
Radical resection	92	—	—		—	—		—	—		
Non-radical surgery	25	1.25	0.79, 1.98		1.08	0.49, 2.40		1.33	0.70, 2.51		
Number of BM				0.023			0.133			0.239	
1-2	98	—	—		—	—		—	—		
>2	20	1.84	1.12, 3.01		1.78	0.84, 3.80		1.57	0.74, 3.32		
Location of BM				0.007			0.650			0.379	
Cerebellum	51	—	—		—	—		—	—		
Other	63	0.58	0.39, 0.86		1.18	0.57, 2.45		1.30	0.72, 2.34		
Primary tumor				0.246			<0.001			0.132	
Breast	24	—	—		—	—		—	—		
GI	10	1.89	0.89, 4.02		1.28	0.47, 3.50		0.59	0.20, 1.75		
Melanoma	13	0.88	0.42, 1.86		0.59	0.22, 1.62		1.11	0.42, 2.93		
Lung	39	1.38	0.81, 2.36		0.26	0.09, 0.72		0.36	0.16, 0.81		
Other	19	0.88	0.46, 1.68		0.41	0.13, 1.29		0.63	0.26, 1.57		
RCC	13	0.78	0.36, 1.70		0.00	0.00, 0.00		0.46	0.19, 1.16		
Extracranial metastases				0.691			0.403			0.254	
No	60	—	—		—	—		—	—		
Yes	58	1.08	0.73, 1.60		1.35	0.67, 2.74		1.39	0.79, 2.47		
Extracranial disease status				0.009			0.935			0.376	
CR-NED	20	—	—		—	—		—	—		
PD	47	2.41	1.32, 4.42		1.06	0.41, 2.74		0.78	0.40, 1.53		
SD/PR	47	1.66	0.90, 3.06		0.91	0.35, 2.35		0.61	0.30, 1.22		
Control primum				<0.001			0.058			0.256	
Yes	65	—	—		—	—		—	—		
No	53	2.22	1.49, 3.31		0.43	0.18, 1.03		0.69	0.37, 1.30		
Systemic treatment before RT				0.460			0.064			0.337	
No	44	—	—		—	—		—	—		
Yes	74	1.17	0.77, 1.76		2.14	0.96, 4.80		1.36	0.73, 2.54		
Type of RT				<0.001			0.801			0.129	
WBRT	70	—	—		—	—		—	—		

Characteristic	OS				LC			distC			
	N	HR	95% CI	p-value	HR	95% CI	p-value	HR	95% CI	p-value	
Stereotactic RT	48	0.47	0.31, 0.71		0.91	0.45, 1.84		1.56	0.88, 2.76		
Time from surgery to RT	118	1.00	0.99, 1.00	0.124	1.00	0.99, 1.00	0.432	1.00	0.99, 1.00	0.371	
Time from indication to start RT	118	0.99	0.97, 1.00	0.071	0.99	0.97, 1.01	0.397	1.00	0.98, 1.01	0.626	
Steroids during RT				0.009			0.619			0.614	
No	24	—	—		—	—		—	—		
Yes	93	1.88	1.14, 3.11		0.83	0.39, 1.75		1.19	0.60, 2.37		

Table S4. Univariable analyses. Abbreviations: OS, overall survival; LC, local control; distC, distal brain control; N, number; HR, hazard ratio; CI, confidence interval; KPS, Karnofsky performance status; BM, brain metastases; GI, gastrointestinal; RCC, renal clear cell carcinoma; CR-NED, complete response – no evidence of disease; PD, progressing disease; SD/PR, stable disease/partial response; RT, radiotherapy.

Outcome		SRS cohort	WBRT cohort
mOS (months; CI)	Brown et al [13]	12.2 (9.7-16)	11.6 (9.9-18)
	Our cohort	18 (11-30)	7.1 (5-11)
12-months localC (%)	Brown et al [13]	60.5 (51.3-71.3)	80.6 (73-89.1)
	Our cohort*	78 (63-90)	82 (69-91.1)
12-months distalC (%)	Brown et al [13]	64.7 (55.8-75)	89.2 (83.1-95.8)
	Our cohort*	56 (42-72)	71 (58-82)

Table S5. Comparison of major outcomes within our cohort and Brown et al. study prospectively comparing the postoperative SRS and WBRT. Abbreviations: SRS, stereotactic radiosurgery; WBRT, whole brain radiotherapy; mOS, median overall survival; localC, local control; distalC, distal brain control. *Estimations from calculated cumulative incidences.