

## Clinical characteristics and outcomes of Richter transformation: experience of 204 patients from a single center

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**Supplemental Table 1. Clinical characteristics at CLL diagnosis in the 204 patients**

	Number (n=204)	%
<b>Age (years)</b>		
Median (range)	62 (22-85)	
≤65	124	60.8
>65	80	39.2
<b>Sex</b>		
Female	56	27.5
Male	148	72.5
<b>Rai stage</b>		
0	59	33.9
1-2	93	53.4
3-4	22	12.6
Missing	30	
<b>Beta-2 microglobulin (mg/L)</b>		
≤3.5	49	60.5
>3.5	32	39.5
Missing	123	
<b>ZAP-70</b>		
Negative	25	43.1
Positive	33	56.9
Missing	146	
<b>CD49d</b>		
Negative	23	44.2
Positive	29	55.8
Missing	152	
<b>CD38</b>		
Negative	53	57.0
Positive	40	43.0
Missing	111	
<b>IGHV mutation status</b>		
Mutated	29	29.0
Unmutated	71	71.0
Missing	104	
<b>FISH (Dohner hierarchical classification)</b>		
Del(17p)	33	25.4
Del(11q)	18	13.8
Trisomy 12	19	14.6
Normal	34	26.2
Del(13q)	26	20.0
Missing	74	
<b>CLL-IPI</b>		
0-1 (low risk)	10	14.1
2-3 (intermediate risk)	14	19.7
4-6 (high risk)	28	39.4
7-10 (very high risk)	19	26.8
Missing	133	

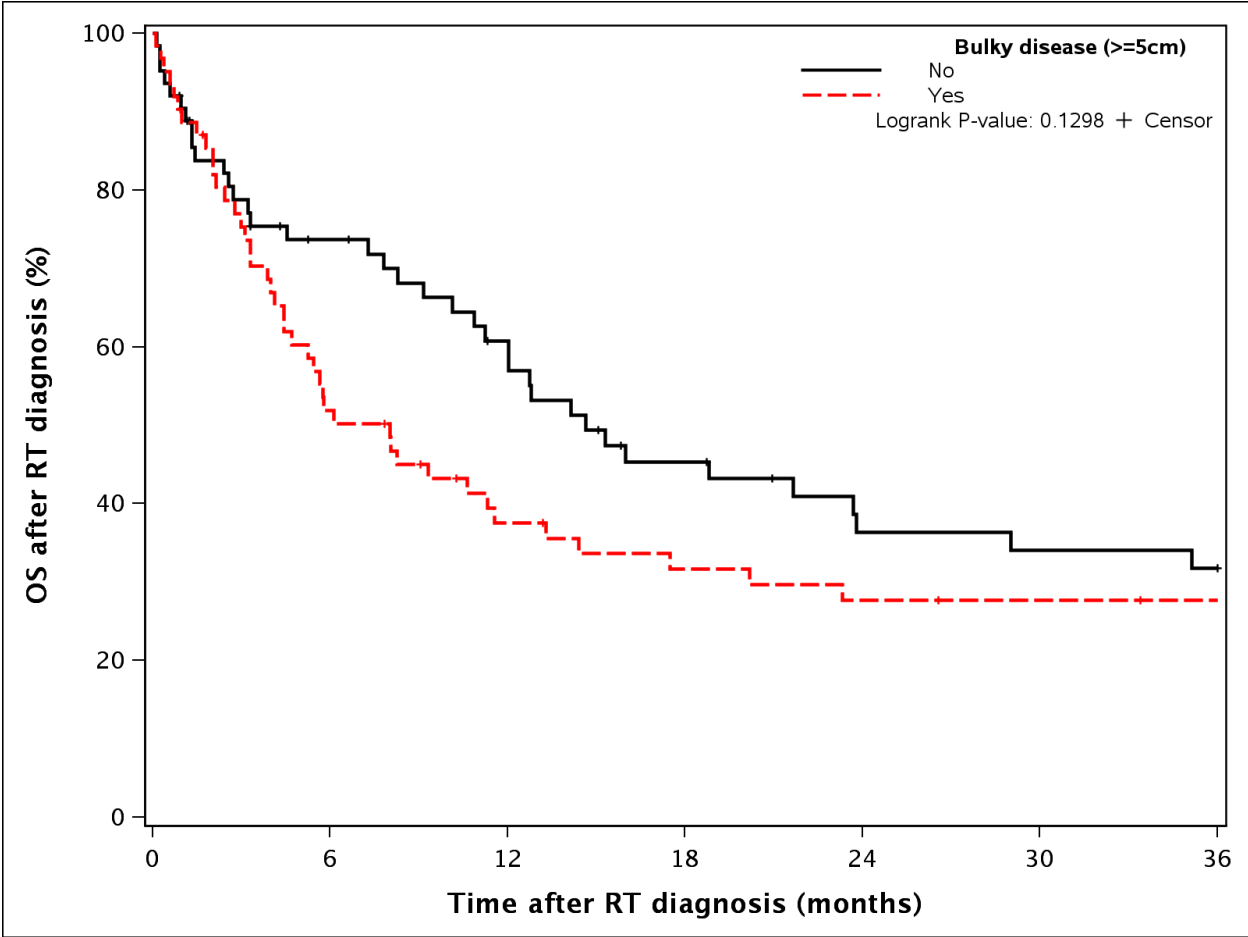
Abbreviations: CLL: chronic lymphocytic leukemia; IGHV: immunoglobulin heavy chain variable region; FISH: fluorescence in situ hybridization; IPI: international prognostic index.

**Supplemental Table 2. Clinical characteristics of the 24 RT patients who underwent stem cell transplant**

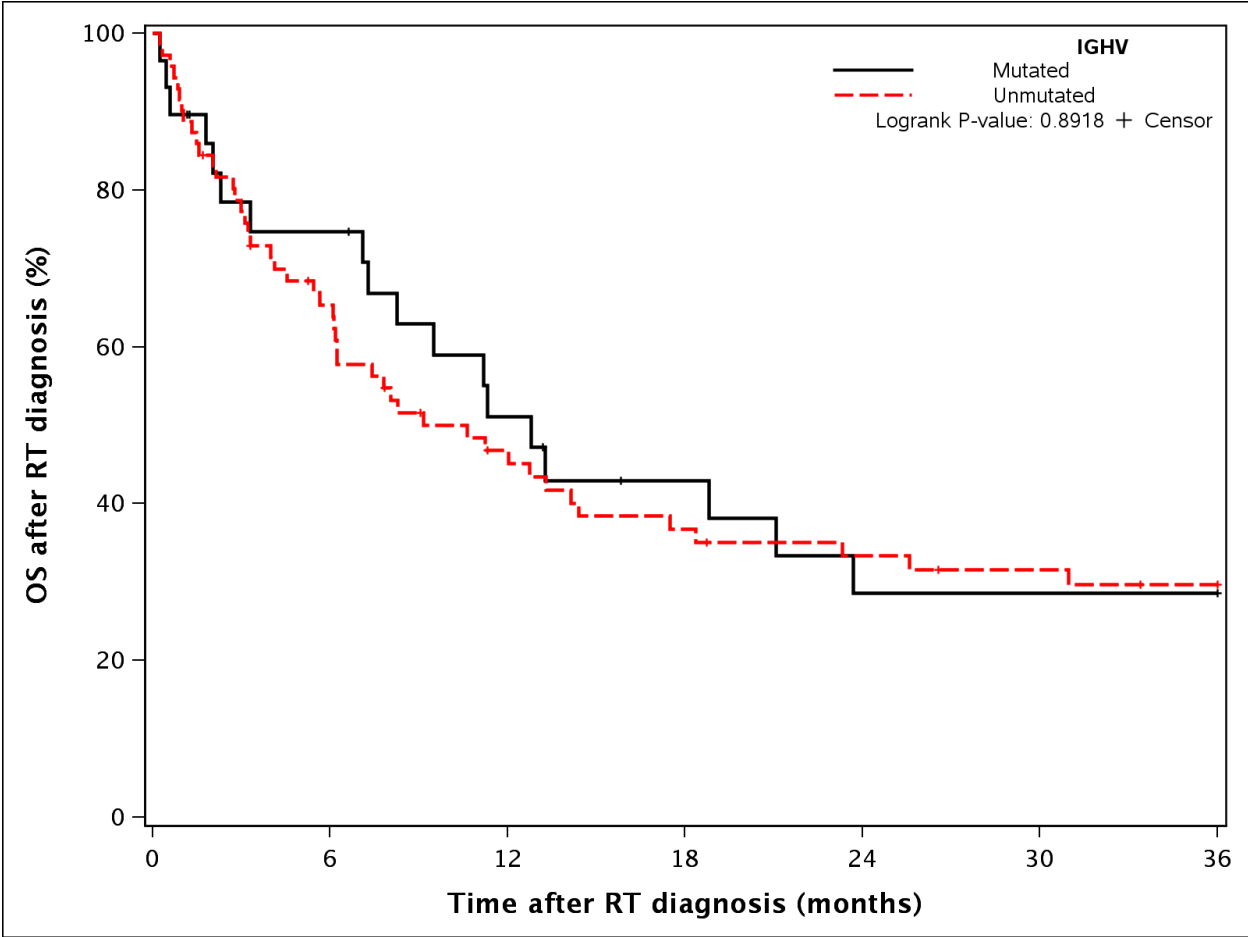
Sex	IGHV mutation	TP53 disruption	CLL treatment status before RT	All prior lines of CLL treatment	Time from CLL to RT (month)	Age at RT diagnosis	Bulky disease (>5 cm)	LDH	All lines of RT treatment	SCT	SCT type	Vital status	OS (month)	RT to SCT (month)	Survival after SCT (month)
Male	Unmutated	Positive	Untreated	None	12.8	63	No	Normal	1. R-CHOP; 2. Fludarabine+TBI/AlloSCT (MUD)	Yes	Allogeneic	Alive	105.1	4.6	100.6
Male	Unmutated	Negative	Untreated	None	0.0	41	Yes	Normal	1. R-CHOP; 2. R-ICE; 3. R-Bendamustine; 4. BEAM/ASCT; 5. R-DHAP; 6. Pembrolizumab; 7. R-GVP+XRT; 8. R-Bendamustine; 9. R-BCVPP+XRT; 10. R-BCVPP+XRT	Yes	Autologous	Dead	80.5	14.2	66.3
Female			Untreated	None	0.6	46	Yes	Elevated	1. CDE; 2. DHAP; 3. BEAC/ASCT; 4. Rituxan	Yes	Autologous	Dead	66.8	14.0	52.8
Male			Untreated	None	0.0	68		Elevated	1. R-CHOP; 2. R-ICE; 3. BEAM/ASCT; 4. R-GVD; 5. Ibrutinib; 6. Obinutuzumab+ Bendamustine; 7. Zanubrutinib; 8. Idelalisib; 9. Venetoclax	Yes	Autologous	Alive	63.1	15.5	47.5
Male			Untreated	None	1.1	64	No	Normal	1. MRT; 2. BCNU+Thiotepa/ASCT	Yes	Autologous	Alive	50.7	5.2	45.6
Female	Mutated	Negative	Untreated	None	4.3	73		Normal	1. MRT; 2. BCNU+Thiotepa/ASCT	Yes	Autologous	Alive	48.1	5.3	42.7
Female	Unmutated	Negative	Untreated	None	49.0	47	Yes	Elevated	1. R-EPOCH; 2. BEAM/ASCT	Yes	Autologous	Alive	43.2	3.7	39.5
Male		Negative	Untreated	None	0.0	70	No	Normal	1. MR-CHOP; 2. RICE; 3. BEAM/ASCT; 4. MRT; 5. MRT	Yes	Autologous	Dead	72.1	36.7	35.4
Male		Positive	Untreated	None	0.4	72	No	Elevated	1. R-CHOP; 2. BEAM/ASCT;	Yes	Autologous	Dead	23.8	5.7	18.0
Male	Mutated	Negative	Untreated	None	101.0	70	No	Normal	1. R-HD MTX; 2. BCNU+Thiotepa/ASCT	Yes	Autologous	Alive	15.8	9.2	6.6
Male			Treated	1. R-CVP	45.3	69	No		1. R-CHOP; 2. XRT; 3. R-CEOP; 4. XRT; 5. XRT; 6. R-ICE; 7. BEAM/ASCT	Yes	Autologous	Dead	107.4	32.4	75.0
Male		Negative	Treated	1. Fludarabine+Ritxuan; 2. R-CVP	90.1	62	No	Normal	1. R-CHOP; 2. R-ICE; 3. BEAM/ASCT	Yes	Autologous	Alive	70.1	9.8	60.3
Female			Treated	1. Cytoxan+Prednison; 2. CHOP; 3. Ritxuan; 4. Iodine-131 tositumomab	127.5	66		Elevated	1. DHAP; 2. R-EPOCH; 3. BEAM/ASCT	Yes	Autologous	Dead	62.4	7.0	55.4

Male	Mutated	Negative	Treated	1. CHOP; 2. Rituxan; 3. Rituxan; 4. PAR	309.9	73	No	Elevated	1. R-ICE; 2. BEAM/ASCT	Yes	Autologous	Alive	48.0	3.3	44.7
Female		Positive	Treated	1. R-CHOP; 2. Zevalin; 3. FCR	66.1	50	No	Elevated	1. ESHAP; 2. RICE; 3. BEAM/ASCT	Yes	Autologous	Dead	35.1	5.0	30.1
Male	Unmutated	Negative	Treated	1. FCR	42.0	52		Normal	1. R-CHOP; 2. BEAM/ASCT; 3. Everolimu/Panobinostat; 4. R-Bendamustine	Yes	Autologous	Dead	30.9	5.9	25.0
Female			Treated	1. FCR	113.1	62			1. R-CHOP; 2. BEAM/ASCT	Yes	Autologous	Alive	19.4	7.0	12.4
Male		Positive	Treated	1. Fludarabine+Ritxuan; 2. R-Bendamustine; 3. R-Bendamustine; 4. Ibrutinib	75.7	52			1. R-CHOP; 2. Fludarabine+TBI/AlloSCT (MUD)	Yes	Allogeneic	Alive	20.5	8.4	12.2
Male	Unmutated	Positive	Treated	1. PCR; 2. R-Medrol; 3. Rituxan; 4. Ibrutinib	169.5	59	Yes	Elevated	1. Pembrolizumab; 2. Pembrolizumab+Ibrutinib; 3. Ibrutinib+Venetoclax; 4. Fludarabine+TBI/AlloSCT (matched related)	Yes	Allogeneic	Alive	26.5	18.7	7.8
Female	Unmutated	Negative	Treated	1. PCR; 2. R-Medrol	15.0	64	No	Elevated	1. R-CHOP; 2. R-ICE; 3. BEAM/ASCT; 4. R-Medrol	Yes	Autologous	Dead	11.2	6.8	4.5
Male	Unmutated	Positive	Treated	1. CFAR; 2. CFAR; 3. Ofutumumab+Medrol; 4. Ibrutinib	88.5	57	No	Elevated	1. R-CHOP; 2. Pembrolizumab; 3. Ibrutinib; 4. Ibrutinib+Venetoclax; 5. Fludarabine+TBI/AlloSCT (MUD)	Yes	Allogeneic	Alive	46.8	42.3	4.5
Male			Treated	1. R-Bendamustine; 2. CVP; 3. R-Bendamustine; 4. Ibrutinib	28.8	50			1. Obinutuzumab-EPOCH; 2. Obinutuzumab-DHAP; 3. BEAM/ASCT; 4. Bendamustine	Yes	Autologous	Dead	10.7	6.8	4.0
Female			Treated	1. CHOP; 2. Fludarabine; 3. FCR; 4. R-Bendamustine	51.7	62	Yes	Elevated	1. R-CHOP; 2. Cytarabine+Thiotepa; 3. R-ICE; 4. BEAM/ASCT	Yes	Autologous	Dead	9.3	5.8	3.5
Male			Treated	1. FCR	19.0	51	No	Elevated	1. R-CHOP; 2. BEAM/ASCT	Yes	Autologous	Alive	7.6	4.3	3.3

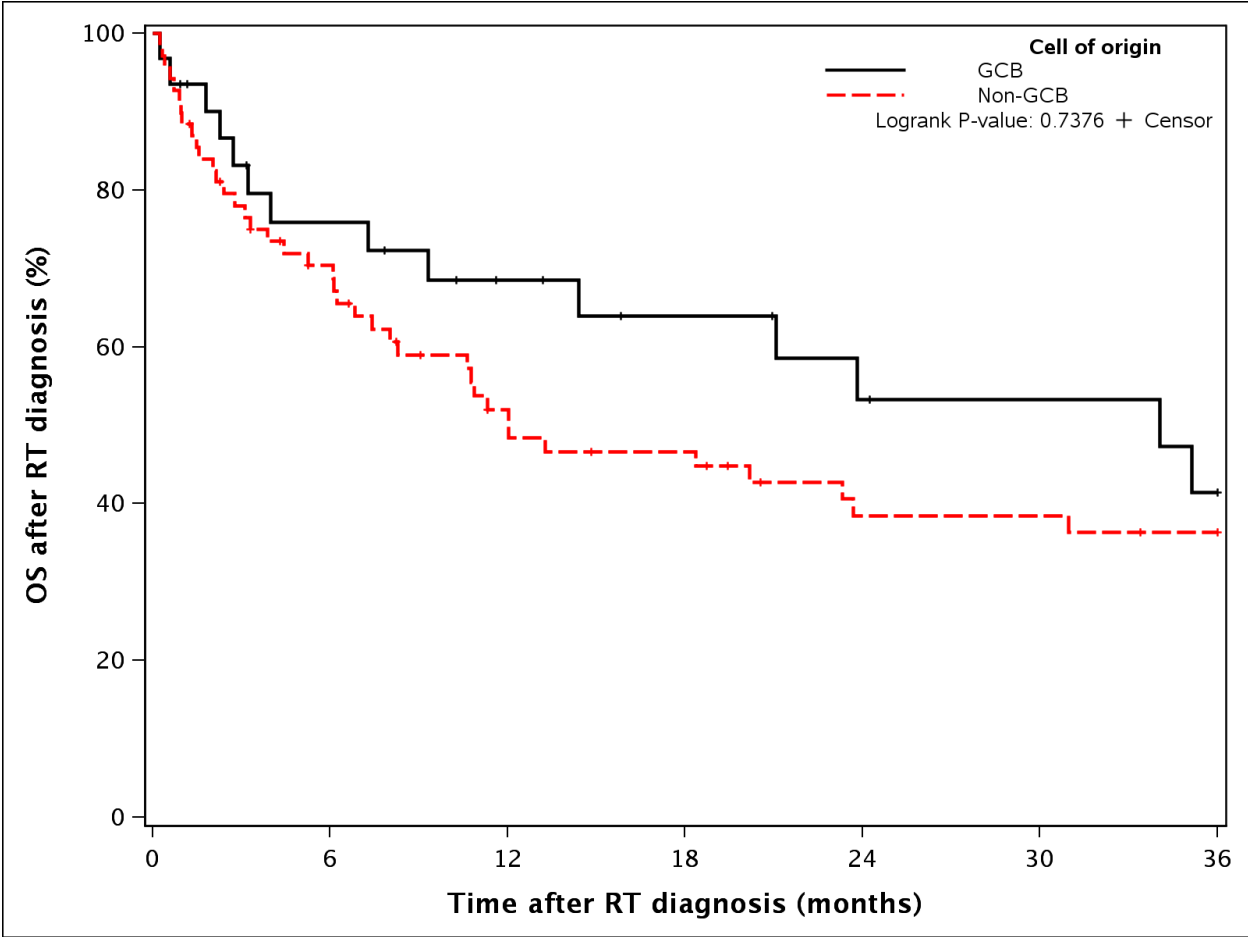
**Supplemental Figure S1. OS after RT diagnosis in patients with bulky vs non-bulky disease at the time of RT diagnosis**



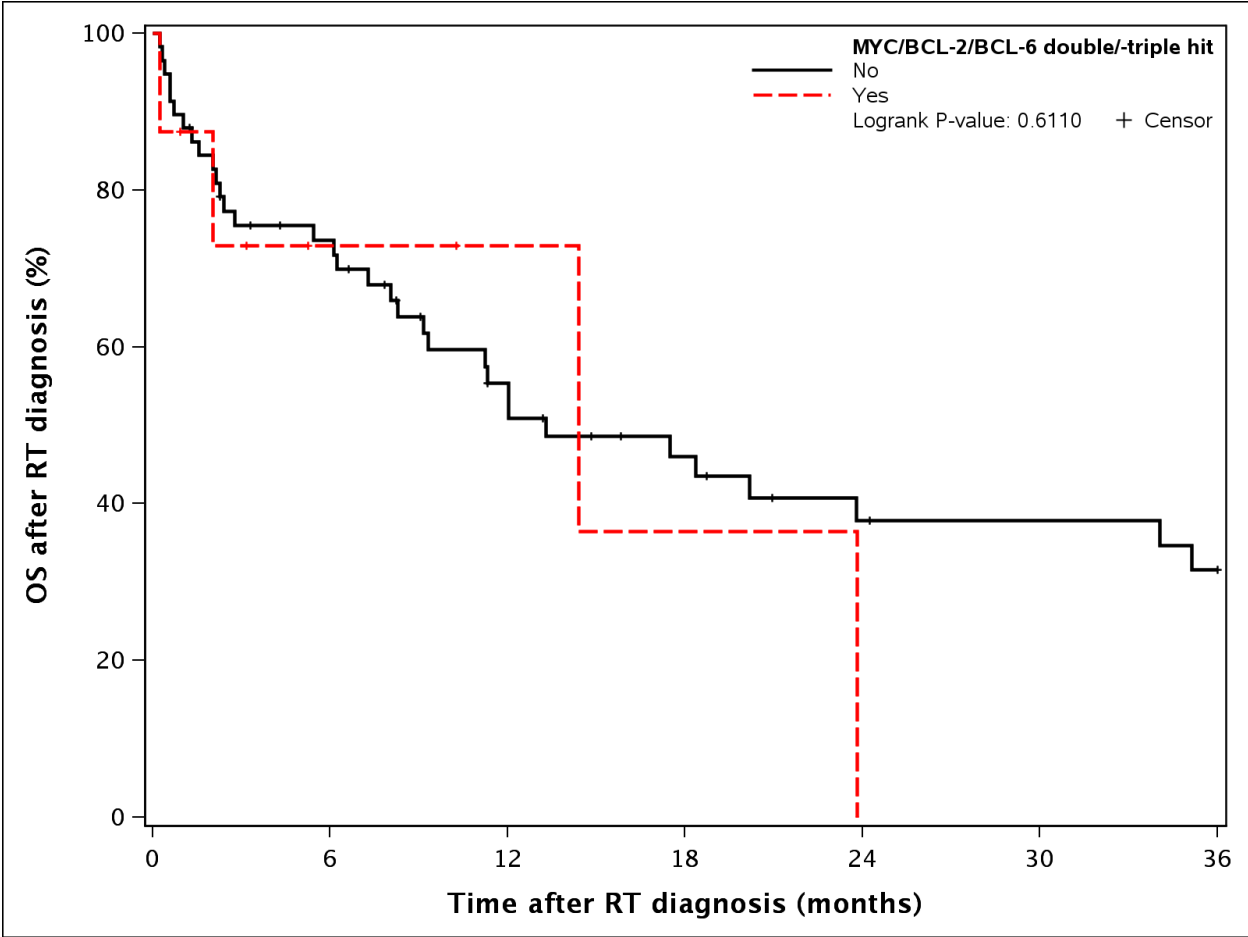
Supplemental Figure S2. OS after RT diagnosis by CLL IGHV mutation status



Supplemental Figure S3. OS after RT diagnosis by cell of origin of the transformed lymphoma

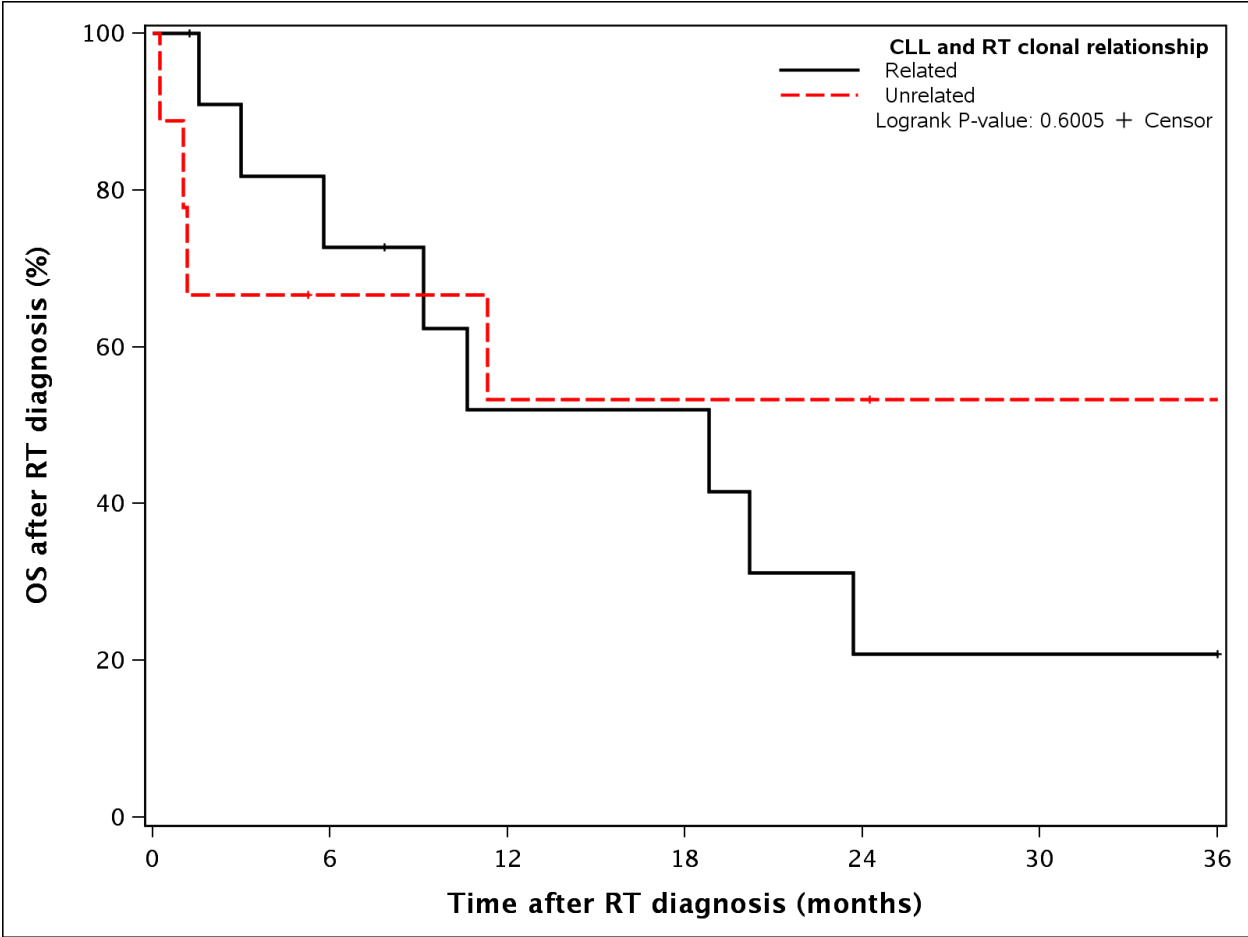


**Supplemental Figure S4. OS after RT diagnosis by double-/triple-hit status of the transformed lymphoma**





Supplemental Figure S5. OS after RT by CLL and RT clonal relationship



Supplemental Figure S6. OS after RT diagnosis by first-line RT treatment regimen

