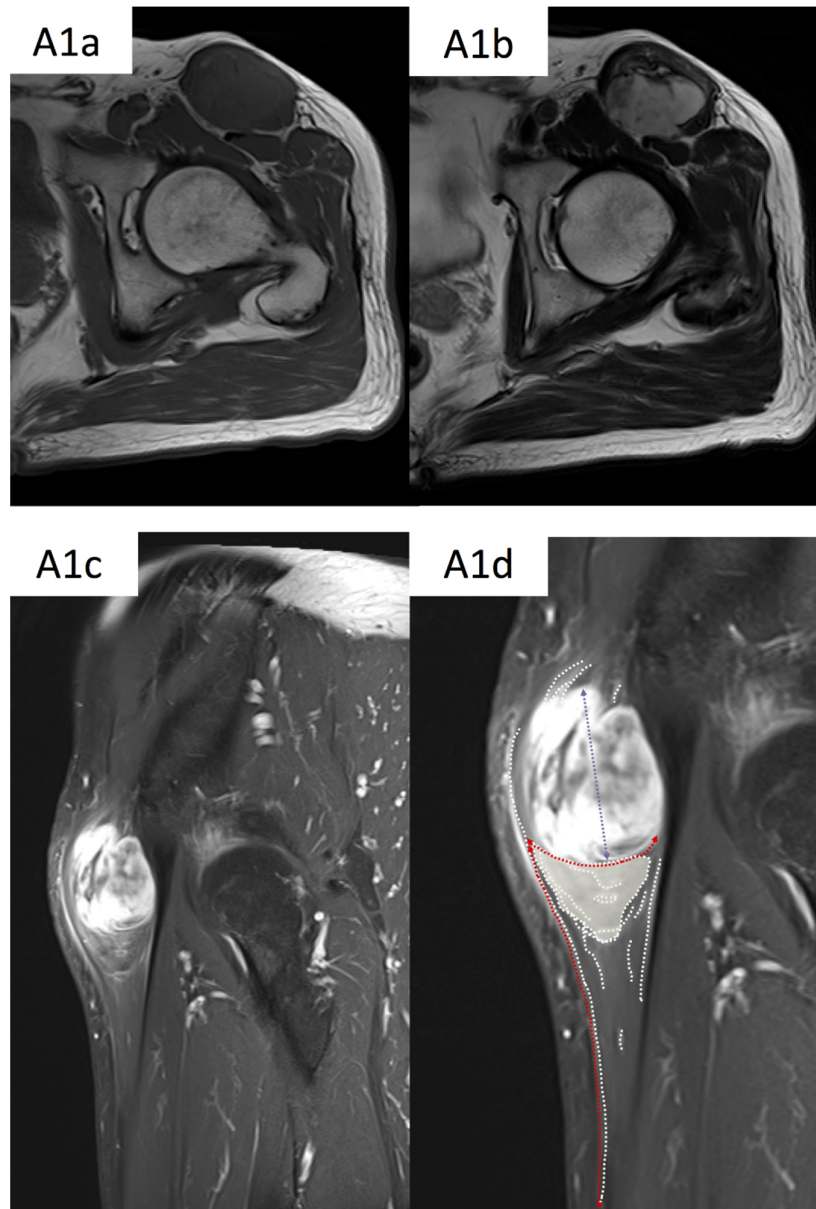


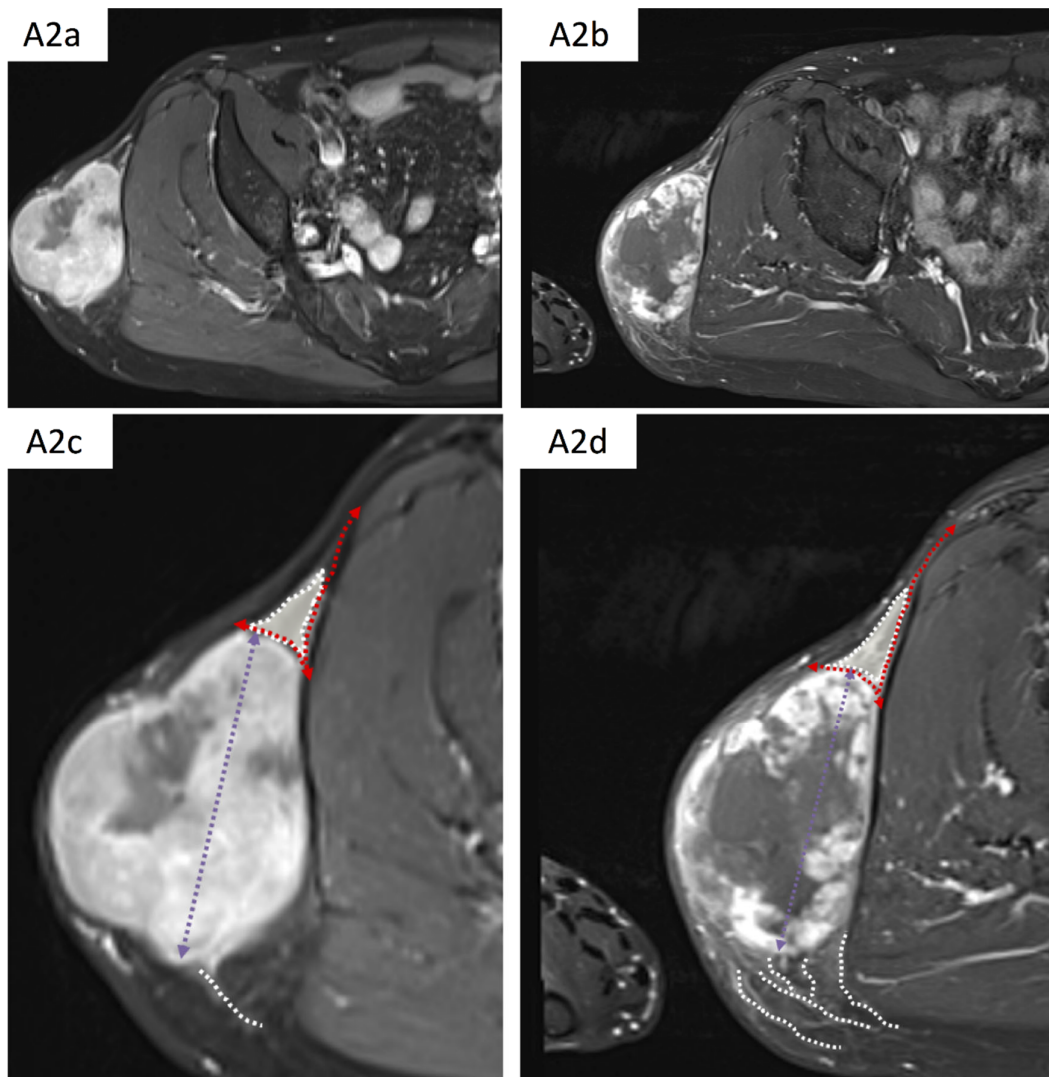
## Supplementary Materials

### Effect of Neoadjuvant Therapies on Soft Tissue Sarcomas with Tail-Like Lesions: A Multicenter Retrospective Study

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**Figure S1.** Representative case and the method of measuring the tail-like lesion (deeply located lesion, 65-year-old, male, myxofibrosarcoma, sartorius muscle).



**Figure 2.** Representative case and the method of measuring the tail-like lesion (superficially located lesion, 59-year-old, male, undifferentiated pleomorphic sarcoma, buttocks).

**Table S1.** Univariate and multivariate analyses of response to neoadjuvant therapy.

Characteristics (N = 36).		PR (/n)	Univariate <sup>1</sup>	Multivariate <sup>2</sup>
Histology	UPS	1 (/11)	p = 0.21	p = 0.54
	MFS	3 (/13)		
	SS	0 (/4)		
	DDL	2 (/4)		
	Others	2 (/4)		
Length	<5 cm	1 (/7)	p = 0.78	NA
	5–10 cm	5 (/20)		
	>10 cm	2 (/8)		
Location	Lower extremity	5 (/30)	p = 0.03	p = 0.26 <sup>3</sup>
	Upper extremity	0 (/3)		
	Trunk	3 (/3)		
Sex	Male	4 (/21)	p = 0.56	NA
	Female	4 (/15)		
Lesion status	Primary	7 (/33)	p = 0.63	NA
	Recurrence	1 (/3)		
FNCLCC grade	Grade 2	1 (/4)	p = 0.89	NA
	Grade 3	7 (/32)		
Biopsy method	Needle	3 (/14)	p = 0.93	NA
	Open	5 (/22)		
Depth	Superficial	2 (/13)	p = 0.46	NA
	Deep	6 (/23)		
Neoadjuvant therapy	RT	0 (/3)	p = 0.56	NA
	Cx	6 (/19)		
	RT + Cx	2 (/14)		

<sup>1</sup> Chi-squared analysis; <sup>2</sup> multiple logistic regression analysis; <sup>3</sup> analyzed using dummy variables to differentiate between patients with and without lower extremity location. UPS, undifferentiated pleomorphic sarcoma; MFS, myxofibrosarcoma; SS, synovial sarcoma; DDL, de-differentiated liposarcoma; FNCLCC, French Federation of Cancer Centers; RT, radiotherapy; Cx, chemotherapy; NA, not analyzed.

**Table S2.** Univariate and multivariate analyses of the disappearance of tail-like lesions.

Characteristics (N = 36)		Disappearance of tail-like lesion (/n)	Univariate <sup>1</sup>	Multivariate <sup>2</sup>
Histology	UPS	2 (/11)	p = 0.32	NA
	MFS	5 (/13)		
	SS	1 (/4)		
	DDL	1 (/4)		
	Others	1 (/4)		
Length	<5 cm	1 (/7)	p = 0.36	NA
	5–10 cm	8 (/20)		
	>10 cm	3 (/8)		
Location	Lower extremity	8 (/30)	p = 0.04	p = 0.06 <sup>3</sup>
	Upper extremity	1 (/3)		
	Trunk	3 (/3)		
Sex	Male	8 (/21)	p = 0.56	NA
	Female	4 (/15)		
Lesion status	Primary	12 (/33)	p = 0.20	p = 0.20
	Recurrence	0 (/3)		
FNCLCC grade	Grade 2	1 (/4)	p = 0.71	NA
	Grade 3	11 (/32)		
Biopsy method	Needle	5 (/14)	p = 0.81	NA
	Open	7 (/22)		
Depth	Superficial	3 (/13)	p = 0.33	NA
	Deep	9 (/23)		
Neoadjuvant therapy	RT	0 (/3)	p = 0.32	NA
	Cx	8 (/19)		
	RT + Cx	4 (/14)		

<sup>1</sup> Chi-squared test; <sup>2</sup> multiple logistic regression analysis; <sup>3</sup> analyzed using dummy variables to differentiate between patients with and without lower extremity location. UPS, undifferentiated pleomorphic sarcoma; MFS, myxofibrosarcoma; SS, synovial sarcoma; DDL, dedifferentiated liposarcoma; FNCLCC, French Federation of Cancer Centers; RT, radiotherapy; Cx, chemotherapy; NA, not analyzed.

**Table S3.** Univariate and multivariate analyses of achievement of R0 resection.

Characteristics (N = 36)		R0 resection (/n)	Univariate <sup>1</sup>	Multivariate <sup>2</sup>
Histology	UPS	7 (/11)	p = 0.20	p = 0.40
	MFS	8 (/13)		
	SS	4 (/4)		
	DDL	4 (/4)		
	Others	4 (/4)		
Length	<5 cm	5 (/8)	p = 0.63	NA
	5–10 cm	4 (/20)		
	>10 cm	2 (/8)		
Location	Lower extremity	23(/30)	p = 0.15	p = 0.16 <sup>3</sup>
	Upper extremity	1 (/3)		
	Trunk	3 (/3)		
Sex	Male	14 (/21)	p = 0.56	NA
	Female	13 (/15)		
Lesion status	Primary	25(/33)	p = 0.73	NA
	Recurrence	2 (/3)		
FNCLCC grade	Grade 2	2 (/4)	p = 0.22	p = 0.57
	Grade 3	25 (/32)		
Biopsy method	Needle	10 (/14)	p = 0.69	NA
	Open	17 (/22)		
Depth	Superficial	9 (/13)	p = 0.55	NA
	Deep	18 (/23)		
Neoadjuvant therapy	RT	2 (/3)	p = 0.01	p = 0.06 <sup>4</sup>
	Cx	18 (/19)		
	RT + Cx	7 (/14)		
Histological response	G1	11 (/15)	p = 0.63	NA
	G2	9 (/13)		
	G3+4	7 (/8)		
RECIST1.1	SD + PD	19 (/28)	p = 0.06	p = 0.09
	PR	8 (/8)		
Disappearance of tail-like lesion	Yes	9 (/12)	p = 1.0	NA
	No	18 (/24)		
Skin reconstruction	Yes	9 (/14)	p = 0.24	p = 0.26
	No	18 (/22)		
Prosthesis use	Yes	2 (/2)	p = 0.40	NA
	No	25 (/34)		
Manipulation of major AVN	Yes	15 (/22)	p = 0.24	p = 0.13
	No	12 (/14)		

<sup>1</sup> Chi-squared test; <sup>2</sup> multiple logistic regression analysis; <sup>3</sup> analyzed using dummy variables to differentiate between patients with or without lower extremity location. <sup>4</sup> analyzed using dummy variables to differentiate between patients with and without chemoradiotherapy. UPS, undifferentiated pleomorphic sarcoma; MFS, myxofibrosarcoma; SS, synovial sarcoma; DDL, dedifferentiated liposarcoma; FNCLCC, French Federation of Cancer Centers; RT, radiotherapy; Cx, chemotherapy; SD, stable disease; PD, progressive disease; PR, partial response; NA, not analyzed.

Table S4. Univariate analysis of oncologic outcomes.

Characteristics (N = 36)		Univariate <sup>1</sup>	P-value
Sex (male > female)	OS	HR = 0.50, 0.12–2.0	p = 0.332
	L-RFS	HR = 1.03, 0.09–11.49	p = 0.978
	D-RFS	HR = 0.49, 0.16–1.48	p = 0.208
FNCLCC grade (grade 2 > 3)	OS	HR = 0.96, 0.12–7.84	p = 0.971
	L-RFS	HR = 0.04, not calculated	p = 0.667
	D-RFS	HR = 0.76, 0.17–3.49	p = 0.743
Depth (superficial > deep)	OS	HR = 0.84, 0.20–3.55	p = 0.813
	L-RFS	HR = 0.69, 0.06–7.63	p = 0.761
	D-RFS	HR = 1.02, 0.07–1.52	p = 0.970
Histological response(grade 3+4 > 1+2)	OS	HR = 0.03, 0.00–32.70	p = 0.331
	L-RFS	HR = 0.02, 0.00–240.53	p = 0.413
	D-RFS	HR = 0.23, 0.03–1.75	p = 0.153
RECIST 1.1 (PR > SD + PD)	OS	HR = 0.38, 0.12–1.23	p = 0.106
	L-RFS	HR = 0.55, 0.05–6.13	p = 0.627
	D-RFS	HR = 0.03, 0.08–6.11	p = 0.198
Disappearance of tail-like lesion (yes > no)	OS	HR = 0.64, 0.13–3.20	p = 0.590
	L-RFS	HR = 1.01, 0.09–11.22	p = 0.992
	D-RFS	HR = 0.34, 0.07–1.52	p = 0.158
Margin status (R0 > R1)	OS	HR = 0.69, 0.16–2.97	p = 0.624
	L-RFS	HR = 0.79, 0.07–8.78	p = 0.847
	D-RFS	HR = 1.24, 0.34–4.51	p = 0.743

<sup>1</sup> Log-rank analysis. Although multiple logistic regression analysis was performed, there were no statistically significant differences. The range indicates the 95% confidence interval of the hazard ratio. HR, hazard ratio; OS, overall survival; L-RFS, local relapse-free survival; D-RFS, distant relapse-free survival; FNCLCC, French Federation of Cancer Centers; SD, stable disease; PD, progressive disease; PR, partial response.

**Table S5.** Basic characteristics of the patients with or without neoadjuvant therapy.

Characteristics		With Neoadjuvant Therapy (n = 24)	Without Neoadjuvant Therapy (n = 24)	P-value
Histology	UPS	11	8	p = 0.376 <sup>1</sup>
	MFS	13	16	
Neoadjuvant therapy	RT	3	0	NA
	Cx	8		
	RT + Cx	13		
Age at diagnosis (mean, SD)		61.8, 10.5	70.8, 14.0	p = 0.014 <sup>2</sup>
Tumor length (median, IQR)		76.0, 37.5-113.3	48.0, 34.0-78.0	p = 0.071 <sup>2</sup>
Tail-like lesion's length (median, IQR)		30.0, 24.5-48.3	21.5, 18.0-35.0	p = 0.014 <sup>2</sup>
Tail-like lesion's thickness (median, IQR)		6.5, 2.2-8.8	4.0, 4.0-11.5	p = 0.076 <sup>2</sup>
Location	Lower extremity	20	11	p = 0.024 <sup>1</sup>
	Upper extremity	2	8	
	Trunk	2	5	
Sex	Male	16	14	p = 0.551 <sup>1</sup>
	Female	8	10	
Lesion status	Primary	22	22	p = 1.0 <sup>1</sup>
	Recurrence	2	2	
FNCLCC grade	Grade 1	0	7	p = 0.015 <sup>1</sup>
	Grade 2	4	2	
	Grade 3	20	15	
Biopsy method	Needle	12	15	p = 0.344 <sup>1</sup>
	Open	12	9	
Depth	Superficial	9	15	p = 0.083 <sup>1</sup>
	Deep	15	9	
Surgical margin	R0	15	14	p = 0.768 <sup>1</sup>
	R1	9	10	
Adjuvant therapy	Yes	3	12	p = 0.005
	No	21	12	

<sup>1</sup> Chi-squared test; <sup>2</sup> Mann-Whitney U test. UPS, undifferentiated pleomorphic sarcoma; MFS, myxofibrosarcoma; SD, standard deviation; IQR, interquartile range; FNCLCC, French Federation of Cancer Centers; RT, radiotherapy; Cx, chemotherapy; NA, not analyzed.