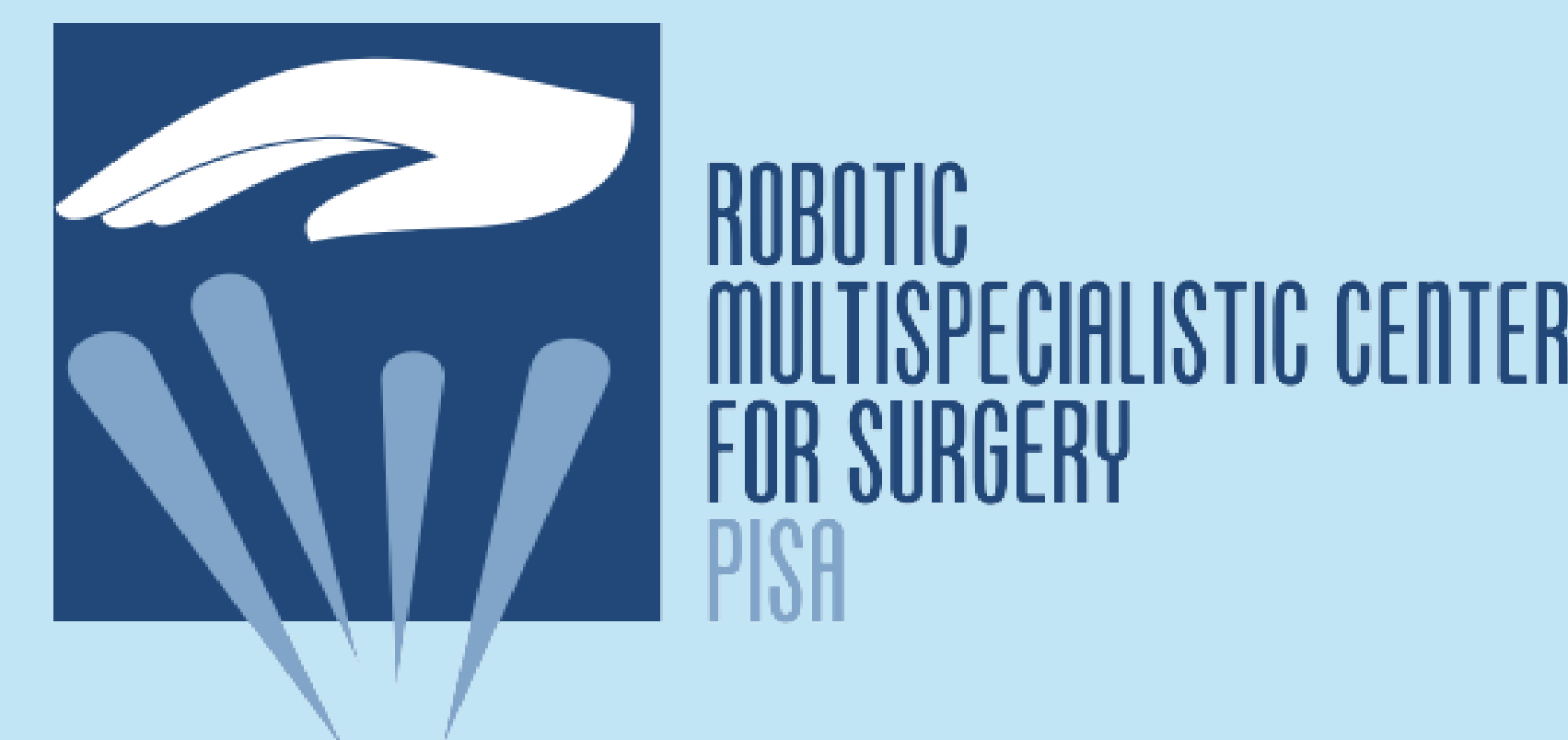




THE ROLE OF LYMPHADENECTOMY IN CLINICAL STAGE I NSCLC: COMPARISON OF ROBOTIC AND OPEN APPROACH

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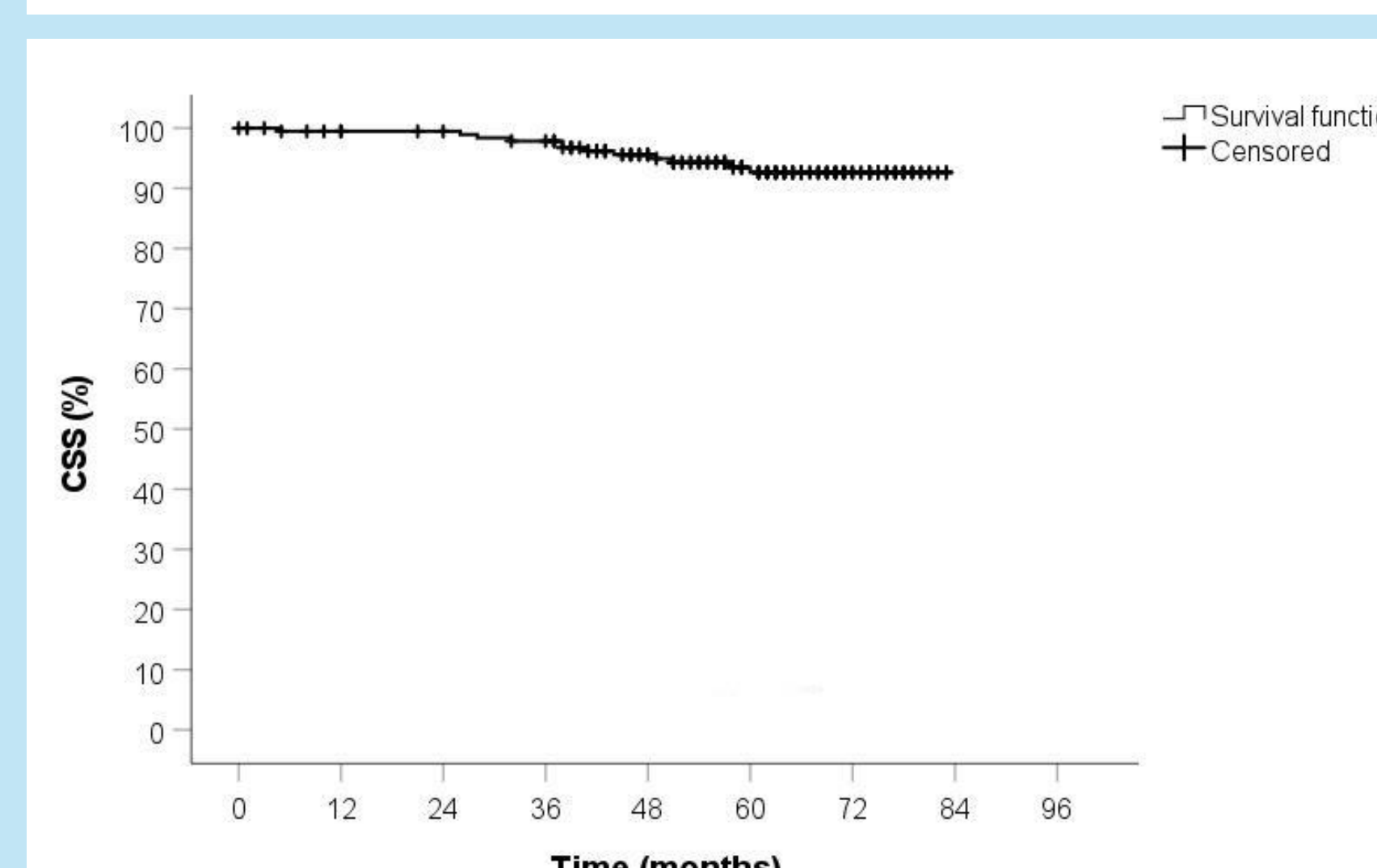
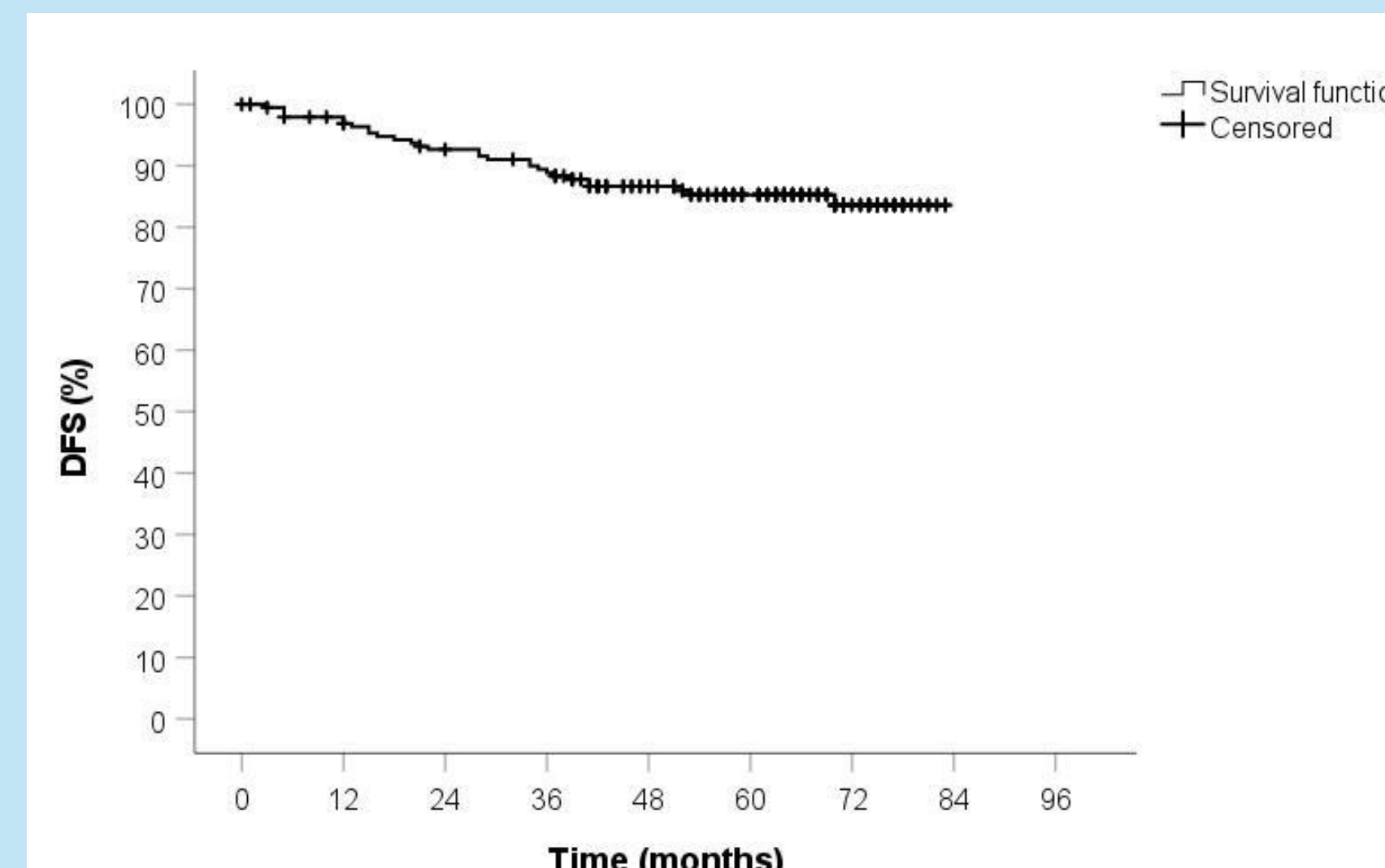
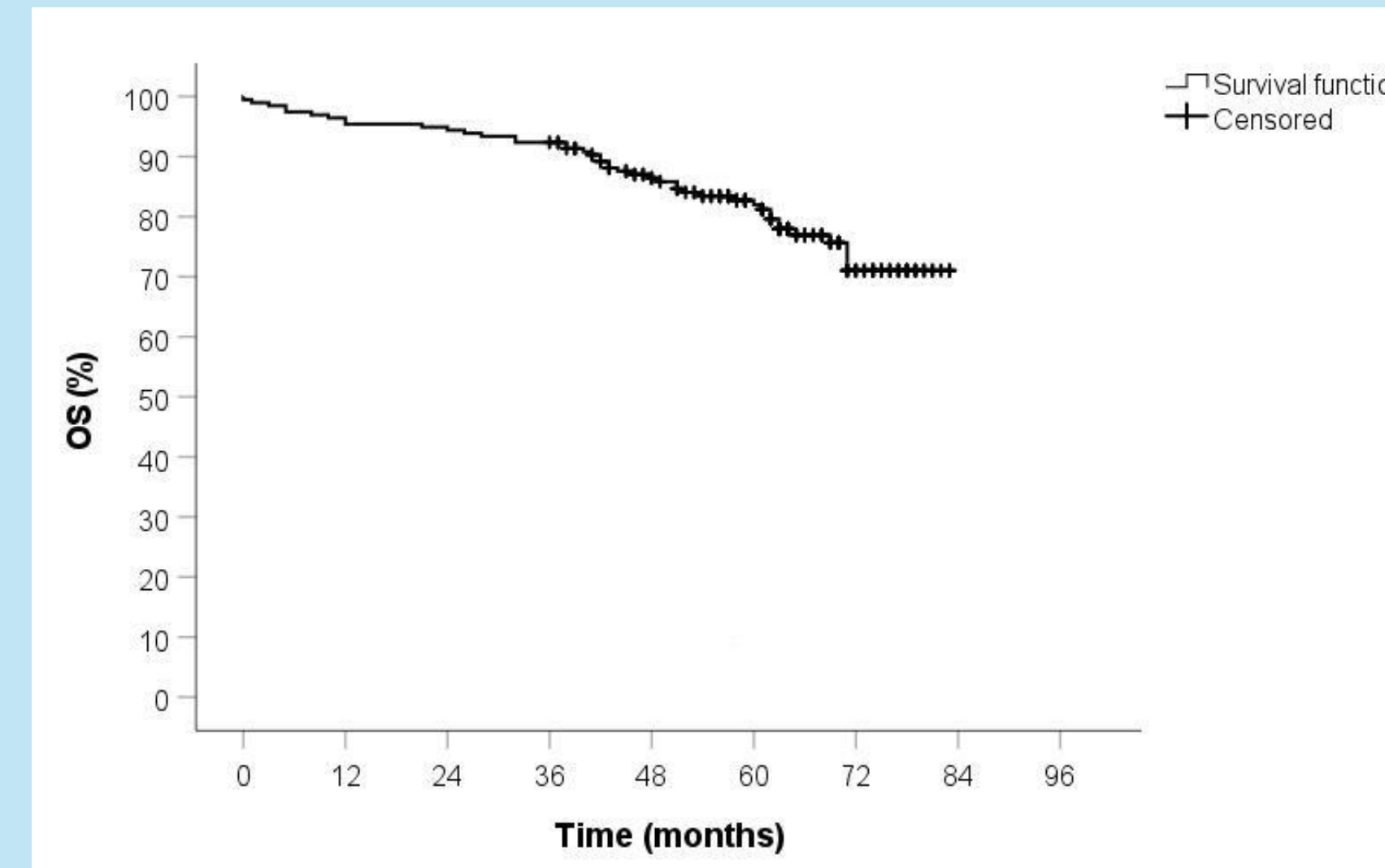
Objective: This study aims to compare lymphadenectomy between thoracotomy and robotic approaches and to analyze the role of lymph node dissection on survival and recurrence in patients undergoing lobectomy with lymphadenectomy for clinical stage I NSCLC.

Methods: Data from all patients who underwent lobectomy and lymphadenectomy by robotic or open surgery for stage cI NSCLC between 2016 and 2019 were retrospectively collected and analysed. Preoperative and intraoperative outcomes and details regarding lymphadenectomy and their impact on OS, CSS, and DFS were assessed.

Cross Table for Dependent 'Surgical Technique'. Statistics: n (%); Median (IQR)			
Characteristics	Open N = 55	RATS N = 142	p-value ²
Gender			0.028
Age	69 (65, 73)	68 (61, 75)	0.68
History of smoking			0.17
ASA risk class			0.061
BMI	25.9 (23.9, 29.2)	25.8 (23.6, 28.8)	0.55
FEV1	2.07 (1.65, 2.54)	2.09 (1.64, 2.68)	0.86
IT	0.73 (0.64, 0.78)	0.75 (0.69, 0.80)	0.070
CDCC score	5 (3, 5)	5 (3, 6)	0.66
Post-operative complications:			
Yes	17 (31%)	28 (20%)	0.093
Prolonged air leak: Yes	6 (11%)	20 (14%)	0.55
Anemization with transfusion: Yes	5 (9.1%)	3 (2.1%)	0.040
Atrial fibrillation: Yes	3 (5.5%)	7 (4.9%)	>0.99
Clavien-Dindo complication grade			0.11
Chest drain duration (days)	4 (4, 5)	3 (3, 5)	<0.001
Hospital stay (days)	6 (5, 8)	5 (4, 7)	0.007
Histology			0.12
Tumor dimension (mm)	20 (16, 28)	20 (15, 27)	0.50
pStage			0.66
Visceral pleura invasion : Yes	15 (27%)	35 (25%)	0.70
Type of lobectomy			0.91
Surgical time (min)	105 (90, 140)	205 (170, 244)	<0.001
2 Pearson's Chi-squared test; Wilcoxon rank sum test; Fisher's exact test			

Cross Table for Dependent 'Surgical Technique'. Statistics: n (%); Mean (SD)			
	Open N = 55	RATS N = 142	p value
*Mean number			0.144 ¹
*Lymph nodes			
Mean (SD)	13.8 (6.8)	12.2 (6.6)	
Range	3.0 - 33.0	1.0 - 35.0	
*Lymph nodes stations			0.076 ¹
Mean (SD)	4.2 (1.3)	4.5 (1.2)	
Range	2.0 - 7.0	2.0 - 7.0	
*N2 lymph node stations			0.038¹
Mean (SD)	2.6 (1.1)	2.9 (1.0)	
Range	1.0 - 5.0	1.0 - 5.0	
1 N2 station			0.006²
No	43.0 (78.2%)	131.0 (92.3%)	
Yes	12.0 (21.8%)	11.0 (7.7%)	
*N1 lymph node stations			0.857 ¹
Mean (SD)	1.6 (0.5)	1.6 (0.6)	
Range	1.0 - 3.0	0.0 - 3.0	
N2 ≥3			0.119 ²
No	26.0 (47.3%)	50.0 (35.2%)	
Yes	29.0 (52.7%)	92.0 (64.8%)	
1. Linear Model ANOVA; 2. Pearson's Chi-squared test			

Results: During this period, 197 patients underwent pulmonary lobectomy and lymphadenectomy using robotic (72%) or open (28%) techniques. The results of lymphadenectomy were comparable between the two groups. Perioperative outcomes showed statistically significant longer surgical time, shorter length of stay, shorter chest tube length and fewer complications in the robotic group. The statistical analysis showed that the evaluated lymph node factors did not have a statistically significant on impact OS, CSS, and DFS in the overall cohort , at a median follow-up of 58 months.



Conclusions: The results of this study show how the robotic approach allows for a lymphadenectomy similar to the open technique, with better perioperative outcomes. Furthermore, this study suggests that systematic lymphadenectomy should not be systematically performed when accurate preoperative clinical staging leads to the identification of the early-stage NSCLC.

Lymph node factors survival analysis			
*Mean Number	RC	HR (95% CI)	p-value
Lymph node factors DFS analysis			
*Lymph nodes	-0.025	0.975 (0.914-1.040)	0.439
*Lymph node stations	-0.122	0.885 (0.648-1.209)	0.443
*N2 lymph node stations	-0.047	0.954 (0.667-1.365)	0.797
*N1 lymph node stations	-0.399	0.671 (0.341-1.320)	0.248
N2 ≥3	0.135	1.145 (0.528-2.481)	0.732
1 N2 station	0.521	1.683 (0.640-4.429)	0.291
Lymph node factors OS analysis			
*Lymph nodes	0.014	1.014 (0.968-1.062)	0.563
*Lymph node stations	-0.123	0.884 (0.687-1.137)	0.338
*N2 lymph node stations	-0.113	0.893 (0.669-1.194)	0.445
*N1 lymph node stations	-0.169	0.845 (0.476-1499)	0.564
N2 ≥3	-0.442	0.643 (0.353-1.170)	0.148
1 N2 station	0.336	1.399 (0.622-3.148)	0.417
Lymph node factors CSS analysis			
*Lymph nodes	-0.065	0.937 (0.839-1.048)	0.254
*Lymph node stations	-0.157	0.854 (0.532-1.374)	0.516
*N2 lymph node stations	-0.132	0.877 (0.508-1.514)	0.636
*N1 lymph node stations	-0.262	0.770 (0.266-2.222)	0.628
N2 ≥3	-0.154	0.857 (0.272-2702)	0.792
1 N2 station	0.396	1.486 (0.325-6.791)	0.609