

The Use of Circulating Tumor DNA to Stratify the Risk of Recurrence After Surgical Debulking in Epithelial Ovarian Cancer

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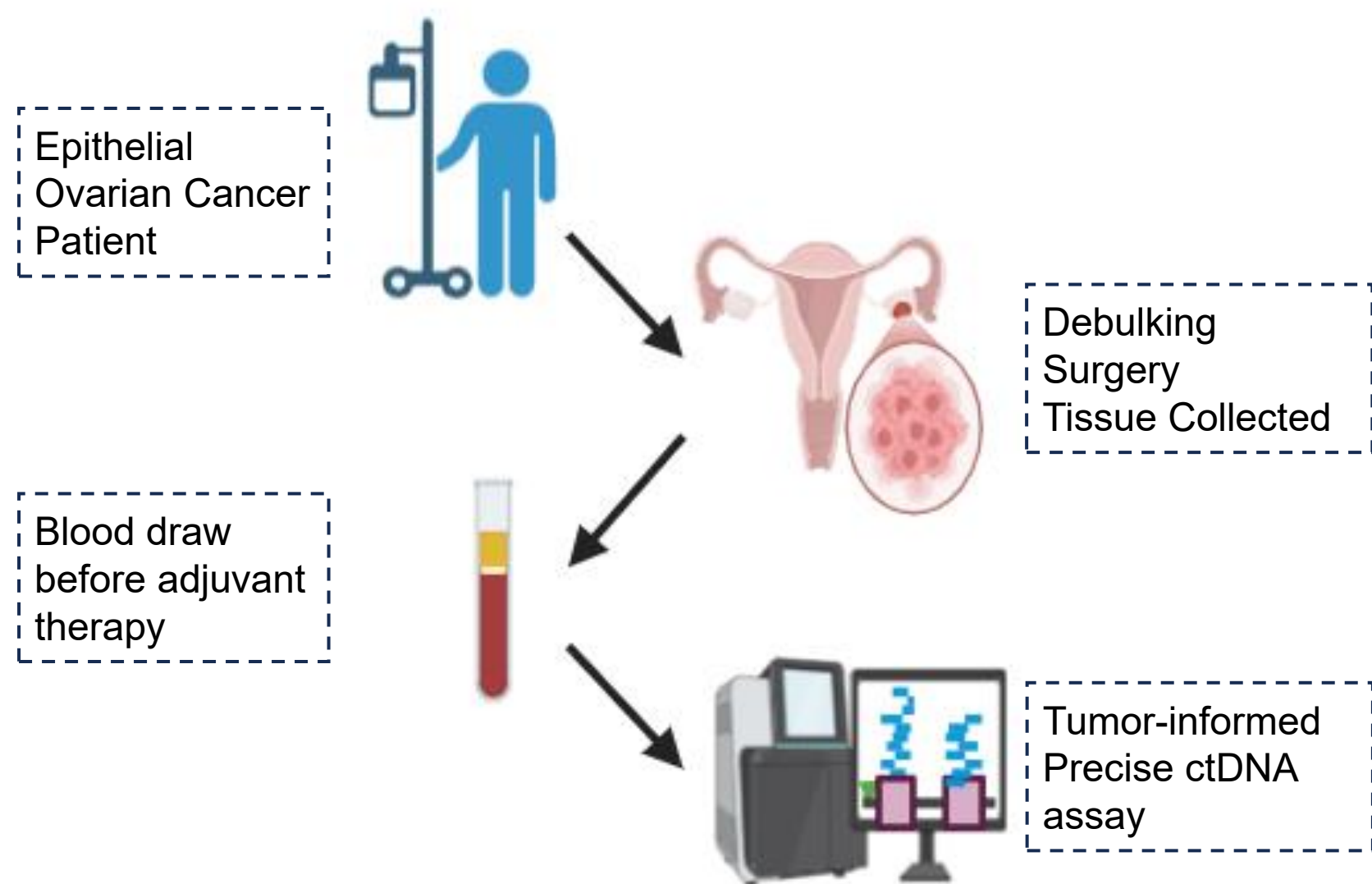
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INTRODUCTION

- Accurate risk stratification after debulking surgery in ovarian cancer remains challenging.
- Although surgical debulking status (SDS) and CA125 are standard prognostic markers, patients remain at high risk of recurrence despite optimal debulking and normalization of CA125.
- Circulating tumor DNA (ctDNA) has emerged as a sensitive biomarker for detecting molecular residual disease (MRD).
- We evaluated the prognostic value of post-surgical ctDNA compared with SDS and post-surgical CA125 in predicting recurrence.

METHODS

- In a prospectively collected cohort of ovarian cancer patients undergoing standard-of-care treatment, we evaluated 37 patients with a reportable post-surgical MRD before initiation of adjuvant chemotherapy.
- Tumor-informed, patient-specific panels created from whole genome sequencing of matched tumors and normal samples were used to assess MRD (Precise MRD, Myriad Genetics).
- Postoperative CA-125 was stratified using a standard clinical cutoff of 35 U/mL.



RESULTS

Table 1: Clinicodemographic characteristics of the ovarian cancer cohort patients by ctDNA detection status

	Overall (N=37)	ctDNA Detected (N=28)	ctDNA Not-Detected (N=9)	p value
Age, median (IQR)	67.0 (61.0-72.0)	66.0 (61.8-73.0)	69.0 (58.0-72.0)	0.986
Histology				0.011
HGSC	25 (67.6%)	22 (78.6%)	3 (33.3%)	
LGSC	3 (8.1%)	3 (1.7%)	0 (0.0%)	
Others	9 (24.3%)	6 (21.4%)	6 (66.6%)	
Grade				0.101
I	4 (10.8%)	3 (10.7%)	1 (11.1%)	
II	3 (8.1%)	1 (3.6%)	2 (22.2%)	
III	30 (81.1%)	24 (85.7%)	6 (66.7%)	
Stage				<0.001
I/II	9 (24.3%)	2 (7.1%)	7 (77.8%)	
III/IV	28 (75.7%)	26 (92.9%)	2 (22.2%)	
Surgery Type				0.960
PDS	20 (54.1%)	13 (46.4%)	7 (77.8%)	
IDS/SDS	17 (45.9%)	15 (53.6%)	2 (22.2%)	
Debulking Status				0.952
NGR	25 (67.6%)	17 (60.7%)	8 (88.9%)	
Optimal	8 (21.6%)	7 (25.0%)	1 (11.1%)	
Suboptimal	4 (10.8%)	4 (14.3%)	0 (0.0%)	
Pre-surgery CA125	80.9 (17.2-295.2)	198.9 (32.5-385.8)	20.9 (15.2-80.9)	0.173
Post-surgery CA125	37.6 (14.2-80.5)	49.1 (16.5-103.2)	14.3 (13.7-27.0)	0.113
Post-surgery CA125				0.202
Elevated	16 (51.6%)	14 (58.3%)	2 (28.6%)	
Normal	15 (48.4%)	10 (41.7%)	5 (71.4%)	
Platinum sensitivity				0.032
Sensitive	23 (63.9%)	15 (53.6%)	8 (100.0%)	
Resistant	13 (36.1%)	13 (46.4%)	0 (0.0%)	

HGSC: High-grade serous carcinoma; LGSC: Low-grade serous carcinoma; PDS: Primary debulking surgery; IDS: Interval debulking surgery; SDS: Secondary debulking surgery; NGR: No gross residual disease

Figure 1: PFS and OS by post-surgical ctDNA Status

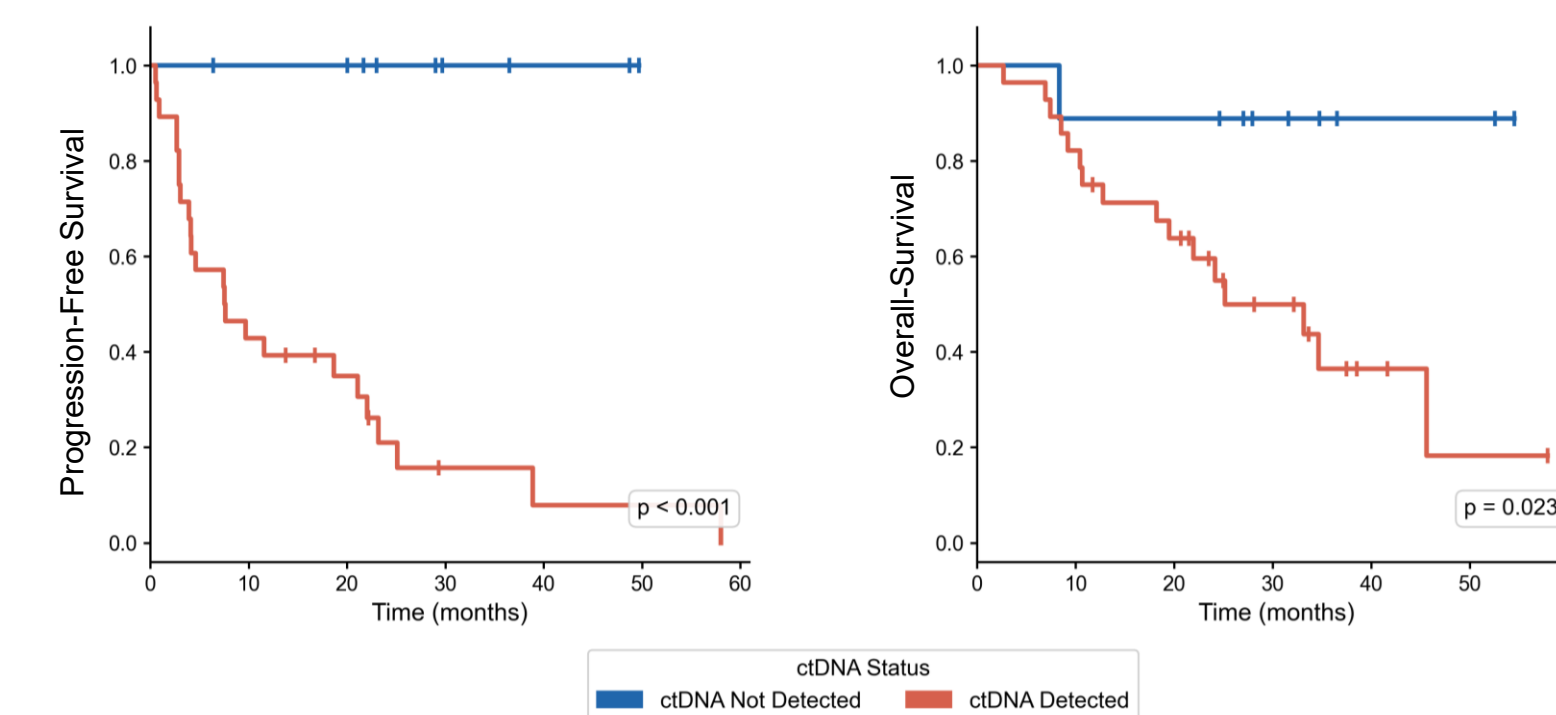


Figure 3: PFS and OS by post-surgical ctDNA Status in the No Gross Residual (NGR) group

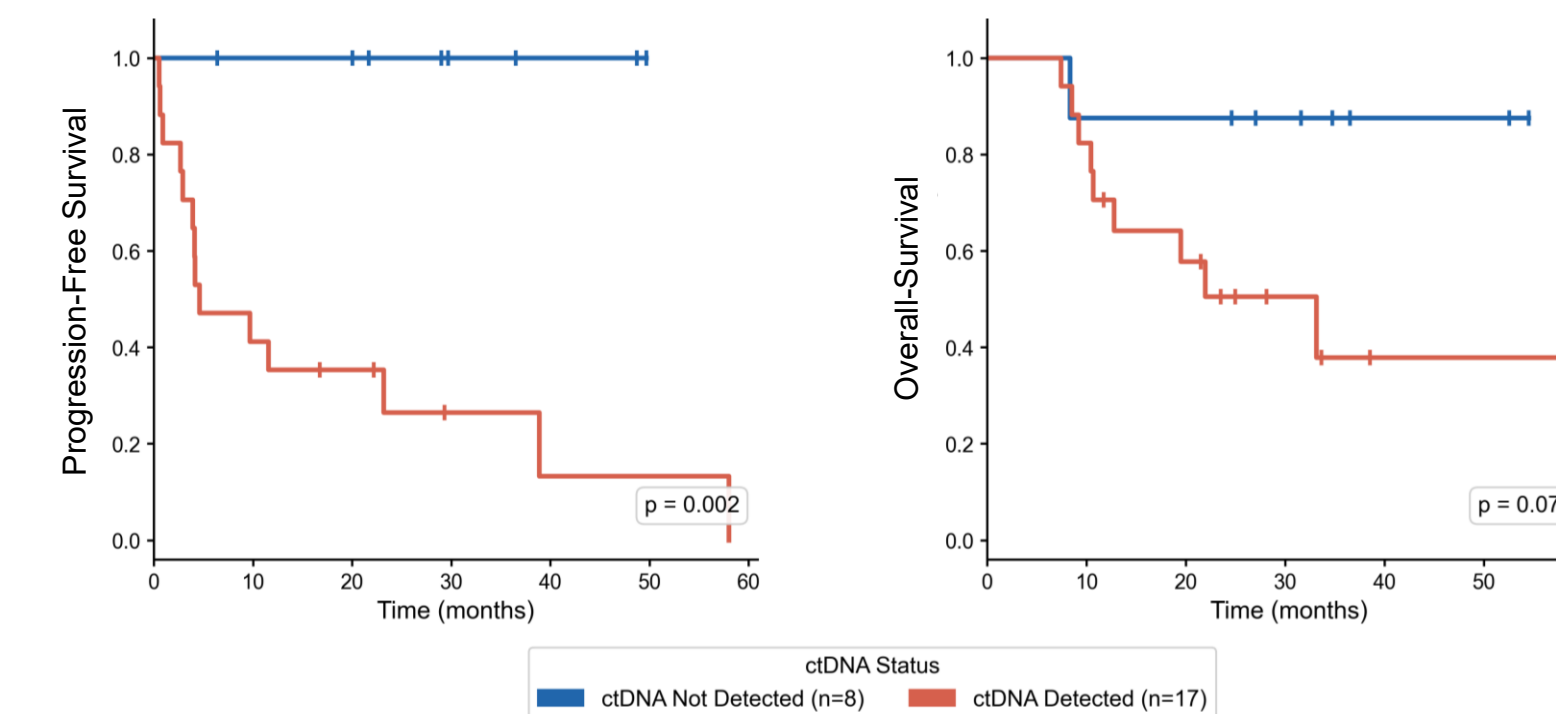


Figure 5: PFS and OS by post-surgical ctDNA Status in the normal CA-125 group

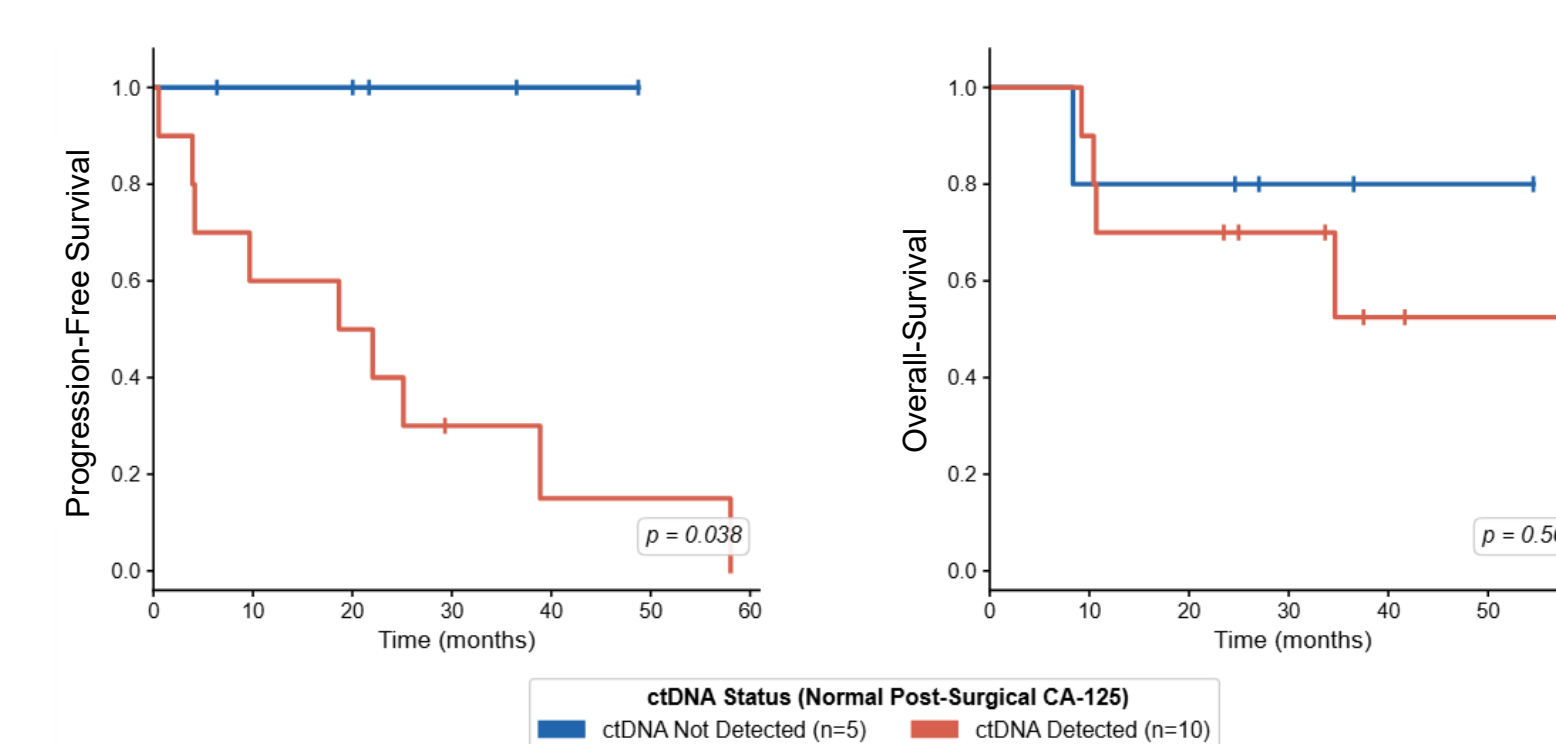


Figure 2: PFS and OS by post-surgical CA-125 Status

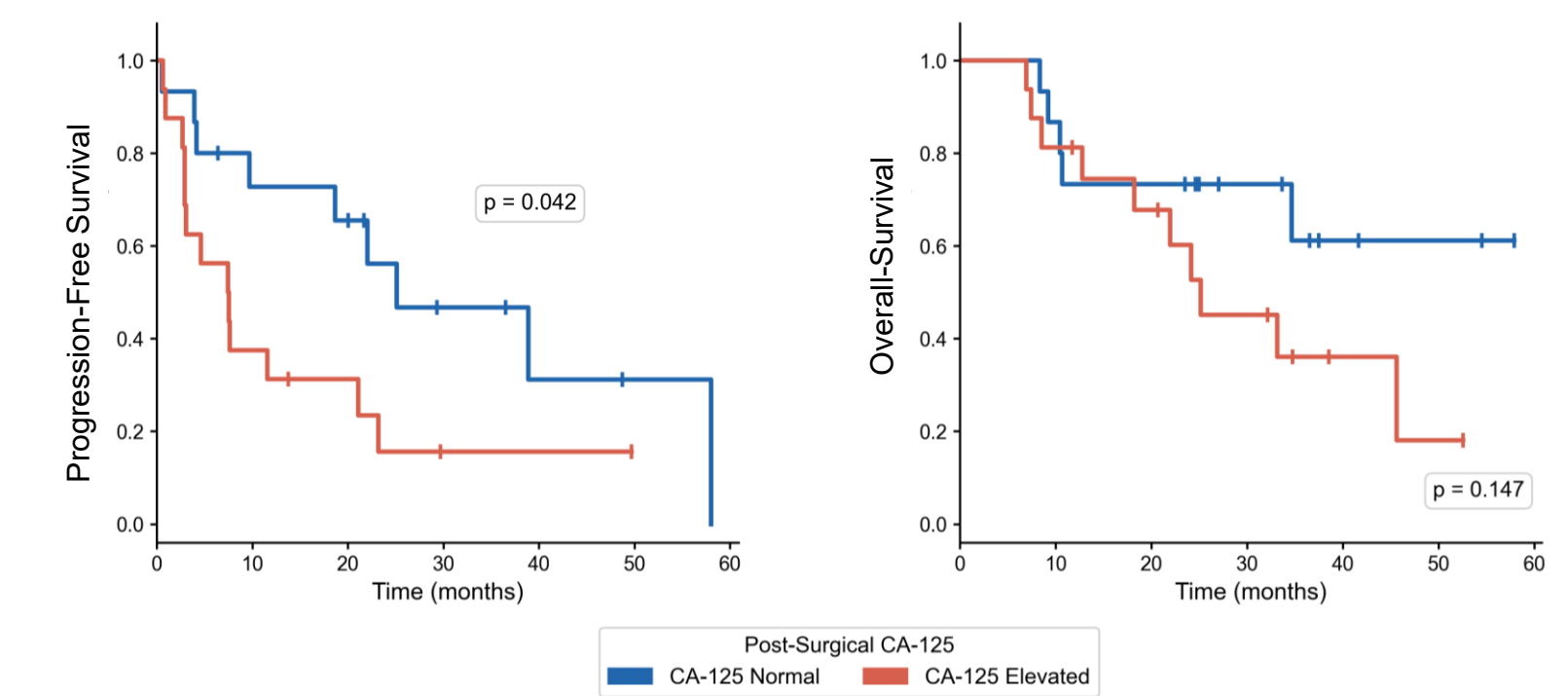


Figure 4: PFS and OS by post-surgical CA-125 Status in the NGR group

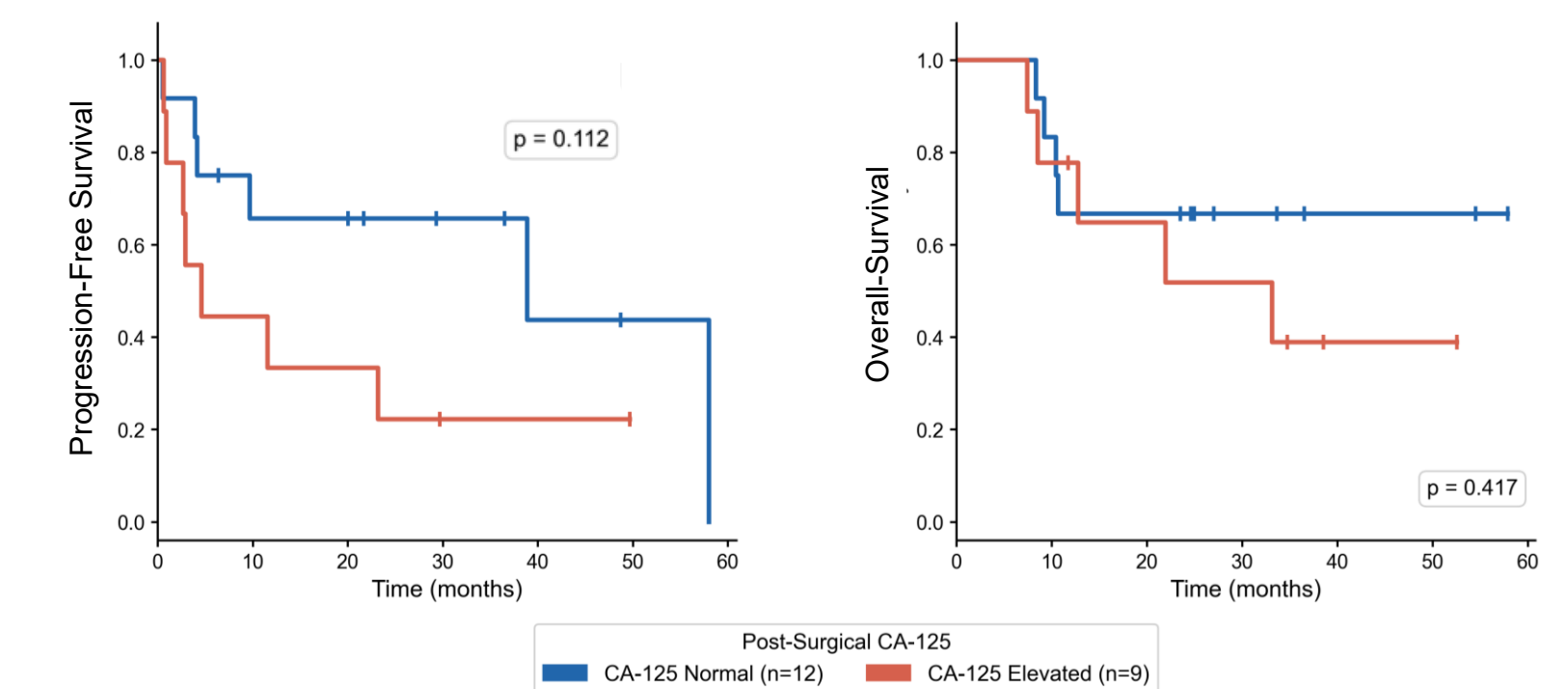
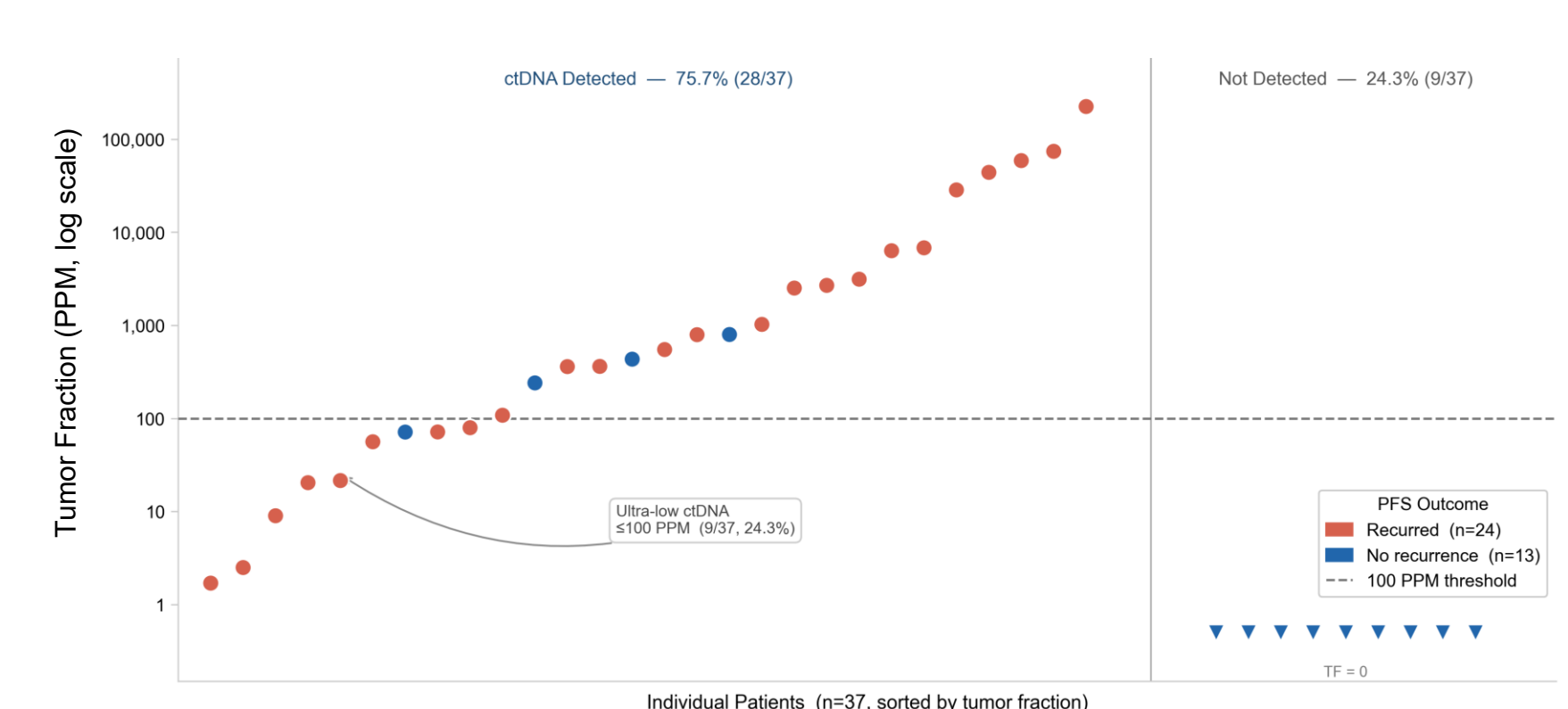


Figure 6: Post-surgical ctDNA tumor fraction distribution across all patients



CONCLUSIONS

Postoperative ctDNA after surgical debulking predicts early recurrence in ovarian cancer, including patients with NGR, supporting its role as a biomarker of molecular residual disease and postoperative risk stratification along with CA125.

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