

Supplementary

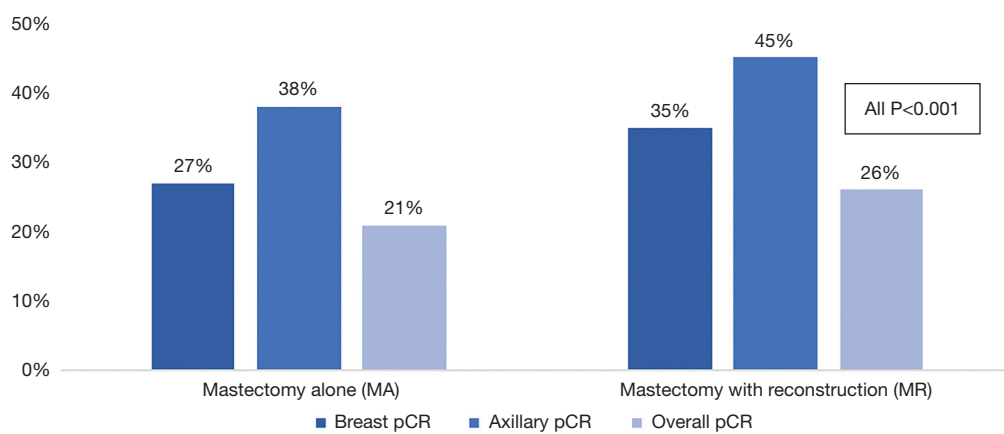


Figure S1 Pathologic response to neoadjuvant chemotherapy for female patients ≤ 40 years with unilateral breast cancer undergoing mastectomy, NCDB 2010–2018. pCR, pathologic complete response; NCDB, National Cancer Database.

Table S1 Multivariable logistic regression analyzing factors associated with post-mastectomy reconstruction and contralateral prophylactic mastectomy for female patients ≤40 years with unilateral breast cancer undergoing mastectomy after neoadjuvant chemotherapy, NCDB 2010–2018

Effects	Factors	Reconstruction						Contralateral prophylactic mastectomy					
		Including breast pCR & axillary pCR			Including overall pCR			Including breast pCR & axillary pCR			Including overall pCR		
		OR	95% CI	P value	OR	95% CI	P value	OR	95% CI	P value	OR	95% CI	P value
Age	Increasing age	0.99	0.97, 1.00	0.083	0.98	0.97, 1.00	0.086	0.99	0.97, 1.00	0.163	0.99	0.97, 1.00	0.159
Year	More recent year	1.07	1.03, 1.11	0.001	1.07	1.03, 1.11	0.001	0.99	0.96, 1.03	0.893	0.99	0.96, 1.03	0.867
Race	Non-Hispanic White		Reference			Reference			Reference			Reference	
	Non-Hispanic Black	0.85	0.71, 1.02	0.088	0.85	0.70, 1.02	0.079	0.63	0.53, 0.75	<0.001	0.63	0.53, 0.75	<0.001
	Hispanic	0.83	0.67, 1.05	0.116	0.83	0.66, 1.04	0.106	0.67	0.56, 0.82	<0.001	0.67	0.56, 0.82	<0.001
	Other	0.872	0.68, 1.12	0.288	0.88	0.68, 1.13	0.300	0.55	0.45, 0.67	<0.001	0.55	0.45, 0.68	<0.001
Charlson-Deyo co-morbidity score	0		Reference			Reference			Reference			Reference	
	≥1	0.79	0.61, 1.03	0.078	0.79	0.61, 1.03	0.081	1.48	1.13, 1.92	0.004	1.48	1.14, 1.92	0.004
Insurance	Private		Reference			Reference			Reference			Reference	
	Uninsured	0.35	0.23, 0.51	<0.001	0.35	0.25, 0.51	<0.001	0.71	0.52, 0.97	0.032	0.72	0.52, 0.98	0.036
	Public	0.63	0.53, 0.74	<0.001	0.62	0.53, 0.74	<0.001	0.85	0.73, 0.99	0.045	0.86	0.73, 0.99	0.044
Income	≤\$50,353		Reference			Reference			Reference			Reference	
	≥\$50,354	1.69	1.43, 2.01	<0.001	1.69	1.43, 2.01	<0.001	0.92	0.78, 1.08	0.293	0.92	0.78, 1.07	0.288
Education level	Low		Reference			Reference			Reference			Reference	
	High	0.95	0.81, 1.13	0.592	0.95	0.81, 1.13	0.588	1.25	1.08, 1.45	0.003	1.26	1.08, 1.45	0.002
Distance from facility	<10 miles		Reference			Reference			Reference			Reference	
	11–50 miles	0.82	0.71, 0.96	0.014	0.82	0.71, 0.96	0.013	1.10	0.96, 1.25	0.158	1.10	0.96, 1.25	0.162
	>50 miles	0.75	0.57, 0.99	0.042	0.75	0.57, 0.99	0.588	0.84	0.68, 1.03	0.101	0.84	0.68, 1.03	0.094
HR status	HR ⁺ /HER2 ⁻		Reference			Reference			Reference			Reference	
	HR ⁺ /HER2 ⁺	0.70	0.54, 0.90	0.006	0.724	0.56, 0.93	0.014	1.30	1.01, 1.68	0.041	1.34	1.04, 1.73	0.022
	HR ⁻ /HER2 ⁺	0.85	0.67, 1.06	0.145	0.90	0.72, 1.12	0.349	0.83	0.67, 1.02	0.073	0.86	0.71, 1.07	0.180
	HR ⁻ /HER2 ⁻	0.715	0.61, 0.84	<0.001	0.74	0.63, 0.87	<0.001	1.25	1.07, 1.47	0.006	1.29	1.10, 1.50	0.001
Grade	I–II		Reference			Reference			Reference			Reference	
	III–IV	0.88	0.76, 1.02	0.093	0.90	0.78, 1.04	0.148	1.01	0.88, 1.17	0.846	1.03	0.89, 1.19	0.682
Receipt of radiation	None		Reference			Reference			Reference			Reference	
	Radiation	0.79	0.67, 0.95	0.010	0.79	0.66, 0.93	0.006	1.01	0.86, 1.17	0.948	0.99	0.85, 1.15	0.871
Axillary surgery	Sentinel lymph node biopsy		Reference			Reference			Reference			Reference	
	No surgery	0.26	0.11, 0.62	0.002	0.27	0.12, 0.63	0.002	0.92	0.44, 1.92	0.830	0.93	0.44, 1.95	0.842
	Axillary lymph node dissection	0.58	0.49, 0.69	<0.001	0.57	0.48, 0.67	<0.001	1.01	0.86, 1.18	0.905	0.97	0.84, 1.13	0.713
Mastectomy type	Unilateral mastectomy		Reference			Reference			N/A			N/A	
	Contralateral prophylactic mastectomy	1.50	1.28, 1.75	<0.001	1.51	1.29, 1.76	<0.001						
Receipt of reconstruction	No		N/A			N/A			Reference			Reference	
	Yes						1.50	1.29, 1.75	<0.001	1.51	1.29, 1.76	<0.001	
Overall pCR	No		N/A			N/A			Reference			Reference	
	Yes				1.20	1.03, 1.40	0.021				1.11	0.96, 1.30	0.168
Breast pCR	No		Reference			N/A			Reference			N/A	
	Yes	1.30	1.09, 1.54	0.003				1.09	0.93, 1.29	0.271			
Axillary pCR	No		Reference						Reference				
	Yes	1.07	0.91, 1.25	0.435				1.16	0.99, 1.35	0.064			

NCDB, National Cancer Database; pCR, pathologic complete response; OR, odds ratio; CI, confidence interval; HR, hormone receptor; HER2, human epidermal growth factor receptor 2; N/A, not applicable.

Table S2 Multivariable Cox regression for female patients ≤40 years with unilateral breast cancer undergoing mastectomy after neoadjuvant chemotherapy, NCDB 2010–2018

Effects	Factors	Including breast pCR & axillary pCR			Including overall pCR		
		Hazard ratio	95% CI	P	Hazard ratio	95% CI	P
Age	Increasing age	0.97	0.95, 0.99	0.001	0.97	0.95, 0.99	0.001
Year	Increasing year	0.96	0.91, 1.01	0.101	0.97	0.92, 1.02	0.213
Race	Non-Hispanic White		Reference			Reference	
	Non-Hispanic Black	1.16	0.96, 1.39	0.119	1.16	0.97, 1.40	0.105
	Hispanic	0.91	0.72, 1.14	0.421	0.90	0.71, 1.14	0.383
	Other	0.72	0.54, 0.96	0.026	0.68	0.50, 0.91	0.010
Charlson-Deyo co-morbidity score	0		Reference			Reference	
	≥1	0.98	0.72, 1.33	0.898	1.00	0.73, 1.36	0.979
Insurance	Private		Reference			Reference	
	Uninsured	1.38	0.98, 1.94	0.065	1.34	0.94, 1.92	0.104
	Public	1.36	1.15, 1.63	<0.001	1.36	1.15, 1.62	<0.001
Income	≤\$50,353		Reference			Reference	
	≥\$50,354	1.14	0.93, 1.39	0.205	1.15	0.95, 1.40	0.152
Education	Low		Reference			Reference	
	High	0.98	0.81, 1.20	0.887	0.97	0.80, 1.17	0.741
Distance from facility	<10 miles		Reference			Reference	
	11–50 miles	0.95	0.81, 1.10	0.475	0.96	0.83, 1.12	0.623
	>50 miles	1.20	0.94, 1.53	0.149	1.28	1.01, 1.64	0.045
HR status	HR ⁺ /HER2 ⁻		Reference			Reference	
	HR ⁺ /HER2 ⁺	0.53	0.35, 0.79	0.002	0.48	0.32, 0.72	<0.001
	HR ⁻ /HER2 ⁺	0.58	0.40, 0.83	0.003	0.53	0.36, 0.76	0.001
	HR ⁻ /HER2 ⁻	1.46	1.05, 2.04	0.025	1.31	0.95, 1.82	0.100
Grade	I-II		Reference			Reference	
	III-IV	1.64	1.35, 2.00	<0.001	1.51	1.24, 1.84	<0.001
Endocrine therapy	No		Reference			Reference	
	Yes	0.44	0.32, 0.60	<0.001	0.46	0.34, 0.63	<0.001
Receipt of Radiation	No radiation		Reference			Reference	
	Radiation	0.86	0.71, 1.04	0.133	0.94	0.77, 1.14	0.531
Mastectomy type	Unilateral mastectomy		Reference			Reference	
	Contralateral prophylactic mastectomy	0.80	0.69, 0.93	0.003	0.77	0.67, 0.89	<0.001
Axillary surgery	Sentinel lymph node biopsy		Reference			Reference	
	No axillary surgery	0.67	0.18, 2.49	0.555	0.49	0.13, 1.83	0.288
	Axillary lymph node dissection	0.84	0.68, 1.04	0.111	0.66	0.54, 0.82	<0.001
Receipt of Reconstruction	No		Reference			Reference	
	Yes	0.86	0.73, 1.00	0.054	0.82	0.70, 0.96	0.015
Overall pCR	No		N/A			Reference	
	Yes				0.20	0.15, 0.27	<0.001
Breast pCR	No		Reference			N/A	
	Yes	0.41	0.32, 0.52	<0.001			
Axillary pCR	No		Reference				
	Yes	0.34	0.28, 0.42	<0.001			

NCDB, National Cancer Database; pCR, pathologic complete response; CI, confidence interval; HR, hormone receptor; HER2, human epidermal growth factor receptor 2; N/A, not applicable.