Prevalence of Lobular Carcinoma In Situ (LCIS) in Surgical Specimens of Invasive Breast Cancer

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Background

- Lobular carcinoma in situ (LCIS) is a noninvasive lesion linked to a **7-11× higher risk** of invasive breast cancer [1].
- Historically, LCIS is seen in **0.5–3.6%** of biopsy specimens, often incidentally [1, 2, 3].
- It is found in **5%** of stage I–II invasive breast cancer, **51%** of invasive lobular carcinoma (ILC), and **2%** of invasive ductal carcinoma (IDC) [4].

Objective

- To evaluate the prevalence of LCIS in invasive breast cancer and examine its association with **tumor subtype, patient demographics, and clinicopathologic features**, as no recent studies have addressed this relationship.

Methods

- **Design:** Retrospective study.
- **Patients:** All consecutive non-metastatic breast cancer patients who underwent surgical resection at Maimonides Medical Center between January 1 and December 31, 2023.
- **Pathology:** The majority of diagnoses were rendered by a single dedicated breast pathologist to ensure consistency in interpretation.
- **Data collected:** Demographics, biomarker profiles, tumor multifocality, presence of LCIS, atypical ductal hyperplasia/ atypical lobular hyperplasia (ADH/ALH), and other high-risk pathological features.
- **Analysis:** Fisher's exact test was performed to compare clinicopathologic characteristics between LCIS-positive and LCIS-negative groups, assessing associations between LCIS presence and key demographic and tumor variables.

Results

Table 1. Patient Demographics and Pathologic Overview

Category	Total (N = 152)	LCIS present (N = 41)	LCIS absent (N = 111)
Sex			
Female	150	41	109
Male	2	0	2
Ethnicity (Number, %)			
Caucasian	59 (38.2)	15 (36.5)	44 (39.6)
Asian	39 (26.3)	9 (22)	30 (27)
African American	48 (31.6)	13 (31.7)	35 (31.5)
Hispanic	5 (3.3)	4 (9.8)	1 (1)
Histology (Number, %)			
IDC	140 (92.1)	30 (73.2)	110 (99.1)
ILC	13 (8.5)	12* (29.3)	1* (0.9)
Clinical Anatomic Stage			
0 (number, %)	11 (7)	4 (9.8)	7 (6.3)
I	86 (56)	27 (65.9)	59 (53)
II	50 (32.5)	10 (24.4)	40 (36)
III	7 (4.5)	2 (4.9)	5 (4.5)

*Includes 2 mixed IDC/ILC cases in the LCIS-present group and 1 mixed case in the LCIS-absent group.
Note: Specimen counts reflect the number of pathology specimens, not individual patients; some patients contributed multiple specimens due to repeated surgeries.

Table 2. Prevalence of LCIS in Surgical and Biopsy Specimens by Histologic Subtype

Category	Total (N=152)	IDC (N=140)	ILC (N=13)
LCIS-positive in surgical specimens	41 (26.97%)	30 (21.4%)	12 (92.3%)
LCIS-positive in biopsy specimens	46 (30.3%)	12 (8.6%)	7 (53.8%)

Table 3. Clinicopathologic Characteristics of LCIS+ vs LCIS- Groups

	LCIS present N=41	LCIS absent N=111	P-value
ER+, Her-2 -	30 (73.2%)	70 (63%)	0.04765
ER+, Her-2 +	8 (19.5%)	12 (10.8%)	
ER-, Her-2 +	0	10 (9%)	
Triple negative	3 (7.3%)	18 (16.2%)	
All ER+	38 (92.7%)	82 (74%)	0.00939
All ER-	3 (7.3%)	28 (25%)	
Multifocal disease	11 (27%)	10 (9%)	0.00508
Presence of ADH or ALH	19 (46.3%)	29 (26%)	0.02455

Abbreviations: LCIS, lobular carcinoma in situ; IDC, invasive ductal carcinoma; ILC, invasive lobular carcinoma; ER, estrogen receptor; HER2, human epidermal growth factor receptor 2; ADH, atypical ductal hyperplasia; ALH, atypical lobular hyperplasia.

Conclusion

- A total of 152 patients were identified. The incidence of LCIS was **26.97%** in invasive breast cancer surgical specimens and **30.3%** in biopsy specimens, both of which were significantly higher than previously reported.
- The incidence of **LCIS was 21.4% in IDC** and **92.3% in ILC.**
- LCIS was predominantly **ER+ (92.7%),** but it was also found in **HER2+ and triple-negative** cancers.

Discussion

- These findings suggest that LCIS may have **greater biological significance** in breast cancer development.
- Although not present in this cohort, LCIS-positive ER-/HER2+ cases have been encountered in the authors' clinical practice, and LCIS-positive triple-negative cases have also been observed. This raises the question of whether **chemoprevention** should be considered for these patients to prevent the development of a future second primary breast cancer, particularly ER-positive tumors.

References

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