



# Long Term Outcome for Early Breast Carcinoma: The University of Chicago Multi-Center Experience



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## Purpose/Objective(s):

To examine the outcomes in women undergoing breast conservation therapy at the University of Chicago in regard to local control, patterns of failure and overall survival.

## Materials/Methods:

We retrospectively reviewed the outcomes of 1094 women with unilateral Stage I, II, and III invasive breast carcinoma. All women were treated at three University of Chicago affiliated institutions between 1986 and 2004. The median follow up was 88 months in surviving patients (84.5 all patients). Median age was 58.0 years. 39.0% of women received chemotherapy with (74.0% receiving anthracycline based). Median radiation dose to the whole breast was 46 gray (Gy). 98.8% of women received a supplemental boost with a median dose of 14Gy. Median dose to the tumor bed was 60Gy. By stage, 63% were stage I, 35% stage II and 2% stage III. Mammographically detected tumors comprised 42.1% of patients while the remaining women were detected clinically.

## Results:

The crude 10-year local control rate (LC) was 91.7% in women  $\leq 40$  years old, 96.1% in women 41-55 years old, and 96.8% in women over the age of 55. The actuarial 10 year local progression free survival (LPFS) was 76.7% (95% CI: 72.4-80.4) for stage I and 65.6% (95% CI: 59.4-71.1) for stage II. There was a greater 10 year LPFS in women under the age of 41 relative to women older than 55, 73.8% (95% CI: 62.2-82.3) and 64.9% (95% CI: 59.8-69.5), respectively. On multivariate analysis (MVA), only the number of positive lymph nodes was a significant prognostic indicator for time to local failure with a hazard ratio (HR) of 1.07 per lymph node ( $p=.001$ ). Overall survival (OS) at 10 years by age was 76.6% (95% CI: 71.2-77.7) in women  $\leq 40$  years old, 85.4% (95% CI: 80.5-89.2) in women age 41-55 and 67.5% (95% CI: 62.4-72.0) in women  $>55$ yo. Women who were pathologic stage I did better than those with stage II disease with 10 year OS of 78.7% (95% CI: 74.5-82.3) versus 68.4% (95% CI: 62.1-73.8), respectively. On MVA, age  $<40$  (HR 1.04,  $p<.05$ ), number of positive lymph nodes (HR 1.14,  $p=.053$ ) and mammographically detected cancers (HR 0.633, 95% CI 0.47-0.85,  $p=.002$ ) were statistically significant prognostic indicators of OS. Women with mammographically detected tumors had better 10 year OS, 80.7% (95% CI: 75.4-84.9) versus 70.9% (95% CI: 66.1-75.2) respectively. The 10 year LPFS was 78.1% (95% CI: 72.7-82.5) for women with mammographically detected tumors and 68.6% (95% CI: 63.9-73.1) for women with clinically detected tumors. On MVA for LPFS, controlling for clinical and pathologic characteristics, mammographically detected tumors were associated with a better outcome with HR 0.687 (95% CI: 0.518-0.913,  $p=.01$ ). On preliminary analysis of point-of-failure, 71.1% failed in quadrant and 28.9% recurred only out of quadrant. Of these, 8.9% failed both in and out of quadrant.

## Conclusions:

46Gy to the whole breast and a 14Gy boost to the lumpectomy cavity is associated with excellent local control at our institution with high rates of breast conservation. Women with mammographically detected tumors had significantly longer survival and local progression free survival than those with clinically detected tumors.

## Multivariate Analysis

Prognostic Factors	OS		LPFS		TTLF	
	Hazard Ratio	P	Hazard Ratio	P	Hazard Ratio	P
Number of positive lymph nodes	1.14	.053				
Age $<40$	1.04	$<.05$			1.07/node	.001
Mammographic Detection	0.633	.002	0.687	.01		

\* OS: Overall Survival; LPFS: Local Progression Free Survival; TTLF: Time to local failure

## Patient Characteristics

<b>Total Patients</b>	1094
<b>Median Age</b>	58.0
<b>Median follow-up</b>	
All Patients	84.5mo
Surviving Patients	88.0mo
<b>% Received Chemo</b>	39.0%
% Anthracycline	74.0%
<b>Stage</b>	
I	63%
II	35%
III	2%
<b>Detection</b>	
Clinical	58%
Mammographic	42%
<b>Median Doses</b>	
Whole Breast	46Gy
Boost	14Gy
Total	60Gy

## Results

	10yr LC	10yr OS	10yr LPFS
<b>Age</b>			
$\leq 40$	91.7%	76.6%	73.8%
41-55	96.1%	85.4%	64.9%
$>55$	96.8%	67.5%	
<b>Stage</b>			
I	---	78.7%	76.7%
II	---	68.4%	65.6%
<b>Detection</b>			
Mammographic	---	80.7%	78.1%
Clinical	---	70.9%	68.6%

\*LC:Local control; LPFS: Local Progression Free Survival; OS: Overall Survival

