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Advances in Approaches to Local-Regional Disease

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Disclosure(s)

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Employee (part time):	**N/A**

Best Of SABCS 2017 Local-regional Treatment

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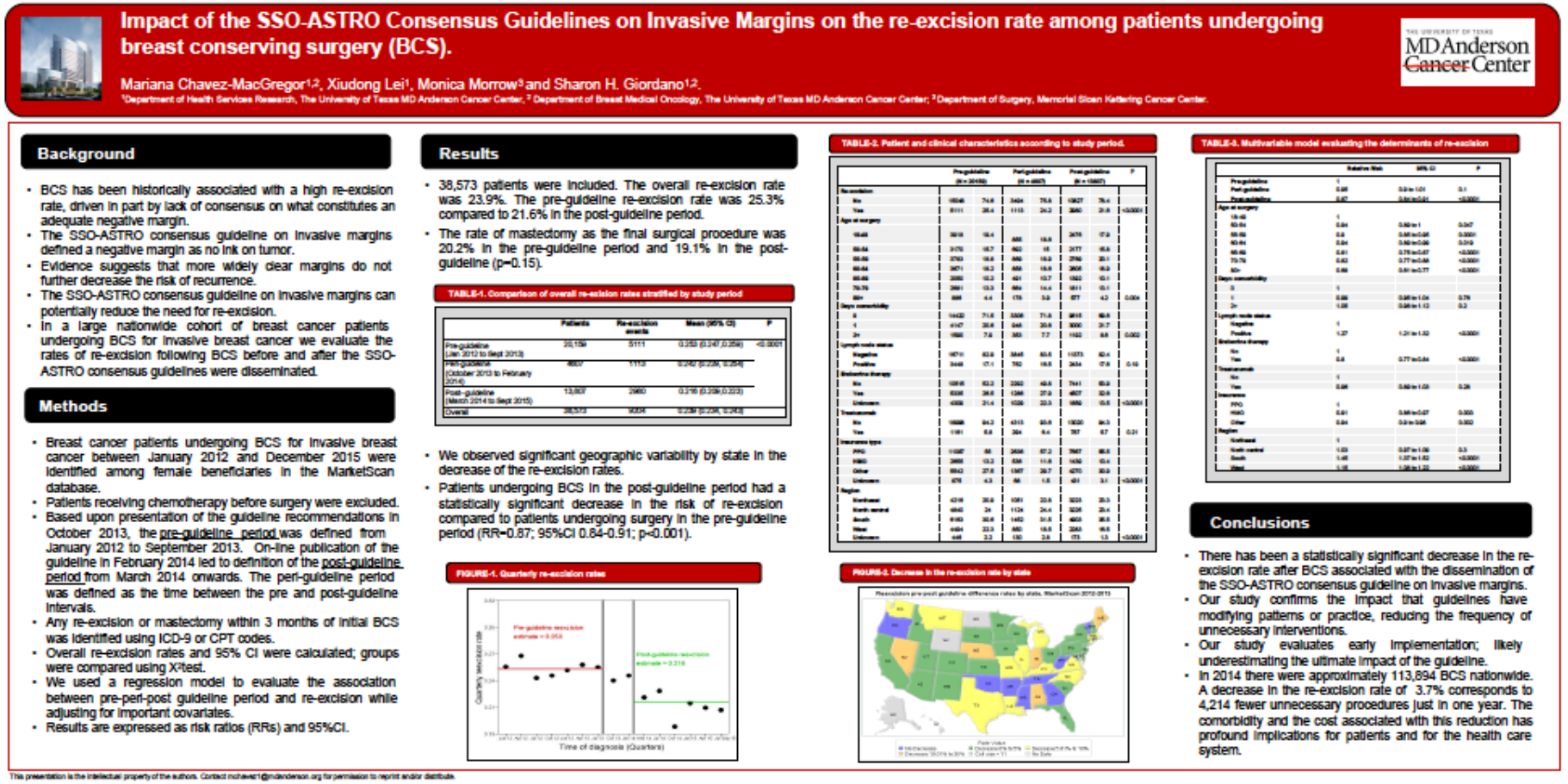
Impact of the SSO-ASTRO Consensus Guidelines on Invasive Margins on the Re-excision Rate among Patients Undergoing BCS

Maria Chavez-MacGregor, et al, MD Anderson



Impact of the SSO-ASTRO Consensus Guidelines on Invasive Margins on the re-excision rate among patients undergoing breast conserving surgery (BCS).

Mariana Chavez-MacGregor[1,2], Xiudong Lei[1], Monica Morrow[3] and Sharon H. Giordano[1,2].

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MD Anderson Cancer Center

Background

- BCS has been historically associated with a high re-excision rate, driven in part by lack of consensus on what constitutes an adequate negative margin.
- The SSO-ASTRO consensus guideline on invasive margins defined a negative margin as no ink on tumor.
- Evidence suggests that more widely clear margins do not further decrease the risk of recurrence.
- The SSO-ASTRO consensus guideline on invasive margins can potentially reduce the need for re-excision.
- In a large nationwide cohort of breast cancer patients undergoing BCS for invasive breast cancer we evaluate the rates of re-excision following BCS before and after the SSO-ASTRO consensus guidelines were disseminated.

Methods

- Breast cancer patients undergoing BCS for invasive breast cancer between January 2012 and December 2015 were identified among female beneficiaries in the MarketScan database.
- Patients receiving chemotherapy before surgery were excluded.
- Based upon presentation of the guideline recommendations in October 2013, the pre-guideline period was defined from January 2012 to September 2013. On-line publication of the guideline in February 2014 led to definition of the post-guideline period from March 2014 onwards. The peri-guideline period was defined as the time between the pre and post-guideline intervals.
- Any re-excision or mastectomy within 3 months of initial BCS was identified using ICD-9 or CPT codes.
- Overall re-excision rates and 95% CI were calculated; groups were compared using X²test.
- We used a regression model to evaluate the association between pre-peri-post guideline period and re-excision while adjusting for important covariates.
- Results are expressed as risk ratios (RRs) and 95%CI.

Results

- 38,573 patients were included. The overall re-excision rate was 23.9%. The pre-guideline re-excision rate was 25.3% compared to 21.6% in the post-guideline period.
- The rate of mastectomy as the final surgical procedure was 20.2% in the pre-guideline period and 19.1% in the post-guideline (p=0.15).

TABLE-1. Comparison of overall re-excision rates stratified by study period

	Patients	Re-excision events	Mean (95% CI)	P
Pre-guideline (Jan 2012 to Sept 2013)	20,159	5111	0.253 (0.247,0.259)	<0.0001
Peri-guideline (October 2013 to February 2014)	4807	1113	0.232 (0.220, 0.254)	
Post-guideline (March 2014 to Sept 2015)	13,607	2960	0.218 (0.209,0.223)	
Overall	38,573	9084	0.236 (0.230, 0.243)	

- We observed significant geographic variability by state in the decrease of the re-excision rates.
- Patients undergoing BCS in the post-guideline period had a statistically significant decrease in the risk of re-excision compared to patients undergoing surgery in the pre-guideline period (RR=0.87; 95%CI 0.84-0.91; p<0.001).

FIGURE-1. Quarterly re-excision rates

TABLE-2. Patient and clinical characteristics according to study period.

FIGURE-2. Decrease in the re-excision rate by state

TABLE-3. Multivariable model evaluating the determinants of re-excision

Conclusions

- There has been a statistically significant decrease in the re-excision rate after BCS associated with the dissemination of the SSO-ASTRO consensus guideline on invasive margins.
- Our study confirms the impact that guidelines have modifying patterns or practice, reducing the frequency of unnecessary interventions.
- Our study evaluates early implementation; likely underestimating the ultimate impact of the guideline.
- In 2014 there were approximately 113,894 BCS nationwide. A decrease in the re-excision rate of 3.7% corresponds to 4,214 fewer unnecessary procedures just in one year. The comorbidity and the cost associated with this reduction has profound implications for patients and for the health care system.

Methods

- Breast cancer pts undergoing BCS for invasive disease between Jan 2012 and Dec 2015 identified among beneficiaries in MarketScan database
- Based on guideline recommendations in October 2013 (presentation)
  - Pre-guidline period Jan 2012-Sept 2013
  - Post-guideline period March 2014 onward (publication Feb 2014

- Re-excision or completion mastectomy within 3 months of initial surgery using CPT codes and ICD-9 codes

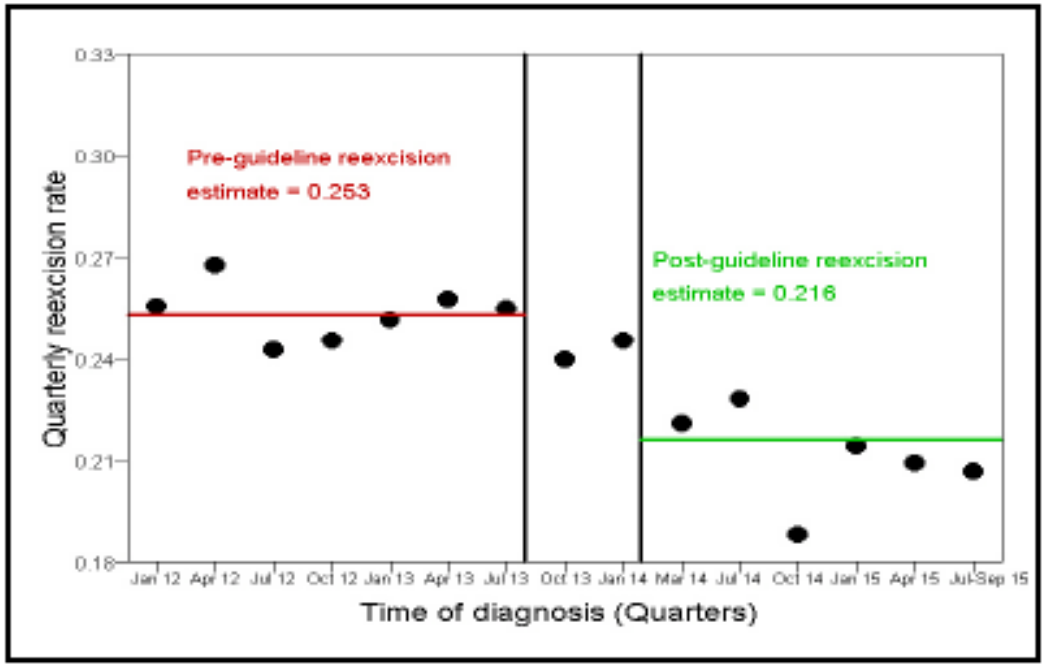
Results

TABLE-1. Comparison of overall re-exision rates stratified by study period

	Patients	Re-excision events	Mean (95% CI)	P
Pre-guideline (Jan 2012 to Sept 2013)	20,159	5111	0.253 (0.247,0.259)	<0.0001
Peri-guideline (October 2013 to February 2014)	4607	1113	0.242 (0.229, 0.254)	
Post--guideline (March 2014 to Sept 2015)	13,807	2980	0.216 (0.209,0.223)	
Overall	38,573	9204	0.239 (0.234, 0.243)	

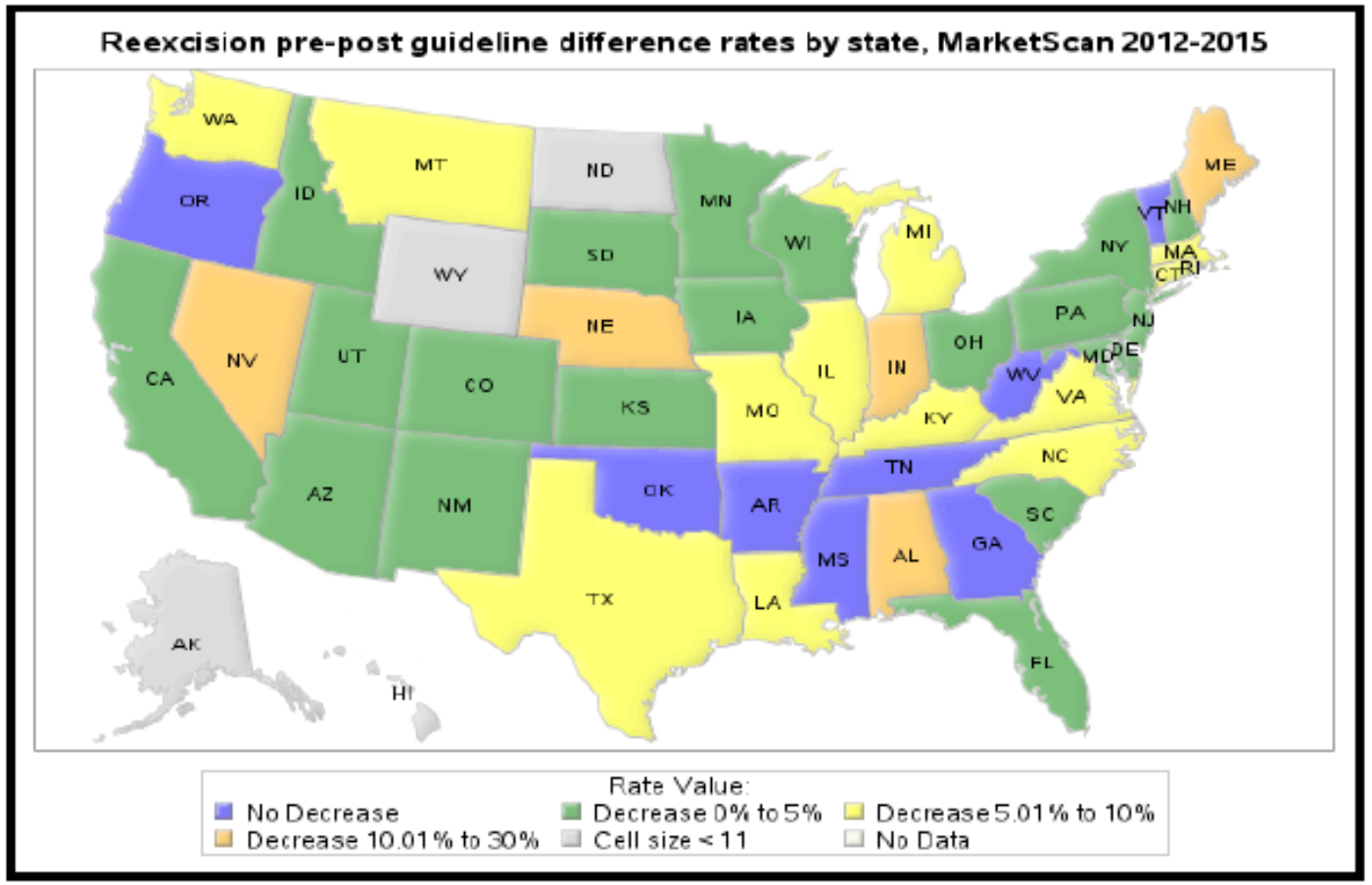
- Patients undergoing BCS in post-guideline period had a stastically significant decrease in risk of re-excision

FIGURE-1. Quarterly re-excision rates



Significant geographical variability by state in re-excision rates

FIGURE-2. Decrease in the re-excision rate by state



Conclusions

- In 2014 there were approximately 113,894 BCS nationwide. A decrease in re-excision rate of 3.7% corresponds to 4,214 fewer unnecessary procedures just in one year.

- The comorbidity and cost associated with this reduction has profound implications for patients and for the health care system

Appropriate margins for breast cancer conserving surgery in patients with early stage breast cancer- A meta-analysis Frank Vicini et al

- Wider margins may reduce local recurrence but might increase morbidity and cost
- Previous meta-analysis concluded wider margins unlikely to have substantial benefit
- Current SSO-ASTRO guideline “no tumor on ink”

- Updated meta-analysis
  - Additional studies
  - Evaluate different margin definition models

Methods

- Systematic literature review 1995-2016
- Inclusion criteria
  - Minimal f/u 50 mo
  - Pathologic margin
  - Local recurrence reported
- 38 studies/55,302 patients
  - Including 31 of 33 previous studies included
  - Additional 20,000 patients
- Median f/u 7.2 years

Methods

- Margin definition similar to previous analysis
- Positive = invasive or DCIS at surgical margin
- Negative = no tumor within a specified distance from margin
- Close = no tumor on ink but tumor less than a specified distance from the margin

- Series of models developed based on cut-point desired

Methods

- Previous analysis
  - Model 1- negative margins *compared* with close/positive
  - Model 2- *comparison* of negative, close and positive
- Present analysis
  - Model 1- negative margins *compared* with close/positive

Model 1

- Consistent with previous model sowing that negative margin associated with lower risk of recurrence

Crude Local Recurrence- Model 1

Negative vs close/positive

Margin (mm) and status	Number of studies providing data	Total number of observations	Total number of LR	LR %
≤0	28	3416	352	10.3
>0	38	46178	1758	3.8
≤1	29	3988	405	10.2
>1	27	33565	1161	3.5
≤2	32	5978	519	8.7
>2	23	31757	1053	3.3
≤5	38	9781	659	6.7
>5	8	19059	604	3.2

Benefit to wider margins observed with greatest difference (benefit) seen at 1 mm (6.7%), but similar rates of recurrence with all negative margin definitions (3.2-3.8%)

Compare:	At or below margin classifications	Above margin classifications
≤0 mm versus >0 mm	≤0	> 0, >1, >2, >3, >5, ≥5; 0-1, 0-2, 0-3, 0 -5, 1-2, 2-5
≤1 mm versus >1 mm	≤0, ≤1, 0-1	>1, >2, >3, >5, ≥5; 1-2, 2-5
≤2 mm versus >2 mm	≤0, ≤2, <1; 0-1, 0-2, 1-2	>2, >3, >5, ≥5; 2-5
≤5 mm versus >5 mm	≤0, ≤2, ≤3, ≤5, <1, <5; 0-1, 0-2, 0-3, 0 -5, 1-2, 1-5, 2-5	>5

Model 2

- Looking at range of margins a wider margin further reduced the local recurrence and was validated on MVA
- Margin range
  - >0-2 mm 7.2 % OR: 0.56 p<0.001
  - 2-5 mm 3.6% OR: 0.44 p<0.001
  - >5 mm 3.2% OR: 0.32 p<0.001
- Multivariate Analysis: margin width only significant variable

Range	Margin range classifications
≤ 0mm	≤ 0
0-2 mm	0-1, 1-2, 0-2
2-5 mm	2-5
>5 mm	>5

Model 3 negative, close or positive

- Negative/Close/Positive
  - 1mm: 8.0%/13%/14%
  - 2mm: 3.6%/5.5%/9.5%
  - 5mm: 2.9%/4.1%/12.8%

- Odds Ratio for LR
  - Close vs Neg: 1.58
  - Positive vs Neg: 2.49
  - **2mm vs 1mm: 0.50**
  - **5mm vs 1mm: 0.40** (both of these different from previous)

Conclusions

- Limitations of meta-analysis
- However: data suggests having a margin width beyond no tumor on ink may further reduce rates of local recurrence
- Further prospective studies required to validate appropriate margin width
- Question?? Should we achieve a 1-2 mm margin as compared to no tumor on ink?

Axillary dissection vs no dissection in patients with cT1-T2 N0 breast cancer and micrometastases only in the sentinel node: 10 yr results IBCSG 23-01 Galimberti et al

- 5 yr results of 23-01 and 10 yr results of Z-0011 showed that for pts with moderate axillary involvement AD provided no advantage for OS or DFS with low axillary failure rate
- These data represent 10 yr update for 23-01 with 83% follow-up completed

Design

- Prior to amendment in 2006
  - Tumor ≤ 3cm, unicentric, one micromet (<2mm), no ECE or macromet
- After amendment
  - Tumor ≤ 5cm, uni or multicentric, one or more micromet in sentinel node

- Patients randomized to axillary dissection or no dissection

Statistics

- Primary endpoint: invasive disease-free survival (DFS)
- Secondary endpoint: overall survival, incidence of re-appearance of tumor in un-dissected axilla
- The non-inferiority margin was defined as a DFS hazard ratio of < 1.25
- 934 patients randomized

Patient and Tumor Characteristics

Characteristic	AD (n=464)	No AD (n=467)	Total (n=931)
Age, years; median (range)	53 (28–81)	54 (26–81)	54 (26–81)
Menopausal status			
Pre	204 (44%)	207 (44%)	411 (44%)
Post	260 (56%)	260 (56%)	520 (56%)
Pre-op sentinel node biopsy			
No	287 (62%)	286 (61%)	573 (62%)
Yes	177 (38%)	181 (39%)	358 (38%)
Sentinel node disease			
≤ 1 mm	323 (70%)	320 (69%)	643 (69%)
1.1–2.0 mm	131 (28%)	135 (29%)	266 (29%)
>2 mm	10 (2%)	11 (2%)	21 (2%)
Unknown	0	1 (<1%)	1 (<1%)

Patient and Tumor Characteristics

Characteristic	AD (n=464)	No AD (n=467)	Total (n=931)
Tumor size			
<2 cm	316 (68%)	322 (69%)	638 (69%)
2 cm to 2.9 cm	106 (23%)	112 (24%)	218 (23%)
≥3 cm	35 (8%)	28 (6%)	63 (7%)
Unknown	7 (2%)	5 (1%)	12 (1%)
Tumor grade			
Grade 1	118 (25%)	90 (19%)	208 (22%)
Grade 2	214 (46%)	241 (52%)	455 (49%)
Grade 3	129 (28%)	135 (29%)	264 (28%)
Unknown	3 (<1%)	1 (<1%)	4 (<1%)

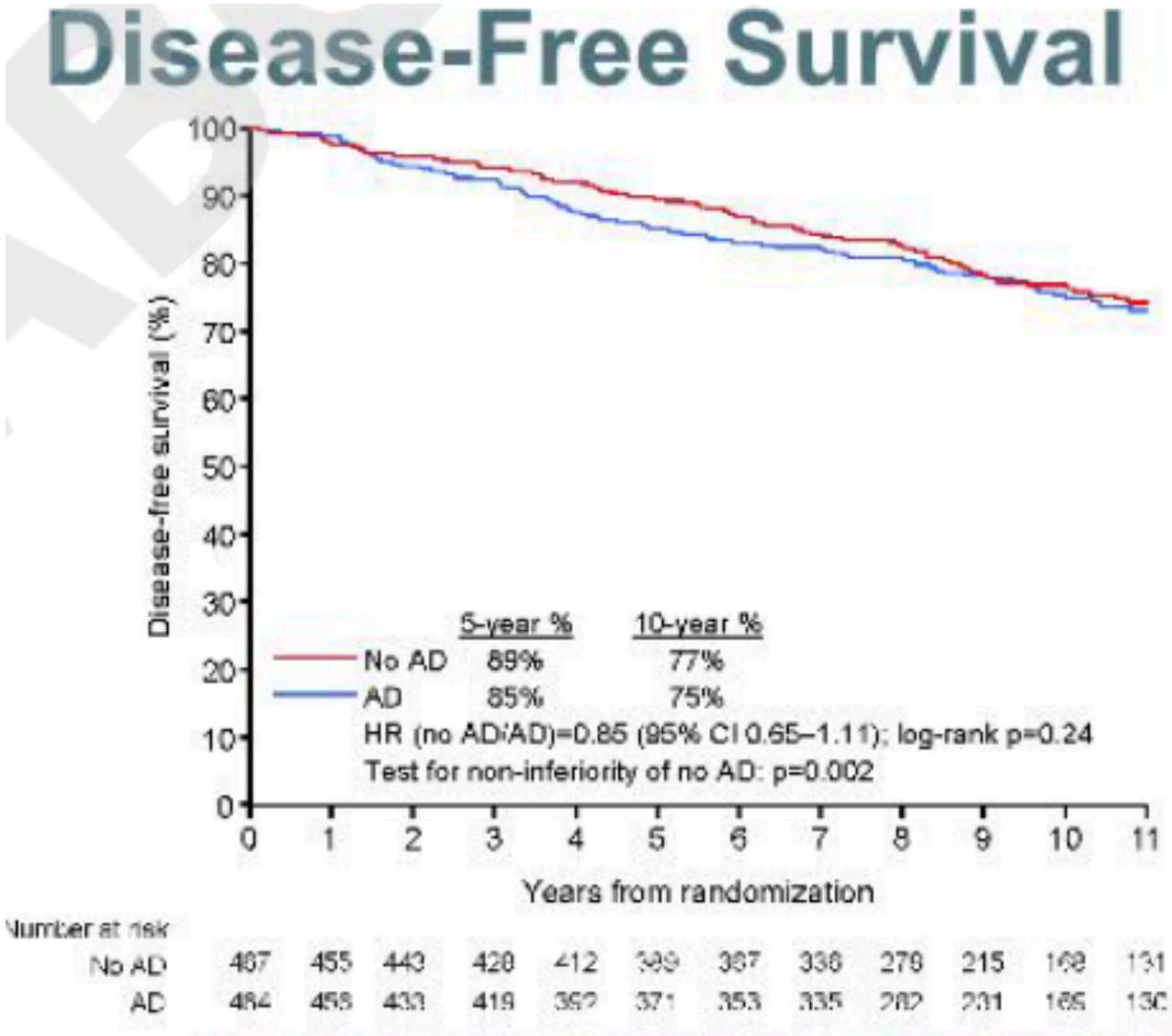
Patient and Tumor Characteristics

Characteristic	AD (n=464)	No AD (n=467)	Total (n=931)
ER status			
Negative	51 (11%)	40 (9%)	91 (10%)
Positive	**409 (88%)**	**425 (91%)**	**834 (90%)**
Unknown	4 (<1%)	2 (<1%)	6 (<1%)
PgR status			
Negative	108 (23%)	115 (25%)	223 (24%)
Positive	**352 (76%)**	**350 (75%)**	**702 (75%)**
Unknown	4 (<1%)	2 (<1%)	6 (<1%)

Treatment	AD (n=464)	No AD (n=467)	Total (n=931)
Type of breast surgery			
Conservative	420 (91%)	425 (91%)	845 (91%)
Mastectomy	44 (9%)	42 (9%)	86 (9%)
Radiotherapy (BCS)			
No	10/420 (2%)	12/425 (3%)	22 (3%)
Yes	410/420 (98%)	413/425 (97%)	823 (97%)
Radiotherapy in mastectomy			
No	42/44 (95%)	39/42 (93%)	81 (94%)
Yes	2/44 (5%)	3/42 (7%)	5 (6%)

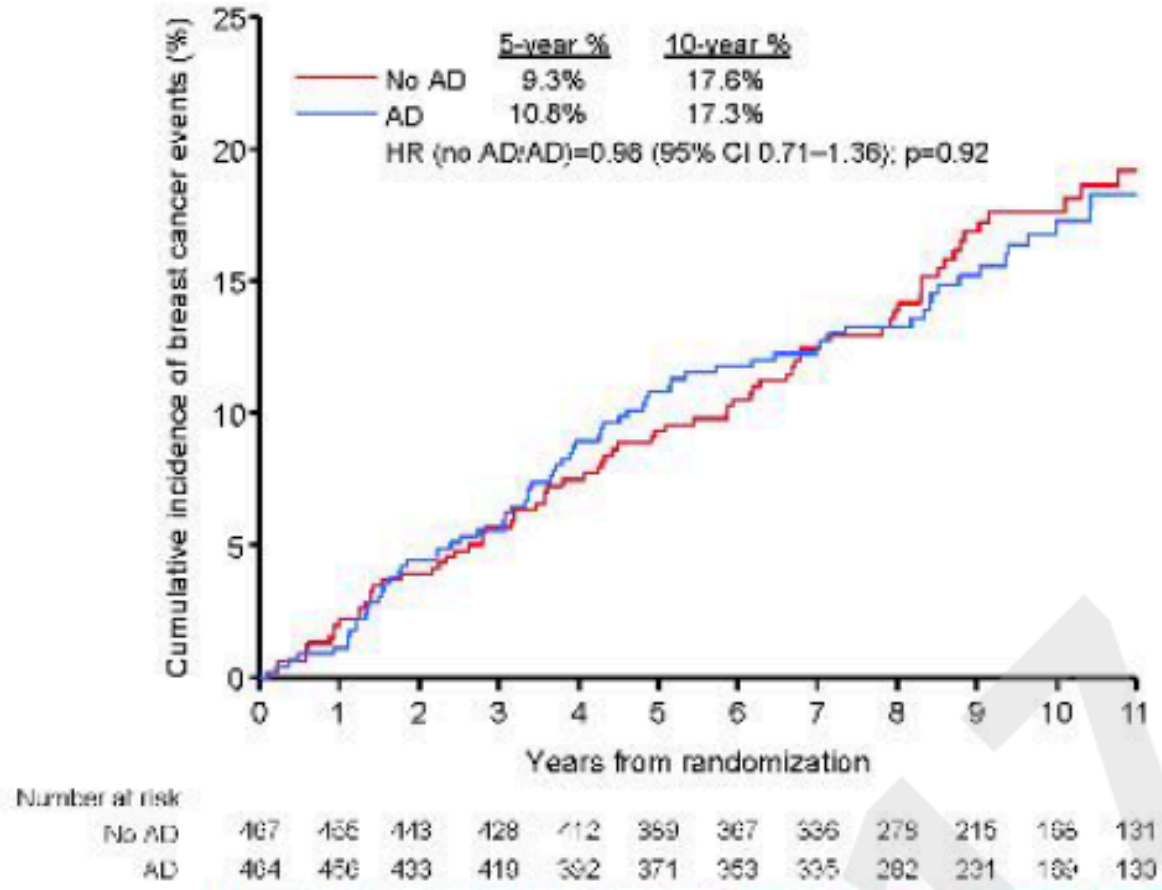
Treatment	AD (n=464)	No AD (n=467)
Any systemic therapy	441 (95%)	451 (97%)
Hormonal therapy only	292 (63%)	315 (67%)
Chemotherapy only	42 (9%)	33 (7%)
Combination therapy	107 (23%)	103 (22%)

Results


Disease-Free Survival
Disease-free survival (%)
100
90
80
70
60
50
40
30
20
10
0
0 1 2 3 4 5 6 7 8 9 10 11
Years from randomization
5-year %
10-year %
No AD 89% 77%
AD 85% 75%
HR (no AD/AD)=0.85 (95% CI 0.65–1.11); log-rank p=0.24
Test for non-inferiority of no AD: p=0.002
Number at risk
No AD 467 455 443 428 412 389 367 336 279 215 169 131
AD 464 458 433 419 392 371 353 335 282 231 185 130

Results

Cumulative Incidence of Breast Cancer Events



Results

Disease-Free Survival Events and Deaths

	AD (n=464)		No AD (n=467)	
Total DFS events	**117**	**25.2%**	**101**	**21.6%**
Breast cancer events	**75**	**16.2%**	**74**	**15.8%**
Local	13	2.8%	14	3.0%
Regional	3	0.6%	9	1.9%
Ipsilateral axillary events	**2**	**0.4%**	**8**	**1.7%**
Distant	47	10.1%	41	8.8%
Contralateral breast	12	2.6%	10	2.1%
Non-breast cancer events	**42**	**9.1%**	**27**	**5.8%**
Second (non-breast) primary	23	5.0%	17	3.6%
Death without prior cancer event	2	0.4%	6	1.3%
Death with unknown cancer status	17	3.7%	4	0.9%
Deaths	**58**	**12.5%**	**45**	**9.6%**

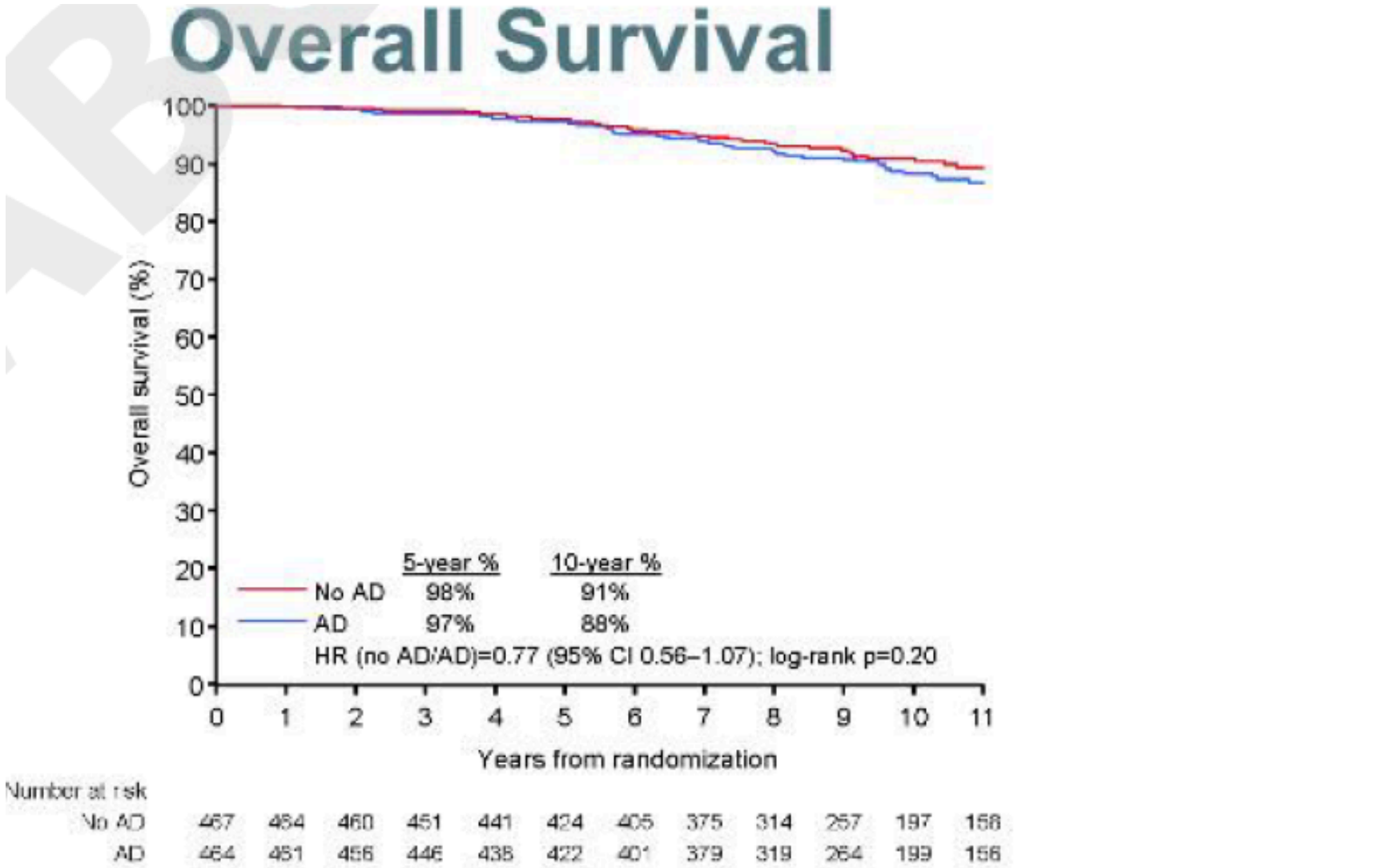
Results

Disease-Free Survival Events According to Type of Surgery

	Mastectomy (n=86)		Breast conservation (n=845)	
Total DFS events	**23 (26.7%)**		**195 (23.1%)**	
Breast cancer events	**17 (19.8%)**		**132 (15.6%)**	
Ipsilateral axillary events	2		8	
	AD 1 (1.2%)	**No AD 1 (1.2%)**	**AD 1 (0.1%)**	**No AD 7* (0.8%)**
Non-breast cancer events	**6 (7.0%)**		**63 (7.5%)**	
Deaths	**14 (16.3%)**		**89 (10.5%)**	

*Five received intraoperative radiotherapy

Results


Overall Survival
Overall survival (%)
100
90
80
70
60
50
40
30
20
10
0
5-year %
10-year %
No AD 98% 91%
AD 97% 88%
HR (no AD/AD)=0.77 (95% CI 0.56–1.07); log-rank p=0.20
0 1 2 3 4 5 6 7 8 9 10 11
Years from randomization
Number at risk
No AD 467 464 460 451 441 424 405 375 314 257 197 168
AD 464 451 456 446 438 422 401 379 319 264 199 156

Summary

- After median follow-up 9.8 yrs
  - No difference between groups for DFS or OS
  - Rate of failure in no AD was low at 1.7%

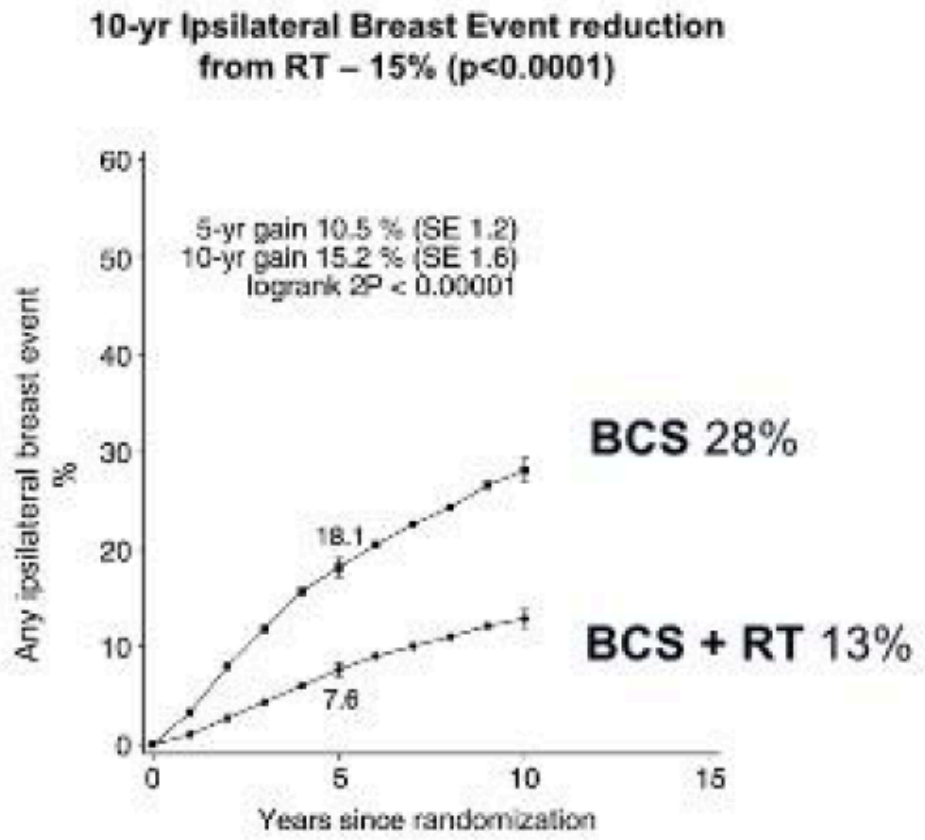
- Findings are fully consistent with Z011

- We also suggest that non-AD is acceptable treatment in patients scheduled for mastectomy
- No AD is now standard treatment in early breast cancer when the SN is only minimally involved

A Validation of a DCIS biological risk profile in a randomized study for radiation therapy SweDCIS

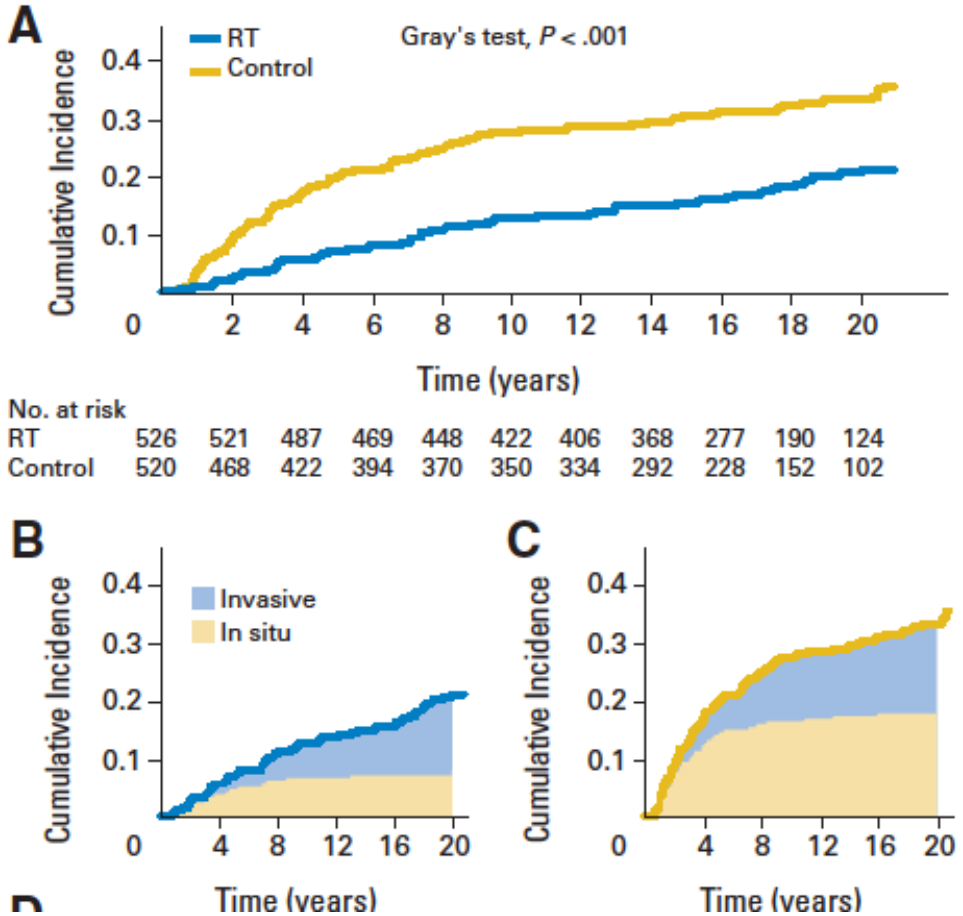
Warnberg, et al

- DCIS randomized trials 2010 EBCTCG Overview
- Approximate 50% reduction in risk of recurrence with XRT
- 50% reduction independent of size, age or grade



SweDCIS Randomized Trial

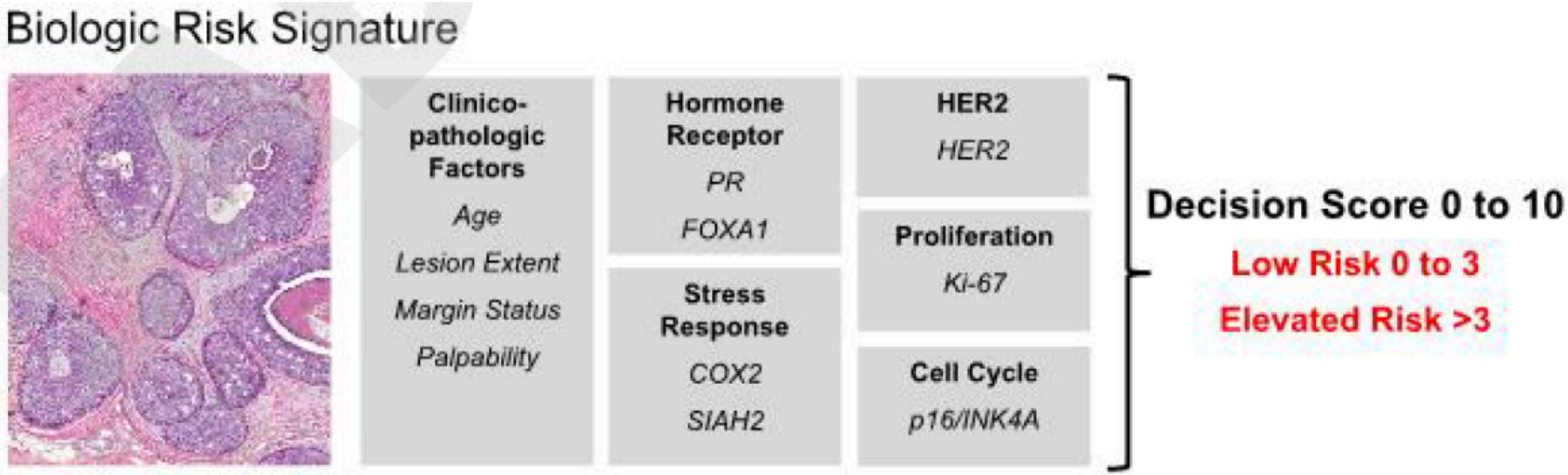
- Eligibility criteria
  - Primary, pure DCIS
  - 1987-1999, BCS +/- XRT
- Recurrences
  - 129 in situ
  - 129 invasive



Validation of Biological Risk Signature

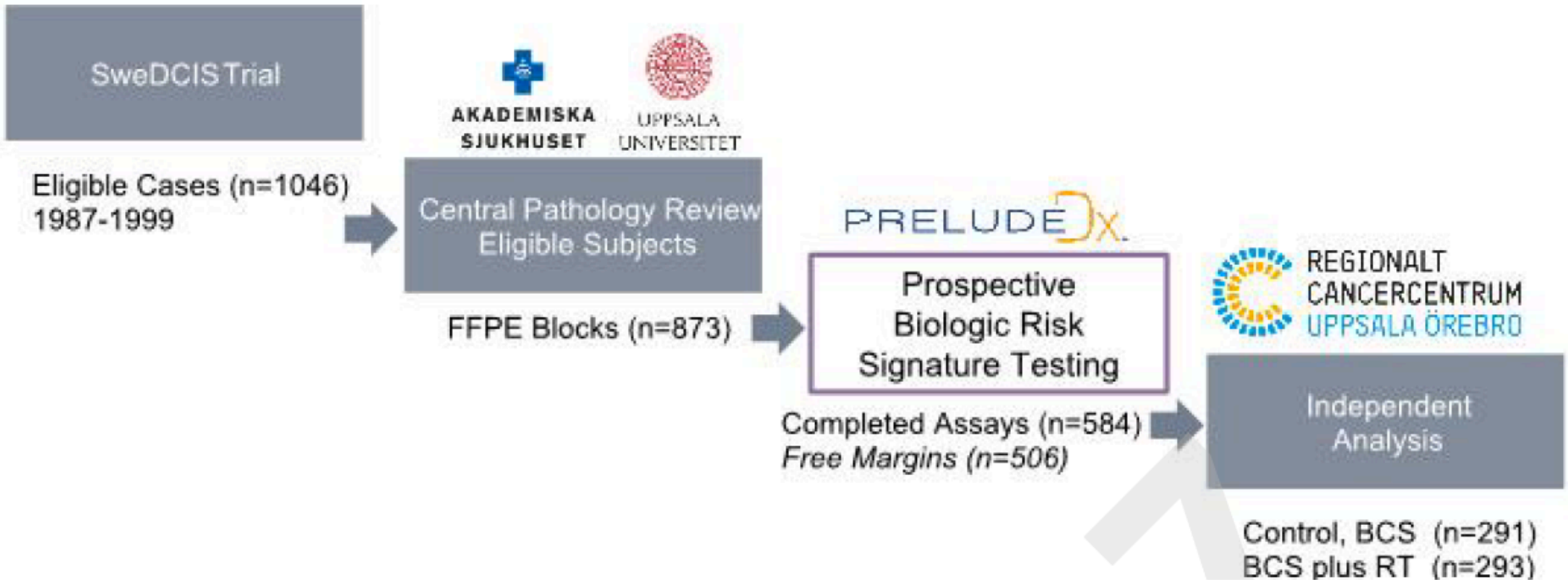
- Assess correlation between
  - Total ipsilateral events/invasive
  - Decision Score
    - Low risk group and RT
    - Elevated risk group and RT
- Multivariate Interaction Analysis

Who will benefit from RT?



- Previously completed validations
  - Multiple cross validation, Uppsala Univ and UMAss (n=526) 2015
  - Independent validation, Kaiser Permanente NW (n=455) 2016

Validation SweDCIS



SweDCIS Clinical Risk Factors

	Complete Assay	**Overall Trial**
Characteristic	Count (%)	Count (%)
Age <50 years	140/584 (24%)	252/1046 (24%)
Size ≥10 mm	424/584 (73%)	709/935 (76%)
Margins: Involved	78/584 (13%)	112/952 (12%)
Treatment Year <1995	331/584 (57%)	602/1046 (58%)
BCS plus RT	293/584 (50%)	526/1046 (50%)

SweDCIS: RT Benefit at 10 yrs

Complete Assay Data w/ Clear Margins, n=506

No significant RT benefit in Low Risk goup

Multivariate Interaction Analyses

Characteristic		Invasive Breast Cancer (IBC)		Total IBE (DCIS+IBC)	
	n	***HR***	***p-value***	***HR***	***p-value***
Low Risk (DS≤3)	*243*	*0.84* [illegible]	*0.70*	*0.48* *[0.24 to 0.97]*	*0.04*
Elevated Risk (DS>3)	*263*	*0.24* *[0.08 to 0.76]*	*0.012*	*0.31* *[0.17 to 0.59]*	*<0.001*

RT benefit larger than expected 50%

SweDCIS compared to Cross-validation
clear margins

- RT benefit at 10 yrs, multivariate interaction analyses

Low Risk (DS≤3)		Invasive Breast Cancer (IBC)		Total IBE (DCIS+IBC)	
Study	n	HR	p-value	HR	p-value
SweDCIS	243	0.84 [0.32 to 2.22]	0.70	0.48 [0.24 to 0.97]	0.04
UUH/UMASS (Cross-Validation)	196	0.76 [0.23 to 2.53]	0.65	0.50 [0.21 to 1.18]	0.12

Elevated Risk (DS>3)		Invasive Breast Cancer (IBC)		Total IBE (DCIS+IBC)	
Study	N	HR	p-value	HR	p-value
SweDCIS	263	0.24 [0.08 to 0.76]	0.012	0.31 [0.17 to 0.59]	<0.001
UUH/UMASS (Cross-Validation)	278	0.32 [0.13 to 0.77]	0.011	0.26 [0.14 to 0.47]	<0.001

Conclusion

- Biological risk signature (Decision Score) correlated to risk (**prognostic**)

- Biological risk signature **predicted** RT benefit
  - Not all patient groups have equivalent RT benefit

  - Low risk patients no RT benefit to prevent Invasive recurrence

  - Elevated risk patients substantial benefit nearly 2x expected

Local recurrence and salvage lumpectomy

Sellam et al

Local Recurrence of Breast Cancer: *Salvage Lumpectomy as a Safe Option for Local Treatment*

Yael Sellam[1], Ilanit D. Shahadi[2], Ilana Gelernter, Douglas Zippel[3], Miri Sklair-Levy[3], Zvi Symon[2], Shira Galper[2], Merav A. Ben-David[2]

1- Sackler School of Medicine, Tel-Aviv University, Tel Aviv, Israel, 2- Radiation Oncology Department, Sheba Medical Center, Ramat-Gan, Israel
3- The Meirav Breast Center - Sheba Medical Center, Ramat-Gan, Israel

Abstract

The best local management for breast cancer recurrence following conservative treatment for breast cancer (breast conserving surgery followed by radiation therapy) continues to be an open question. In this study, we compared patient outcomes after salvage lumpectomy vs. patients who underwent mastectomy for ipsilateral breast tumor recurrence (IBTR).

Objectives

Between 1987 and 2014 we identified 121 patients with pT0-2, N0-3, M0 breast cancer who had breast conserving surgery and radiation as their primary treatment, and subsequently had IBTR (unifocal only, eligible for re-lumpectomy).

At first recurrence, 47 patients (39%) underwent salvage lumpectomy (SL) and 74 (61%) salvage mastectomy (SM).

Median F/U was 14 years (2-30) from first breast cancer diagnosis.

Results

The women who opted for SM as salvage treatment for their recurrence previously had more ALND (58% vs. 33%, p=0.023) and received neoadjuvant chemotherapy more frequently (20% vs. 4%, p=0.022) at their first breast cancer diagnosis. The median DFI at 1st recurrence for SL and SM group was 12 and 7 years, respectively (p=0.011).

	Salvage Lumpectomy	Salvage Mastectomy	
	Patients, n (%)	Patients, n (%)	P-value
Mean Age at 1st diagnosis	52.2 y	46.9 y	0.006
Tumor size at 1st surgery	1.26 cm	1.67 cm	0.722
Tumor size at 2nd surgery	1.13 cm	1.52 cm	0.013
RT post 2nd surgery	16 (34%)	20 (27%)	0.154
Pathologic G 1st surgery			0.046
Grade 1	14 (29.7%)	12 (16.9%)	
Grade 2	21 (44.6%)	(42.2%) 30	
Grade 3	(12.7%) 6	(30.9%) 22	
DCIS related	(12.7%) 6	(9.8%) 7	
IDC pathology 1st surgery	(74%) 35	(83%) 59	0.761
ER 1st surgery - Positive	(74%) 28	(60%) 40	0.202
HER2 1st surgery Positive	(24%) 9	(26%) 17	0.819
True Recurrence	(46.8%) 22	(39.4%) 28	0.395

- For the SL and SM cohorts, 8 and 10 patients (17%, 13.5%, p=0.22) respectively, developed subsequent local recurrence as a 3rd event. The median DFI between 2nd and 3rd recurrence for SL and SM was 6.5 and 15.5 years, respectively (p=0.081).
- In a univariate analysis, age at 1st diagnosis, T stage at 1st diagnosis and 1st recurrence, number of dissected/+ve LN, grade, type of axillary surgery, neo/adjuvant chemo and HER2 status (both in primary and at recurrence), had no effect on 2nd recurrence occurrence for both groups.
- In MVA, undergoing SL had higher chances of having a 2nd recurrence (3rd event), p=0.020. Having re-irradiation following SL did not protect against 2nd recurrence (3rd event, p=0.42).
- At a median follow-up of 14 years, 95.7% of SL patients are alive, NED, 85% are mastectomy free. 84% of patients who opted for SM are alive, NED.32

Conclusion

Salvage lumpectomy following IBTR, while associated in MVA with higher second LR rate than SM, is not associated with inferior survival. With survival >95% at 14 years in the SL cohort, salvage lumpectomy with or With out re-radiation, in a selected population (unifocal T), represents an acceptable treatment option for patients in order to delay time to mastectomy and keep the original breast without reducing BC survival. Both options should be discussed prior to any surgical decision.

QR Code

Salvage lumpectomy after recurrence

- Between 1987 and 2014 121 patients identified
- pT0-2, N0-3
- BCS and XRT
- In breast true recurrence (unifocal) eligible for re-lumpectomy

- 47 (39%) underwent salvage lumpectomy
- 74 (61%) underwent salvage mastectomy
- Median f/u 14yrs from first diagnosis

	Salvage Lumpectomy	Salvage Mastectomy	
	Patients, n (%)	Patients, n (%)	P-value
Mean Age at 1st diagnosis	52.2 y	46.9 y	0.006
Tumor size at 1st surgery	1.26 cm	1.67 cm	0.722
Tumor size at 2nd surgery	1.13 cm	1.52 cm	0.013
RT post 2nd surgery	16 (34%)	20 (27%)	0.154
Pathologic G 1st surgery			0.046
Grade 1	14 (29.7%)	12 (16.9%)	
Grade 2	21 (44.6%)	(42.2%) 30	
Grade 3	(12.7%) 6	(30.9%) 22	
DCIS related	(12.7%) 6	(9.8%) 7	
IDC pathology 1st surgery	(74%) 35	(83%) 59	0.761
ER 1st surgery - Positive	(74%) 28	(60%) 40	0.202
HER2 1st surgery Positive	(24%) 9	(26%) 17	0.819

Results

- For SL and SM cohorts, 8 and 10 pts (17%, 13.5% p=0.2) respectively, developed subsequent local recurrence as 3rd event
- Median DFI between 2nd and 3rd event 6.6 (SL) and 15.5yrs (SM)

- Median follow-up 14yrs, 95.7% of SL patients are alive NED and 85% are mastectomy free

Conclusions

- In a selected population salvage lumpectomy is an acceptable treatment for women who have recurrence following BCS and XRT

Thank you