
Management des Mammakarzinoms: Verändern kleine Tumorinfiltrate die Prognose

Weekly Surgical & Gastroenterological Grand Rounds
6. Oktober 2009

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Kantonsspital Olten

www.so-H.ch

Literature in line

- Basler Facharztseminar



Literature in line

• Guidelines

GUIDELINE

Tumorektomie oder Mastektomie?

Wahl des Operationsverfahrens für Stadien T₁-T₃N_xM₀ des Mammakarzinoms

J. Benz¹, G. Berclaz¹, V. Dupont Lampert², E. Eicher³, F. Harder², O. Köchl¹, U. T. Laffer³, J. G. Poell⁴, M. Trutmann⁵, M. Zuber²

Arbeitsgruppe «Guideline Mammakarzinom, Chirurgische Therapie»

Kurzfassung

1. Patientinnen mit einem Chirurgie gefolgt von Ra Kontraindikationen
2. Kontraindikationen der b
 - Multizentrität des Tu
 - tumorbefallene Schnitt
 - nach Tumorektomie, so akzeptable Brusterhaltu
 - verantwoehbar unbefried

Guideline zur Axilladissektion

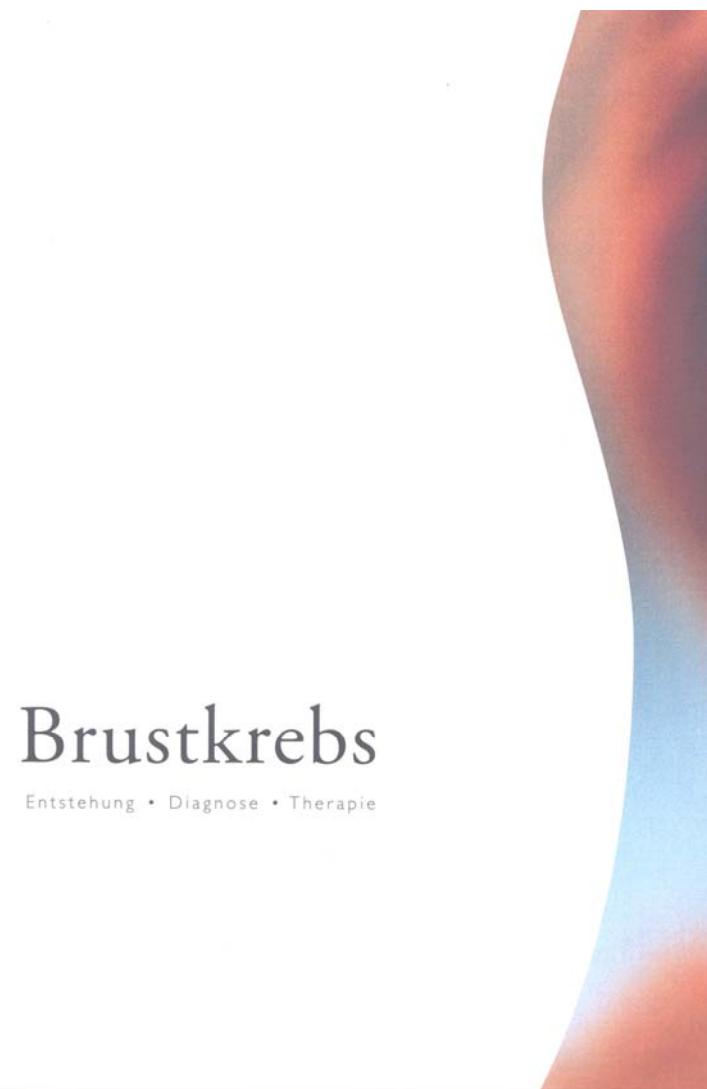
M. Zuber¹, D. Oertli¹, W. R. Marti¹, T. Kocher¹, A. Wildisen¹, G. Berclaz², O. R. Köchl², F. Harder¹

Arbeitsgruppe «Guideline Mammakarzinom, Axilladissektion»*

Kurzfassung

Literature in line

- Brochure for patients
- Available: Roche

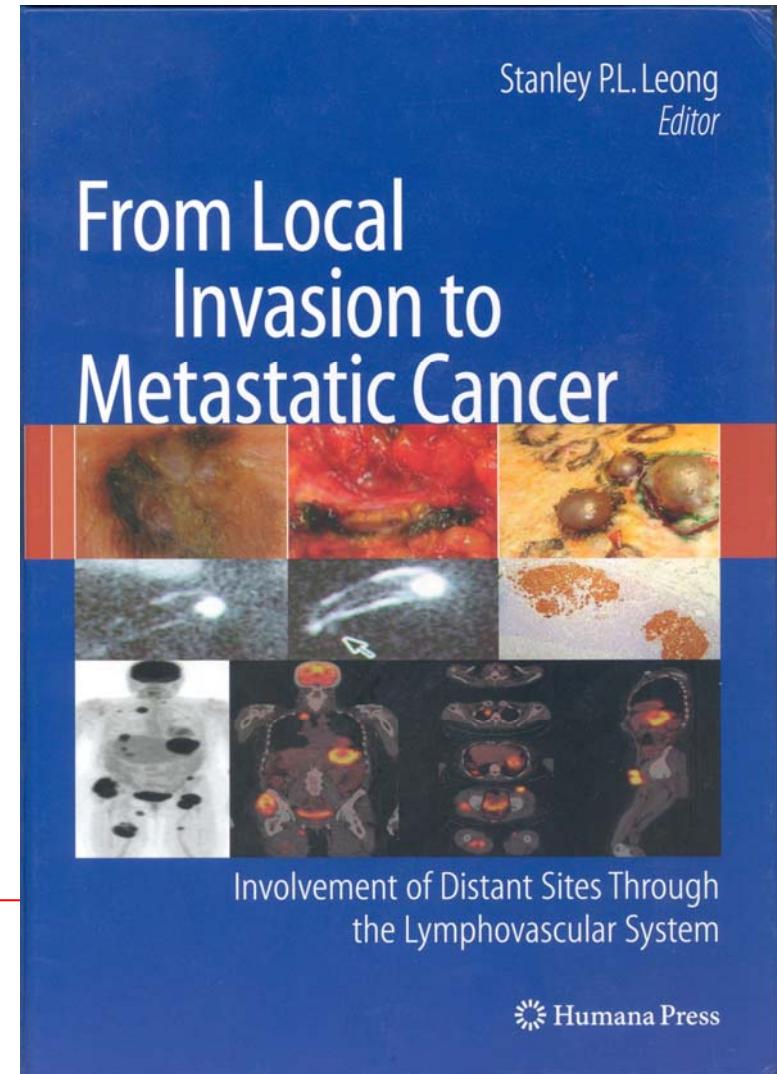


Brustkrebs

Entstehung • Diagnose • Therapie

Literature in line

- In depth

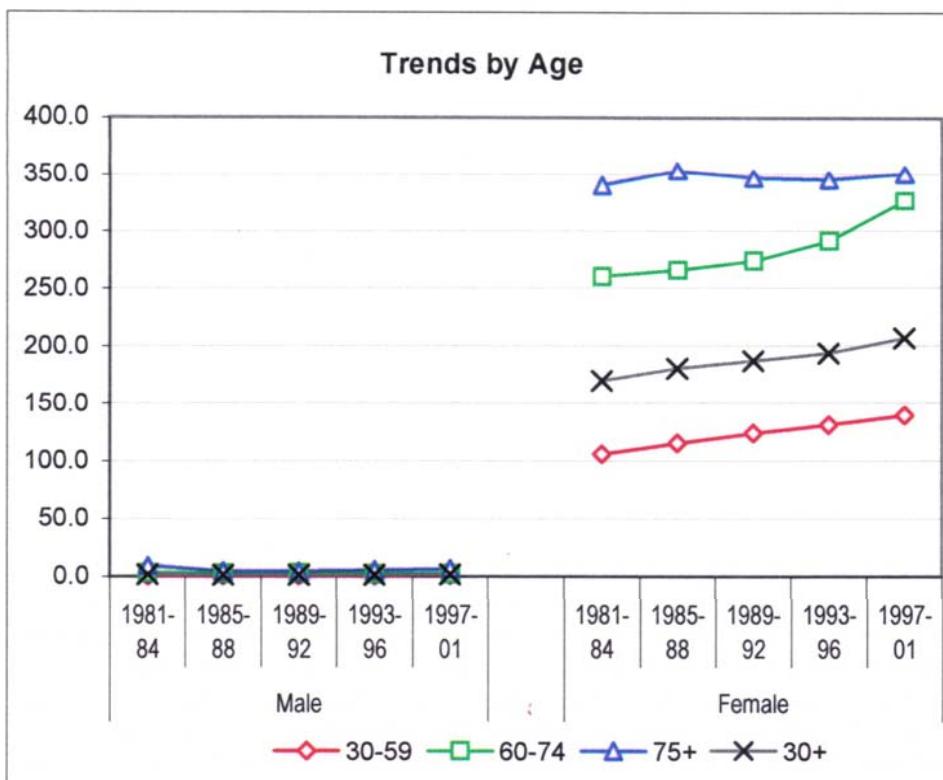


Pattern of care in Switzerland

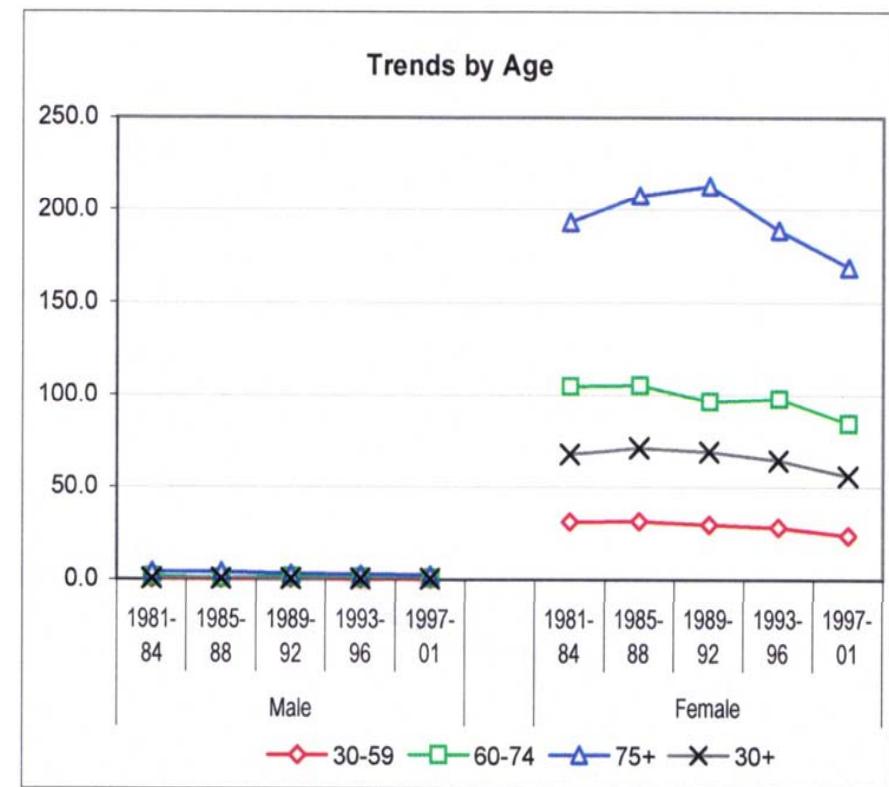
- Breast cancer surgery (2005) 62 / 75 institutions
- Interdisciplinary tumor boards
 - Standard 66 %
 - Participants diverse

Facts for breast cancer in Switzerland

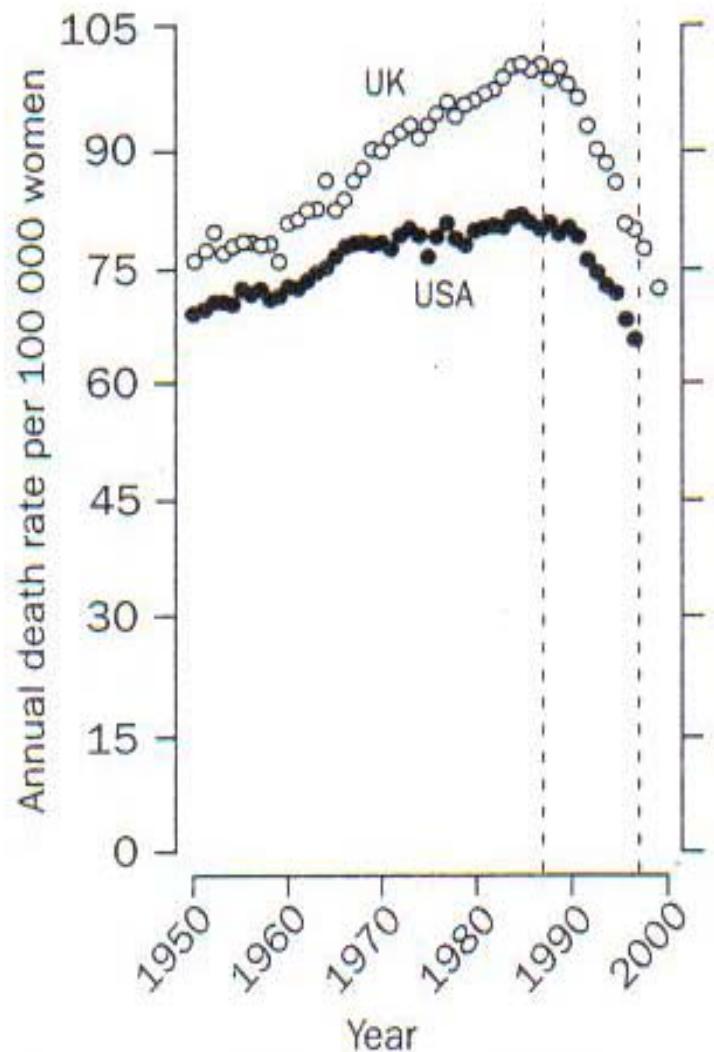
Incidence



Mortality



Facts: breast cancer death rate in the UK and USA



Peto R et al. Lancet 2000; 355: 1822

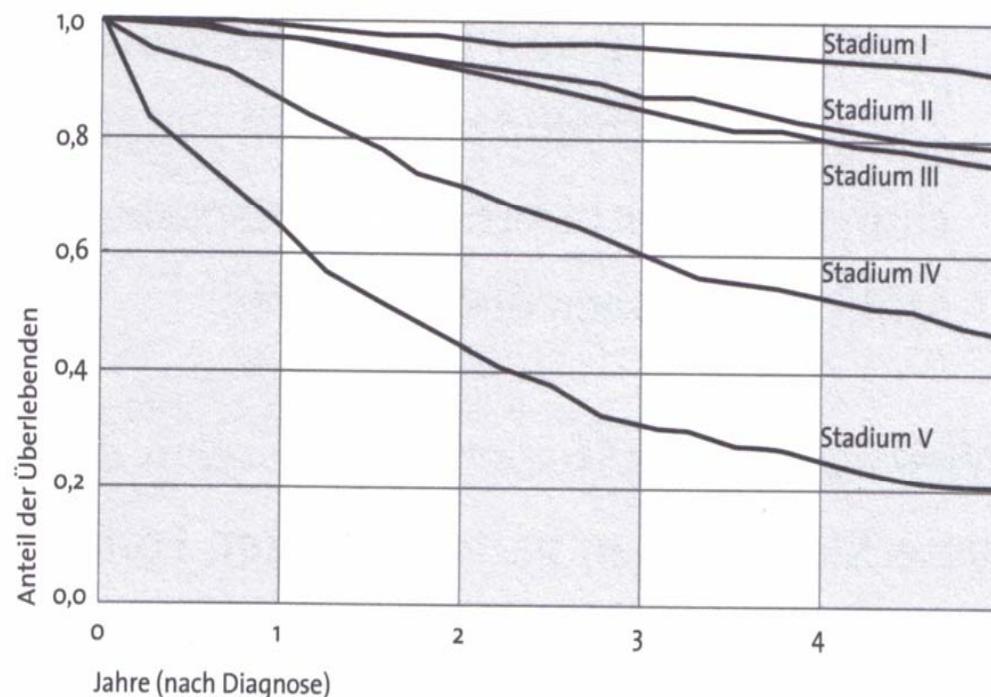
Fact for breast cancer

**The earlier breast cancer is detected
the better the prognosis**

Fact for breast cancer

Early detection of breast cancer

- The chance of survival is depending on the stage at the time of diagnosis

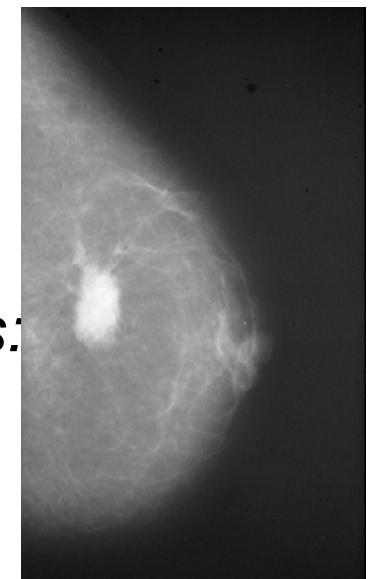


Stadium I = TNM pTis

Fact for breast cancer

Mammography screening programm in Switzerland

- For all women between 50 - 69 years
- In every second year
- Every breast in 2 planes



*In case of international accepted quality standards:
33 % mortality reduction*

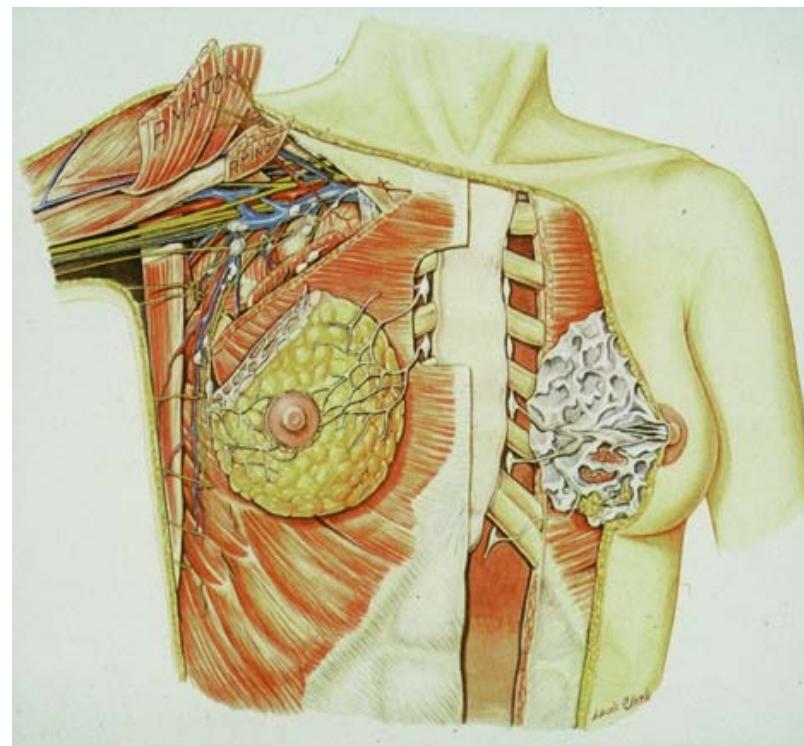
Overview of the presentation

- Introduction
 - Less invasive procedure of axillary staging
 - Non invasive procedure of axillary staging
 - Swiss SLN multicenter study
 - frozen section
 - morbidity
 - association SLN and BM
 - survival
 - SLN micrometastases
 - SLN survival pN0
-

I. Introduction

Clinical relevance of axillary lymph nodes

- Lymph node status is the most important prognostic marker

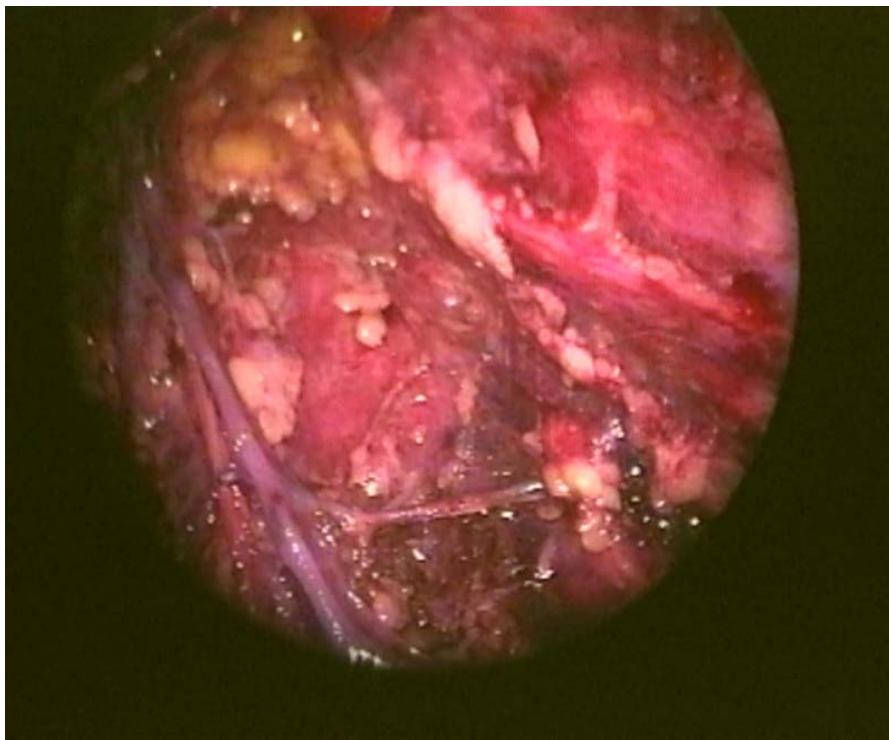


Controversy of the axillary lymph node dissection

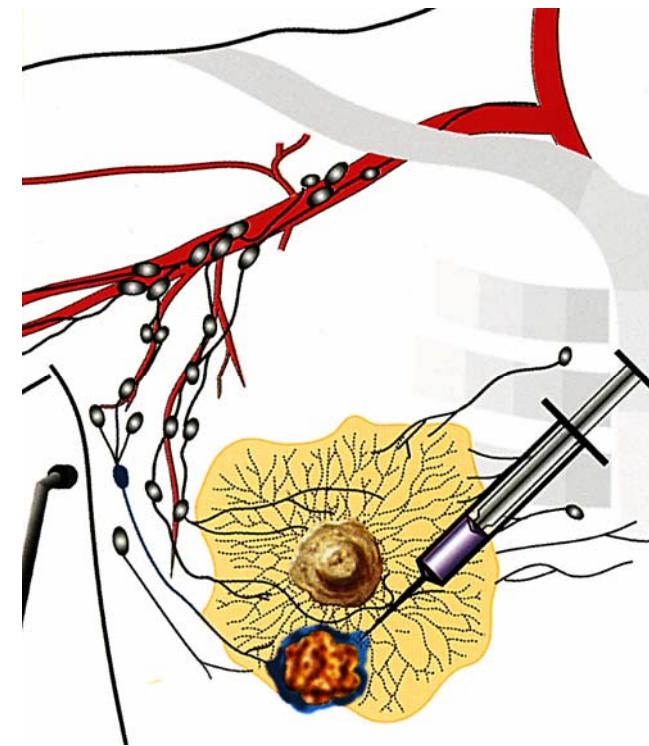
- Morbidity:
Lymphoedema of the upper extremity
- Systemic adjuvant therapy:
Based on primary tumor characteristics

II. Less invasive procedures for axillary staging

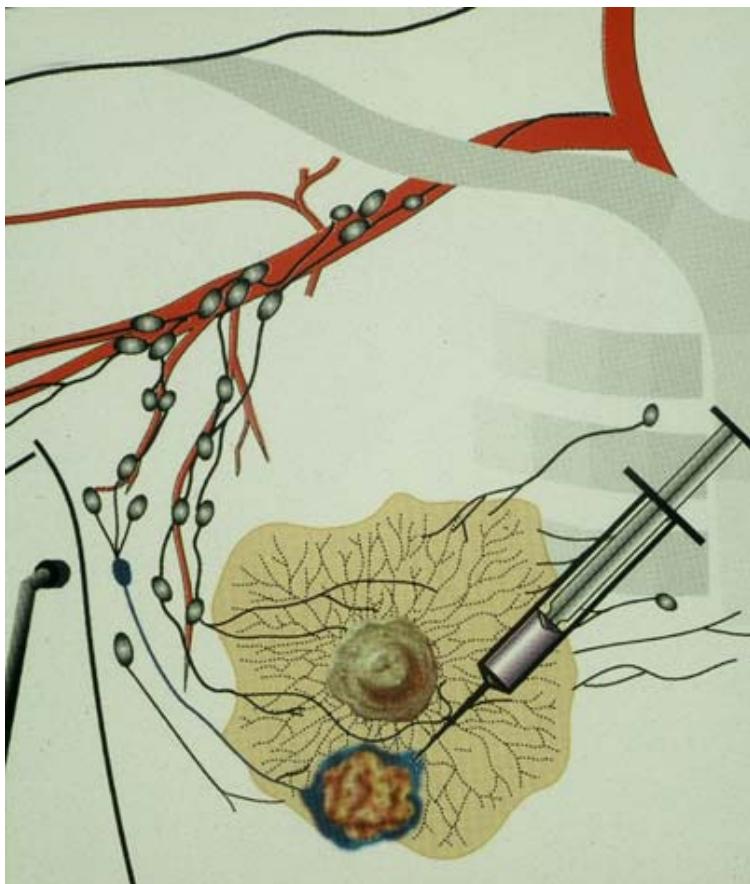
Endoscopic axillary dissection



Sentinel lymph node biopsy



Sentinel lymph node biopsy



Sentinel lymph node Hypothesis

The sentinel lymph nodes are the first lymph nodes draining the area of the primary tumor.

With the highest probability these lymph nodes harbour the first small tumor infiltrates.

The SLN represents the lymph node status.

Sentinel lymph node biopsy

Method

- Blue dye
- Radioactive tracer
- Combination



Nuklearmedizin

Sentinel lymph node biopsy

Histology

- Conventional
 - 1 - 2 sections / lymph node
 - H&E
- Sentinel
 - Multilevel sectioning (MLS)
 - H&E
 - Immunohistochemistry (IHC)

Sentinel lymph node biopsy

Prospective validation study	9.1997 - 1.1999
Patients stage I + II ($\leq 3\text{cm}$)	41 / 44 93%
Histology	MLS H&E, IHC
SLN / patient	2.4
SLN + Non-SLN	17.6
FNR	1 / 17 5.9%

Langer I, Zuber M, Koechli OR, Kocher T, Mueller-Brand J, Torhorst J, Harder F.
Swiss Surgery 2000; 6: 128 - 136

Sentinel lymph node biopsy

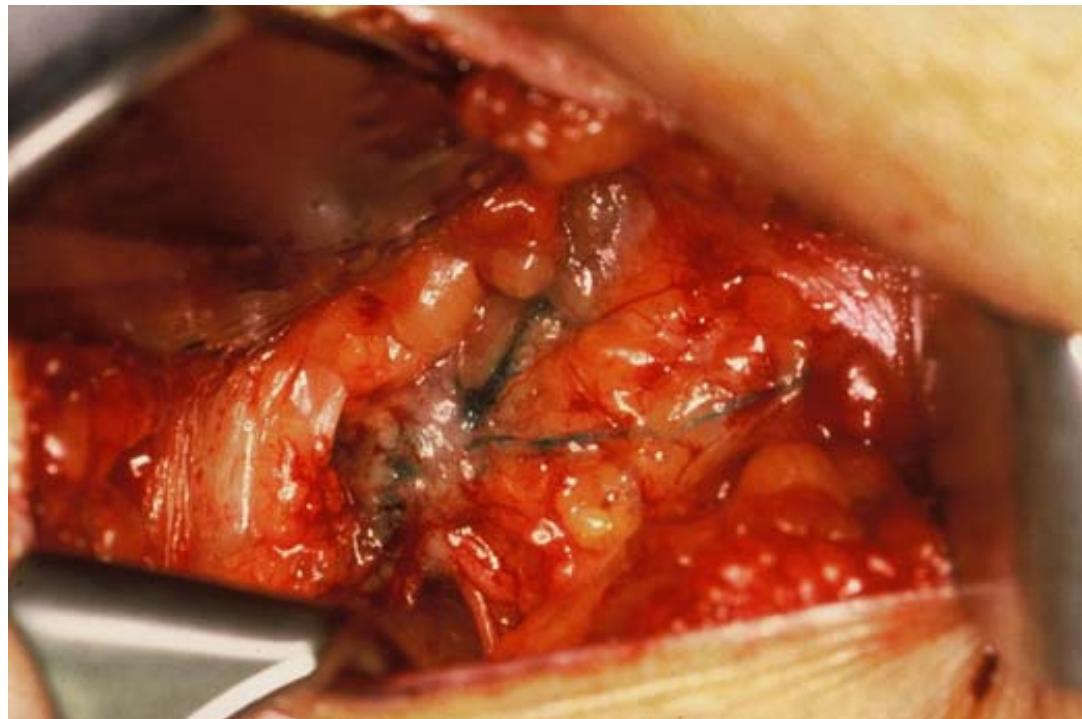
Results in the literature

- Identification rate 90 - 100 %
- False negative rate 0 - 5 %

Sentinel lymph node biopsy

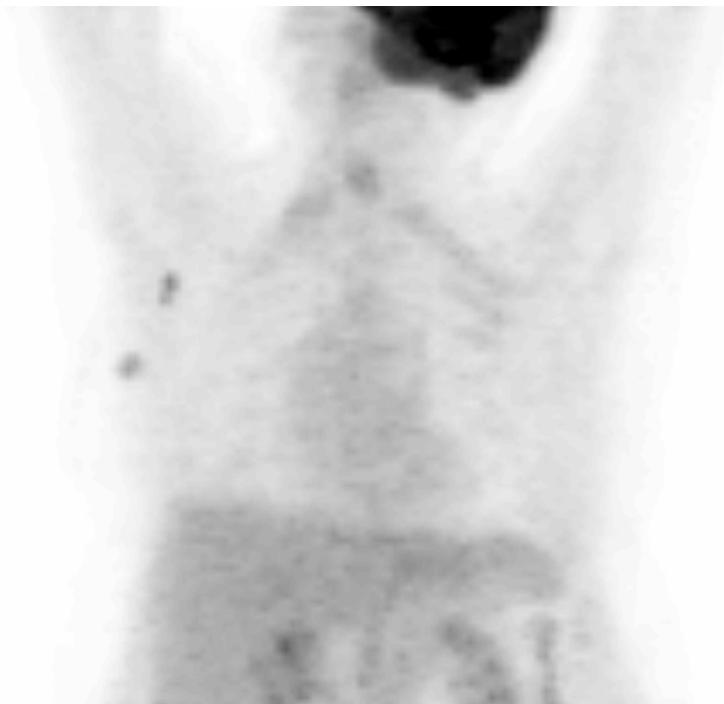
Conclusion consensus conference 2001

- Standard of care



III. Non invasive procedures for axillary staging

FDG-PET

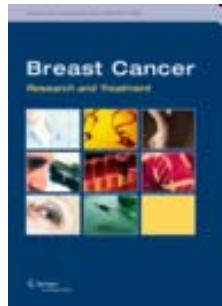


Smith IC et al. Ann Surg 1998; 228: 220 - 227

PET versus SLN

Prospective feasibility study 1.1998 - 12.2000
Patients stage I + II 31
Histology MLS
 H&E, IHC

True +	True -	False +	False -	Sens.%	Spec. %	NPV %
6	16	1	8	43	94	67

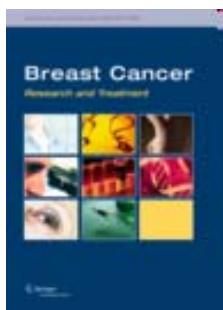


Guller U, Nitzsche EU, Viehl CT, Torhorst J, Moch H, Langer I, Marti WR, Oertli D, Harder F, Zuber M. Breast Cancer Res Treat 2002; 71: 171 - 173

PET versus SLN

Summary

Detection of <i>micrometastasis</i>	no
Smallest metastasis	3mm
Detection of <i>macrometastasis</i>	yes, but not all!



Guller U, Nitzsche EU, Viehl CT, Torhorst J, Moch H, Langer I, Marti WR, Oertli D, Harder F, Zuber M. Breast Cancer Res Treat 2002; 71: 171 - 173

PET versus SLN Literature

<i>Studies</i>		<i>n</i>	<i>Sensitivity</i>	<i>Specificity</i>	<i>FN</i>
Lovrics	2001	41	27 %	98 %	?
Kelemen	2002	15	20 %	90 %	4 / 5
Guller	2002	31	43 %	94 %	8 / 14
Van der Hoeven	2003	70	0 %	97 %	0 / 10



Guller U, Nitzsche E, Moch H, Zuber M. J Natl Cancer Inst 2003; 95: 1040 - 1043

PET versus SLN

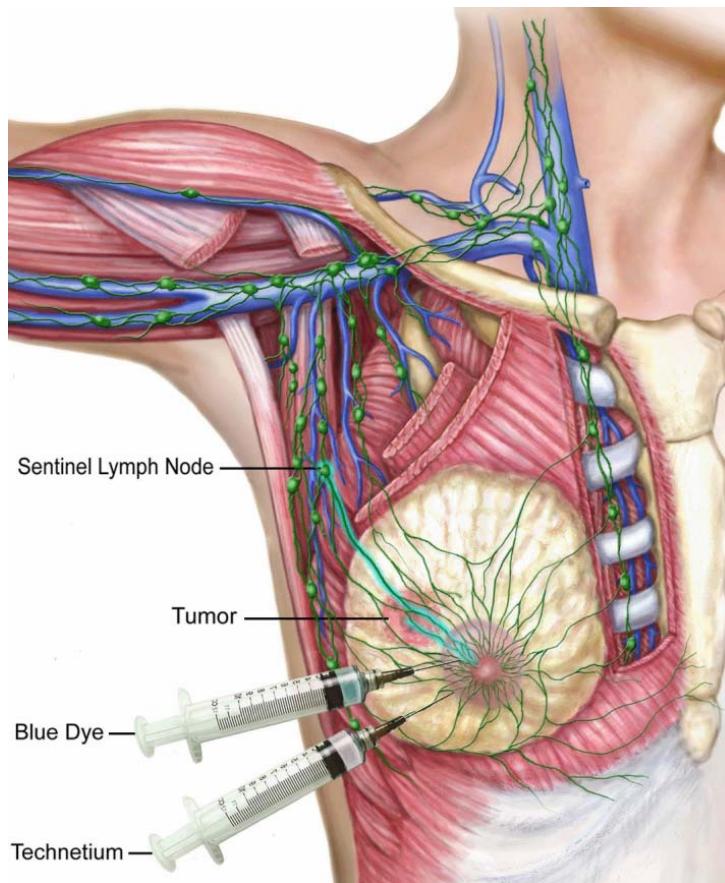
Conclusion

PET – not yet !



Guller U, Nitzsche E, Moch H, Zuber M. J Natl Cancer Inst 2003; 95: 1040 - 1043

IV. Swiss SLN multicenter study



Study aims

Introduction of the SLN procedure in clinical practice

- Technical feasibility
 - Frozen section analysis
 - Postoperative morbidity
 - Axillary recurrences and distant disease
 - Correlation SLN – bone marrow micro-metastases
 - Overall and disease free survival
-

Methodological issues

Prospective, non-randomized multicenter trial

- Participants 13 centers (8 - 113 cases)
 academic (3) and non-academic (10)
 - Validation 20 cases under supervision
 95% ID rate
 95% negative predictive value
 - Standardized protocol at 3 d, 3 to 12 monthly
 - Subjective and objective criteria
-

Criteria

Inclusion

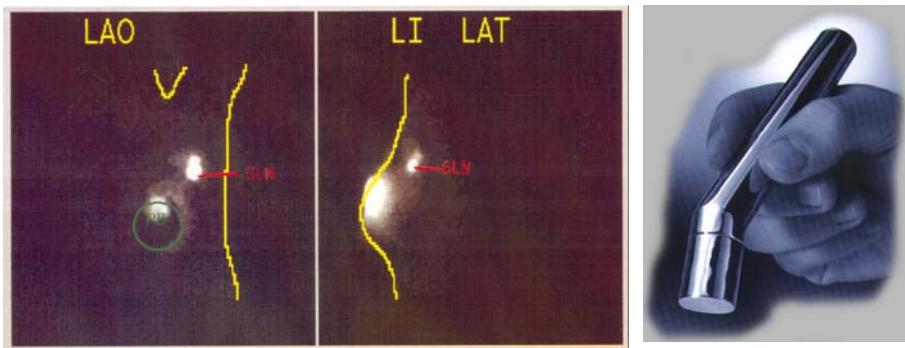
- Tumor size \leq 3 cm ($pT1+pT2 \leq 3\text{cm}$)
- Non palpable axillary lymph nodes (cN0)
- Informed consent

Exclusion

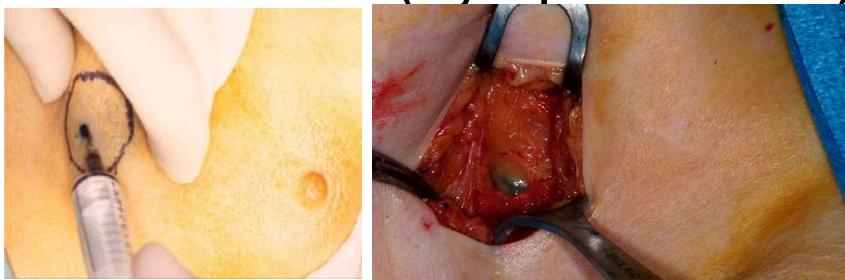
- $T2 > 3\text{ cm}$
 - cN+
 - Multicentricity
 - Bilateral breast cancer / other malignancies
 - Neoadjuvant therapy
 - Inflammatory breast cancer
-

SLN identification

-
- a. 99m Tc labeled colloid (lymphoscintigraphy)
handheld gamma probe (Navigator[®], Neoprobe[®], C-Trak[®])



- b. Isosulfanblue (Lymphazurin[®]) / Patent blue V[®]



SLN histopathological analyses

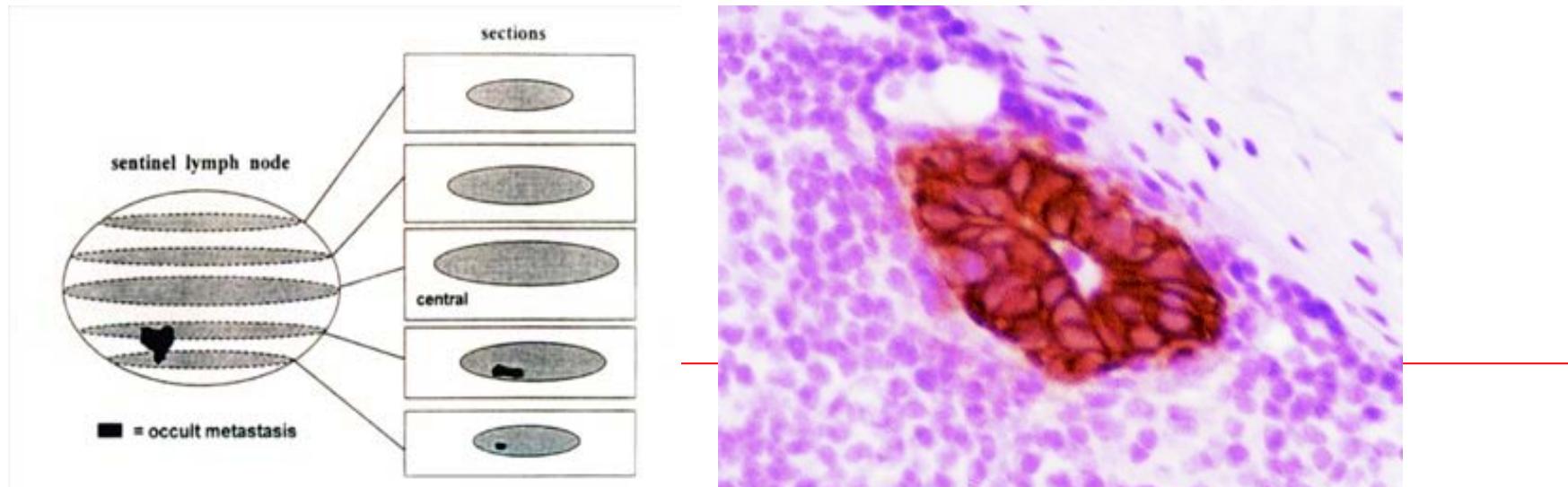
Frozen section (H&E) at 3 levels, cutting interval 150 µm

SLN < 5 mm totally embedded 3 x 1 sections

SLN ≥ 5 mm bisected 3 x 2 sections

Paraffin section (H&E, IHC)

Residual tissue, cutting interval 250 µm, IHC with Lu-5 / CK 22



Policy

SLN isolated tumor cells pN0(i+) ($\leq 0.2\text{mm}$)  completion ALND according to hospitals' directives

Swiss SLN multicenter study: results

Prospective registration study	1.2000 - 12.2003
Patients stage I + II (≤ 3 cm)	635
Bone marrow	iliac crests
Blood	peripheral
SLN / patient	2
SLN + Non-SLN	18.5

Langer I, Guller U, Berclaz G, Köchli OR, Moch H, Schaer G, Fehr MF, Hess Th, Oertli D, Bronz L, Schnarwyler B, Wight E, Uehlinger U, Infanger E, Burger D, Zuber M. Ann Surg 2007; 245: 452 - 461

Swiss SLN multicenter study: results

Identification rate	98.3 %
Follow up	30 months

Langer I, Guller U, Berclaz G, Köchli OR, Moch H, Schaer G, Fehr MF, Hess Th, Oertli D, Bronz L, Schnarwyler B, Wight E, Uehlinger U, Infanger E, Burger D, Zuber M. Ann Surg 2007; 245: 452 - 461

Swiss SLN multicenter study

Accuracy and sensitivity of frozen section

Accuracy macro-metastases 99.5 %

Accuracy macro- & micro-metastases 90.1 %

Specificity 100 %

no false positive frozen section

Sensitivity macro-metastases 97.9 %

only 2 % of patients had to be reoperated

Sensitivity micro-metastases 10.0 %

Langer I, Guller U, Berclaz G, Köchli OR, Moch H, Schaer G, Fehr MF, Hess Th, Oertli D, Bronz L, Schnarwyler B, Wight E, Uehlinger U, Infanger E, Burger D, Zuber M. Breast Cancer Res Treat 2009; 113: 129 - 136

Swiss SLN multicenter study

Morbidity

	SLN n = 431	SLN + ALND n = 204	p
Scar pain axilla	16 (3,7 %)	28 (13,7 %)	<0.0001
Range of motion	15 (3,5 %)	23 (11,3 %)	0.0002
Numbness upper arm	47 (10,9 %)	77 (37,7 %)	<0.0001
Shoulder- / arm pain	35 (8,1 %)	43 (21,1 %)	<0.0001
Breast- / chest wall pain	33 (7,7 %)	13 (6,4 %)	0.626

Langer I, Guller U, Berclaz G, Köchli OR, Moch H, Schaer G, Fehr MF, Hess Th, Oertli D, Bronz L, Schnarwyler B, Wight E, Uehlinger U, Infanger E, Burger D, Zuber M. Ann Surg 2007; 245: 452 - 461

Swiss SLN multicenter study

Morbidity

	SLN n = 431	SLN + ALND n = 204	p
Lymphoedema	15 3.5%	39 19,1%	<0.0001

Langer I, Guller U, Berclaz G, Köchli OR, Moch H, Schaer G, Fehr MF, Hess Th, Oertli D, Bronz L, Schnarwyler B, Wight E, Uehlinger U, Infanger E, Burger D, Zuber M. Ann Surg 2007; 245: 452 - 461

Conclusions

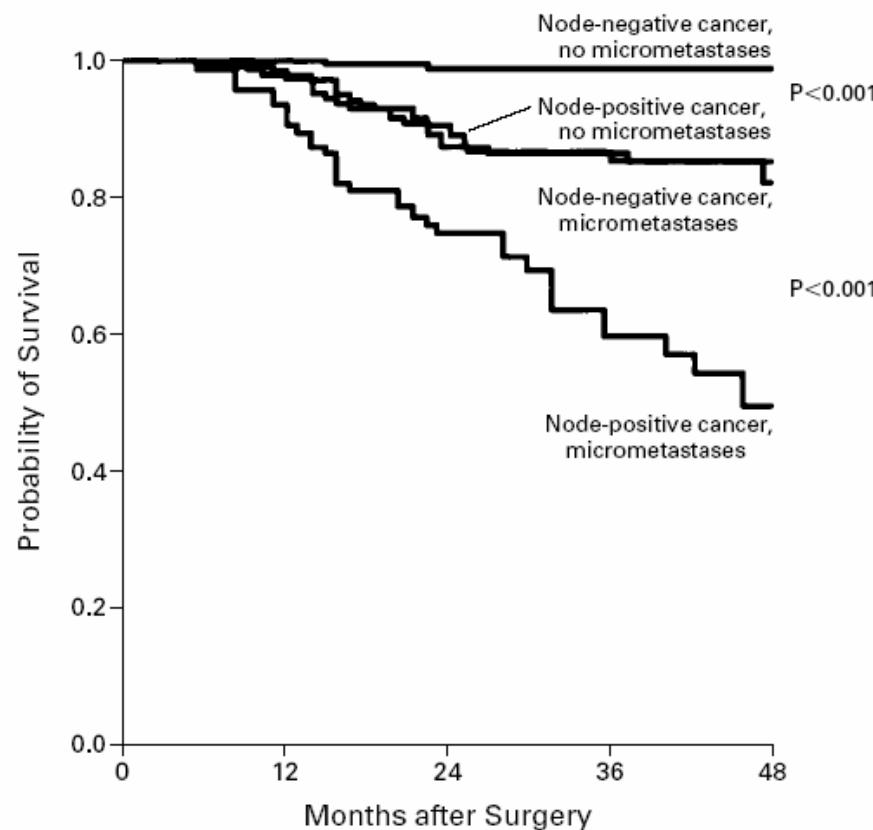
Feasibility and morbidity

- SLN reliable and safe with high ID rate
- Morbidity is significantly lower after SLN
- Low morbidity, but not zero !
- Reproducible in a multiinstitutional setting
- No difference academic vs. nonacademic centers

Langer I, Guller U, Berclaz G, Köchli OR, Moch H, Schaer G, Fehr MF, Hess Th, Oertli D, Bronz L, Schnarwyler B, Wight E, Uehlinger U, Infanger E, Burger D, Zuber M. Ann Surg 2007; 245: 452 - 461

Bone marrow micro-metastases and nodal status

Overall survival



Braun et al. N Engl J Med 2000; 342:525-533

Methods: Bone marrow



Isolation of the mononuclear cell fraction

Staining with the EPiMET® kit (Baxter):

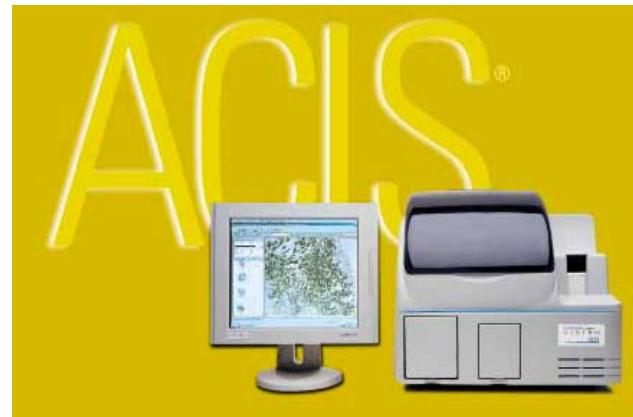
- A45-B/B45, monoclonal Ab against CK 8, 18 and 19

Positive controls: BM spiked with tumor cells

Negative controls: irrelevant antibody
BM from adenoma patients

Methods: ACIS Chromavision Workstation®

- Automatic, computer-aided, digital microscope
- Cell analysis based on color and morphology
- Visual verification by a pathologist



SLN and BMM

Detection rate 28.8% (118/410)

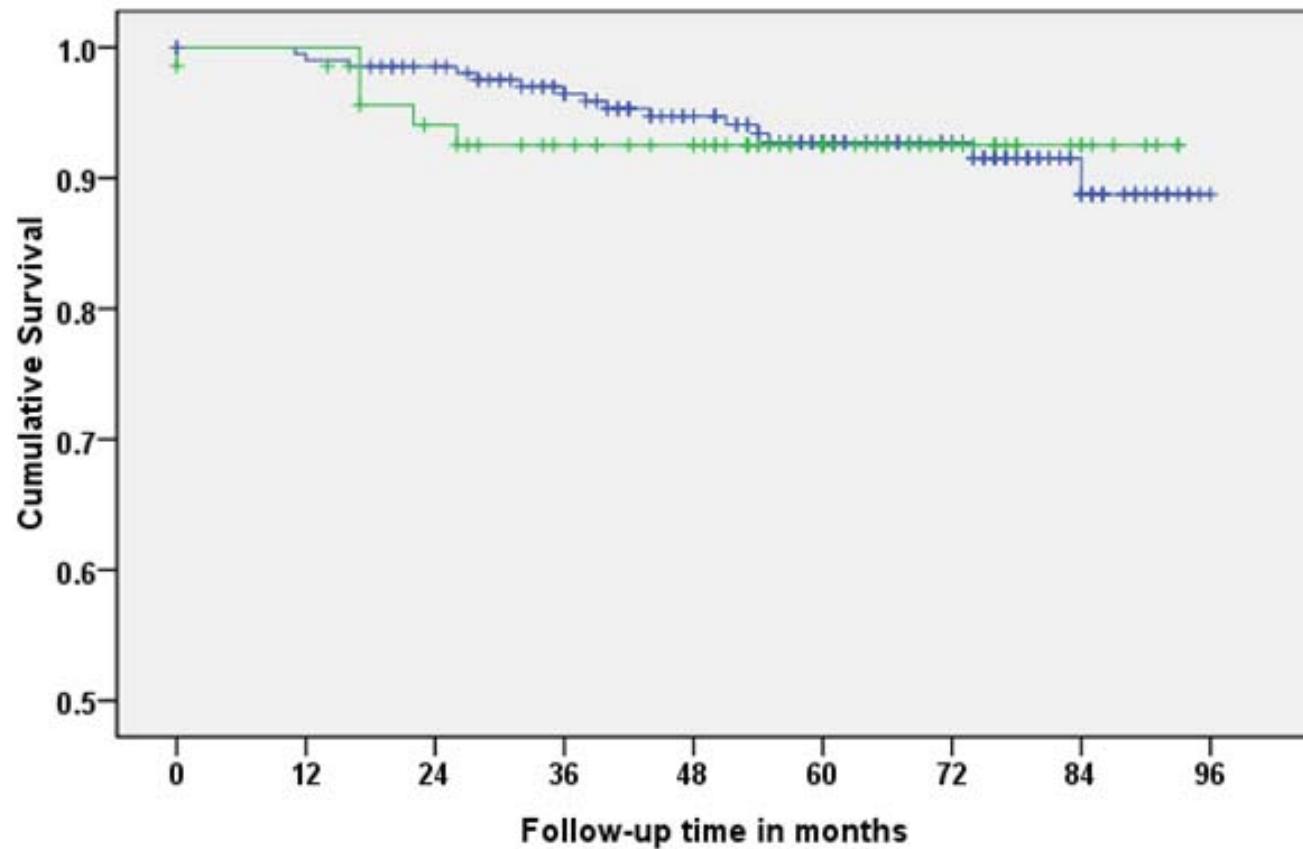
	BMM neg.	BMM pos.	total
SLN neg.	210 (51.2%)	67 (16.4%)	277 (67.6%)
SLN pos.	82 (20.0%)	51 (12.4%)	133 (32.4%)
total	292 (71.2%)	118 (28.8%)	410 (100.0%)

SLN and BMM

Multiple logistic regression analysis

Presence of bone marrow micrometastases			
Variable	p value	Odds ratio	95% CI
SLN positive vs. negative	0.007	1.860	1.181-2.929
Tumor size >1 cm vs. <=1cm	0.438	1.306	0.665-2.563
Grade 3 vs. 1 & 2	0.411	1.279	0.712-2.297
Post- vs. premenopausal	0.955	0.986	0.605-1.606
ER positive vs. negative	0.859	1.086	0.437-2.697
PR positive vs. negative	0.585	1.234	0.580-2.624

OS of node-negative patients with/without BMM



Median FU 60 months

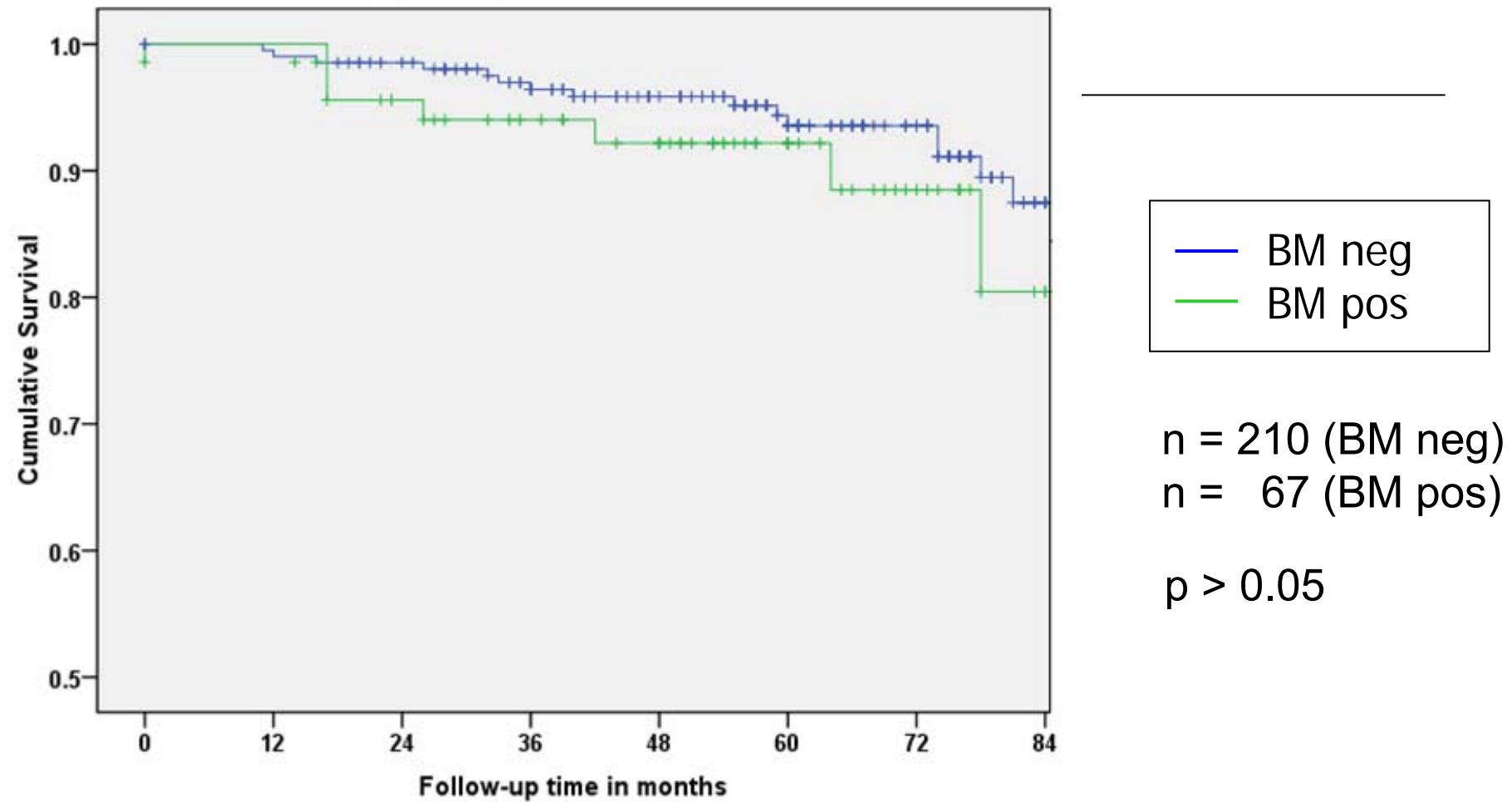
BM neg.
BM pos.

n = 210 (BM neg)
n = 67 (BM pos)

p > 0.05

DFS of node-negative patients with/without BMM

Median FU 60 months



SLN and BMM Conclusions

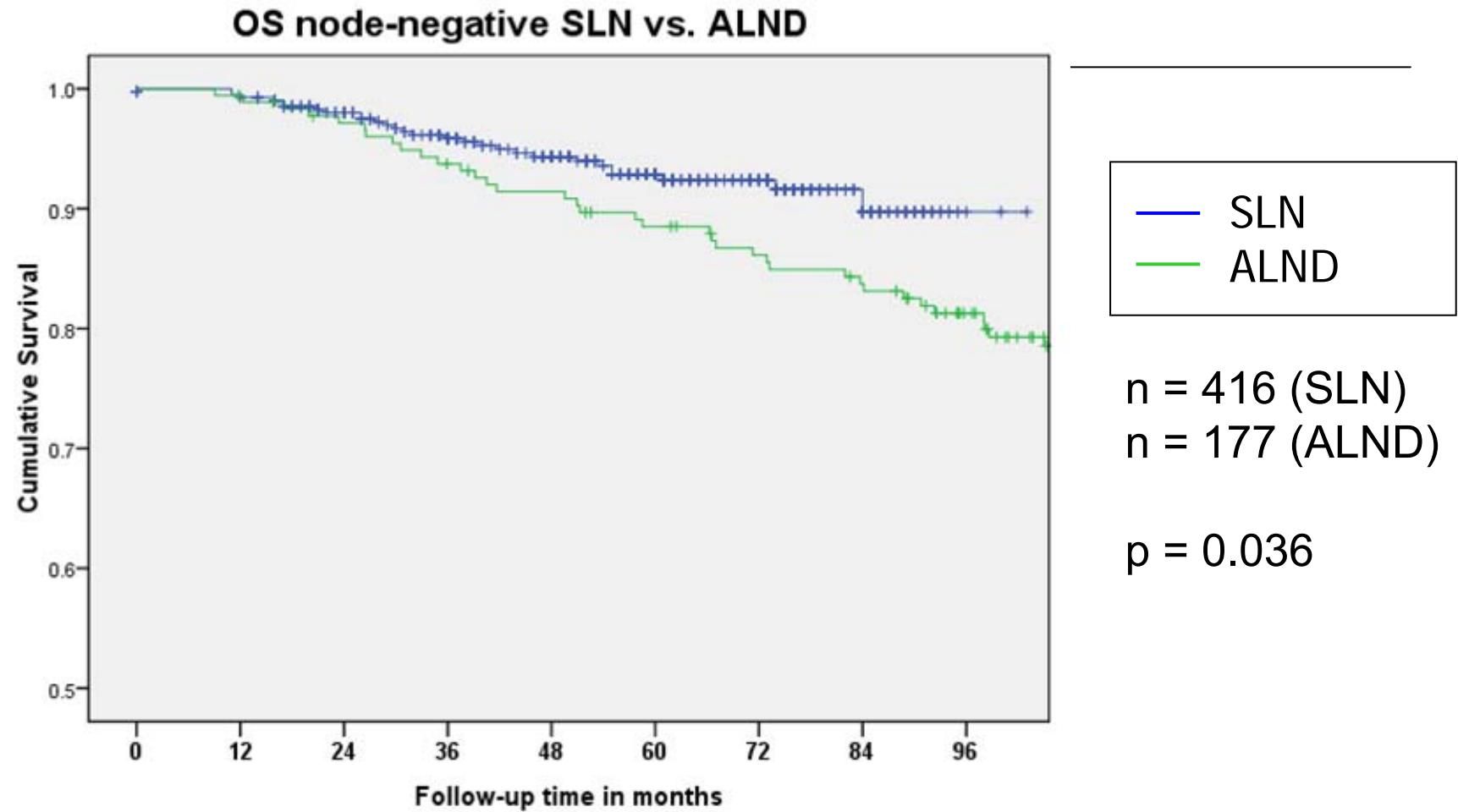
- Significant correlation between SLN and BMM in univariate and multivariable analysis
- Considerable percentage of non-concordance
- No survival difference

Langer I, Guller U, Berclaz G, Köchli OR, Moch H, Schaer G, Fehr MF, Hess Th, Oertli D, Bronz L, Schnarwyler B, Wight E, Uehlinger U, Infanger E, Burger D, Zuber M. Ann Surg Oncol 2007; 14: 1896 - 1903

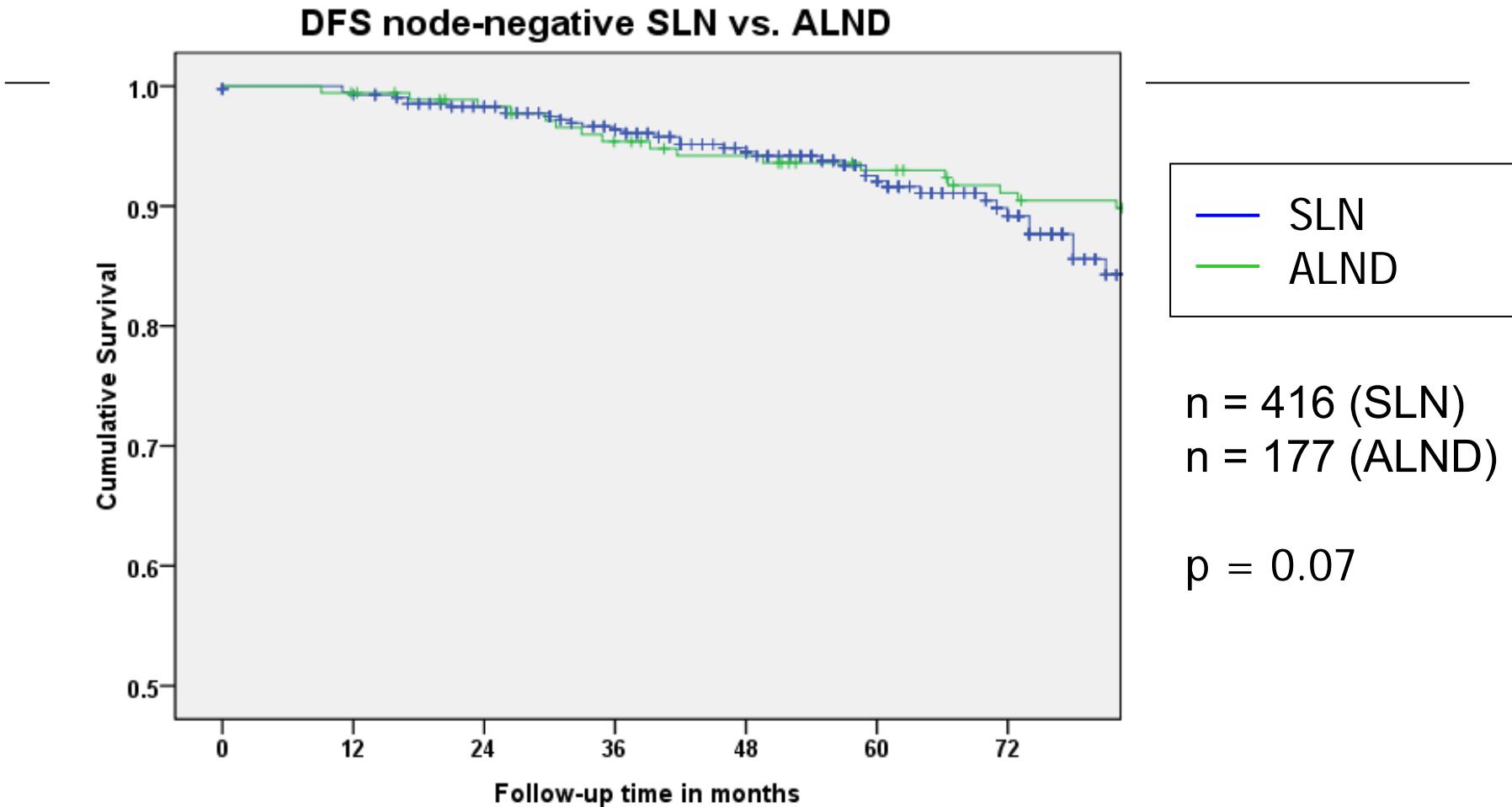
Swiss SLN multicenter study Late morbidity, recurrence, and mortality **60 months**

<i>Parameter</i>	<i>SN only</i> <i>n = 439</i>	<i>SN + ALND</i> <i>n = 220</i>	<i>P value</i>
Morbidity	39.0 %	68.6 %	<0.0001
Breast recurrence	1.8 %	2.7 %	0.567
Axillary recurrence	1.4 %	1.4 %	1.000
Distant metastases	6.4 %	12.7 %	0.008
Mortality	7.1 %	9.1 %	0.358

Survival: median follow-up: 60 months



Survival: median follow-up: 60 months



Swiss guideline for SLN in early breast cancer

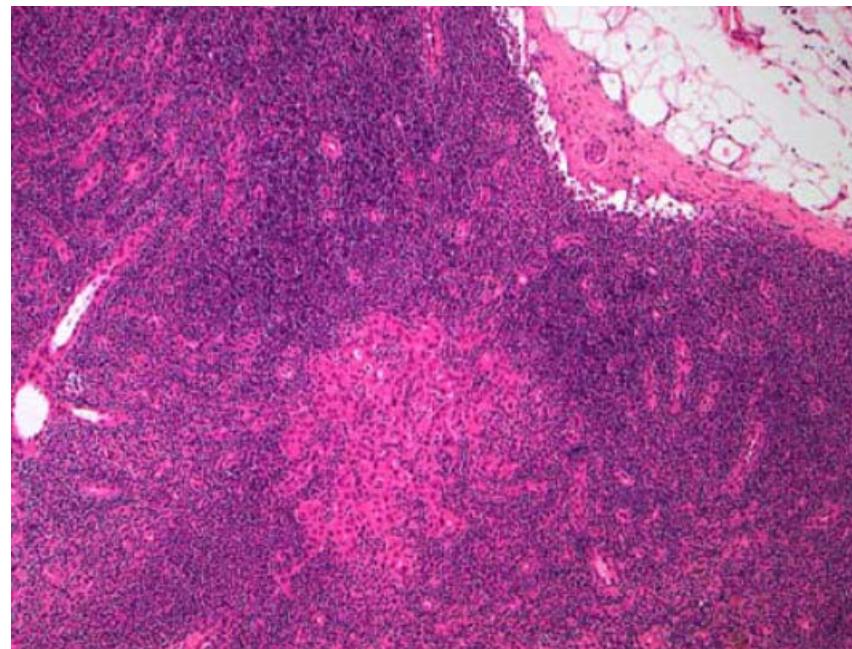
Guideline

Sentinel-Lymphknotenbiopsie beim Mammakarzinom

Konsensusstatements der Schweizerischen Arbeitsgruppe Sentinel beim Mammakarzinom und der Arbeitsgemeinschaft Gynäkologische Onkologie (AGO)

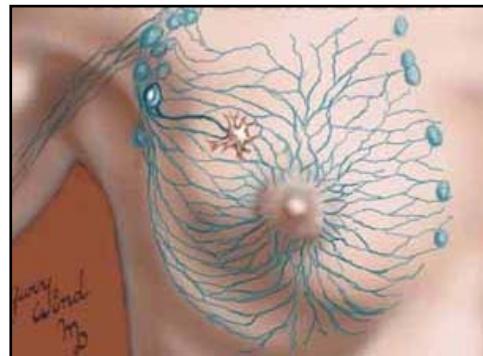
Ossi R. Köchli*, Igor Langer*, Gilles Berclaz*, Thomas Bischof, Renzo Brun del Re, Roger Burkhard, Jean-François Delaloye, Pierre-André Diener, Urs Haller, Gerhard Ries, Pierre Schäfer, Gabriel Schär, Hans C. Steinert, Stefanie von Orelli, Markus Zuber*

V. SLN micrometastases





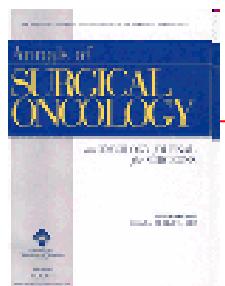
Axillary Recurrence Rate in Breast Cancer Patients with Negative Sentinel Lymph Node (SLN) or SLN Micrometastases: Prospective Analysis of 150 Patients after SLN Biopsy



I. Langer¹, W.R. Marti¹, U. GÜller¹, H. Moch², F. Harder¹, D. Oertli¹,
M. Zuber³

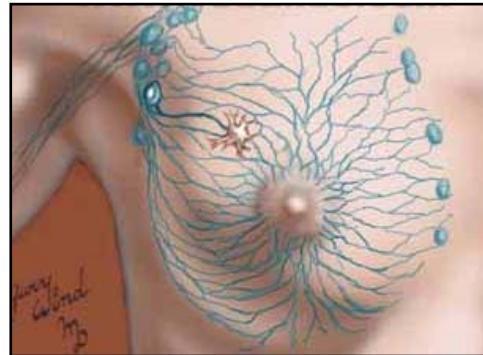
¹Department of Surgery, ²Institute of Pathology, University of Basel

³Department of Surgery, Kantonsspital Olten, Switzerland



First update: Langer I, Guller U, Viehl CT, R. Zanetti-Dallenbach, Moch H,
Wight E, Harder F, Oertli D, Zuber M. Ann Surg Oncol 2009
Doi10.1245/s10434-009-0660-9

... the Second Update with a Longer Follow Up Time



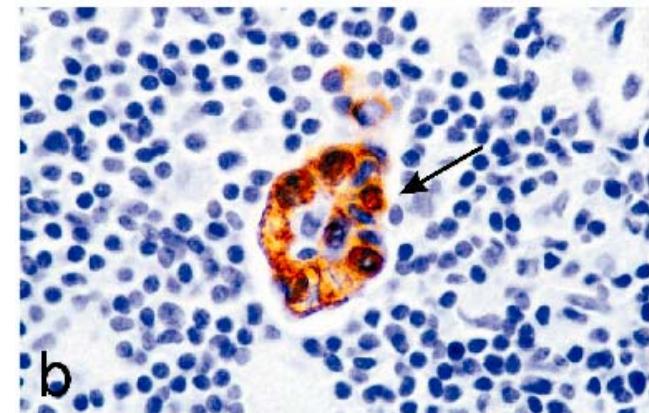
C.T. Viehl¹, I. Langer³, U. Guller¹, R. Zanetti-Dallenbach², H. Moch⁴, W.R. Marti¹,
F. Harder¹, D. Oertli¹, M. Zuber⁵

¹Department of Surgery, ²Department of Gynecology, University of Basel

³Department of Surgery, Kantonsspital Bruderholz, ⁴Institute of Pathology, University of
Zurich, ⁵Department of Surgery, Kantonsspital Olten, Switzerland

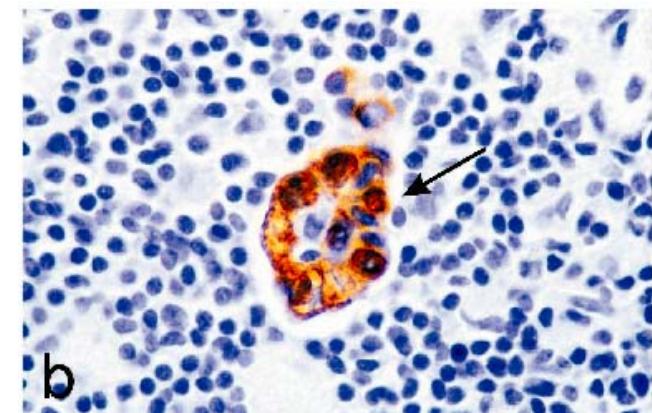
Background in 1998 - controversy

- Clinical relevance of SLN micrometastasis ?
- Prognostic value and therapeutic consequence of SLN micrometastases ?
- Omitting completion ALND could increase the axillary and distant recurrence rate ?



Background in 1998 - controversy

- No evidence **for** or **against** a completion ALND



Axillary recurrence rate after axillary lymph node dissection

University of Basel (1986 - 1996)

n = 227

Median follow up

62 months (12 - 108)

Axillary recurrence rate

1.3 %

Literature

0.5 - 2.0 %

Harder L. Long term morbidity after axillary dissection of level I and II and tumorectomy or mastectomy in breast cancer patients. Thesis, University of Basel, 2002

Study objective

Systematic and consecutive omission of a completion ALND in

- negative SLN

vs.

- SLN micrometastases ($>0.2 - \leq 2.0$ mm)

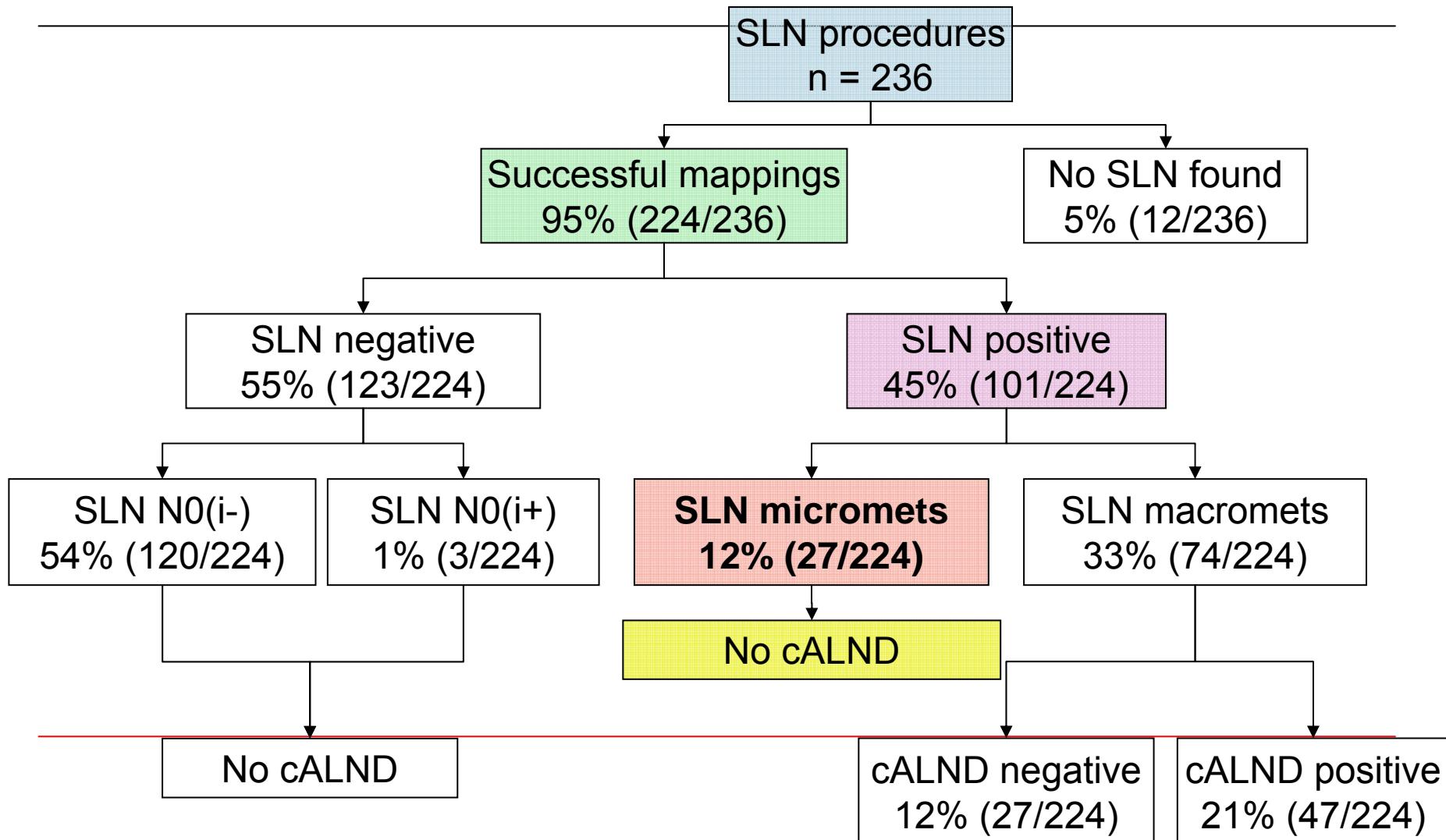
after a SLN procedure

1. No difference in axillary recurrence rate
 2. No difference in distant recurrence rate
 3. No difference in axillary and distant DFS and OS
-

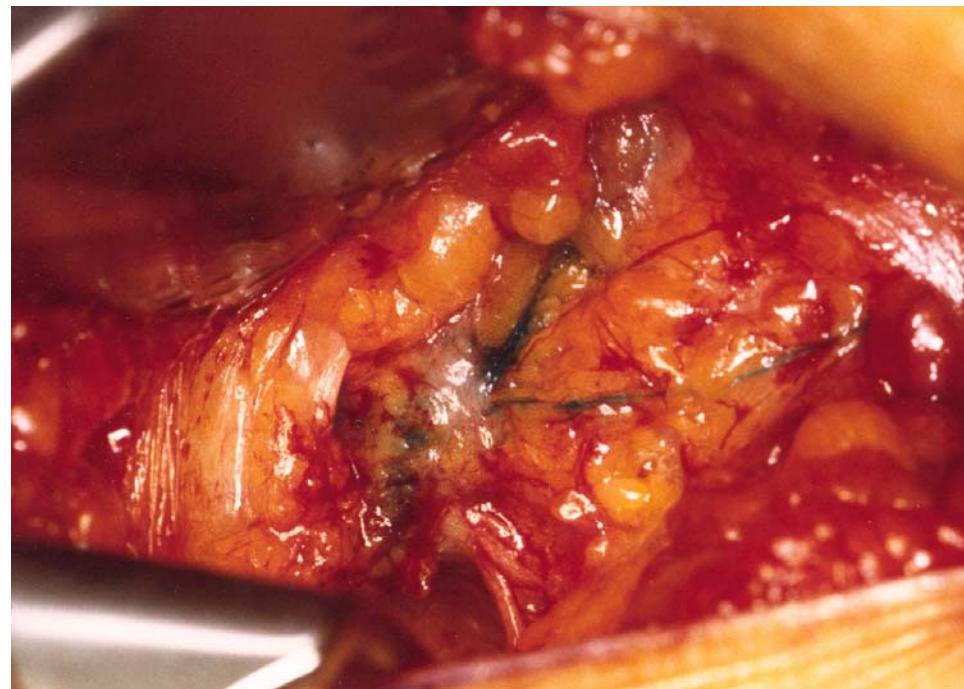
Patients and methods

- Prospective, consecutive study April 1998 - September 2002
 - Inclusion criteria palpable unilateral cancer cT1 and cT2 ≤ 3cm, cN0, M0
 - Number of patients 234 (236 SLN procedures)

Patients and methods



Methods



Methods

Treatment

- No completion ALND level I + II pN0(i-), pN(i+), pN1mi
 - Irradiation BPT breast

Methods

Adjuvant therapy

- No irradiation to the axilla
- St. Gall consensus conference guidelines^{1,2}
 - pN1mi considered as node negative
 - adjuvant therapy based on pT criteria

¹Goldhirsch A et al. J Natl Cancer Inst 1998; 90: 1601 - 1608

²Goldhirsch A et al. J Clin Oncol 2001; 19: 3817 - 3827

Results

- SLN negative group 123
- SLN micrometastasis group 27
- Upstaging 27 / 150 18 %

Results

Parameter	SLN negative n = 123	SLN micromets n = 27	P value
Age (yrs)	60	62	0.41
Postmenopausal	97 (79%)	22 (82%)	1.0
Tumor size (mm)	16.4	16.9	0.55
Grading G1 + G2	92 (75%)	20 (74%)	0.65
ER positive	103 (84%)	22 (82%)	0.78
Number of SLN	2.1	1.9	0.88
Hormonal therapy	84 (68%)	18 (67%)	0.09
Chemotherapy	15 (12%)	3 (11%)	
H + C	7 (6%)	5 (18%)	

... the Second Update with a Longer Follow Up Time



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F. Harder¹, D. Oertli¹, M. Zuber⁵

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Methods

Patients' follow up

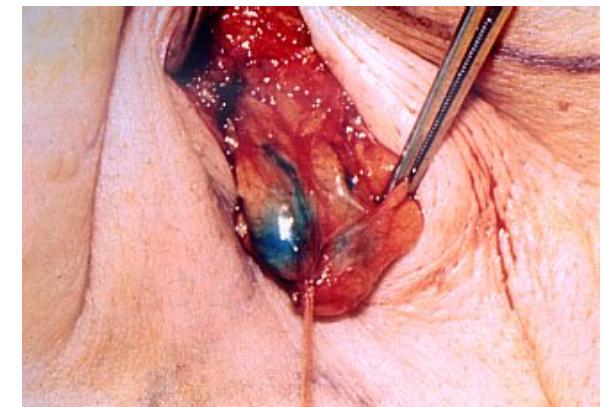
- Median follow up time 97.7 months (3.6 - 133.7)

- Lost to follow up 2 patients
- Patients' collective 222 / 224 (99 %)
- Follow up every 4 months
 - clinical examination
 - annual mammographies

Update results

Axillary recurrence rate

• SLN negative group	1 / 123	0.8 %
• SLN micrometastasis group	0 / 27	0.0 %
p = 1.000		



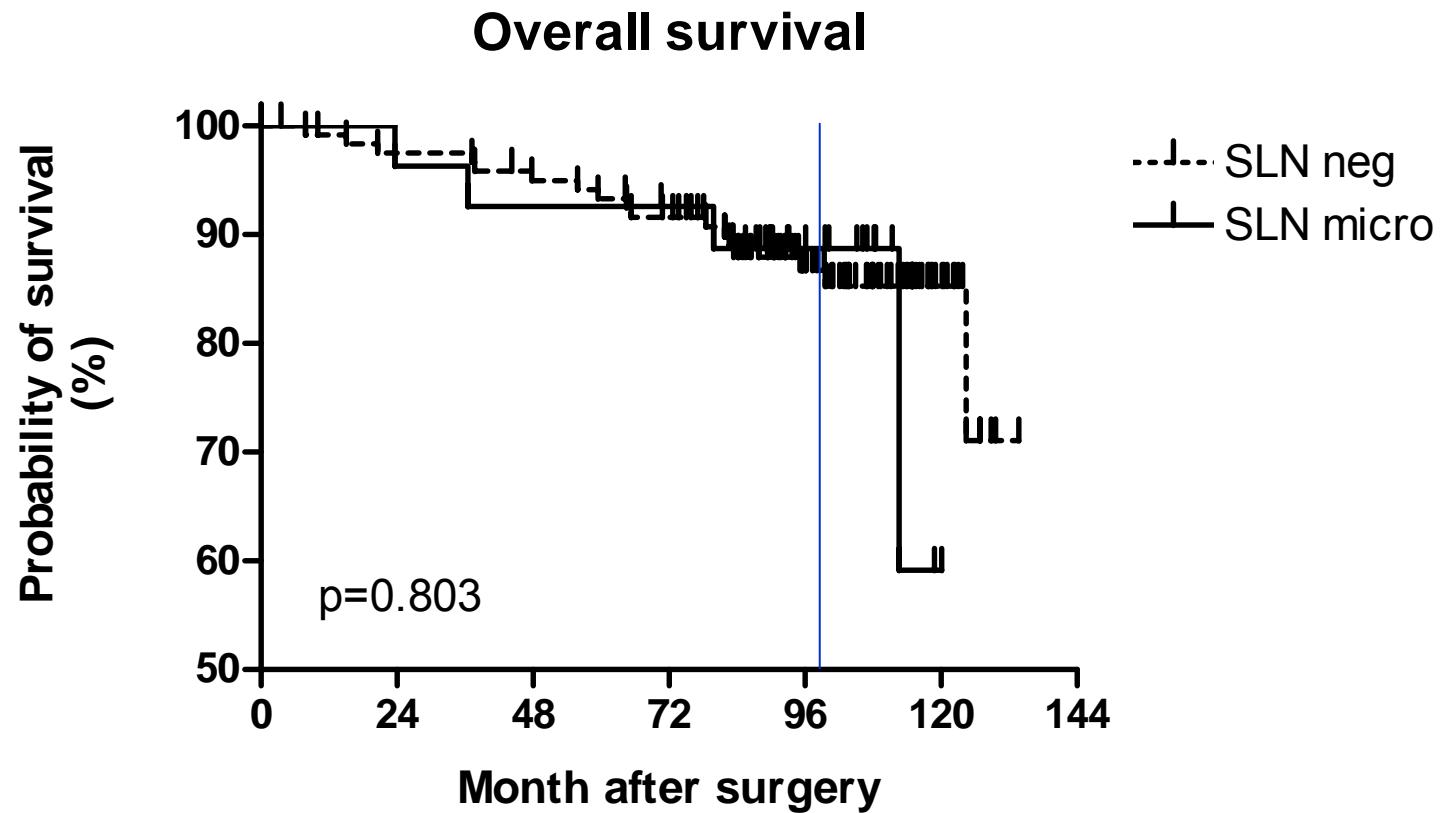
Update results

Distant recurrence rate

• SLN negative group	9 / 122	7.4 %
• SLN micrometastasis group	1 / 27	3.7 %
p = 0.075		

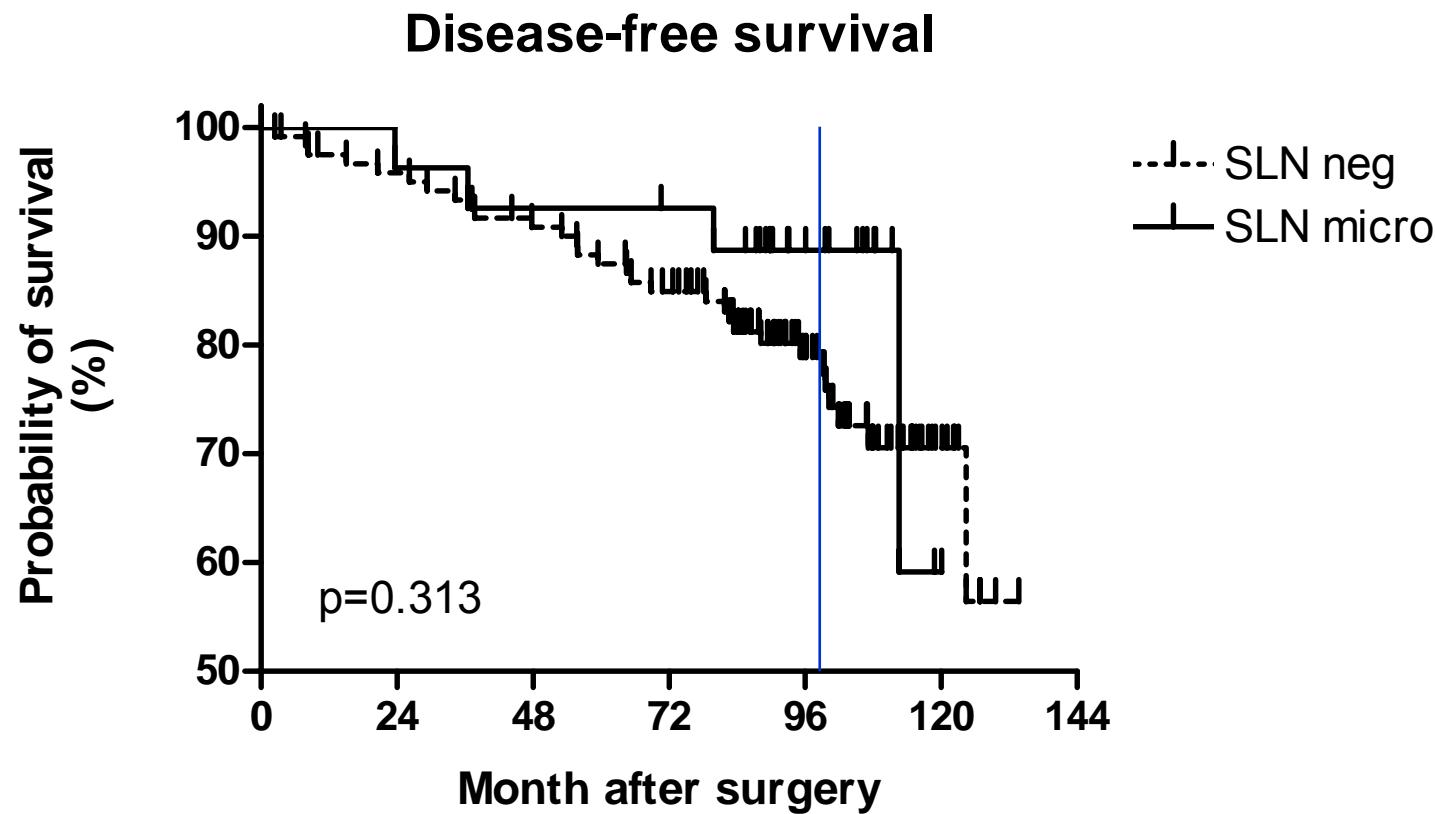
Overall survival

SLN negative vs. SLN micrometastases



Disease-free survival

SLN negative vs. SLN micrometastases

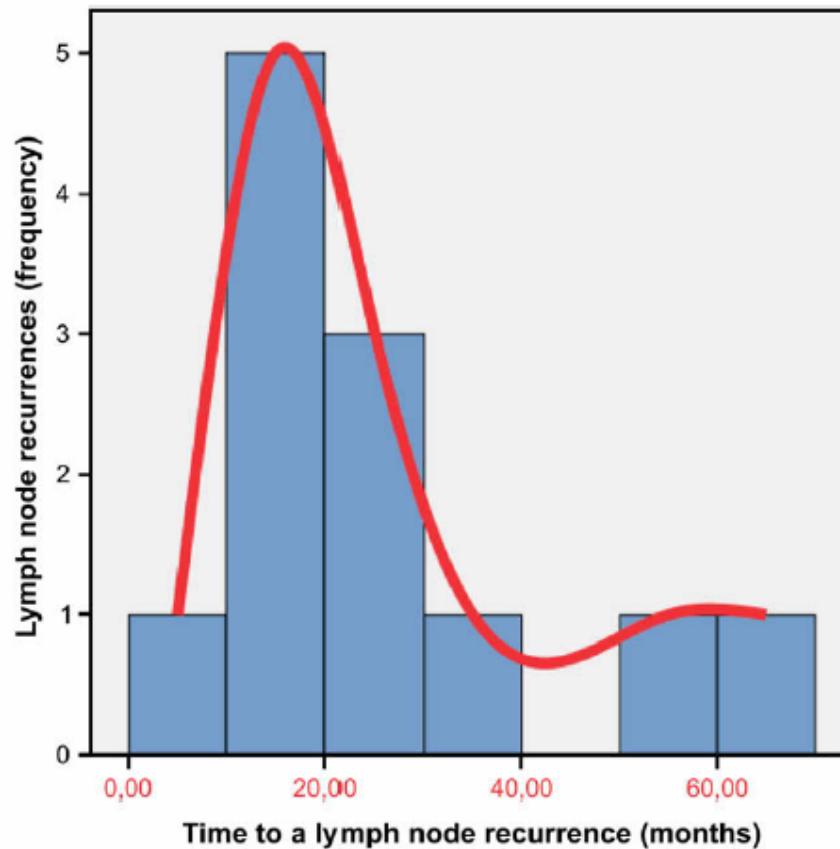


Literature: SLN negative and axillary recurrences Meta-analysis¹

• Period	2001 - 2007		
• n trials	48		
• n patients pN0	14959	(26 - 2340)	
• Median follow up (months)	34	(14 - 65)	
• Axillary recurrence	67	0.3 %	(0 - 9)
• Time to recurrence (months)	20		(4 - 63)

¹van der Plog IMC et al. Eur J Surg Oncol 2008; 34: 1277 - 1284

Literature: SLN negative and axillary recurrences Meta-analysis¹



¹van der Plog IMC et al. Eur J Surg Oncol 2008; 34: 1277 - 1284

Literature: SLN micrometastases and axillary recurrences without an completion ALND

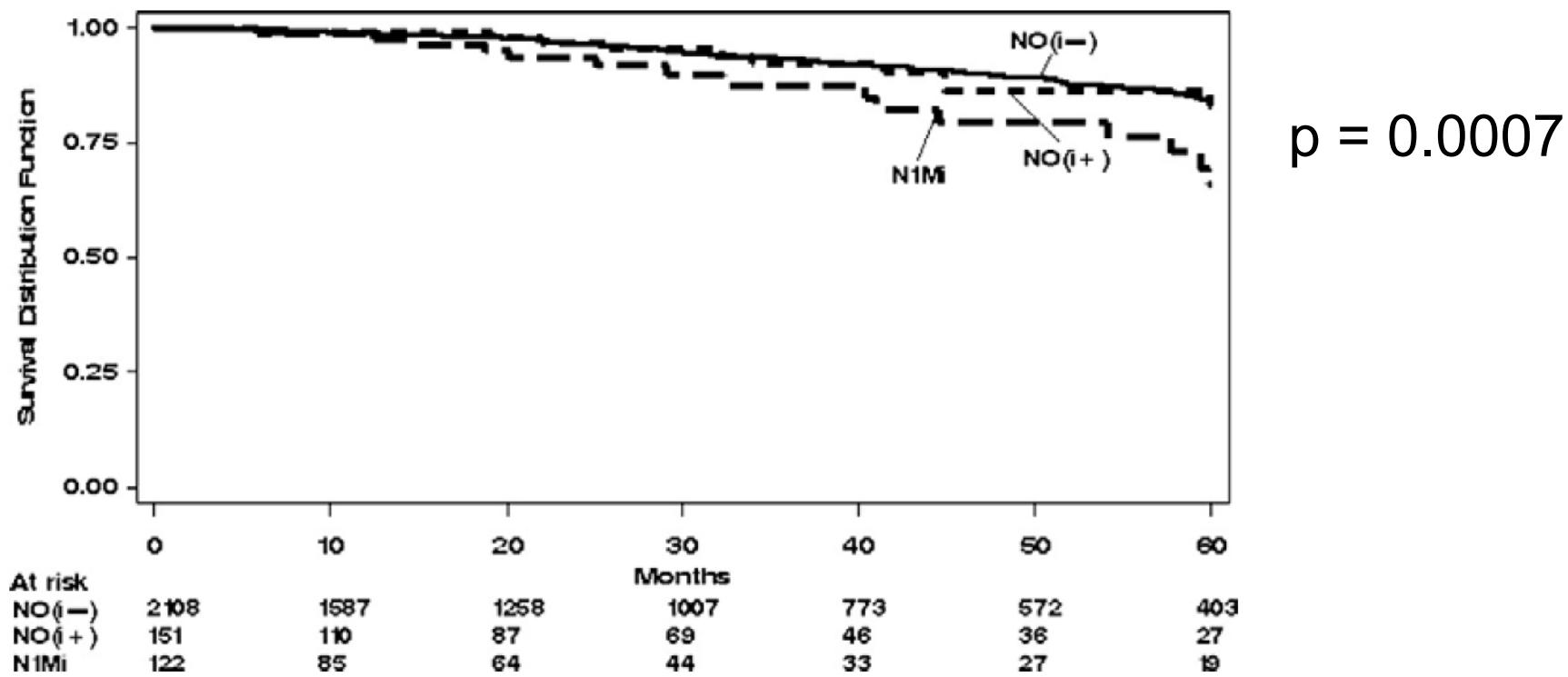
Authors	Year	Type	n	Nodal infiltrate	Follow-up (months)	Axillary recurrence (n)	Patients' sampling
Liang	2001	retro	4	< 2mm	13.5*	0	selected
Guenther	2003	prosp	16	< 2mm	32†	0	selected
Fant	2003	retro	27	< 2mm	30*	0	selected
Fournier	2004	retro	6	< 2mm	12*	0	selected
Fan (Leong)	2005	retro	27	< 2mm	29†	1 (3.7%)	selected
Schrenk	2005	retro	16	> 0.2mm ≤ 2mm	48†	1 (2.1%)	selected
Carlo	2005	prosp	21	< 2mm	60†	0	selected
Jeruss	2005	prosp	73	Ø 2.7mm	28*	0	selected
Nagashima	2006	retro	19	< 2mm	48†	1 (3.5%)	selected
Haid	2006	retro	6	> 0.2mm ≤ 2mm	47†	0	selected
Hwang	2007	retro	90	> 0.2mm ≤ 2mm	29†	0	selected
Our study*	2009	prosp	27	> 0.2mm ≤ 2mm	97†	0	unselected

* mean

† median

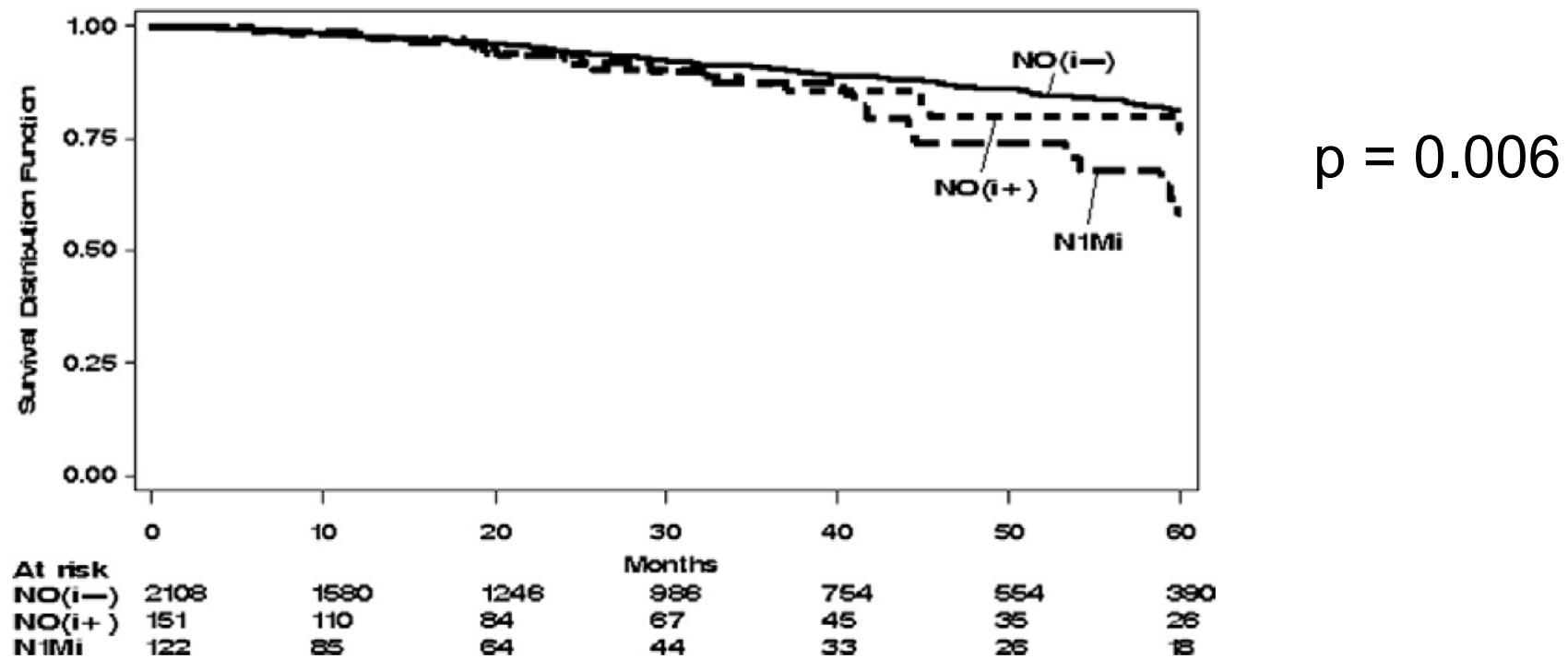
* Manuscript in preparation

Literature: evidence against completion ALND¹ Overall survival pN0 vs. pN1mi



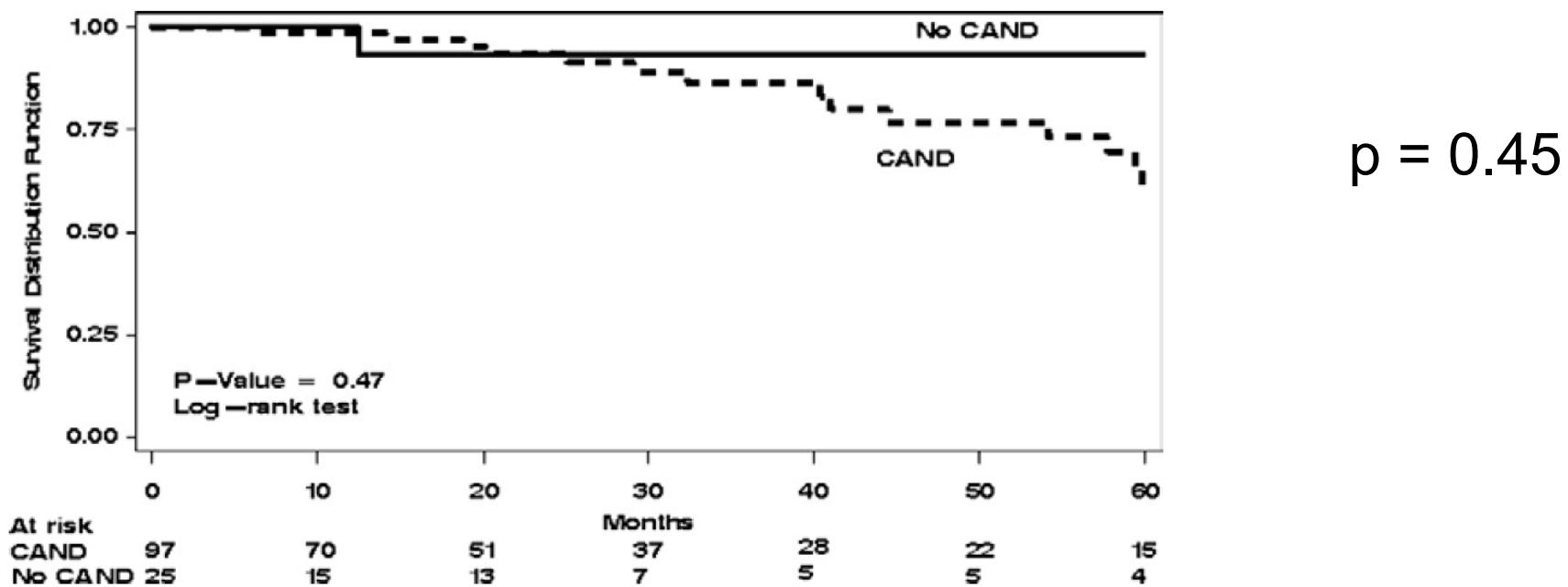
¹Cox C et al. J Am Coll Surg 2008; 206: 261 - 268

Literature: evidence against completion ALND¹ Disease-free survival pN0 vs. pN1mi



¹Cox C et al. J Am Coll Surg 2008; 206: 261 - 268

Literature: evidence against completion ALND¹ OS SLN micrometastasis ALND vs. no cALND



¹Cox C et al. J Am Coll Surg 2008; 206: 261 - 268

Literature: evidence against completion ALND SLN alone vs. SLN + cALND for pN1mi

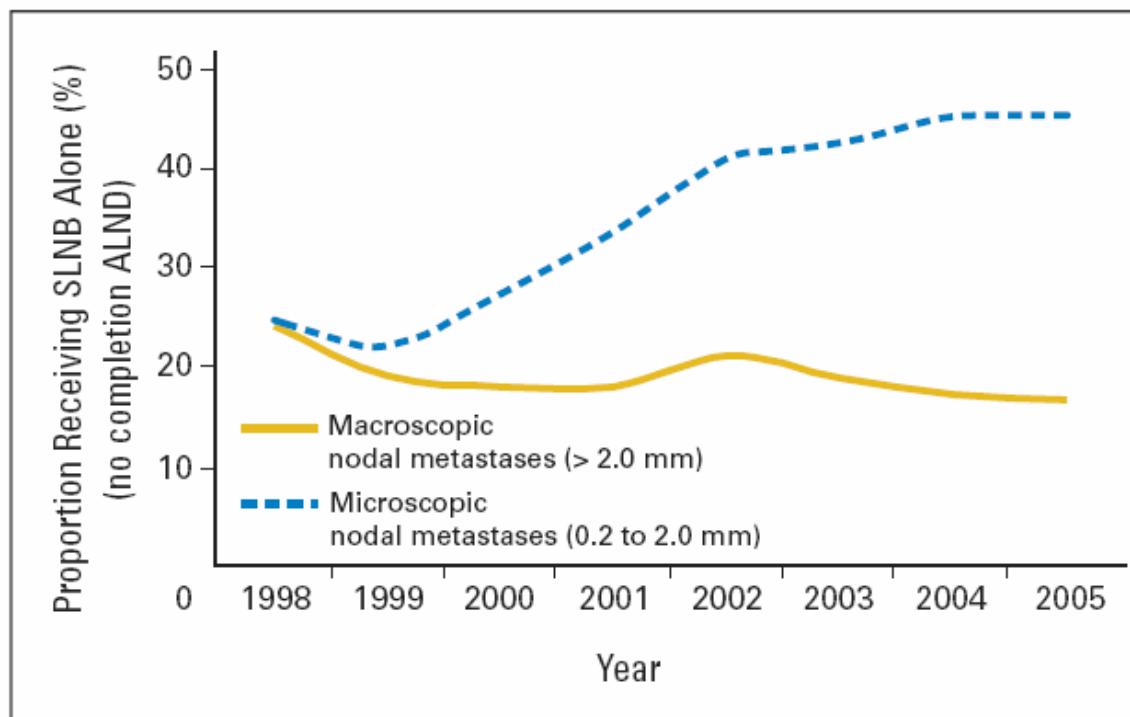
- National Cancer Data Base¹
- Period 1998 - 2000
- n patients pN1mi 2203
- Median follow up (months) 63

For SLN micrometastases there were no significant differences in axillary recurrence or survival for the SLN alone group versus the SLN + CALND group

¹Bilimoria KY et al. J Clin Oncol 2009; 27: 1857 - 1863

Literature: evidence against completion ALND SLN alone vs. SLN + cALND for pN1mi

- National Cancer Data Base¹ n = 97'314 patients



¹Bilimoria KY et al. J Clin Oncol 2009; 27:1857 - 1863

Summary of the study

- Axillary recurrences are *not* more frequent in SLN micrometastases patients than in SLN negative cases.
- Patients with SLN micrometastasis without completion ALND do *not* suffer more often from distant metastasis than SLN negative patients.
- DFS and OS of SLN negative and SLN micrometastasis are statistically *not* significant different.

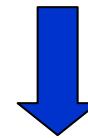
Conclusion

- Based on a median follow up of 97 months the study does *not* provide evidence that the presence of SLN micrometastasis in early breast cancer leads to
 - axillary recurrence or
 - distant disease and
- supports the theory:

Formal axillary dissection may be omitted in these patients.

Conclusion

SLN micrometastases



No axillary dissection level I + II

Trials

- ACOSOG Z0010 and Z0011
- NSABP B-32
- IBCSG 23-1

Definite answer regarding prognostic relevance and therapeutic implications of SLN micrometastases

Adjuvant therapy for small nodal tumor infiltrates

- Dutch study retrospective
 - Patients 2707
 - Median FU (years) 5.1

No conclusion ALND yes or no

Outcome Reduced 5-year disease-free survival rate in patients not received adjuvant therapy

De Boer M et al. New Engl J Med 2009; 361: 653 - 663

Adjuvant therapy for small nodal tumor infiltrates

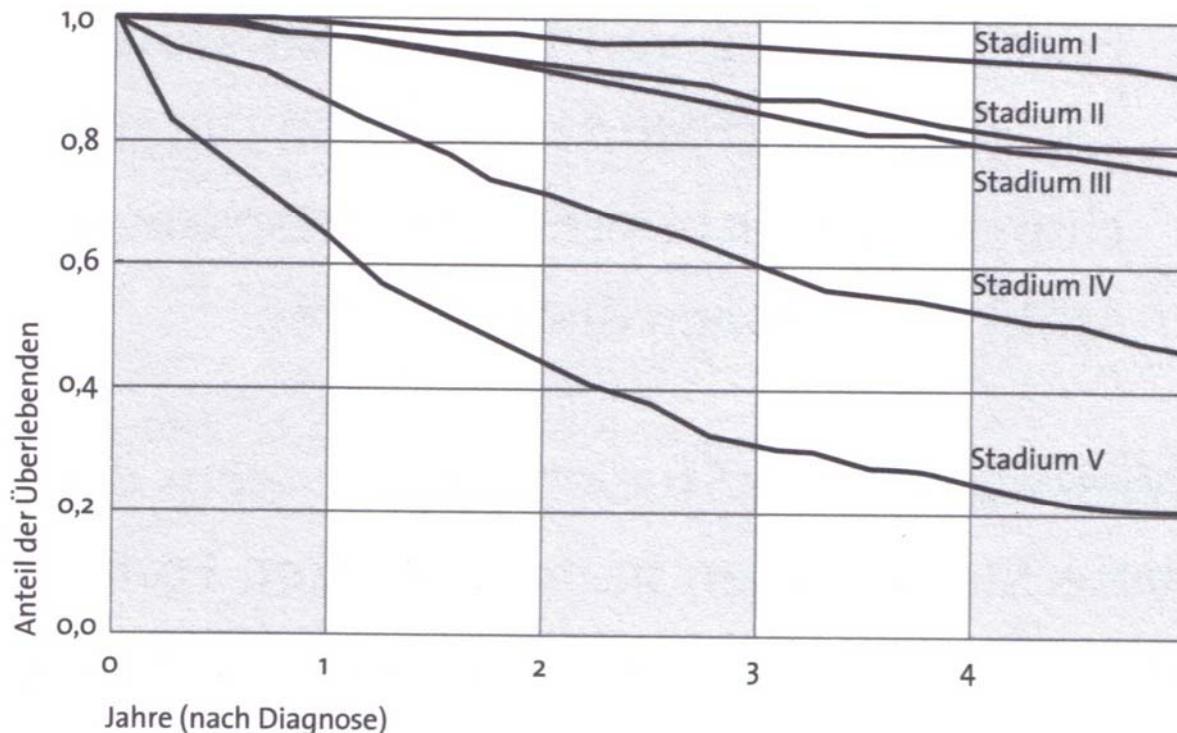
<i>Study</i>	<i>Control pNsn0</i> 5-Y-DFS	<i>MM treated</i> 5-Y-DFS
Dutch retrospective	85.7 %	87.9 %
Basel/Olten prospective	93.9 %	100 %

De Boer M et al. New Engl J Med 2009; 361: 653 - 663

Langer I et al. Ann Surg Oncol 2009; Doi10.1245/s10434-009-0660-9

VI. Survival in SLN negative patients

Staging and survival



- Breast cancer
- Stadium I = in situ ca
Stadium II = stage I etc.

www.oncosuisse.ch

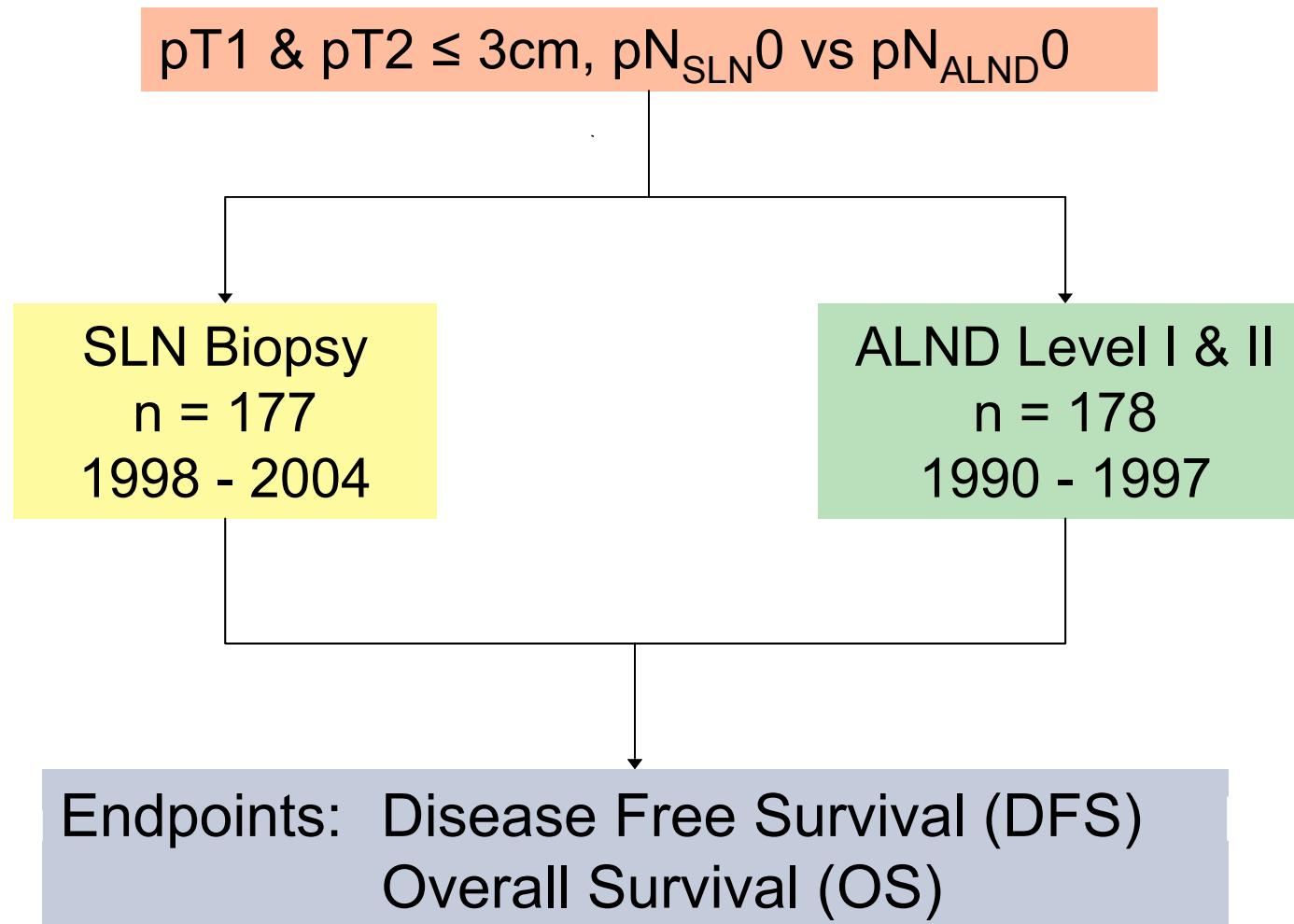
Background: Survival of pN_{SLN}0 patients

- pN_{SLN}0 vs pN_{ALND}0 study design
No longer to be performed in breast cancer patients
- All randomized SLN vs ALND studies are *biased*
SLN procedure prior to the ALND
MILAN, ALMANAC, NSABP B-32, RACS SNAC

Comparison: Survival of pN_{SLN}0 vs pN_{ALND}0

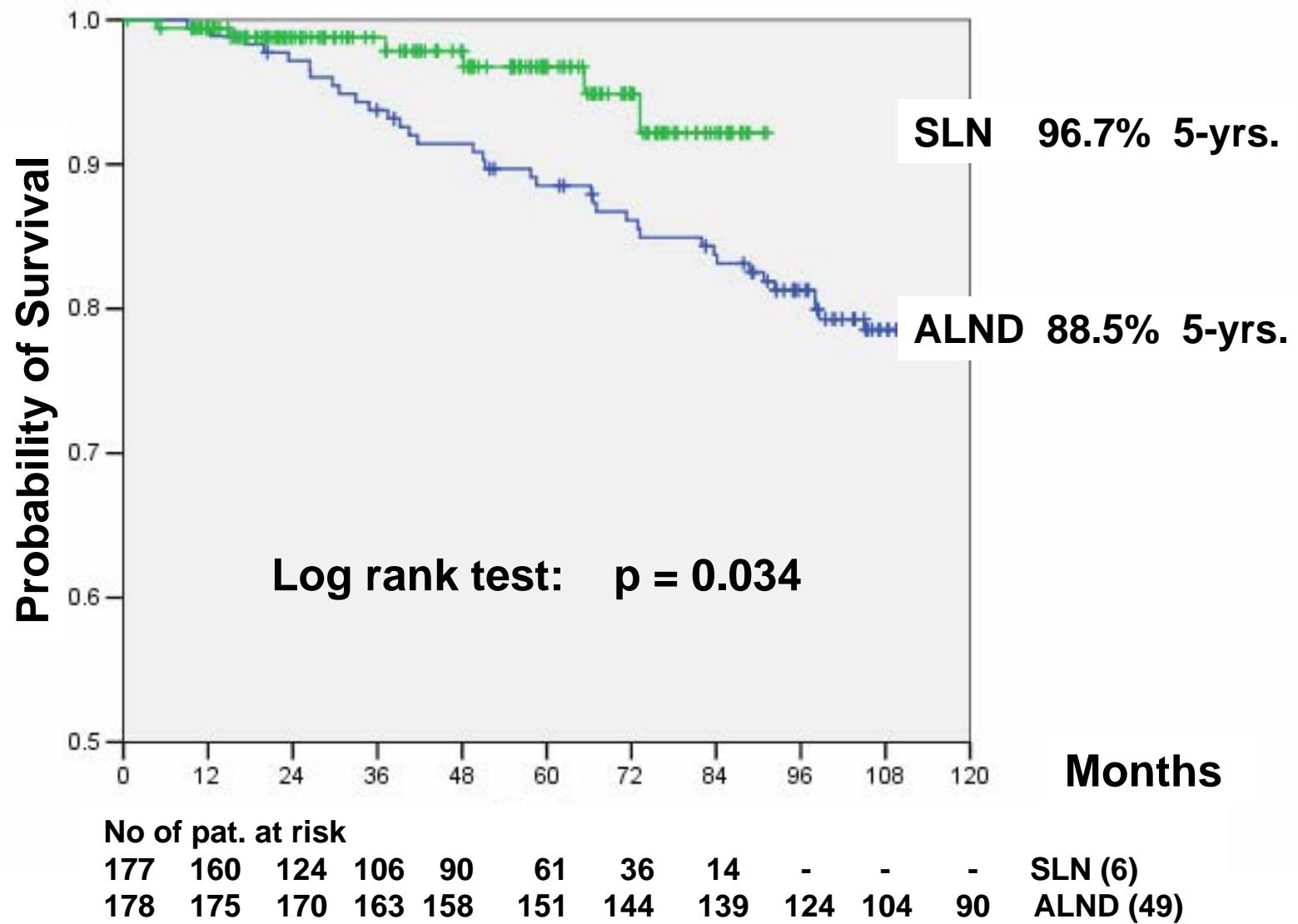
- The best
 - Historical comparison
 - The same institution
 - The same surgeons
 - The same nuclear medicine specialists
 - The same pathologists
 - The same medical oncologists
 - The same radiotherapists
-

Study Design

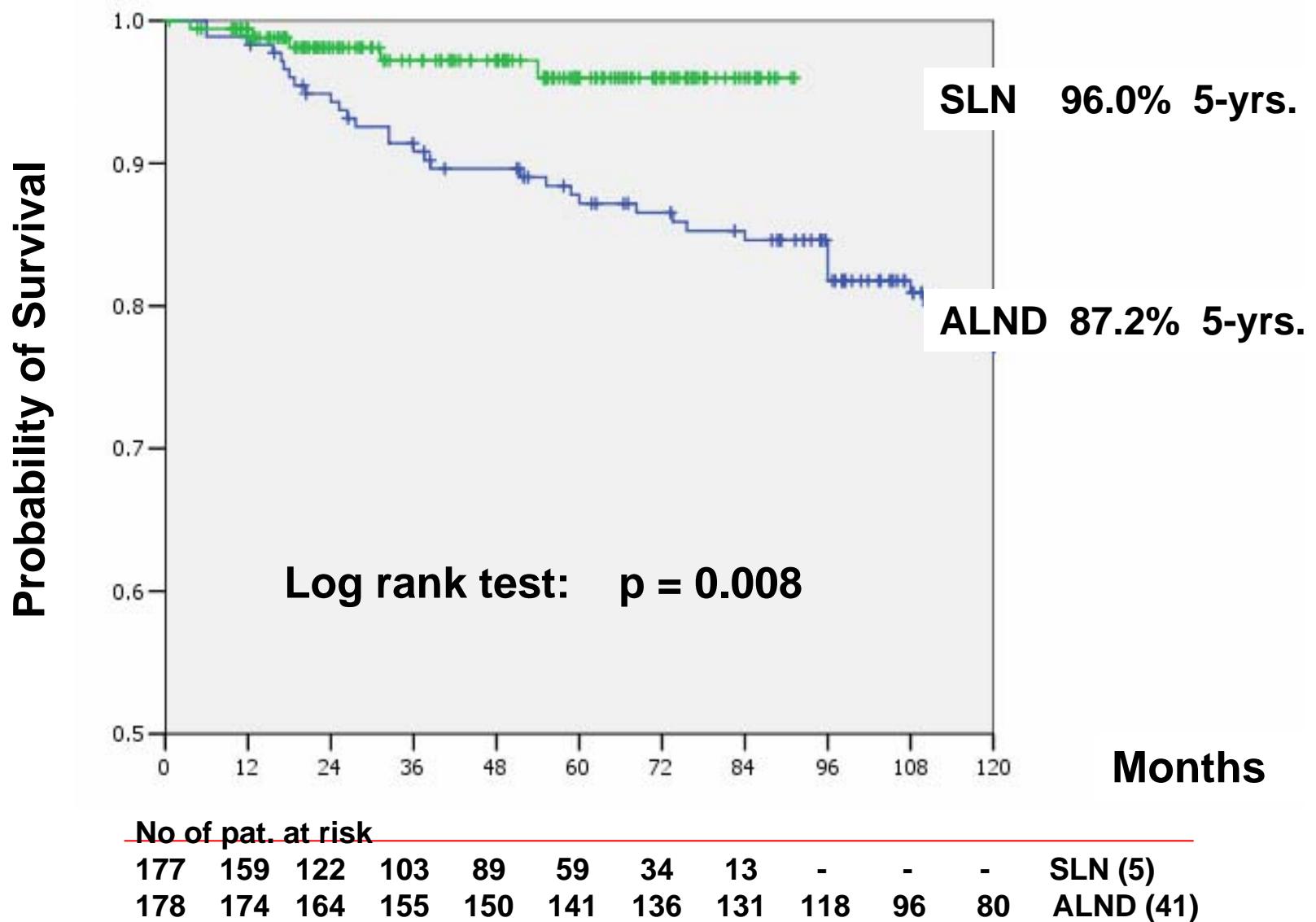


Univariate and multivariate Cox regressions of OS

Overall Survival (OS) pN_{SLN}0 vs. pN_{ALND}0

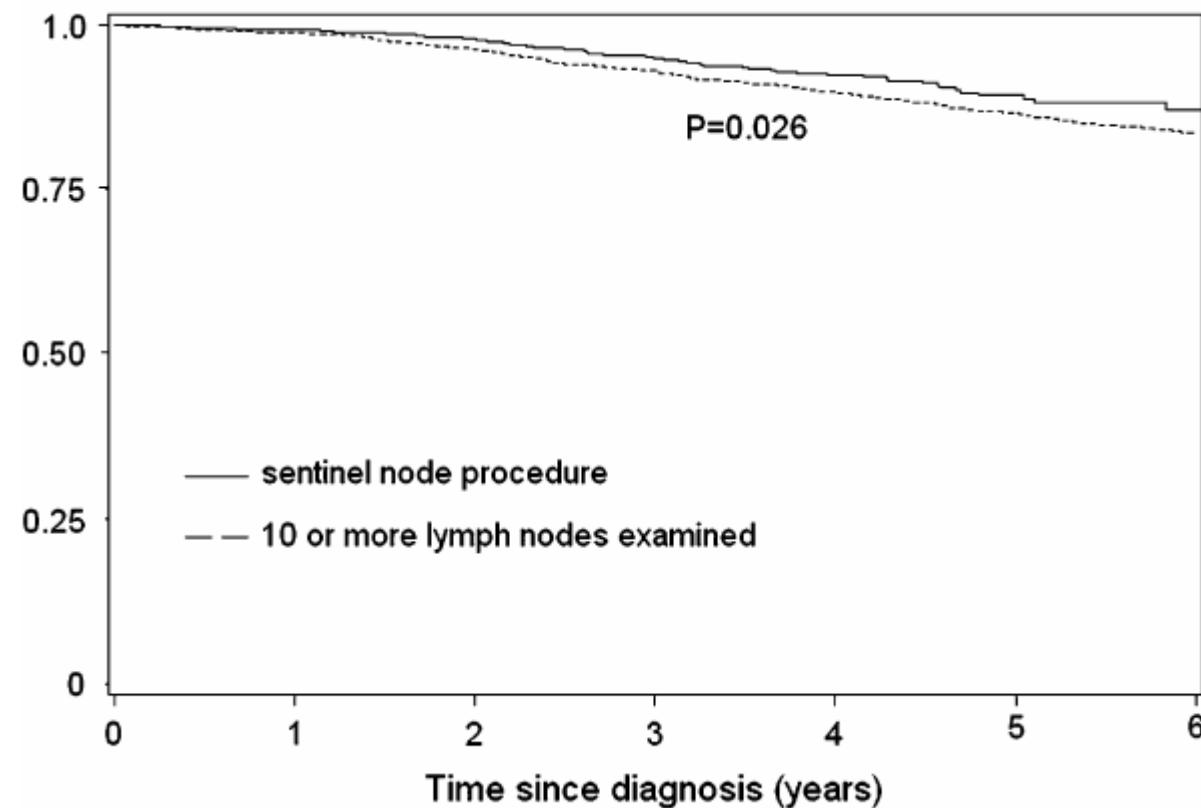


Disease-free Survival (DFS) pN_{SLN}0 vs. pN_{ALND}0



Support

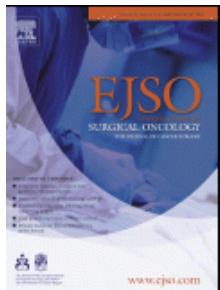
Survival benefit pN_{SLN}0 vs. pN_{ALND}0¹



¹Kuijt GP et al. Eur J Surg Oncol 2007; 33: 832 - 837

Attempt to explain

- $pN_{SLN}0$: A so far not yet described group of patients with a better prognosis – closer to *real world pN0*
- More accurate staging – stage migration – better outcome



Langer I, Guller U, Hsu-Schmitz SF, Ladewig A, Viehl CT, Moch H, Wight E, Harder F, Oertli D, Zuber M. Eur J Surg Oncol 2009; 35: 805 - 813

