



Multidisciplinary Approaches to Cancer Symposium

De-escalating Breast Cancer Surgery

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Disclosures

I do not have any relevant financial relationships.

This presentation and/or comments will provide a balanced, non-promotional, and evidence-based approach to all diagnostic, therapeutic and/or research related content.



Cultural Linguistic Competency (CLC) & Implicit Bias (IB)

STATE LAW:

The California legislature has passed Assembly Bill (AB) 1195, which states that as of July 1, 2006, all Category 1 CME activities that relate to patient care must include a cultural diversity/linguistics component. It has also passed AB 241, which states that as of January 1, 2022, all continuing education courses for a physician and surgeon **must** contain curriculum that includes specified instruction in the understanding of implicit bias in medical treatment.

The cultural and linguistic competency (CLC) and implicit bias (IB) definitions reiterate how patients' diverse backgrounds may impact their access to care.

EXEMPTION:

Business and Professions Code 2190.1 exempts activities which are dedicated solely to research or other issues that do not contain a direct patient care component.

The following CLC & IB components will be addressed in this presentation:

- *Impact of social determinants of health on care delivery*
- *Ageism related to treatment decisions*



Case Presentation

A 62-year-old postmenopausal woman presents with a screen-detected 1.2 cm invasive ductal carcinoma of the breast. The tumor is estrogen receptor–positive, HER2-negative, grade 1, and clinically node-negative on physical examination. Preoperative axillary ultrasound shows no suspicious lymph nodes.

How are you currently managing this patient?

Would you perform a sentinel lymph node surgery today?

Would you offer surgery for the breast-lumpectomy or mastectomy-or omit breast surgery?



Outline

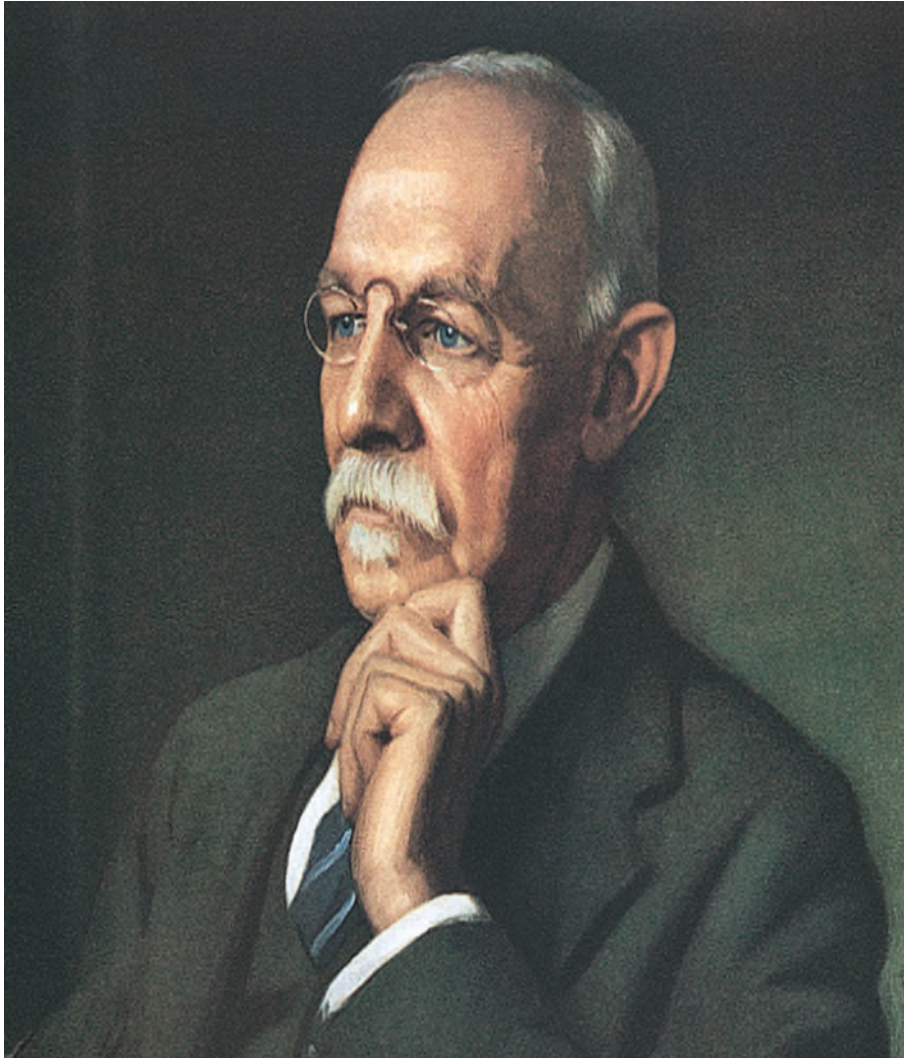
1. History of Breast Surgery De-escalation
2. Current State and Role of Breast Surgery
3. De-escalation Strategies (Case Presentation)
4. Equity Considerations



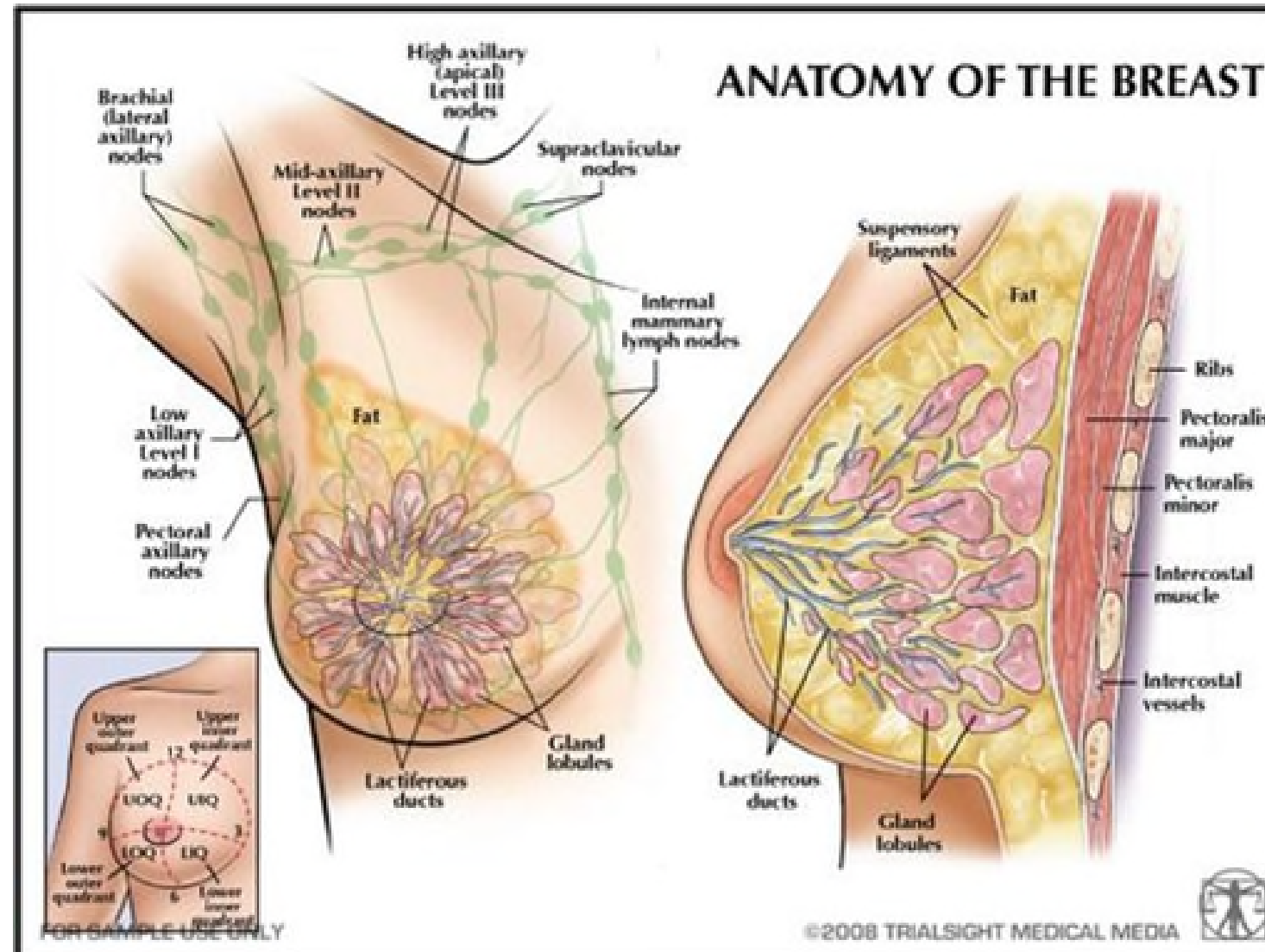
History of Breast Surgery De-escalation

Legacy of surgical de-escalation

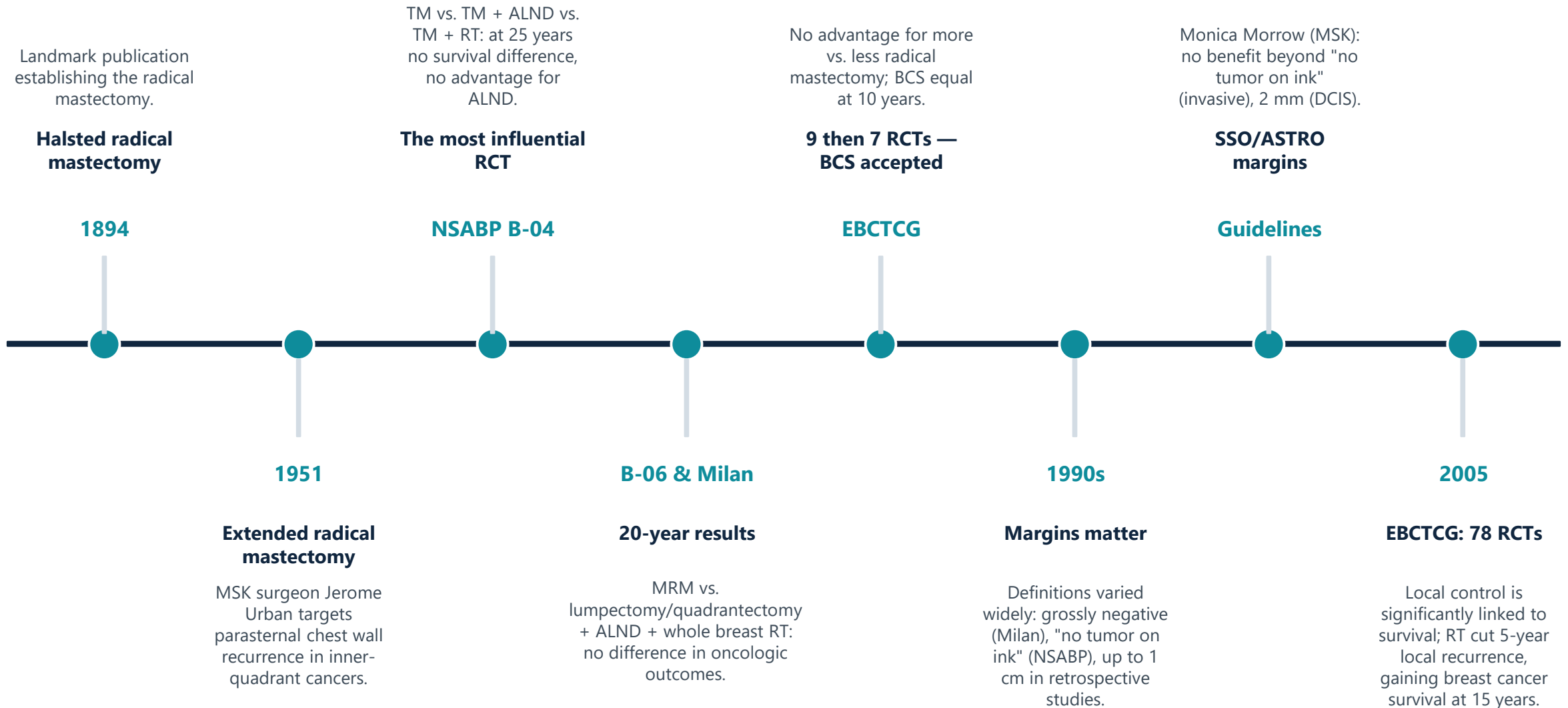
1894: Halsted Radical Mastectomy



Surgical anatomy



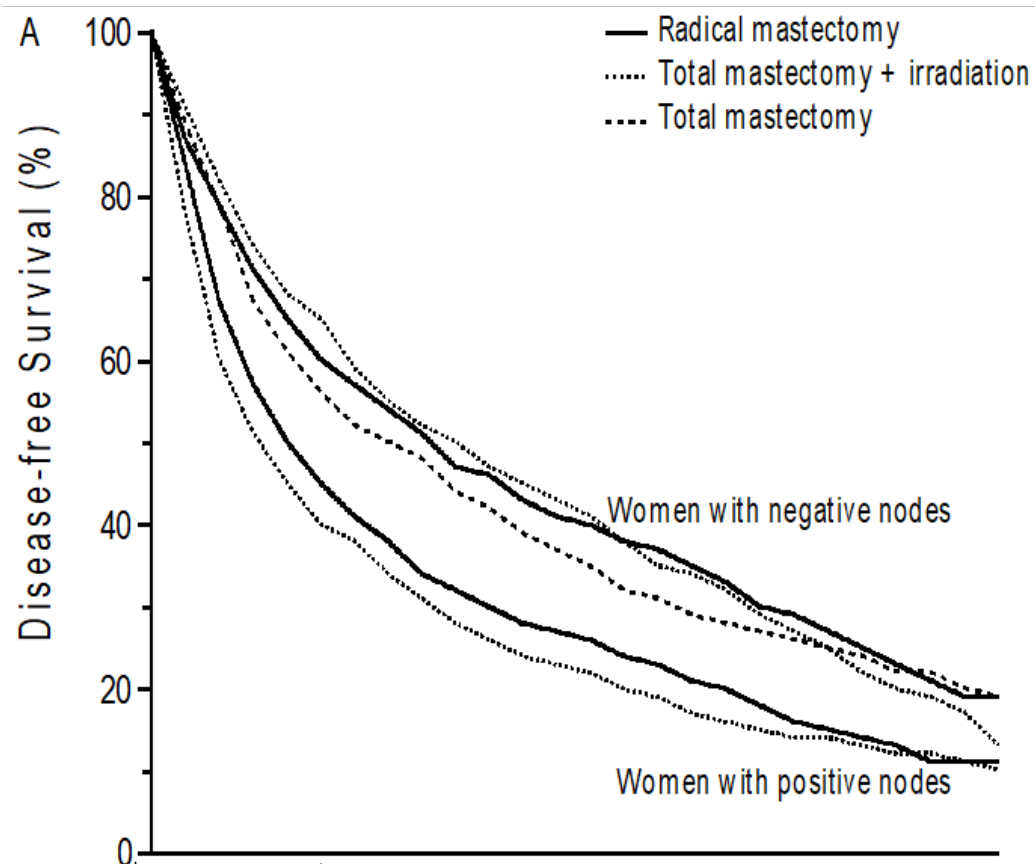
History of breast surgery de-escalation



Landmark trial results

NSABP B-04

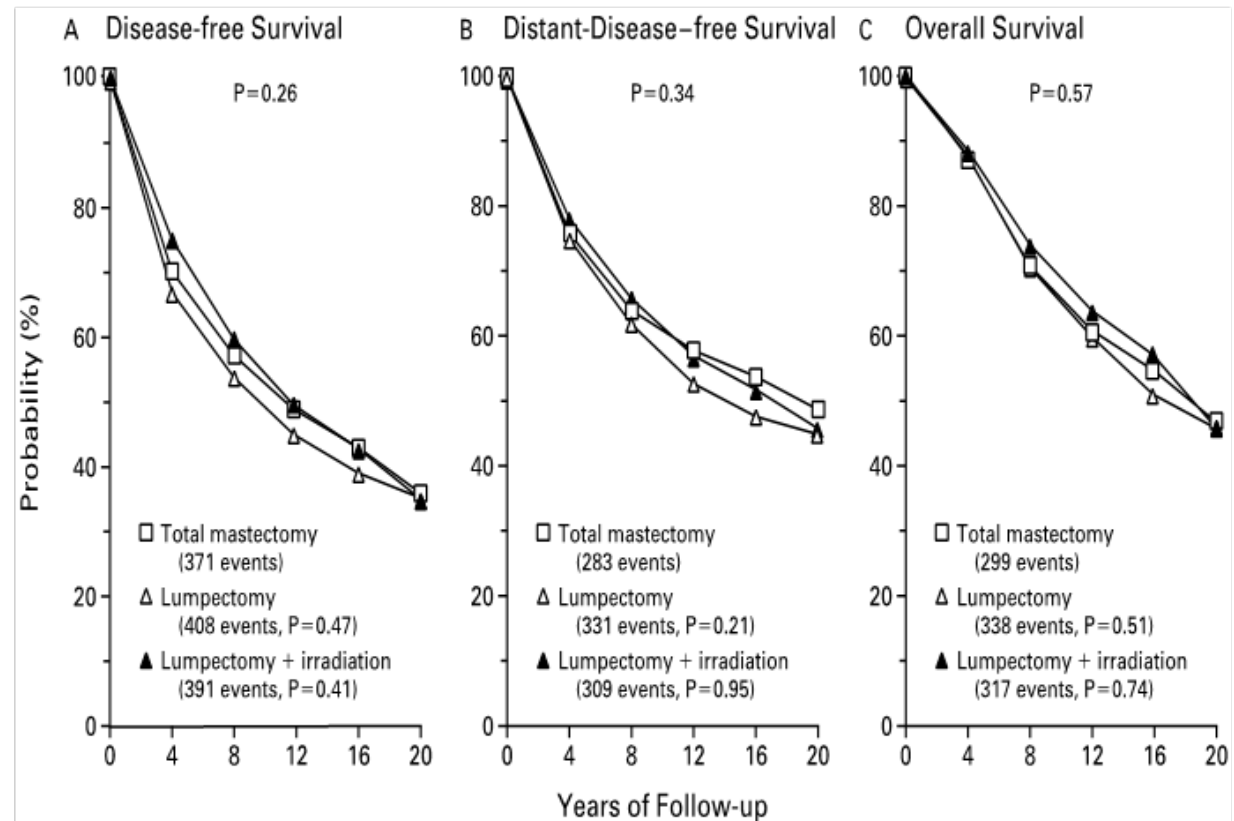
Disease-free survival by surgical arm



No significant differences in local DFS, distant DFS, or overall survival between radical mastectomy, total mastectomy + irradiation, and total mastectomy.

NSABP B-06 & Milan

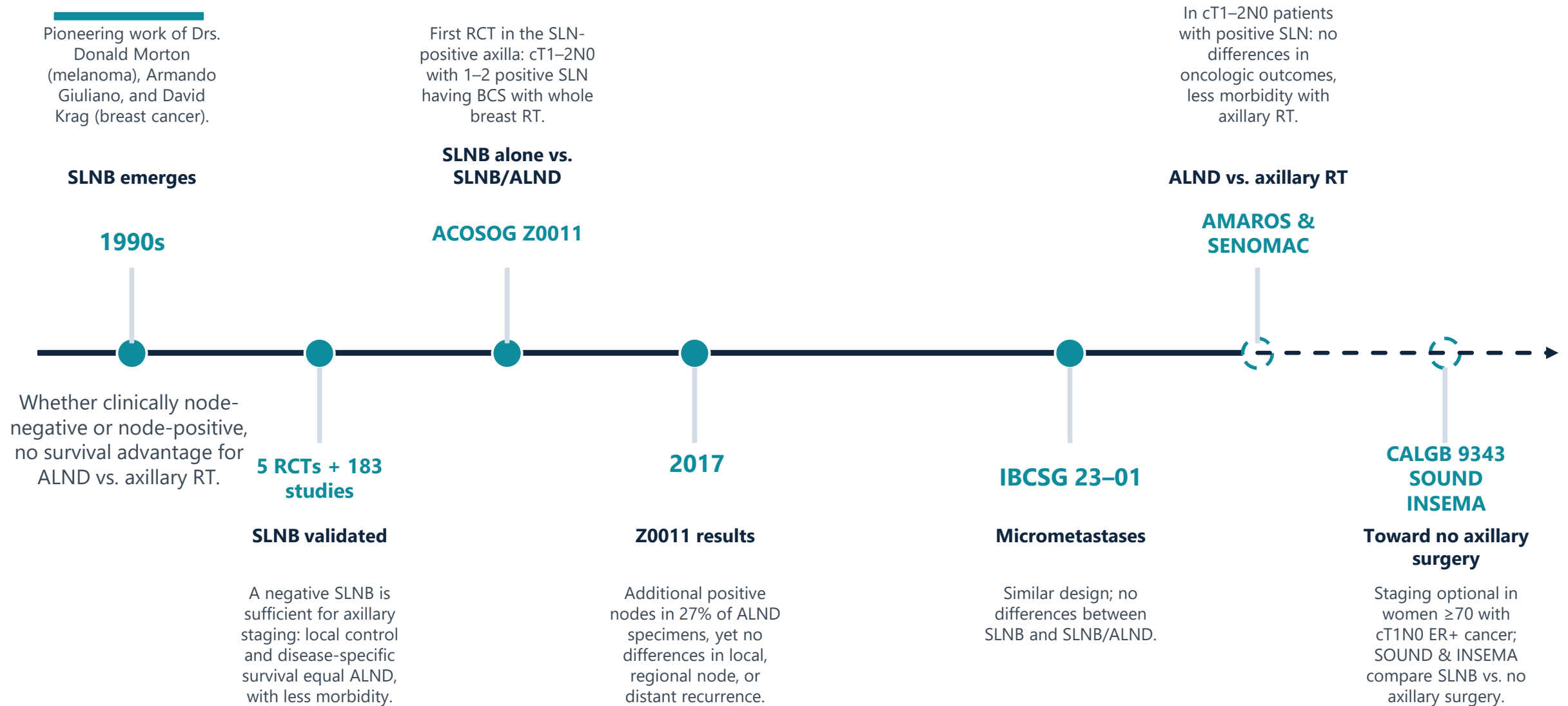
DFS, distant DFS, and overall survival at 20 years



Total mastectomy vs. lumpectomy vs. lumpectomy + irradiation: no difference in oncologic outcomes, establishing breast conservation.



History of axillary surgery de-escalation



Current State and Role of breast surgery

Why surgical de-escalation is possible

Role of surgery has evolved to assisting in cure, staging, treatment planning

- Goal is both staging and local control
- Principles of achieving negative margins and facilitating additional therapies must be upheld
- Decisions are not made in isolation
 - Imaging
 - Medical Oncology
 - Radiation Oncology
 - Genetics
 - Plastic Surgery
- *What is the purpose of each component of this surgery and how will it affect 1) systemic management 2) local control 3) overall prognosis?*



Omission of breast surgery

In clinical trials, breast surgery is omitted with use of imaging and biopsy and reliable biomarkers.

Omission in non-invasive disease	Omission in invasive disease	Ablative techniques
COMET: - Prospective, randomized noninferiority trial- 995 women ≥ 40 with HR+ grade 1-2 DCIS at 100 US Alliance sites from 2017 to 2023 2-year Kaplan-Meier cumulative rate of ipsilateral invasive cancer was 4.2% in the active monitoring group vs 5.9% in the guideline-concordant care group, active monitoring is not inferior to guideline-concordant care RECAST-DCIS: - Ongoing actively enrolling clinical trial of HR+ DCIS with or without microinvasion 3 investigational study medication (z-Elacestrant, Testosterone + Anastrozole, or Endoxifen) or receive control hormonal therapy (Tamoxifen or an aromatase inhibitor) vs SOC 1^o endpoint-fraction of pts on AS	HR+: - Early-stage HR+ treated with stereotactic ablative radiotherapy and endocrine therapy without surgery - Enrolled 20 patients, 12 omitted surgery - At mean 44 months, PFS 92% TN and HER2+: - Phase 2 nonrandomized clinical trial at 7 US medical centers >40 yo with cT1-2, N0-1, M0 TN or HER2+ with ≥ 2 cm of residual disease on imaging from 2017-2021 - Image-guided VAB of tumor bed-if no residual disease went to received whole breast radiotherapy or TAD alone if ycN1 50 pts enrolled, 31 had omission of surgery, additional 8 had TAD alone - At median 55 months, IBTR was 0% and OS 100%	Cryoablation: - ICE3 trial was a prospective, multi-center, single-arm, non-randomized trial evaluating cryoablation in women >60 with tumors <1.5 cm, Grade $\frac{1}{2}$, HER+, HER2- 3 yr interim analysis showed IBTR 2.06%; 5 yr FU showed 4.3% and BCSS 97% - FDA approved in Oct 2025 Focused ultrasound, laser, microwave, radiofrequency: - Additional studies needed

1. Hwang ES, Hyslop T, Lynch T, et al. Active Monitoring With or Without Endocrine Therapy for Low-Risk Ductal Carcinoma In Situ: The COMET Randomized Clinical Trial. JAMA. 2025;333(11):972-980. doi:10.1001/jama.2024.26698
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Omission of surgical axillary staging

For eligible patients, axillary staging may be completed with imaging alone.

Original Investigation

September 21, 2023

Sentinel Lymph Node Biopsy vs No Axillary Surgery in Patients With Small Breast Cancer and Negative Results on Ultrasonography of Axillary Lymph Nodes The SOUND Randomized Clinical Trial

Oreste Davide Gentilini, MD^{1,2}; Edoardo Botteri, PhD^{3,4}; Claudia Sangalli, BSc⁵; [et al](#)

- Sentinel Node vs Observation After Axillary Ultra-Sound
- Prospective non-inferiority phase 3 randomized clinical trial in Italy, Switzerland, Spain and Chile
- 1463 women, any age, T<2 cm, negative axillary US
- Primary endpoint-distant disease-free survival at 5 years
- Median tumor size 1.1 cm, 88% ER+,HER2-neg
- RESULTS: omission of axillary surgery was non-inferior to SLN surgery for 5-year distant DFS (98.0% vs. 97.7%), overall DFS (93.9% vs. 94.7%), and overall survival (98.4% vs. 98.2%)

Comparative Study > N Engl J Med. 2025 Mar 13;392(11):1051-1064.

doi: 10.1056/NEJMoa2412063. Epub 2024 Dec 12.

Axillary Surgery in Breast Cancer – Primary Results of the INSEMA Trial

Toralf Reimer¹, Angrit Stachs¹, Kristina Veselinovic², Thorsten Kühn³, Jörg Heil^{4, 5}, Silke Polata⁶, Frederik Marmé⁷, Thomas Müller⁸, Guido Hildebrandt⁹, David Krug^{10, 11}, Beyhan Ataseven¹², Roland Reitsamer¹³, Sylvia Ruth¹⁴, Carsten Denkert¹⁵, Inga Bekes^{2, 16}, Dirk-Michael Zahm¹⁷, Marc Thill¹⁸, Michael Golatta^{4, 5}, Johannes Holtschmidt¹⁹, Michael Knauer²⁰, Valentina Nekljudova¹⁹, Sibylle Loibl¹⁹, Bernd Gerber¹

Affiliations + expand

PMID: 39665649 DOI: [10.1056/NEJMoa2412063](https://doi.org/10.1056/NEJMoa2412063)

- T1-2, Clinically node negative, undergoing BCS
- 5502 pts, 90% cT1, median FU 73.6 months
- 5-yr IDFS 92% in omission group, 92% in surgery group
- RESULTS: Omission determined to be non-inferior



Omission of surgical axillary dissection




Omission of completion axillary dissection in patients with breast cancer and sentinel lymph node macrometastases: Overall survival and patient-reported arm morbidity from the randomized SENOMAC trial

Jana de Boniface, Tove Filtenborg Tvedskov, Lisa Rydén, Robert Szulkin, Matilda Appelgren, Toralf Reimer, Thorsten Kühn, Michalis Kontos, Oreste Davide Gentilini, Roger Olofsson Bagge, Malin Sund, Dan Lundstedt, Johan Ahlgren, Sara Alkner, Yvette Andersson, Birgitte Vrou Offeren, Lief Bergkvist, Jan Frisell, Peer Christiansen, and the SENOMAC Trialists' Group

Department of Medical Epidemiology and Biostatistics, Karolinska Institutet, Stockholm, Sweden
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Presented by: Prof. Jana de Boniface, MD, PhD
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- Included T1-3 and 1-2 SLN macrometastases, BCS and mastectomy
- RESULTS: 5 yr OS comparable between groups (93.4% in ALND vs 94.4% in omission group)
- TAKEAWAY: Omission of completion axillary dissection does not worsen survival or relapse rates but does result in less arm-related complications and improved function and QOL

2026 ASCO
ANNUAL MEETING



Prediction of axillary response in 5,262 patients with node-positive breast cancer treated with neoadjuvant chemotherapy - Results from the prospective multicenter AXSANA / EUBREAST-03 / AGO-B-053 study

Maggie Barys-Paluchowski, Thorsten Kühn, Steffi Hartmann, Jana de Boniface, Nina Ditsch, Oreste D. Gentilini, Elmar Stickeler, Joyce Agbo, Marc Thill, Rosa Di Micco, Dawid Murawa, Isabel T. Rubio, Laura Niinikoski, Michalis Kontos, Henning Schäffler, Lia Rebaza, Maria Luisa Gasparri, Markus Hahn, Ümit Ugurlu, Güldeniz Karadeniz Cakmak & AXSANA Study Group



2026 ASCO ANNUAL MEETING #ASCO26
Presented by: Prof. Dr. Maggie Barys-Paluchowski, University Hospital Schleswig-Holstein Campus Lübeck, Germany
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- Any patient with node positive disease prior to NAC eligible
- 22% had ≥ 4 suspicious nodes
- RESULTS: pCR rates highest in HER2+ followed by TNBC; initial number of nodes not associated with response to treatment
- TAKEAWAY: Tumor biology, rather than axillary burden, is associated with response to NAC, expanding eligibility for surgical axillary staging rather than dissection



Balancing de-escalation strategies

Case Presentation

A 62-year-old postmenopausal woman presents with a screen-detected 1.2 cm invasive ductal carcinoma of the breast. The tumor is estrogen receptor–positive, HER2-negative, grade 1, and clinically node-negative on physical examination. Preoperative axillary ultrasound shows no suspicious lymph nodes.

What is the purpose of each component of this surgery and how will it affect 1) systemic management 2) local control 3) morbidity and 4) overall prognosis?

- *Breast*
- *Axilla*



Balancing Impact and Risk of Breast Management

	Impact on systemic therapy	Impact on local control	Impact on prognosis	Morbidity burden
Mastectomy		 *		
Lumpectomy				
Ablation				
Observation				

Fill = size of effect. Green = favorable for the patient. Red = unfavorable. Dashed outline = effect uncertain; *when XRT omitted in select cases



Lumpectomy vs. Mastectomy

➤ JAMA Surg. 2021 Jul 1;156(7):628-637. doi: 10.1001/jamasurg.2021.1438.

Survival After Breast Conservation vs Mastectomy Adjusted for Comorbidity and Socioeconomic Status: A Swedish National 6-Year Follow-up of 48 986 Women

Jana de Boniface ^{1 2}, Robert Szulkin ^{3 4}, Anna L V Johansson ^{4 5}

Comparative Study

➤ JAMA Surg. 2014 Mar;149(3):267-74. doi: 10.1001/jamasurg.2013.3049.

Effect of breast conservation therapy vs mastectomy on disease-specific survival for early-stage breast cancer

Shailesh Agarwal ¹, Lisa Pappas ², Leigh Neumayer ³, Kristine Kokeny ⁴, Jayant Agarwal ³

- T1-2 N0-2 breast cancer having surgery 2008-2017
- Compared 3 groups: BCT+XRT, Mx-XRT, MX+XRT
- OS and BCSS significantly worse after MX-XRT (HR 1.79) and Mx+XRT (HR 1.66) than BCT+XRT



Impact of axillary management

	Impact on systemic therapy	Impact on local control	Impact on prognosis	Morbidity burden
Sentinel lymph node surgery				
Axillary dissection				
Omission				

Fill = size of effect. Green = favorable for the patient. Red = unfavorable. Gray = no meaningful effect.

ASCO Summary: Clinical Questions 1-3

Clinical Question	Recommendation	Evidence Quality	Strength
CQ1. Can SLNB be omitted in select patients?	Rec 1.1: SLNB can be omitted for select patients with a small (≤ 2 cm) breast cancer, negative preoperative ALN ultrasound and all criteria met — postmenopausal and ≥ 50 years; unifocal invasive ductal carcinoma ≤ 2 cm; Nottingham grade 1-2; HR-positive/HER2-negative intending adjuvant endocrine therapy; no suspicious nodes on axillary US; upfront breast conservation surgery with whole breast radiation if < 65 years.	Moderate	Strong
	Good Practice Statement 1.2: For patients ≥ 65 years who qualify for omission of SLNB, radiation after breast conserving surgery is not mandatory (extrapolating from PRIME II and CALGB 9343), as risk of nodal involvement is very low.	Good Practice Statement	—
CQ2. How are radiation and systemic treatment decisions impacted by omission of SLNB?	GPS 2.1: Radiation treatment decisions should not be altered by omission of SLNB in appropriate candidates (those meeting Rec 1.1). GPS 2.2: Genomic assay testing and subsequent systemic therapy decisions should not be altered; the 21-gene recurrence score can be performed in the setting of SLNB omission.	Good Practice Statement	—
CQ3. Is ALND necessary with 1-2 SLN metastases and breast conserving surgery plus whole-breast radiotherapy?	Rec 3.1: Clinicians should not recommend ALND. Qualifying: completion ALND is unnecessary if the patient already meets candidacy for a CDK4/6 inhibitor or olaparib; otherwise it can be considered, but the rate of four or more nodal metastases is low (13%) and shared decision-making is warranted.	High	Strong



ASCO Summary: Clinical Questions 4-6

Clinical Question	Recommendation	Evidence Quality	Strength
CQ4. Is ALND necessary for patients with nodal metastases planning mastectomy?	Rec 4.1: ALND can be omitted in clinically node-negative invasive cancer ≤ 5 cm receiving mastectomy with one to two positive sentinel nodes; PMRT with RNI can be offered. Rec 4.2: In pT1-T2, pN1 disease undergoing mastectomy without PMRT or RNI, completion ALND is recommended. Rec 4.3: ALND followed by PMRT for patients with ≥ 3 positive nodes.	High	Strong
CQ5. Can completion ALND be omitted when there are no nodal metastases?	Rec 5.1: Clinicians should not recommend ALND for axillary staging in patients with early-stage breast cancer who do not have nodal metastases.	High	Strong
CQ6. What is the role of SLNB in special circumstances?	Rec 6.1: SLNB may be offered in operable breast cancer with multicentric tumors (cN0), male breast cancer, pregnancy, obesity, cT3-cT4c N0, DCIS undergoing mastectomy, or prior breast/axillary surgery.	Low	Conditional
	Rec 6.2: Do not offer routine SLNB for DCIS after breast conserving surgery, or for the sole purpose of evaluating the internal mammary nodes. Rec 6.3: ALND (not SLNB) should be performed for inflammatory breast cancer, biopsy-proven palpable axillary nodes, or matted axillary / multiple suspicious level 3 or supraclavicular nodes.	Low	Conditional



Patient and Clinician Communication

- Despite the Choosing Wisely campaign to omit SLNB and data showing little benefit of post-lumpectomy radiotherapy in women 70 years of age or older with early-stage hormone receptor-positive, HER2-negative breast cancer, de-implementation of both SLNB and radiotherapy has been minimal in this patient population in the United States.⁴⁻⁹
- While guidelines may recommend omission of SLNB and radiotherapy in appropriate patients following lumpectomy, studies indicate that high quality patient-clinician communication and education are necessary to disseminate and implement these recommendations.
- For recommendations and strategies to optimize patient-clinician communication, see Patient-Clinician Communication: American Society of Clinical Oncology Consensus Guideline.¹⁰



Health Equity Considerations

- In an analysis of SEER-Medicare data from 2002 to 2007, SLNB was performed in significantly more White than Black patients (74% v 62%, respectively, $P < .001$) with pathologically node-negative breast cancer.¹¹
- These racial disparities in SLNB use contributed to higher rates of lymphedema in Black than White patients (12% v 8%, respectively, $P < .001$).¹¹
- It will be important to study if there are racial differences in the adoption of omission of axillary surgical staging in the appropriate patients and whether lymphedema rates may differ based on race due to continued surgical staging in marginalized populations.
- Health inequity plays a significant role in BCS, impacting access, outcomes, and decision-making for patients across different demographic groups.
- These disparities can be influenced by socioeconomic factors, race, geographic location, and healthcare access, ultimately leading to differences in treatment and survival outcomes.



Health Equity Considerations

- Patients with lower socioeconomic status may have limited access to specialized breast cancer care, including multidisciplinary teams and facilities that offer breast conservation.¹²
- Rural patients often have less access to high-quality breast cancer care and advanced technologies like radiation therapy, which is integral to BCS.
- Delays in radiation treatment adversely impact outcomes.¹³⁻¹⁵
- This lack of access can lead to higher mastectomy rates in rural populations.
- Additionally, sexual and gender minority people experience stigma along with barriers to cancer screening, prevention, and treatment that contribute to these cancer disparities.¹⁶



Cost Implications

- Cost effectiveness analysis of SLNB versus omission of SLNB after a negative axillary US for patients with early-stage breast cancer, for post-menopausal women with cT1-T2 N0, hormone receptor-positive, HER2-negative breast cancer demonstrated that omission of SLNB was associated with lower costs and higher quality of life.¹⁷
- The choice of radiation protocols is another important factor in cost of overall care.
- Radiation therapy cost effectiveness studies demonstrating cost-effectiveness of PBI did not evaluate cost in the context of SLNB use or omission.¹⁸⁻²¹
- Studies demonstrating decreased cost with omission of SNB did not compare the cost effectiveness stratified by different radiation type or use (WBI v PBI v no RT).
- Therefore, there are no current data evaluating overall cost effectiveness of omission of SLNB and different standard radiation approaches.



Case Presentation

A 62-year-old postmenopausal woman presents with a screen-detected 1.2 cm invasive ductal carcinoma of the breast. The tumor is estrogen receptor–positive, HER2-negative, grade 1, and clinically node-negative on physical examination. Preoperative axillary ultrasound shows no suspicious lymph nodes.

- *What would you offer for the breast now?*
- *Did your recommendations for the axillary lymph nodes change?*



Summary

1. There is a Legacy of Breast Surgery De-escalation
2. Role of Breast Surgery has transformed from debulking to staging
3. Current De-escalation Strategies include omission of breast or axillary surgery when appropriate after asking a key question:
What is the purpose of each component of this surgery and how will it affect 1) systemic management 2) local control 3) overall prognosis
4. Advocate for appropriate de-escalation in appropriate patients



Thank You

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References

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5. Reimer T, Stachs A, Veselinovic K, Kühn T, Heil J, Polata S, Marmé F, Müller T, Hildebrandt G, Krug D, Ataseven B, Reitsamer R, Ruth S, Denkert C, Bekes I, Zahm DM, Thill M, Golatta M, Holtschmidt J, Knauer M, Nekljudova V, Loibl S, Gerber B. Axillary Surgery in Breast Cancer - Primary Results of the INSEMA Trial. *N Engl J Med*. 2025 Mar 13;392(11):1051-1064. doi: 10.1056/NEJMoa2412063. Epub 2024 Dec 12. PMID: 39665649.
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7. Hwang ES, Hyslop T, Lynch T, et al. Active Monitoring With or Without Endocrine Therapy for Low-Risk Ductal Carcinoma In Situ: The COMET Randomized Clinical Trial. *JAMA*. 2025;333(11):972–980. doi:10.1001/jama.2024.26698
8. www.asco.org/breast-cancer-guidelines ©American Society of Clinical Oncology (ASCO) 2025. All rights reserved worldwide.



APPENDIX

NSABP B-04, B-06

Sentinel lymph node surgery procedure

Lumpectomy

Mastectomy

NCCN Guidelines

Total Mastectomy not worse than Radical Mastectomy: NSABP B-04 (1971)

1765 women with early operative breast cancer with movable nodes

34 centers

2 groups: N0 and N+

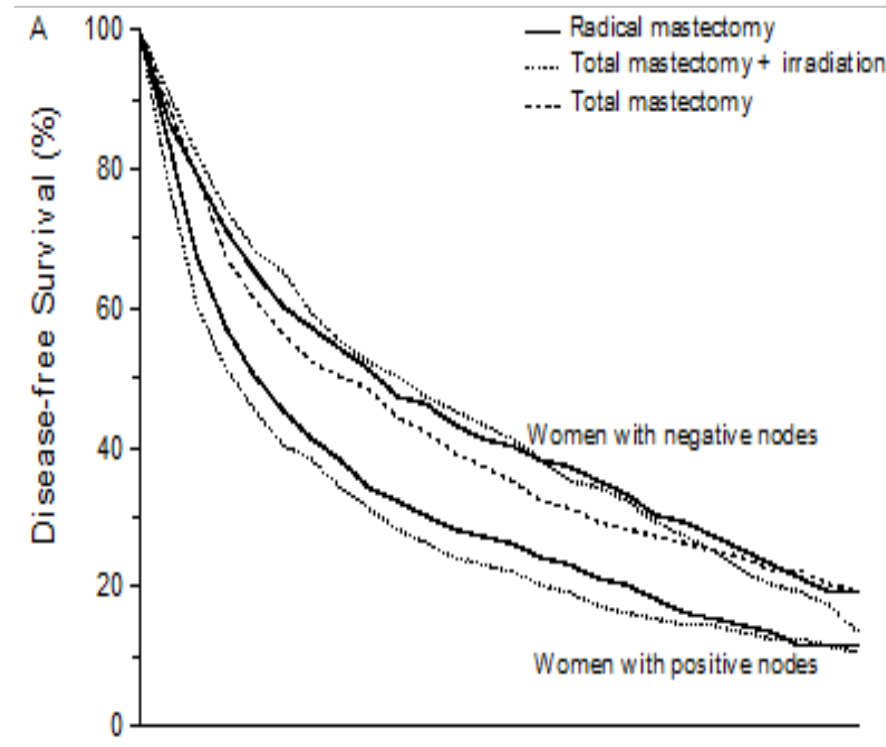
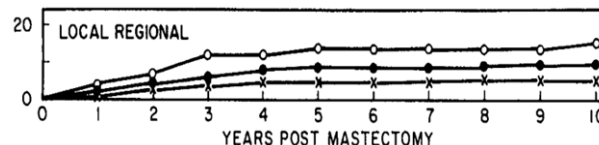
N0

3 arms (~350pt each): RM, TM (with delayed ALND if pos), and TM+XRT

N+

2 arms (~300pt each): RM and TM+XRT

Locoregional recurrence rate 9% with RM vs 5% with TM+XRT ($p=0.002$) in N0 arm, no difference in N+ arm (16% vs 14%).



Fisher et al, Cancer 1977

Fisher et al, NEJM 1985

Fisher et al, NEJM 2002

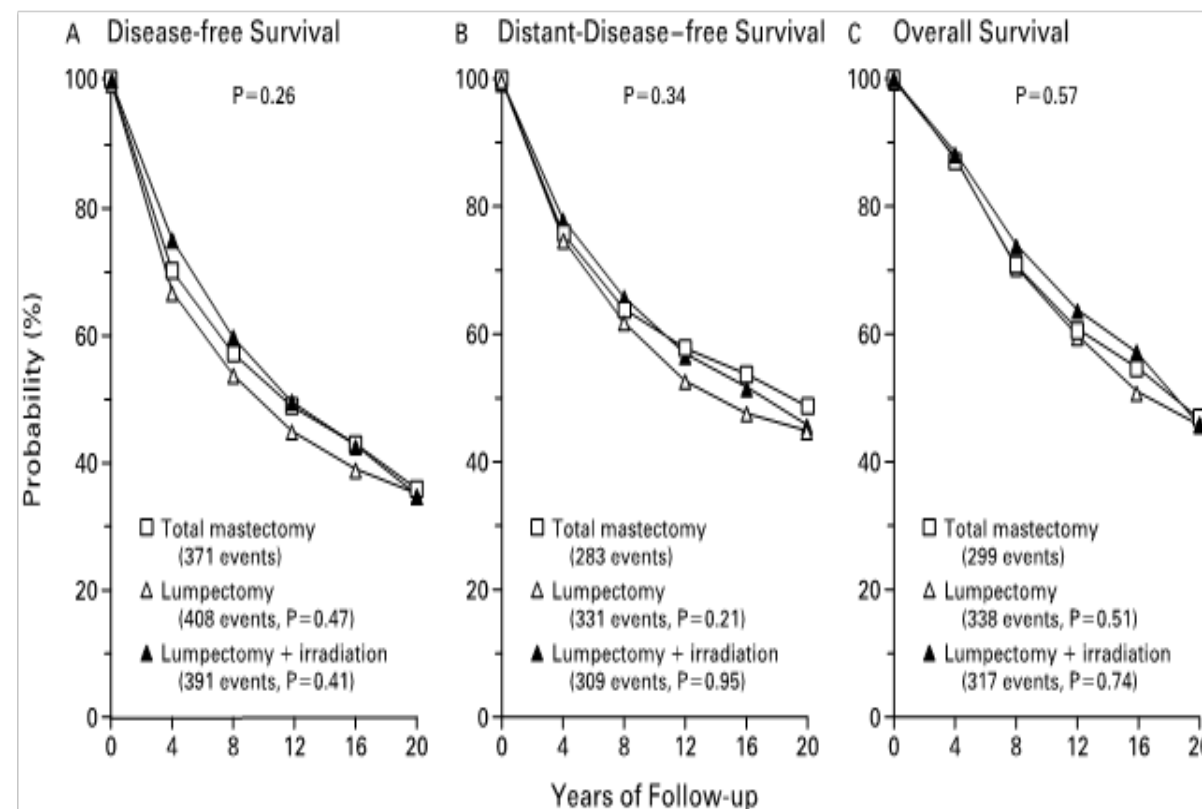


Lumpectomy not worse than Total Mastectomy: NSABP B-06 (1976)

1843 women with early operable breast cancer with movable nodes

Eligibility: tumor < 4cm and movable LNs (stage 1 or 2), no skin involvement, breast must be of sufficient size to preserve cosmesis and negative margins (“no ink on tumor”)

Everyone got ALND and all N+ patients got adjuvant chemo (melphalan/5FU)



Fisher et al, NEJM 1985

Fisher et al, NEJM 2002



Lumpectomy not worse than Total Mastectomy: NSABP B-06 (1976)

**No diff in DFS/OS with TM vs Lump +/-
XRT**

Ipsilateral recurrence rate (IRR):

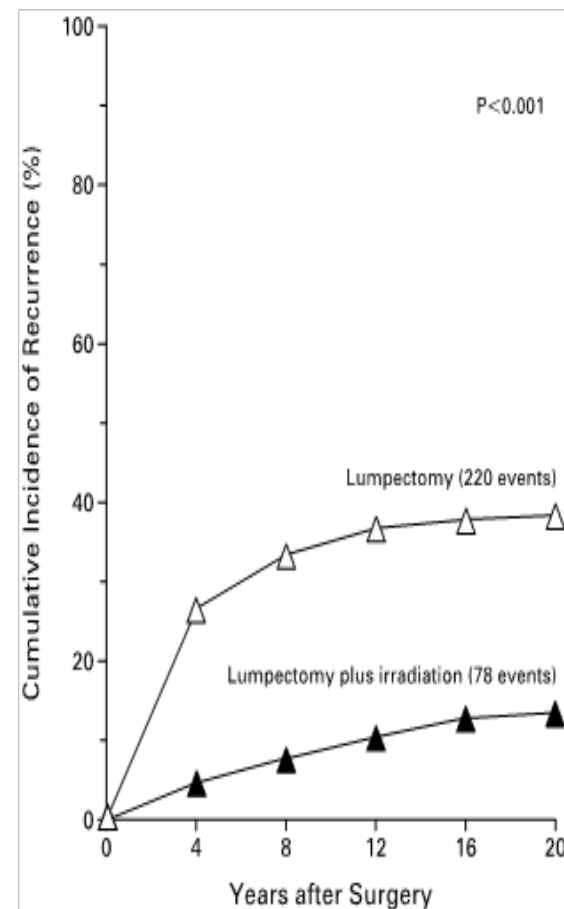
Lump: 39%

Lump/XRT: 14%

IRR N0 patients: 36% vs 17%

IRR N+ patients: 44% vs 9%

OS: 5yr 90% -> 20yr 45%

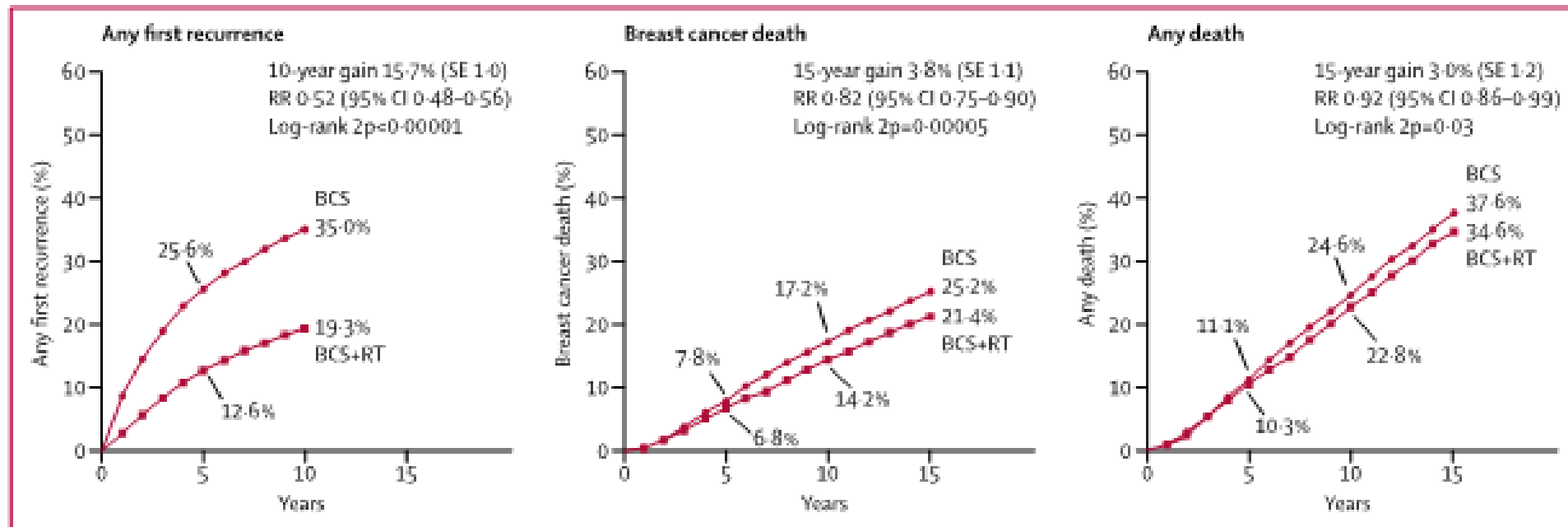


Fisher et al, NEJM 1985

Fisher et al, NEJM 2002



EBCTCG Meta-analysis: BCT +XRT reduces recurrence rates and breast cancer deaths compared to lumpectomy alone.



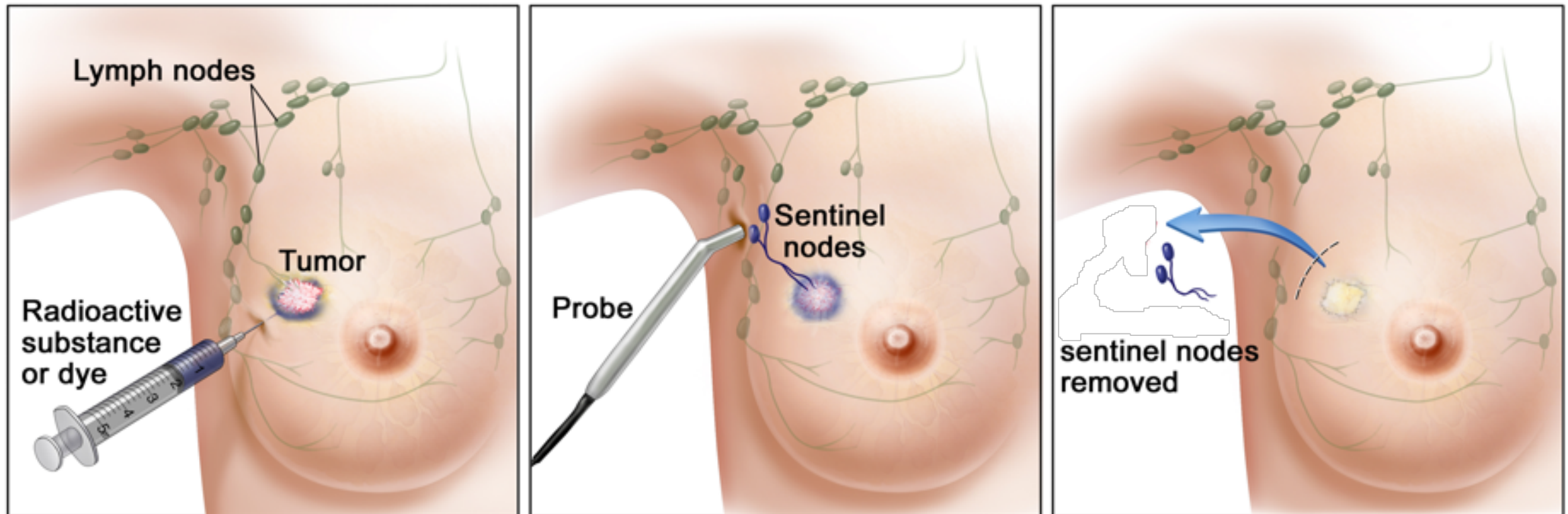
16% decrease in 1st recurrence

4% decrease in deaths due to BC

3% decrease in deaths due to any cause

Sentinel Lymph Node Surgery

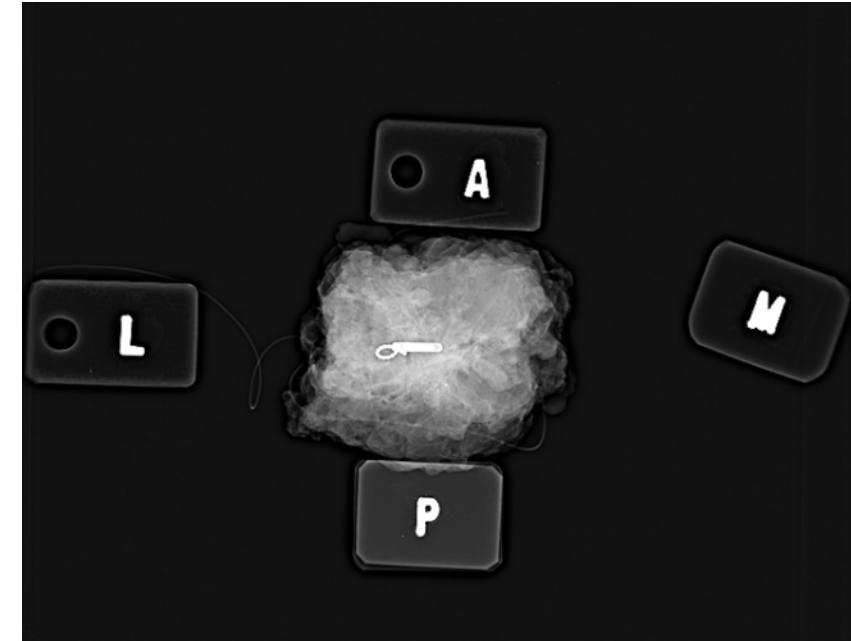
Sentinel Lymph Node Biopsy



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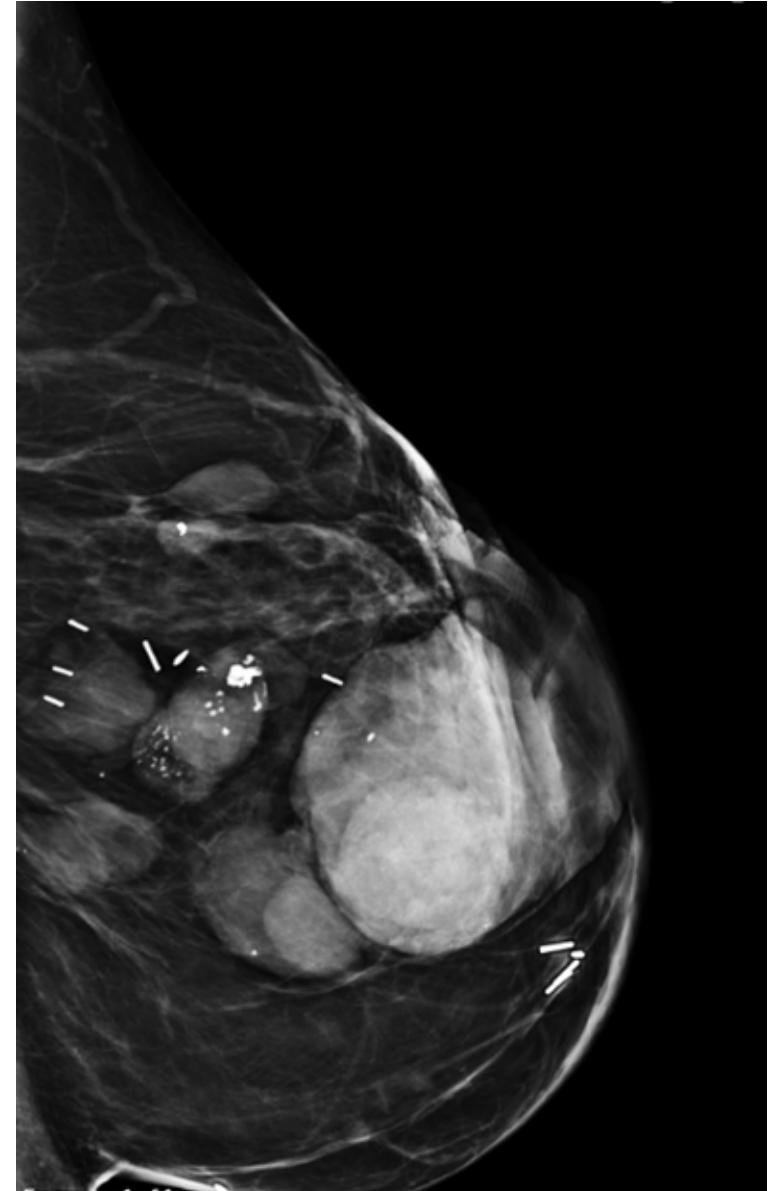


Lumpectomy



Indications for mastectomy

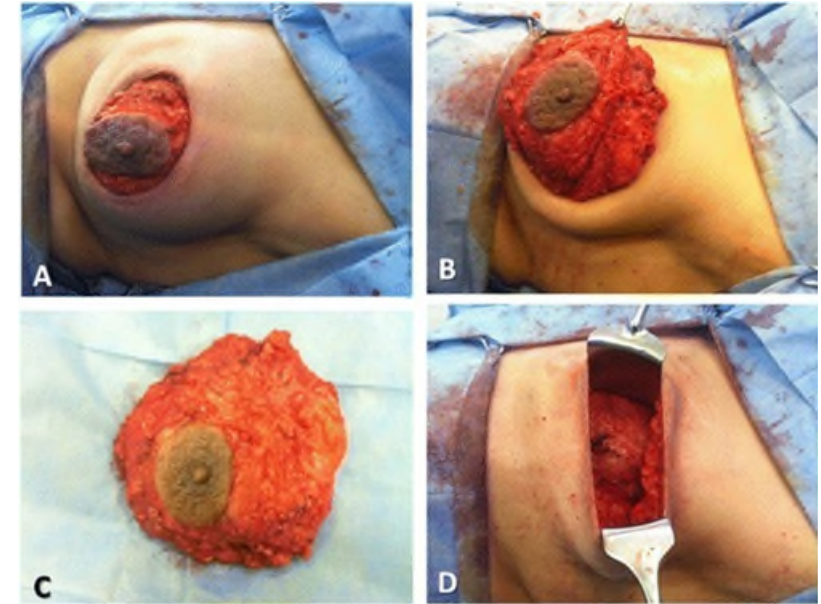
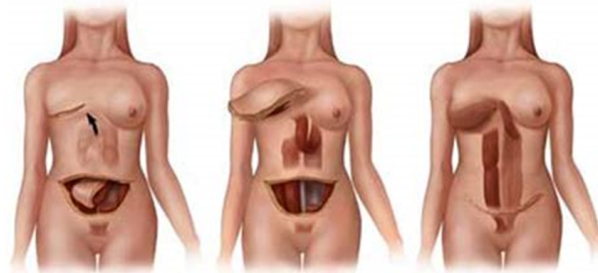
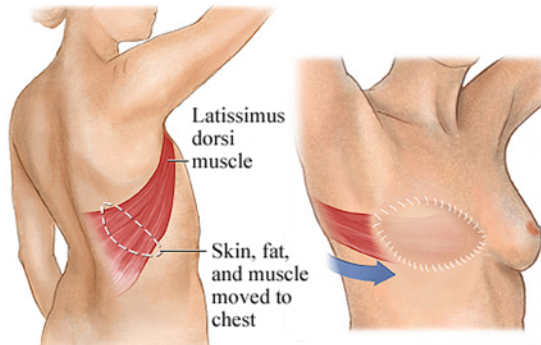
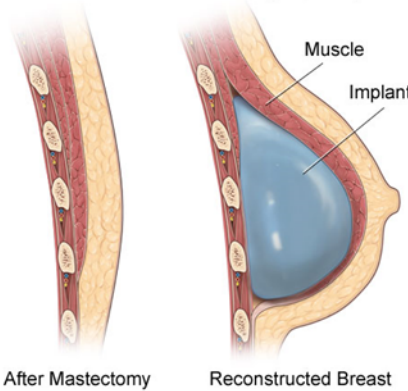
- High risk of future breast cancer
 - Genetic predisposition
- Unable to achieve principles of breast conservation surgery
- Inflammatory breast cancer
- Imaging barriers
- Patient preference



Reconstruction

- Foreign Body
 - Tissue Expander
 - Implant
 - Silicone
 - Saline
- Autologous
 - Fat, muscle and blood vessels taken from another part of the body
 - Back (latissimus flap)
 - Abdomen (DIEP flap)
 - Buttocks

Breast Reconstruction (Implant)



Bilateral NSM and DTI

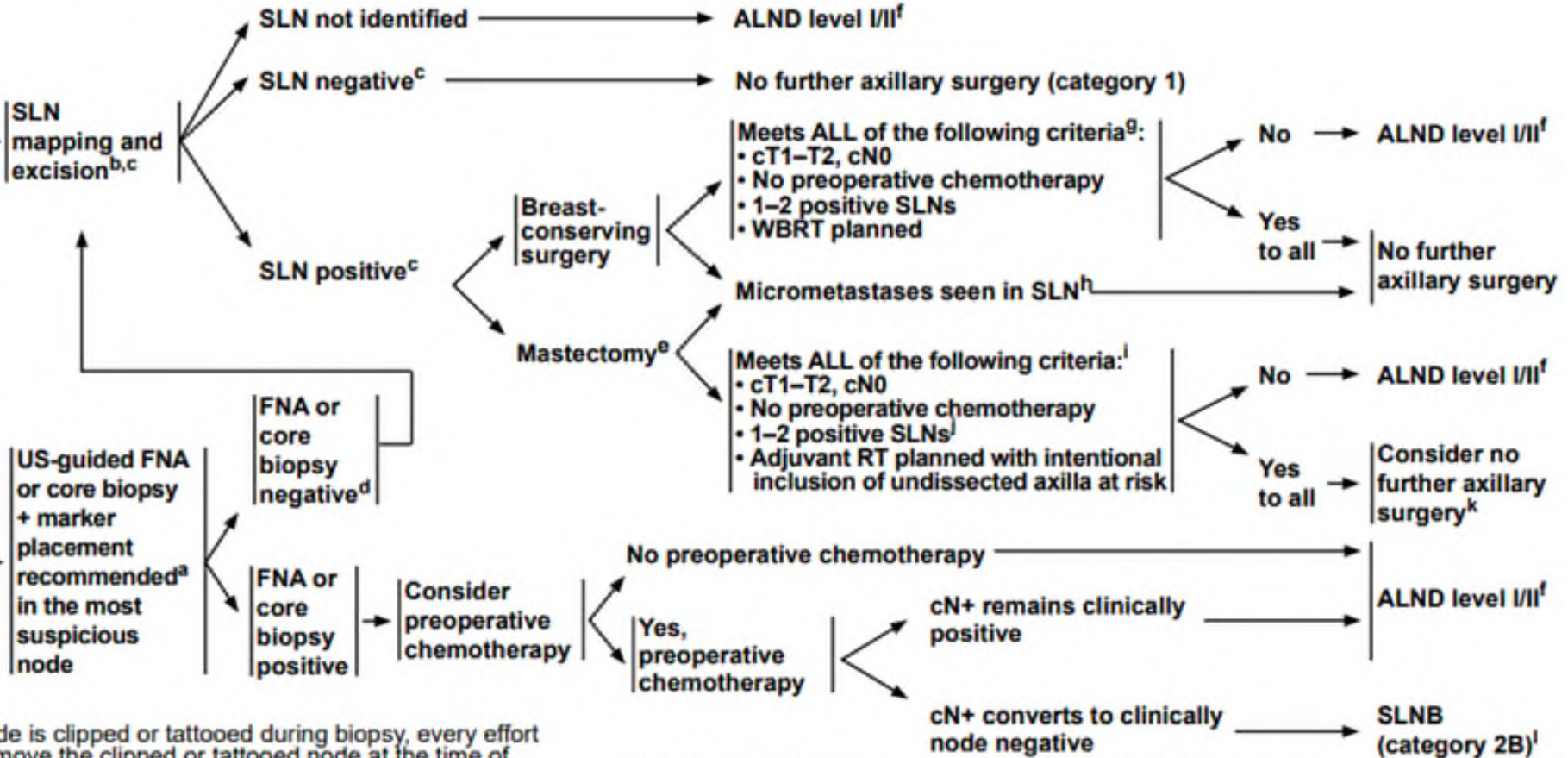


Sentinel Node Biopsy Expansion

CONSIDERATIONS FOR SURGICAL AXILLARY STAGING

No palpable lymph node at diagnosis and limited axillary lymph node involvement on imaging confirmed by needle biopsy ± marker placement^a in the most suspicious node

Clinically suspicious (palpable) lymph nodes or Significant axillary lymph node disease burden on imaging or Preoperative systemic therapy being considered and suspicious lymph nodes at diagnosis on exam or imaging



^a If a positive lymph node is clipped or tattooed during biopsy, every effort should be made to remove the clipped or tattooed node at the time of surgery. Only the most suspicious node should be marked and retrieved along with SLNs to reduce the false negative rate.

^b SLN mapping injections may be peritumoral, subareolar, or subdermal.

^c Sentinel node involvement is defined by multilevel node sectioning with hematoxylin and eosin (H&E) staining. Cytokeratin IHC may be used for equivocal cases on H&E. Routine cytokeratin IHC to define node involvement is not recommended in clinical decision-making.

^d If clinically negative axilla before chemotherapy and then have a positive sentinel node after chemotherapy, consider completion axillary lymph node dissection or multidisciplinary tumor board discussion on appropriateness of radiation of axilla without further surgery.

^e Limited data exist for patients with mastectomy.

^f Axillary Lymph Node Staging (BINV-E)

^g ACOSOG Z0011: Giuliano AE, et al. JAMA 2017;318:918-926.

^h Galimberti V, et al. Lancet Oncol 2013;14:297-305.

ⁱ EORTC AMAROS: Donker M, et al. Lancet Oncol 2014;15:1303-1310; Rutters E, et al. Cancer Res 2019;79-GS4-01-GS04-01.

^j Limited data exist for ≥3 positive SLNs.

^k In the mastectomy setting, in patients who were initially cN0, who have positive nodes on SLNB, and have no axillary dissection, RT to the chest wall should include undissected axilla at risk ± RNI.

^l Among patients shown to be N+ prior to preoperative systemic therapy, SLNB has a >10% false-negative rate when performed after preoperative systemic therapy, which can be improved by marking and removing the most suspicious biopsied node, using dual tracers, and by obtaining ≥3 sentinel nodes (targeted axillary lymph node dissection). (Caudle AS, et al. J Clin Oncol 2016;34:1072-1078.)

