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Clinical Guidelines from the 2025 International Symposium on Breast Diseases of Inland São Paulo: management of breast cancer in special situations

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ABSTRACT

Introduction: The 2025 International Symposium on Breast Diseases of Inland São Paulo addressed clinically relevant controversies in the management of breast cancer in special situations, including inflammatory carcinoma, axillary micrometastases after neoadjuvant chemotherapy, early luminal tumors in elderly women, and the use of vaginal estrogen therapy after breast cancer treatment. **Methods:** Four priority topics were presented in evidence-based lectures, followed by expert panel discussions and anonymous electronic voting. Consensus was predefined as agreement of at least 75% among panelists. **Results:** No consensus was reached regarding the use of sentinel lymph node biopsy in inflammatory carcinoma, although 73% of panelists voted against its performance. Likewise, no consensus was achieved on omitting axillary lymph node dissection in patients with axillary micrometastases after neoadjuvant chemotherapy, despite 61% considering this approach feasible. In elderly women with early luminal tumors, the most frequently selected option was to maintain standard treatment (29%), with no consensus supporting treatment de-escalation. In contrast, consensus was reached regarding the safety of vaginal estrogen therapy after breast cancer treatment, with 88% of panelists supporting its use in appropriately selected patients. **Conclusions:** These guidelines summarize expert-based recommendations for the management of breast cancer in challenging clinical scenarios and reinforce the importance of individualized, multidisciplinary decision-making. Sentinel lymph node biopsy was generally not supported in inflammatory carcinoma, and vaginal estrogen therapy was considered safe in selected breast cancer survivors. Greater caution remains warranted regarding treatment de-escalation in elderly women with early luminal tumors and omission of axillary lymph node dissection in the setting of residual micrometastatic nodal disease after neoadjuvant chemotherapy.

KEYWORDS: breast cancer; inflammatory carcinoma; sentinel lymph node biopsy; axillary lymph node dissection; luminal tumors; vaginal estrogen therapy; neoadjuvant chemotherapy.

INTRODUCTION

Breast cancer in special situations, such as inflammatory carcinoma, micrometastases post-neoadjuvant therapy, early luminal tumors in elderly women, and the management of genitourinary symptoms post-treatment, poses significant clinical challenges. Inflammatory carcinoma (T4d) is an aggressive entity

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with high lymphatic dissemination, making the use of sentinel lymph node biopsy (SLNB) controversial[1-7]. Axillary lymph node dissection (ALND) post-neoadjuvant therapy in cases of micrometastases is under scrutiny, with interest in less invasive approaches that preserve oncologic safety[8]. In elderly women with early luminal tumors, de-escalation of treatments such as hormone therapy and radiotherapy is debated to reduce treatment morbidity. Vaginal estrogen therapy for genitourinary symptoms post-breast cancer raises concerns about oncologic safety. The 2025 International Symposium on Breast Diseases of Inland São Paulo convened experts to deliberate evidence-based clinical guidelines for these scenarios, addressing four critical thematic axes[1].

METHODS

The plenary sessions were organized around four critical thematic axes:

1. Feasibility of SLNB in inflammatory carcinoma;
2. Possibility of avoiding ALND post-neoadjuvant therapy with micrometastases;
3. Optimal approach for elderly women with early luminal tumors; and
4. Safety of vaginal estrogen therapy post-breast cancer.

Each topic was presented in a 10-minute didactic session with a literature review, followed by 50 minutes of technical debate among panelists, discussants, and speakers, concluding with anonymous electronic voting. Results were tabulated, with consensus defined as ≥75% agreement. The analysis was descriptive, and results were drafted as clinical guidelines.

RESULTS AND DISCUSSION

Feasibility of sentinel lymph node biopsy in inflammatory carcinoma

Voting results

- Yes: 27%
- No: 73%

Inflammatory breast carcinoma (T4d) is characterized by diffuse erythema, skin edema (***peau d'orange***), and high rates of dermal lymphatic embolization (50–65%) and nodal involvement (50–80%)[1-4]. Standard management includes neoadjuvant systemic therapy, modified radical mastectomy with complete axillary dissection, and radiotherapy (trimodality approach)[1-3,9]. Sentinel lymph node biopsy (SLNB) is controversial due to variable sentinel node identification rates (25–80%) and a high risk of false negatives[3-6]. Small case series report higher rates of no residual nodal disease in the axilla after neoadjuvant chemotherapy (ypN0) in pure human epidermal growth factor receptor-type 2 (HER2)-positive tumors, but prospective de-escalation studies exclude inflammatory carcinoma[2-4,7,8,10,11]. A 2017 United States series reported SLNB in 22% of cases, but this is not a standard practice. Exceptional cases with excellent neoadjuvant response and clinically negative axilla may consider selective axillary dissection, though this is not routine[5-8].

Practical recommendations

- Standard surgical approach: Modified radical mastectomy with complete axillary dissection, maintaining the trimodality approach[1-3,9].
- Exceptional cases: Selective axillary dissection may be considered in patients with excellent neoadjuvant response, clinically negative axilla, and multidisciplinary consensus[5-8].
- Education: Reinforce the contraindication of SLNB as a standard practice in inflammatory carcinoma[1-13].

Possibility of avoiding axillary lymph node dissection post-neoadjuvant therapy with micrometastases

Voting results

- Yes: 61%
- No: 39%

Axillary management post-neoadjuvant chemotherapy is debated, particularly in cases of minimal residual disease (ypNmic – microscopic axillary lymph node involvement – micrometastases – after neoadjuvant chemotherapy). Traditionally, avoiding axillary lymph node dissection (ALND) is performed for staging and regional control, but less invasive approaches, such as SLNB or selective axillary dissection with radiotherapy, are being evaluated to reduce morbidity. Retrospective studies and the National Cancer Database (NCDB) analyses suggest that micrometastases can be managed without complete ALND, with similar local control and fewer complications. Evidence from Giuliano et al.[14] and others supports this approach in selected patients, though randomized trials are needed[11,15-28].

Practical recommendations

- Patient selection: Omission of ALND may be considered in cases of micrometastases post-neoadjuvant therapy in selected patients with low nodal disease volume, confirmed by clinical-radiological findings[11,15-28].
- Multidisciplinary approach: Decisions should involve breast surgeons, oncologists, radiologists, and pathologists[11,15-28].
- Alternatives: SLNB or selective axillary dissection with radiotherapy in selected cases.
- Follow-up: Rigorous monitoring for regional recurrences[11,15-28].

Optimal approach for elderly women with early luminal tumors

Voting results

- De-escalate hormone therapy: 24%
- De-escalate radiotherapy: 28%
- De-escalate both therapies: 19%
- Maintain standard treatment: 29%

In elderly women with early luminal tumors (pT1, pN0, low grade), de-escalation of hormone therapy and/or radiotherapy is discussed as a strategy to reduce toxicity and preserve quality of life. Studies like the EUROPA Trial suggest de-escalation may be safe in low-risk cases, but data are preliminary. Maintaining standard treatment was the most favored option (29%), reflecting caution due to uncertainties about local recurrence risk (1% with radiotherapy vs. 10% without, over 10 years)[29-33].

Practical recommendations

- Individualized approach: De-escalation of radiotherapy may be considered in patients >70 years old with low-risk luminal tumors, following multidisciplinary discussion and informed consent regarding recurrence risk[2,9-33].
- Multidisciplinary decision: Involve oncologists, breast surgeons, and radiation therapists[2,9-33].
- Education and follow-up: Inform patients about risks and benefits, with rigorous follow-up for recurrence detection[29-33].

Safety of vaginal estrogen therapy post-breast cancer

Voting results

- Yes: 88%
- No: 12%

Vaginal estrogen therapy is an option for genitourinary symptoms (vaginal dryness, dyspareunia) post-breast cancer. Observational studies, systematic reviews, and the American College of Obstetricians and Gynecologists (ACOG) guidelines indicate that estriol or promestriene use does not increase the risk of recurrence or mortality. Therapy is recommended after the failure of non-hormonal treatments, in shared decision-making with oncologists, particularly for patients on aromatase inhibitors[34-39].

Practical recommendations

- Indication: Consider vaginal estrogen therapy for persistent genitourinary symptoms after the failure of non-hormonal treatments[34-39].
- Modalities: Use promestriene or estriol vaginally[34-39].
- Monitoring: Clinical follow-up and multidisciplinary decision-making[34-39].

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ECP: Conceptualization, Methodology, Project administration, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing. FB: Conceptualization, Methodology, Investigation, Validation, Writing – review & editing. MM: Conceptualization, Methodology, Validation, Writing – review & editing. JTAN: Investigation, Methodology, Validation, Writing

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REFERENCES

1. Teichgraeber DC, Guirguis MS, Whitman GJ. Breast Cancer Staging: updates in the AJCC Cancer Staging Manual, 8th Edition, and Current Challenges for Radiologists, From the AJR Special Series on Cancer Staging. AJR Am J Roentgenol. 2021;217(2):278-90. https://doi.org/10.2214/AJR.20.25223
2. National Comprehensive Cancer Network. NCCN Guidelines. Breast cancer. Version 1.2025 [Internet]. [cited on 2025 Mar 31]. Available from: https://www.nccn.org/guidelines/guidelines-detail?id=1419
3. Woodward WA. Deescalation perils in inflammatory breast cancer. JAMA Netw Open. 2025;8(2):e2454513. https://doi.org/10.1001/jamanetworkopen.2024.54513
4. Wu T, Long Q, Zeng L, Zhu J, Gao H, Deng Y, et al. Axillary lymph node metastasis in breast cancer: from historical axillary surgery to updated advances in the preoperative diagnosis and axillary management. BMC Surg. 2025;25(1):81. https://doi.org/10.1186/s12893-025-02802-2
5. Stearns V, Ewing CA, Slack R, Penannen MF, Hayes DF, Tsangaris TN. Sentinel lymphadenectomy after neoadjuvant chemotherapy for breast cancer may reliably represent the axilla except for inflammatory breast cancer. Ann Surg Oncol. 2002;9(3):235-42. https://doi.org/10.1007/BF02573060
6. Hidar S, Bibi M, Gharbi O, Tebra S, Trabelsi A, Korbi S, et al. Sentinel lymph node biopsy after neoadjuvant chemotherapy in inflammatory breast cancer. Int J Surg. 2009;7(3):272-5. https://doi.org/10.1016/j.ijsu.2009.04.012
7. DeSnyder SM, Mittendorf EA, Le-Petross C, Krishnamurthy S, Whitman GJ, Ueno NT, et al. Prospective feasibility trial of sentinel lymph node biopsy in the setting of inflammatory breast cancer. Clin Breast Cancer. 2018;18(1):e73-e77. https://doi.org/10.1016/j.clbc.2017.06.014
8. Postlewait LM, Teshome M, DeSnyder SM, Lim B, Kuerer HM, Bedrosian I, et al. Factors associated with pathological node negativity in inflammatory breast cancer: are there patients who may be candidates for a de-escalation of axillary surgery? Ann Surg Oncol. 2020;27(12):4603-12. https://doi.org/10.1245/s10434-020-08891-y
9. Tadros A, Diskin B, Sevilimedu V, Xu A, Vingan P, Nelson J, et al. Trends in guideline-concordant care for inflammatory breast cancer. JAMA Netw Open. 2025;8(2):e2454506. https://doi.org/10.1001/jamanetworkopen.2024.54506
10. Kronen EA, Chervu NL, Ng AP, Lee H, Benharash P, Thompson CK. National trends and survival outcomes associated with non-guideline-concordant treatment of inflammatory breast cancer. Breast Cancer Res Treat. 2025;211(2):527-35. https://doi.org/10.1007/s10549-025-07669-8
11. Mattar A, Antonini M, Cavalcante FP, Zerwes F, Millen EC, Brenelli FP, et al. CADONOT: comparing axillary dissection or not in breast cancer surgery. Breast. 2025;81:104453. https://doi.org/10.1016/j.breast.2025.104453
12. Grova MM, Strassle PS, Navajas EE, Gallagher KK, Ollila DW, Downs-Canner SM, et al. The prognostic value of axillary staging following neoadjuvant chemotherapy in inflammatory breast cancer. Ann Surg Oncol. 2021;28(4):2182-90. https://doi.org/10.1245/s10434-020-09152-8
13. Sosa A, Lei X, Woodward WA, Mac Gregor MC, Lucci A, Giordano SH, et al. Trends in sentinel lymph node biopsies in patients with inflammatory breast cancer in the US. JAMA Netw Open. 2022;5(2):e2148021. https://doi.org/10.1001/jamanetworkopen.2021.48021
14. Giuliano AE, Hunt KK, Ballman KV, Beitsch PD, Whitworth PW, Blumencranz PW, et al. Axillary dissection vs no axillary dissection in women with invasive breast cancer and sentinel node metastasis: a randomized clinical trial. JAMA. 2011;305(6):569-75. https://doi.org/10.1001/jama.2011.90
15. Kantor O, Pesce C, Liederbach E, Wang CH, Winchester DJ, Yao K. Are the ACOSOG Z0011 trial findings being applied to breast cancer patients undergoing neoadjuvant chemotherapy? Breast J. 2017;23(5):554-62. https://doi.org/10.1111/tbj.12793
16. Cavalcante FP, Zerwes F, Millen EC, Novita G, Souza ABA, Reis JHP, et al. Management of the positive sentinel lymph node following neoadjuvant chemotherapy: results of a survey conducted with breast surgeons. Ecancermedicalscience. 2022;16:1357. https://doi.org/10.3332/ecancer.2022.1357
17. Ditsch N, Gnant M, Thomssen C, Harbeck N. St. Gallen/Vienna 2025 Summary of Key Messages on Therapy in Early Breast Cancer from the 2025 St. Gallen International Breast Cancer Conference. Breast Care (Basel). 2025 May 3:1-10. https://doi.org/10.1159/000546080. Online ahead of print.
18. Boughey J, Suman V, Hunt KJ, Haffty BG, Buchholz T, Symmans WF, et al. Abstract RF2-01: Factors influencing additional nodal disease and pathologic nodal upstaging with axillary dissection in patients with residual node-positive breast cancer after neoadjuvant chemotherapy enrolled on Alliance A011202 clinical trial. Clin Cancer Res. 2025;31(12_Suppl):RF2-01. https://doi.org/10.1158/1157-3265.SABCS24-RF2-01
19. Moo TA, Pawloski KR, Flynn J, Edelweiss M, Le T, Tadros A, et al. Is residual nodal disease at axillary dissection associated with tumor subtype in patients with low volume sentinel node metastasis after neoadjuvant chemotherapy? Ann Surg Oncol. 2021;28(13):8662–71. https://doi.org/10.1245/s10434-021-09910-2

20. Moo TA, Edelweiss M, Hajiyeva S, Stempel M, Raiss M, Zabor EC, et al. Is low-volume disease in the sentinel node after neoadjuvant chemotherapy an indication for axillary dissection? Ann Surg Oncol. 2018;25(5):1488-94. https://doi.org/10.1245/s10434-018-6429-2

21. Mamounas EP, Anderson SJ, Dignam JJ, Bear HD, Julian TB, Geyer Jr CE, et al. Predictors of locoregional recurrence after neoadjuvant chemotherapy: results from combined analysis of National Surgical Adjuvant Breast and Bowel Project B-18 and B-27. J Clin Oncol. 2012;30(32):3960-6. https://doi.org/10.1200/JCO.2011.40.8369

22. Ling DC,Vargo JA, Beriwal S. Breast, prostate, and rectal cancer: should 5-5-5 be a new standard of care? Int J Radiat Oncol Biol Phys. 2020;108(2):390-3. https://doi.org/10.1016/j.ijrobp.2020.06.04

23. Chun JW, Kim J, Chung IY, Ko BS, Kim HJ, Lee JW, et al. Sentinel node biopsy alone for breast cancer patients with residual nodal disease after neoadjuvant chemotherapy. Sci Rep. 2021;11(1):9056. https://doi.org/10.1038/s41598-021-88442-x

24. Muslumanoglu M, Cabioglu N, Igci A, Karanlık H, Kocer HB, Senol K, et al. Combined analysis of the MF18-02/MF18-03 NEOSENTITURK studies: ypN-positive disease does not necessitate axillary lymph node dissection in patients with breast cancer with a good response to neoadjuvant chemotherapy as long as radiotherapy is provided. Cancer. 2025;131(1):e35610. https://doi.org/10.1002/cncr.35610

25. Limberg JN, Jones T, Thomas SM, Ntowe KW, Dalton JC, van den Bruele AB, et al. Omission of axillary lymph node dissection in patients with residual nodal disease after neoadjuvant chemotherapy. Ann Surg Oncol. 2024;31(13):8813-20. https://doi.org/10.1245/s10434-024-16143-6

26. Almahariq MF, Levitin R, Quinn TJ, Chen PY, Dekhne N, Kiran S, et al. Omission of axillary lymph node dissection is associated with inferior survival in breast cancer patients with residual N1 nodal disease following neoadjuvant chemotherapy. Ann Surg Oncol. 2021;28(2):930-40. https://doi.org/10.1245/s10434-020-08928-2

27. Montagna G, Laws A, Ferrucci M, Mrdutt MM, Sun SX, Bademler S, et al. Nodal burden and oncologic outcomes in patients with residual isolated tumor cells after neoadjuvant chemotherapy (ypN0i+): the OPBC-05/ICARO study. J Clin Oncol. 2025;43(7):810-20. https://doi.org/10.1200/JCO.24.01052

28. Montagna G, Alvarado M, Myers S, Mrdutt MM, Sun SX, Sevilimedu V, et al. Association of axillary lymph node dissection with oncologic outcomes in patients with residual micrometastases after neoadjuvant chemotherapy: the OPBC-07/microNAC study. Tampa: Society of Surgical Oncology; 2025. Annual Meeting; 2025 Mar 27–29.

29. Giaquinto AN, Sung H, Newman LA, Freedman RA, Smith RA, Star J, et al. Breast cancer statistics 2024. CA Cancer J Clin. 2024;74(6):477-95. https://doi.org/10.3322/caac.21863

30. Fuentes JDB, Morgan E, Aguilar AL, Mafra A, Shah R, Giusti F, et al. Global stage distribution of breast cancer at diagnosis: a systematic review and meta-analysis. JAMA Oncol. 2024;10(1):71-8. https://doi.org/10.1001/jamaoncol.2023.4837

31. Early Breast Cancer Trialists' Collaborative Group (EBCTCG). Effects of chemotherapy and hormonal therapy for early breast cancer on recurrence and 15-year survival: an overview of the randomised trials. Lancet. 2005;365(9472):1687-717. https://doi.org/10.1016/S0140-6736(05)66544-0

32. Meattini I, De Santis MC, Visani L, Scorsetti M, Fozza A, Meduri B, et al. Single-modality endocrine therapy versus radiotherapy after breast-conserving surgery in women aged 70 years and older with luminal A-like early breast cancer (EUROPA): a preplanned interim analysis of a phase 3, non-inferiority, randomised trial. Lancet Oncol. 2025;26(1):37-50. https://doi.org/10.1016/S1470-2045(24)00661-2

33. Kunkler IH, Williams LJ, Jack WJL, Cameron DA, Dixon JM. Breast-conserving surgery with or without irradiation in early breast cancer. N Engl J Med. 2023;388(7):585-94. https://doi.org/10.1056/NEJMoa2207586

34. ACOG Committee Opinion No. 659: the use of vaginal estrogen in women with a history of estrogen-dependent breast cancer. Obstet Gynecol. 2016;127(3):e93-e96. https://doi.org/10.1097/AOG.0000000000001351

35. Cold S, Cold F, Jensen MB, Cronin-Fenton D, Christiansen P, Ejlertsen B. Systemic or vaginal hormone therapy after early breast cancer: a Danish observational cohort study. J Natl Cancer Inst. 2022;114(10):1347-54. https://doi.org/10.1093/jnci/djac112

36. Agrawal P, Singh SM, Able C, Dumas K, Kohn J, Kohn TP, et al. Safety of vaginal estrogen therapy for genitourinary syndrome of menopause in women with a history of breast cancer. Obstet Gynecol. 2023;142(3):660-8. https://doi.org/10.1097/AOG.0000000000005294

37. Beste ME, Kaunitz AM, McKinney JA, Sanchez-Ramos L. Vaginal estrogen use in breast cancer survivors: a systematic review and meta-analysis of recurrence and mortality risks. Am J Obstet Gynecol. 2025;232(3):262-270.e1. https://doi.org/10.1016/j.ajog.2024.10.054

38. Ganz PA, Greendale GA, Kahn B, O'Leary JF, Desmond KA. Are older breast carcinoma survivors willing to take hormone replacement therapy? Cancer. 1999;86(5):814-20. PMID: 10463980.

39. Biglia N, Cozzarella M, Cacciari F, Ponzone R, Roagna R, Maggiorotto F, et al. Menopause after breast cancer: a survey on breast cancer survivors. Maturitas. 2003;45(1):29-38. https://doi.org/10.1016/s0378-5122(03)00087-2

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