

Practical consensus recommendations for tumor margins and breast conservative surgery

R. Sarin, S. P. Somsekhar¹, R. Kumar², Gupta Pawan³, Jain Sumeet⁴, Jindal Pramoj⁵, Zamre Vaishali⁶, Pasha Firoz, P. M. Parikh⁷, S. Aggarwal⁸, R. Koul⁹

Abstract

My suggestion: There is no difference in survival of breast cancer patients treated with either mastectomy or with breast conservation therapy combined with external beam radiotherapy. A positive margin (s) is an important factor contributing to the increased risk of local recurrence. However, in published literature, there is a lack of consensus on the definition of acceptable margin (s). As a result decision process about need for re-excision after positive margins remains unclear.

Key words: Acceptable margin, extensive intraductal component, nodal metastasis, original size, re-excision, resection

Introduction

Breast cancer is the commonest cancer among women worldwide, with the lowest incidence being reported from far eastern and south eastern Asian countries.^[1,2] In recent years, breast cancer has emerged as the commonest malignancy affecting women in the majority of Asian countries,^[3,4] The breast cancer cause-specific mortality in most Asian countries is also higher as compared to western countries.^[2] Larger proportions of breast cancer patients in developing Asian countries are younger than patients in developed Asian and western countries.^[5,6]

The adoption of screening mammography has led to the identification of smaller, often non-palpable, tumors that can be treated with breast-conserving surgical approaches as opposed to mastectomy.^[7-9] Breast-conserving therapy (BCT) followed by irradiation nowadays is the treatment of choice for early-stage disease; There is no difference in long-term survival (more than 20 years) between mastectomy and BCT combined with external radiotherapy.^[10,11] The main goal of BCT is the complete removal of cancer with clear surgical margins while maintaining the natural shape of the breast. The principal risk with the conservative option is local recurrence, ranging between 0.6% and 1.5% per year, and is directly related to the presence of residual tumor in the remaining mammary gland, since isolated local recurrence (i.e., without systemic metastases) is mainly observed in the first 2–3 years after surgery.^[12]

Expert group of oncologists met in the update in oncology-X-2017 to discuss on available strategies and approaches to tumor margins and breast conservative surgery for the treatment of breast cancer.

The update in oncology-X-2017 was organized by Sir Ganga Ram Hospital discuss and arrive at a consensus statement to provide community oncologists practical guidelines for

challenging common case scenarios in Breast Cancer out of these we are discuss about tumor margins and breast conservative surgery in this chapter. While the discussions will take the scenario as exists in India as a representative country with limited resources, the final manuscript is applicable globally.^[13,14]

The discussion was based on domain expertise of the National as well as international faculty, published evidence and practical experience in real life management of breast cancer patients. Opinion of the 250 oncologist including medical oncologist, radiation oncologist, surgical oncologist, molecular oncologist and radiologist are present in the update in oncology-X-2017 was taken into consideration by the expert panel.

The expert group was chaired by Dr. Rajiv Kumar and Dr. Somsekhar whereas the discussions were moderated by Dr. Ramesh Sarin. The core expert group consisted of Dr. Pawan Gupta, Dr. Sumeet Jain, Dr. Pramoj Jindal, Dr. Vaishali Zamre, Dr. Firoz Pasha and Dr. Sarah P Cate. Consensus answers were used as the basis of formulating the consensus statement providing community oncologists with ready-to-use practical recommendations. The survey answers were used as the basis for formulating the consensus statement so that community oncologists have a ready-to-use practical recommendations for tumor margins and breast conservative surgery.

As part of the background work, the best existing evidence was compiled and provided to the expert group panel members for review in preparation for the expert group meeting.^[15-17] The national and international experts invited to this meeting were also provided the data on the voting by the audience delegates from the update in oncology-X-2017. Members of the panel were also allowed to share their personal experiences, make comments and record dissent while voting for the consensus statements. Total of sixteen broad question categories were part of the expert group discussions.

The American Society of Clinical Oncology (ASCO) Clinical Practice Guidelines Committee (CPGC) identified a guideline for endorsement that addressed margins for breast-conserving

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: reprints@medknow.com

How to cite this article: Sarin R, Somsekhar SP, Kumar R, Pawan G, Sumeet J, Pramoj J, *et al.* Practical consensus recommendations for tumor margins and breast conservative surgery. *South Asian J Cancer* 2018;7:72-8.

Access this article online

Quick Response Code:



Website: www.sajc.org

DOI: 10.4103/sajc.sajc_105_18

Department of Surgical Oncology, Apollo Indraprastha Hospital, ²Department of Surgical Oncology, Rajiv Gandhi Cancer Hospital, Departments of ³Surgery, ⁴Medical Oncology and ⁵Surgical Oncology, Sir Ganga Ram Hospital, ⁶Department of Surgical Oncology, Max Hospital, New Delhi, ⁷Department of Surgical Oncology, Manipal Hospital, Bengaluru, Karnataka, ⁸Department of Surgical Oncology, Jaypee Hospital, Noida, Uttar Pradesh, ⁹Department of Surgical Oncology, Fortis Hospital, Mohali, Punjab, ⁷Department of Oncology, Shalby Cancer and Research Institute, Mumbai, Maharashtra, India

Correspondence to: Dr. R. Koul,
E-mail: rkkdoc2014@gmail.com

Table 1: Should the entire area of the original primary be resected after downstaging

Options (%)	Yes	No	Abstain
Percentage of polled oncologists at update in oncology-X-2017	70	20	0
Percentage of polled oncologists at St. Gallen's consensus - 2017	14	82	4

Expert group consensus: Even after taking into consideration the St. Gallen's 2017 statement, the current consensus for India still remains that entire area of the original primary needs to be resected

Table 2: What should be the minimum acceptable surgical margin to avoid re-excision (with multifocal residual disease in their pathological specimen)?

Options (%)	No ink on invasive tumor or DCIS?	2 mm clearance?	2-5 mm clearance?	>5 mm clearance?
Percentage of polled oncologists at update in oncology-X-2017	0	0	100	0
Percentage of polled oncologists at St. Gallen's consensus - 2017	95.8	4.2	0	0

Expert group consensus: The minimum acceptable surgical margin for avoiding need for re-excision is 2-5 mm of clearance. DCIS=Ductal carcinoma *in situ*

Table 3: How many times should frozen section for margin status be sent before abandoning breast conserving surgery?

Options (%)	1-2	3-4	Abandonment will depend on the size of tumor to be excised in relation to the size of the breast concerned
Percentage of polled oncologists	33.3	33.3	33.3

Expert group consensus: The expert group recommendation is that abandonment of BCS needs to be individualized for each patient and will depend on the relative size of tumor with respect to the breast concerned. BCS=Breast conserving surgery

Table 4: If whole breast radiation treatment is planned, what is the minimum margin width sufficient to avoid re-excision?

Options (%)	No ink on invasive tumor or DCIS	2 mm clearance	5 mm clearance	Abstain
Percentage of polled oncologists at update in oncology-X-2017	16.7	16.7	66.6	0
Percentage of polled oncologists at St. Gallen's consensus - 2017	25	25	25	25

Expert group consensus: While the majority of pooled oncologists preferred a 5 mm clearance, the expert group consensus recommendation was that a 2 mm clear margin is sufficient to avoid re-excision when breast irradiation is part of treatment plan. DCIS=Ductal carcinoma *in situ*

Table 5: Tumor foci contained in one "quadrant" of the breast (multifocal) can be treated with breast conservation; provided margins are clear and adequate radiotherapy is planned

Options (%)	Yes	No	Abstain
Percentage of polled oncologists at update in oncology-X-2017	83.3	16.7	0
Percentage of polled oncologists at St. Gallen's consensus - 2017	97.1	2.9	0

Expert group consensus: Yes, it is possible to recommend BCS to such patients. BCS=Breast conserving surgery

Table 6: Tumor foci in more than one "quadrant" of the breast (multicentric) can it be treated with breast conservation; provided margins are clear and adequate radiotherapy is planned

Options (%)	Yes	No	Abstain
Percentage of polled oncologists at update in oncology-X-2017	0	100	0
Percentage of polled oncologists at St. Gallen's consensus - 2017	60.6	33.3	6.1

Expert group consensus: Even after taking into consideration the St. Gallen's 2017 statement, the current consensus for India is that BCS is NOT recommend to patients who have tumor in more than one quadrant of the breast (multicentric)

with early stage breast cancers. The goal of BCS is to achieve adequate surgical margins during the initial surgical resection while optimizing the aesthetic appearance of the breast. Additional surgery with re-excision may not only compromise cosmesis, but also can increase morbidity and costs^[19,20] for patients while delaying initiation of appropriate adjuvant treatment. Surgical margin status is considered one of the strongest predictors for local recurrence and an important factor guiding the decision to re-excite.^[21-26] It is standard practice to re-excite additional breast tissue for positive margins to reduce the risk of local recurrence.^[27-30] The therapeutic decisions for positive margins are relatively straightforward; however, only recently has there been published consensus over what constitutes an adequate negative margin.^[31,32] Historically, the criteria for an adequate negative margin had relatively arbitrary thresholds ranging from "no tumor at inked margin" to 10 mm or more.^[24,33] Although absence of tumor at the inked margin is the current recommendation from national clinical consensus guidelines,^[31,32] there has been a considerable variation in practice patterns among surgeons regarding the decision to re-excite or perform a mastectomy based on margin distance [Tables 1-16].^[27,34,35]

The status of the surgical margins is assessed by applying ink to the surface of the lumpectomy specimen and determining the microscopic distance between tumor cells and the inked surface. The exact definition of an adequate surgical margin after breast cancer resection has long been debated among physicians and represents an area of considerable variation in clinical practice.^[36-38]

surgery with whole-breast irradiation in stage I and II invasive breast cancer. The target guideline was developed in 2013 as a joint product in association with the Society of Surgical Oncology (SSO) and the American Society for Radiation Oncology (ASTRO).^[18]

Breast conserving surgery (BCS) is widely considered to be the standard operative approach for treating most patients

South Asian Journal of Cancer ♦ Volume 7 ♦ Issue 2 ♦ April-June 2018

Pathological Evaluation

There is no standard method of margin evaluation for breast cancer specimens and there is no standard number of histologic sections examined from each margin surface. Margins can be evaluated (A) by a radial method, (B) by a shaved method, or (C) by shaving the walls of the lumpectomy cavity.

(A) The most common method of margin assessment is the radial (or perpendicular) margin technique, which allows for a precise measurement of the distance from the tumor to the inked margin. With this method the specimen is received with at least two of the margins marked with metal clips or sutures for specimen orientation. The six margins of the specimen are then inked in six different colors by the processor. The inked breast tissue is cut into 0.2–0.3 cm sequential sections perpendicular to its long axis so that the perimeter of each tissue section contains few (two to four) margins identified by the different ink colors.

With this technique the pathologist can report the exact microscopic distance from the tumor to each margin and can distinguish between a truly positive margin (tumor at ink) and a close margin. The disadvantages of this method include running ink, imprecise margin orientation and surface complexity of the breast specimen.

(B) The use of shaved (*en face*) margins allows the oriented specimen to be inked entirely in one color, as long as the processor is able to maintain the proper orientation, and eliminates the problem of different color inks running together.

Table 7: Should the margin required be dependent on tumor biology or histology e.g., lobular carcinoma?

Options (%)	Yes	No	Abstain
Percentage of polled oncologists at update in oncology-X-2017	60	40	0

Expert group consensus: The treating oncologist usually will take into consideration several factors, including but not limited to, tumor biology and histology while planning tumor margin

Table 8: Should the surgical tumor margin requirement be dependent on age of the patient (<40 or >40 years)?

Options (%)	Yes	No	Abstain
Percentage of polled oncologists at update in oncology-X-2017	33.3	33.3	33.3

Expert group consensus: Age has no bearing on the requirement of tumor margin

Table 9: Should the margin required be greater in presence of extensive intraductal component?

Options (%)	Yes	No	Abstain
Percentage of polled oncologists at update in oncology-X-2017	46.7	53.3	0

Expert group consensus: The tumor margin is NOT required to be greater in the presence of EIC. EIC=Extensive intraductal component

Table 10: Question 11 (I) - In patients with macro-metastases in 1-2 sentinel nodes, completion of axillary dissection can safely be omitted following mastectomy?

Options (%)	Mastectomy (no radiotherapy to lymph nodes planned)	Mastectomy (radiotherapy to lymph nodes planned)	Both	Abstain
Percentage of polled oncologists at update in oncology-X-2017	25	25	25	25
Percentage of polled oncologists at St. Gallens consensus - 2017	0	0	85	15

Expert group consensus: Expert panel agree that in patients with macro-metastases in 1–2 sentinel nodes, completion of axillary dissection can safely be omitted following mastectomy irrespective of whether radiotherapy is planned or not

The margins are shaved off parallel to the surface of the inked specimen at a tissue depth of 0.2–0.3 cm, similar to the process of peeling an orange. The sections are then embedded *en face* with the inked surface facing down so that the microscopic examination starts from the inner aspect of the breast specimen. With this technique a margin is reported as positive when tumor is present anywhere in the section, which means that malignant cells may be present within a 0.2–0.3 cm radius from the margin or at the margin, but the exact distance of the tumor to the margin cannot be evaluated by the pathologist. If no tumor is identified, the margin is reported as negative. The advantages of this method include easier and faster microscopic examination, no occurrence of ink problems and the examination of a larger portion of the specimen's surface with relatively few histologic sections. The disadvantage is that this technique is extremely problematic for surgeons since it increases the number of margins called positive.

(C) The third method, shaving the walls of the lumpectomy cavity, provides a nice solution to margin evaluation and combines the advantages of the radial and *en face* margin assessments: the surgeon resects the index lesion and then takes separate shaved margins from the cavity. The main breast specimen containing the tumor is received unoriented and does not need to be inked. Each shaved specimen represents a margin (medial, lateral, superior, inferior and posterior walls of the cavity) and is received oriented with a suture or metal clip designating the final surgical margin. The anterior margin may or may not be submitted by the surgeon. This technique allows precise margin designation and an accurate measurement of the margin width, and limits additional manipulation of the breast tissue since compression devices used for the specimen radiography may alter measurements of the margin distances. Although an increase in the number of histologic blocks and slides is the main concern for this method, a number of studies report that this method reduces the rate of re-excision for close margins.^[39-45]

Surgical Margins

The possible scenarios of margin assessment encountered at the microscope are: broadly positive margin, focally positive margin, close margin, negative margin, and cauterized margin. As previously mentioned, there is a lack of standardization in the pathological methods of margin evaluation, which yields little consensus regarding what constitutes an adequate negative margin. Patient management varies widely based on the threshold that surgeons accept for adequate margins and the subsequent need for re-excision. Morrow *et al.*^[46] recently proposed that the negative margin used in the National Surgical

Table 11: Question 1 (II) - In patients with macro-metastases in 1-2 sentinel nodes, completion of axillary dissection can safely be omitted following breast conservative surgery if radiotherapy is part of treatment plan

Options (%)	Conservative resection with radiotherapy using standard tangents	Conservative resection with radiotherapy using high tangents	Both	No	Abstain
Percentage of polled oncologists at update in oncology-X-2017	20	20	20	20	20
Percentage of polled oncologists at St. Gallen's consensus - 2017	0	0	78.1	18.8	3.1

Expert group consensus: Expert panel agree that in patients with macro-metastases in 1-2 sentinel nodes, completion of axillary dissection can safely be omitted following breast conservative surgery if radiotherapy is part of treatment plan, irrespective of whether radiotherapy is with standard or high tangents

Table 12: Question 12 - In patients with macro-metastases in 1-2 sentinel nodes, completion of axillary dissection can safely be omitted irrespective of tumor biology (LVI, estrogen receptor negative, Grade 3 etc.)

Options (%)	Yes	No	Abstain
Percentage of polled oncologists at update in oncology-X-2017	33.3	33.3	33.3
Percentage of polled oncologists at St. Gallen's consensus - 2017	76.9	23.1	0

Expert group consensus: Tumor biology should be taken into consideration when deciding about need for completion axillary dissection if macro-metastases is present in 1-2 sentinel node (s)

Table 13: Question 13 - In a patient who is clinically (at palpation and on ultrasonography) node-negative at diagnosis: Is sentinel node biopsy appropriate?

Options (%)	Yes	No	Abstain
Percentage of polled oncologists at update in oncology-X-2017	33.3	33.3	33.3
Percentage of polled oncologists at St. Gallen's consensus - 2017	95.7	4.3	0

Expert group consensus: Yes, sentinel node biopsy is appropriate even for patients with clinically node negative disease

Adjuvant Breast and Bowel Project (NSABP) trials should be adopted as the definition of an adequate margin, and the close margin, as described by pathologists and interpreted by patients and clinicians as evidence of inadequate surgery, should be replaced by the measurement of the distance of the tumor from the inked resection margin, without any additional qualifications.

It is also important to recognize that a reported negative margin does not confirm that there is no residual tumor in the breast; rather it indicates that the residual tumor burden is low enough to be likely controlled by radiotherapy. In recognition of the multiple factors impacting local control of breast cancer, a consensus conference concluded that the only negative margin width for all patients with invasive carcinoma was tumor not touching the inked margin.^[33]

The criteria for surgical re-excision by mastectomy after BCT, according to the Standards, Options and Recommendations (SOR) guidelines are positive resection margins, the extension of intraductal lesions extending beyond 3 cm, and the presence of multifocal lesions.^[47,48] However, according to the literature, 30-65% of mastectomies performed after BCT are free of residual tumor, which therefore casts doubt on the validity of these procedures providing no therapeutic benefit, impairing cosmesis and increasing morbidity and costs.^[49,50] In daily clinical practice it is important to know predictors of the risk of residual cancer in the presence of positive or close margins in order to identify patients in whom unnecessary re-excision (s)

or mastectomies could be avoided. Young age, tumor size, nodal status, number of involved margins, multifocality and extent of the tumoral lesion, presence of an extensive intraductal component have been found to be associated with the risk of residual cancer in the tumor cavity.^[20,51-54]

In any case, no predictive factor has yet been proven to be reliable enough to exactly identify patients with involved margins in whom re-excision (s) or mastectomies could safely be omitted. However, it is also important to establish the exact anatomical situation of the positive margins; the absence of re-excision in the case of positive margins, whether anterior (close to skin) or posterior (close to pectoral muscle), does not appear to significantly increase the risk of recurrence, whereas positive margins are a risk factor for local recurrence when in contact with the remnant gland.^[55]

The definition of acceptable margin width is similar for invasive cancer and for DCIS with RT; in DCIS treated without RT larger margins are favored. The case is different for lobular carcinoma *in situ* (LCIS) which is known to be a marker for breast cancer and not necessarily a precursor. A larger recent study has shown classic LCIS near the margin does not increase local recurrence.^[39,56]

Neoadjuvant chemotherapy (NACT) has the potential to allow removal of a smaller amount of breast tissue than if surgery was performed at initial presentation. Shrinkage of the locally advanced breast tumor in response to NACT has been shown to occur in two different ways: concentrically and in a honeycomb or buckshot pattern. In patients with a pathologic complete response or concentric tumor shrinkage, consideration of margin width does not differ from that in a non-NACT setting. In contrast, in patients with the buckshot pattern of tumor shrinkage, determination of the appropriate extent of resection may be problematic perhaps due to the biologic features of the tumor, suggesting that if viable residual tumor is present scattered throughout the lumpectomy, even if it is not at the inked margin, re-excision should be considered.^[57]

Sentinel Lymph Node Biopsy

If the patient has clinically positive axillary lymph node (s) at diagnosis, and then is given systemic therapy (neoadjuvant), the role of SLNB has remained controversial.

SLNB without level I and II axillary dissection hasn't been performed in patients with clinical N+ at diagnosis even when the axillary status has been downstaged by the systemic treatment.

SENTINA trial, a prospective trial in Germany and Austria, showed that after treatment, the detection rate of metastases by sentinel lymph node dissection becomes low with a high FNR

Table 14: Question 14 - In a patient who is clinically (at palpation and ultrasonography) node-negative at diagnosis: When is the best time point for sentinel node biopsy?

Options (%)	Before the start of neo-adjuvant chemotherapy	After neo-adjuvant chemotherapy	Either before or after chemo are valid options	Abstain
Percentage of polled oncologists at update in oncology-X-2017	25	25	25	25
Percentage of polled oncologists at St. Gallen's consensus - 2017	20	60	16.7	3.3

Expert group consensus: Sentinel Node biopsy should be done after neo-adjuvant chemotherapy has been given, if it is plan of treatment

Table 15: Question 15 - In a patient who is clinically node-positive at diagnosis and who downstage (becomes clinically node negative) after chemotherapy, is sentinel node biopsy appropriate with 1-2 lymph node detected?

Options (%)	Yes	No	Abstain
Percentage of polled oncologists at update in oncology-X-2017	33.3	33.3	33.3
Percentage of polled oncologists at St. Gallen's consensus - 2017	42.9	53.6	3.6

Expert group consensus: As a general rule, it is not recommended to do sentinel node biopsy if patient has already received systemic chemotherapy because it leads to low detection rates and high false negative rates

Table 16: Question 16 - In a patient who is clinically node-positive at diagnosis and who downstage (becomes clinically node negative) after chemotherapy, is sentinel node biopsy appropriate only in selected cases such as >2 sentinel node evaluated?

Options (%)	Yes	No	Abstain
Percentage of polled oncologists at update in oncology-X-2017	33.3	33.3	33.3
Percentage of polled oncologists at St. Gallen's consensus - 2017	52.2	30.4	17.4

Expert group consensus: There is not enough data for a consensus on this. Hence the decision needs to be individualized

(False Negative Rate: 24.3% for one SLN removed and 18.5% for two SLNs).^[58] Following downstaging of cN+ to cN- by systemic treatment, SLNB procedure is contraindicated because:

- Possibility of alteration of intramammary lymphatic drainage
- Potentially multiple obscured sources of lymphatic drainage for larger tumors
- Possibility of non uniform cytotoxic response of axillary metastases.

The only data in favour of continuing with SLNB in a subgroup of patients comes from Swedish prospective multicentre trial evaluating SLNB after neoadjuvant systemic therapy in cN+ patients of breast carcinoma. Here the overall FNR dropped from 14.1% to 4% when two or more SLNs were analyzed.^[59]

Conclusion

A positive margin is associated with increased risk of local recurrences after BCT for invasive breast cancer and DCIS. Surgeons may be influenced by the level of compliance in pathology reporting when making decisions about the necessity for additional surgical procedures following initial BCS. Improving communication between surgeons and pathologists will help achieve standardized margin reporting, which could help streamline the decision process for need of re-excision and mastectomy following breast conserving surgery. Currently the entire area of the original primary tumor needs to be

Take Home Message

- 1 Even after taking into consideration the St Gallen's 2017 statement, the current consensus for India still remains that entire area of the original primary needs to be resected, even after downstaging.
- 2 With regards to the primary tumor, the minimum acceptable surgical margin for avoiding need for re-excision is 2 -5 mm of clearance.
- 3 Abandonment of BCS needs to be individualized for each patient and will depend on the relative size of tumor with respect to the breast concerned
- 4 A 2 mm clear margin is sufficient to avoid re-excision when breast irradiation is part of treatment plan.
- 5 It is possible to offer breast conservation to patients having tumor foci contained in one 'quadrant' of the breast (multifocal), provided margins are clear and adequate RT is planned.
- 6 Even after taking into consideration the St Gallen's 2017 statement, the current consensus for India is that BSC is NOT recommend to patients who have tumor in more than one quadrant of the breast (multi-centric).
- 7 The treating oncologist usually will take into consideration several factors, including but not limited to, tumor biology and histology while planning tumor margin.
- 8 Age has no bearing on the requirement of tumor margin
- 9 The tumor margin is NOT required to be greater in the presence of EIC.
- 10 In patients with macro-metastases in 1-2 sentinel nodes, completion of axillary dissection can safely be omitted following mastectomy irrespective of whether radiotherapy is planned or not.
- 11 In patients with macro-metastases in 1-2 sentinel nodes, completion of axillary dissection can safely be omitted following Breast Conservative Surgery if radiotherapy is a part of treatment plan, irrespective of whether radiotherapy is with standard or high tangents.
- 12 Tumor biology should be taken into consideration when deciding about need for completion axillary dissection if macro-metastases are present in 1-2 sentinel node (s).
- 14 Sentinel Node biopsy may be done after neo-adjuvant chemotherapy, provided it already forms plan of treatment for that patient.
- 15 It is not recommended to do sentinel node biopsy if chemotherapy has resulted in successful downstaging of clinically axillary lymph node positive disease, except for carefully selected patients where more than two SLNs are removed for analysis.

resected, even after downstaging with neoadjuvant systemic therapy. The cut margins should be at least 2 mm to avoid need for re-excision. When margins are clear, it is still possible to offer breast conservation to patients having tumor foci contained in one 'quadrant' of the breast (multifocal). Even after taking into consideration the St Gallen's 2017 statement, our current consensus is that BSC (breast conserving surgery) is NOT recommended to patients who have tumor in more than one quadrant of the breast (multi-centric). In patients

with macro-metastases in 1-2 sentinel nodes, completion of axillary dissection can safely be omitted following mastectomy irrespective of whether radiotherapy is planned or not. SLNB is an acceptable standard of care and has resulted in significant reduction in morbidity of arm oedema. SLNB is appropriate for patients with clinically node negative disease. It is not recommended to do sentinel node biopsy if chemotherapy has resulted in successful downstaging of clinically axillary lymph node positive disease, except for carefully selected patients where more than two SLNs are removed for analysis.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

- Lacey JV Jr., Devesa SS, Brinton LA. Recent trends in breast cancer incidence and mortality. *Environ Mol Mutagen* 2002;39:82-8.
- Shibuya K, Mathers CD, Boschi-Pinto C, Lopez AD, Murray CJ. Global and regional estimates of cancer mortality and incidence by site: II. Results for the global burden of disease 2000. *BMC Cancer* 2002;2:37.
- Nandakumar A, Gupta PC, Gangadharan P, Visweswara RN, editors. Summary of specific sites: Breast (ICD-10:C50)-females. In: Development of an Atlas of Cancer in India: First all India Report: 2001-2002. Vol. 1. Bangalore, India: National Cancer Registry Program, Indian Council for Medical Research; 2004.
- Chopra R. The Indian scene. *J Clin Oncol* 2001;19:106S-11S.
- Amr SS, Sa'di AR, Ilahi F, Sheikh SS. The spectrum of breast diseases in Saudi Arab females: A 26 year pathological survey at Dhahran health center. *Ann Saudi Med* 1995;15:125-32.
- Breast Cancer Incidence in Different Regions GLOBOCAN 2002. IARC. Available from: <http://www.dep.iarc.fr/GLOBOCAN2002>.
- Cady B, Stone MD, Schuler JG, Thakur R, Wanner MA, Lavin PT, *et al.* The new era in breast cancer. Invasion, size, and nodal involvement dramatically decreasing as a result of mammographic screening. *Arch Surg* 1996;131:301-8.
- Tabár L, Fagerberg CJ, Gad A, Baldetorp L, Holmberg LH, Grøntoft O, *et al.* Reduction in mortality from breast cancer after mass screening with mammography. Randomised trial from the Breast Cancer Screening Working Group of the Swedish National Board of Health and Welfare. *Lancet* 1985;1:829-32.
- Morrow M, White J, Moughan J, Owen J, Pajack T, Sylvester J, *et al.* Factors predicting the use of breast-conserving therapy in stage I and II breast carcinoma. *J Clin Oncol* 2001;19:2254-62.
- Fisher B, Dignam J, Wolmark N, Mamounas E, Costantino J, Poller W, *et al.* Lumpectomy and radiation therapy for the treatment of intraductal breast cancer: Findings from National Surgical Adjuvant Breast and Bowel Project B-17. *J Clin Oncol* 1998;16:441-52.
- Fisher ER, Dignam J, Tan-Chiu E, Costantino J, Fisher B, Paik S, *et al.* Pathologic findings from the national surgical adjuvant breast project (NSABP) eight-year update of protocol B-17: Intraductal carcinoma. *Cancer* 1999;86:429-38.
- Schnitt SJ. Risk factors for local recurrence in patients with invasive breast cancer and negative surgical margins of excision. Where are we and where are we going? *Am J Clin Pathol* 2003;120:485-8.
- National Cancer Registry Programme, Indian Council of Medical Research. Leading sites of cancer. In: Consolidated Report of Population Based Cancer Registries 2001-2004, Incidence and Distribution of Cancer. Bangalore: Coordinating Unit, National Cancer Registry Programme (ICMR); 2006. p. 8-30.
- Badwe RA, Gangawal S, Mitra I, Desai PB. Clinico-pathological features and prognosis of breast cancer in different religious communities in India. *Indian J Cancer* 1990;27:220-8.
- Altekrose SF, Kosary CL, Krapcho M, editors. SEER Cancer Statistics Review. National Cancer Institute; 1975-2007.
- National Cancer Registry Program. Ten Year Consolidated Report of the Hospital Based Cancer Registries, 1984-1993, An Assessment of the Burden and Care of Cancer Patients. New Delhi: Indian Council of Medical Research; 2001.
- Agarwal G, Pradeep PV, Aggarwal V, Yip CH, Cheung PS. Spectrum of breast cancer in Asian women. *World J Surg* 2007;31:1031-40.
- Moran MS, Schnitt SJ, Giuliano AE, Harris JR, Khan SA, Horton J, *et al.* Society of Surgical Oncology-American Society for Radiation Oncology consensus guideline on margins for breast-conserving surgery with whole-breast irradiation in stages I and II invasive breast cancer. *Ann Surg Oncol* 2014;21:704-16.
- Singletary SE. Surgical margins in patients with early-stage breast cancer treated with breast conservation therapy. *Am J Surg* 2002;184:383-93.
- Swanson GP, Rynearson K, Symmonds R. Significance of margins of excision on breast cancer recurrence. *Am J Clin Oncol* 2002;25:438-41.
- Fisher B, Anderson S, Bryant J, Margolese RG, Deutsch M, Fisher ER, *et al.* Twenty-year follow-up of a randomized trial comparing total mastectomy, lumpectomy, and lumpectomy plus irradiation for the treatment of invasive breast cancer. *N Engl J Med* 2002;347:1233-41.
- Zavagno G, Goldin E, Mencarelli R, Capitanio G, Del Bianco P, Marconato R, *et al.* Role of resection margins in patients treated with breast conservation surgery. *Cancer* 2008;112:1923-31.
- Park CC, Mitsumori M, Nixon A, Recht A, Connolly J, Gelman R, *et al.* Outcome at 8 years after breast-conserving surgery and radiation therapy for invasive breast cancer: Influence of margin status and systemic therapy on local recurrence. *J Clin Oncol* 2000;18:1668-75.
- Houssami N, Macaskill P, Marinovich ML, Dixon JM, Irwig L, Brennan ME, *et al.* Meta-analysis of the impact of surgical margins on local recurrence in women with early-stage invasive breast cancer treated with breast-conserving therapy. *Eur J Cancer* 2010;46:3219-32.
- Newman LA, Kuerer HM. Advances in breast conservation therapy. *J Clin Oncol* 2005;23:1685-97.
- Morrow M, Strom EA, Bassett LW, Dershaw DD, Fowble B, Giuliano A, *et al.* Standard for breast conservation therapy in the management of invasive breast carcinoma. *CA Cancer J Clin* 2002;52:277-300.
- McCahill LE, Single RM, Aiello Bowles EJ, Feigelson HS, James TA, Barney T, *et al.* Variability in reexcision following breast conservation surgery. *JAMA* 2012;307:467-75.
- Kotwall C, Ranson M, Stiles A, Hamann MS. Relationship between initial margin status for invasive breast cancer and residual carcinoma after re-excision. *Am Surg* 2007;73:337-43.
- Waljee JF, Hu ES, Newman LA, Alderman AK. Predictors of re-excision among women undergoing breast-conserving surgery for cancer. *Ann Surg Oncol* 2008;15:1297-303.
- Menes TS, Tartter PI, Bleiweiss I, Godbold JH, Estabrook A, Smith SR, *et al.* The consequence of multiple re-excisions to obtain clear lumpectomy margins in breast cancer patients. *Ann Surg Oncol* 2005;12:881-5.
- The American Society of Breast Surgeons. Position Statement on Breast Cancer Lumpectomy Margins; 2013. Available from: https://www.breastsurgeons.org/statements/PDF_Statements/Lumpectomy_Margins.pdf. [Last accessed on 2009 Jan 28].
- Moran MS, Schnitt SJ, Giuliano AE, Harris JR, Khan SA, Horton J, *et al.* Society of Surgical Oncology-American Society for Radiation Oncology consensus guideline on margins for breast-conserving surgery with whole-breast irradiation in stages I and II invasive breast cancer. *Int J Radiat Oncol Biol Phys* 2014;88:553-64.
- Kaufmann M, Morrow M, von Minckwitz G, Harris JR; Biedenkopf Expert Panel Members. Locoregional treatment of primary breast cancer: Consensus recommendations from an international expert panel. *Cancer* 2010;116:1184-91.
- Taghian A, Mohiuddin M, Jagsi R, Goldberg S, Ceilley E, Powell S, *et al.* Current perceptions regarding surgical margin status after breast-conserving therapy: Results of a survey. *Ann Surg* 2005;241:629-39.
- Young OE, Valassiadou K, Dixon M. A review of current practices in breast conservation surgery in the UK. *Ann R Coll Surg Engl* 2007;89:118-23.
- Blair SL, Thompson K, Rococco J, Malcarne V, Beitsch PD, Oilila DW, *et al.* Attaining negative margins in breast-conservation operations: Is there a consensus among breast surgeons? *J Am Coll Surg* 2009;209:608-13.
- Azu M, Abrahamse P, Katz SJ, Jagsi R, Morrow M. What is an adequate margin for breast-conserving surgery? Surgeon attitudes and correlates. *Ann Surg Oncol* 2010;17:558-63.
- Morrow M. Breast conservation and negative margins: How much is enough? *Breast* 2009;18 Suppl 3:S84-6.
- Huston TL, Pigalarga R, Osborne MP, Tousimis E. The influence of additional surgical margins on the total specimen volume excised and the reoperative rate after breast-conserving surgery. *Am J Surg* 2006;192:509-12.
- Jacobson AF, Asad J, Boolbol SK, Osborne MP, Boachie-Adjei K, Feldman SM, *et al.* Do additional shaved margins at the time of lumpectomy eliminate the need for re-excision? *Am J Surg* 2008;196:556-8.
- Kobbermann A, Unzeitig A, Xie XJ, Yan J, Euhus D, Peng Y, *et al.* Impact of routine cavity shave margins on breast cancer re-excision rates. *Ann*

- Surg Oncol 2011;18:1349-55.
42. Marudanayagam R, Singhal R, Tanchel B, O'Connor B, Balasubramanian B, Paterson I, *et al.* Effect of cavity shaving on reoperation rate following breast-conserving surgery. *Breast J* 2008;14:570-3.
 43. Rizzo M, Iyengar R, Gabram SG, Park J, Birdsong G, Chandler KL, *et al.* The effects of additional tumor cavity sampling at the time of breast-conserving surgery on final margin status, volume of resection, and pathologist workload. *Ann Surg Oncol* 2010;17:228-34.
 44. Tengher-Barna I, Hequet D, Reboul-Marty J, Frassati-Biaggi A, Seince N, Rodrigues-Faure A, *et al.* Prevalence and predictive factors for the detection of carcinoma in cavity margin performed at the time of breast lumpectomy. *Mod Pathol* 2009;22:299-305.
 45. Cao D, Lin C, Woo SH, Vang R, Tsangaris TN, Argani P, *et al.* Separate cavity margin sampling at the time of initial breast lumpectomy significantly reduces the need for reexcisions. *Am J Surg Pathol* 2005;29:1625-32.
 46. Morrow M, Harris JR, Schnitt SJ. Surgical margins in lumpectomy for breast cancer – bigger is not better. *N Engl J Med* 2012;367:79-82.
 47. Morrow M, Harris JR. Practice guideline for breast conservation therapy in the management of invasive breast cancer. *J Am Coll Surg* 2007;205:362-76.
 48. Vennin P. Standards, Options and Recommendations (SOR) on hormone therapy in nonmetastatic cancer of the breast. *Bull Cancer* 2000;87:948-50.
 49. Cutuli B, Fourquet A, Luporsi E, Arnould L, Caron Y, Cremoux Pd, *et al.* Standards, Options and Recommendations for the management of ductal carcinoma *in situ* of the breast (DCIS): Update 2004. *Bull Cancer* 2005;92:155-68.
 50. Papa MZ, Zippel D, Koller M, Klein E, Chetrit A, Ari GB, *et al.* Positive margins of breast biopsy: Is reexcision always necessary? *J Surg Oncol* 1999;70:167-71.
 51. Cellini C, Huston TL, Martins D, Christos P, Carson J, Kemper S, *et al.* Multiple re-excisions versus mastectomy in patients with persistent residual disease following breast conservation surgery. *Am J Surg* 2005;189:662-6.
 52. Sabel MS, Rogers K, Griffith K, Jagsi R, Kleer CG, Diehl KA, *et al.* Residual disease after re-excision lumpectomy for close margins. *J Surg Oncol* 2009;99:99-103.
 53. Mirza NQ, Vlastos G, Meric F, Buchholz TA, Esnaola N, Singletary SE, *et al.* Predictors of locoregional recurrence among patients with early-stage breast cancer treated with breast-conserving therapy. *Ann Surg Oncol* 2009;99:99-103.
 54. Leong C, Boyages J, Jayasinghe UW, Bilous M, Ung O, Chua B, *et al.* Effect of margins on ipsilateral breast tumor recurrence after breast conservation therapy for lymph node-negative breast carcinoma. *Cancer* 2004;100:1823-32.
 55. Huston TL, Simmons RM. Locally recurrent breast cancer after conservation therapy. *Am J Surg* 2005;189:229-35.
 56. McIntosh A, Freedman G, Eisenberg D, Anderson P. Recurrence rates and analysis of close or positive margins in patients treated without re-excision before radiation for breast cancer. *Am J Clin Oncol* 2007;30:146-51.
 57. Ciocca RM, Li T, Freedman GM, Morrow M. Presence of lobular carcinoma *in situ* does not increase local recurrence in patients treated with breast-conserving therapy. *Ann Surg Oncol* 2008;15:2263-71.
 58. Schwentner L, Helms G, Nekljudova V, Ataseven B, Bauerfeind I, Ditsch N, *et al.* Using ultrasound and palpation for predicting axillary lymph node status following neoadjuvant chemotherapy – Results from the multi-center SENTINA trial. *Breast* 2017;31:202-7.
 59. Zetterlund LH, Frisell J, Zouzos A, Axelsson R, Hatschek T, de Boniface J, *et al.* Swedish prospective multicenter trial evaluating sentinel lymph node biopsy after neoadjuvant systemic therapy in clinically node-positive breast cancer. *Breast Cancer Res Treat* 2017;163:103-10.

Best of ASCO India
6-8 July 2018, Coimbatore
Dr R Bharath - bharath37@gmail.com
www.BestOfASCO.in
Conference Organizer : Kashish Parikh
+91-98190-25850 and kashishparikh@gmail.com

4th AMMO Conference
11-12 August 2018, Nashik
Dr Shailesh Bondarde - shaileshbondarde@yahoo.com
www.medintelservices.com
Conference Organizer : Kashish Parikh
+91-98190-25850 and kashishparikh@gmail.com

ICON
39th ICON Conference
8-9 Sept 2018, Indore
Dr PM Parikh - purvish1@gmail.com
www.OncologyIndia.org
Conference Organizer : Kashish Parikh
+91-98190-25850 and kashishparikh@gmail.com