

Peer Review File

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Reviewer A

1) Thank you for the opportunity to review this article entitled “Standards in Oncoplastic Surgery” by Thompson et al. This is a review article which highlights the benefits of oncoplastic surgery as it relates to safety, efficacy, and patient satisfaction versus standard breast conservation surgery. The authors summarize some of the literature regarding oncoplastic procedure classification, outcomes, and various training models. Overall, it is a good summary written by a team of plastic and reconstructive surgeons with additional expertise in breast surgical oncology. However, as it currently stands, there are a few limitations to this work, as described below.

The authors define oncoplastic breast surgery as the “surgical management of breast cancer combining lumpectomy with plastic surgery techniques to optimize breast cosmesis and symmetry”. In my opinion this is a rather narrow definition. Oncoplastic surgery encompasses a much larger field including nipple and skin sparing mastectomy with immediate reconstruction, dealing with cosmetic sequelae following breast conservation, lipo-modelling during and following cancer treatment, to name a few of the domains. An oncoplastic surgeon, by true definition, should be able to manage the vast majority of breast oncology and reconstruction cases.

Reply 1: We acknowledge that “oncoplastic surgery” in its most general definition is considered by some to include whole breast reconstruction after total mastectomy. For the purposes of this review, we have focused on “oncoplastic breast-conserving surgery” as described in the ASBrS consensus definition of 2019. We have added additional text to highlighting that there may be regional differences in understanding of these definitions between Europe and the United States, where often the terms “oncoplastic surgery” and “oncoplastic breast-conserving surgery” are used interchangeably. We have adjusted the title to specify oncoplastic breast-conservation surgery.

2) The authors imply that oncoplastic surgery is the gold standard following partial mastectomy, does this mean that all patients appropriate for oncoplastic surgery? Does an 80-year-old patient with a BMI of 45 and large fatty replace breasts with a small tumor in the upper outer quadrant require oncoplastic surgery? Moreover, a bilateral mammoplasty?

Reply 2: We acknowledge that not all patients are candidates for oncoplastic techniques, though it is accepted that when it can be accomplished safely, oncoplastic techniques would result in improved breast cosmesis compared to partial mastectomy alone. As with any surgery, the risks and benefits must be carefully discussed with patients. Risk factors for surgical complication (including obesity) are listed in our section on

[oncoplastic safety.](#)

3) The new ASBRS definition of oncoplastic surgery would imply that a level-1 oncoplastic technique should be used when less than 20% of the breast tissue has been removed to facilitate repair by “local tissue rearrangement” by “dual plane undermining” and the use of hidden incisions. However, undermining the skin in a patient with fatty-replaced breast tissue is a recipe for fat necrosis and subsequent deformity; even though the operation is being done using “oncoplastic technique”. My point is that not all patients are appropriate for Oncoplastic surgery, even level 1. Some patients are better suited for a direct incision over the tumor followed by lumpectomy, followed by direct parenchymal closure without parenchymal mobilization. This would be called a “standard lumpectomy”, and in my opinion, and is probably appropriate for 30-40% of breast cancer cases- maintaining perfect symmetry and avoiding deformity by closing the defect directly, while not mobilizing any parenchyma for a small tumor in a large fatty breast. Consulting with an oncoplastic or plastic surgeon on these cases is unnecessary. This key point is lost in the article as it is currently written, as it suggests that oncoplastic surgery be used for every patient undergoing partial mastectomy.

[Reply 3: As with any surgery, risks and benefits must be discussed. This is detailed in the oncoplastic safety section, wherein we stated, “breast aesthetics are secondary in importance to oncologic efficacy and safety. Many oncoplastic techniques involve extensive rearrangement of local tissues, creation of additional incisions on the breast, or transposition of regional tissues into the tumor cavity. Legitimate concerns have been previously raised about how these techniques may affect overall risk of complications, subsequent delivery of adjuvant therapy, margin positivity, local recurrence, and survival. Preoperative counseling of patients considering oncoplastic breast surgery should include a thorough discussion of the risks and benefits of these techniques.”](#)

4) The founders of oncoplastic surgery are Clough from France and Audretsch from Germany. Both trained in plastic surgery in the United States prior to bringing these techniques back to their home countries around the same time in the 1980s and applying them to breast oncology.

Clough revolutionized oncoplastic surgery with his Classification and Atlas published in 2010, describing in detail- quadrant per quadrant mammoplasty techniques. Just recently, the ASBRS used, in large part, the classification of Clough et al., as the backbone for their “redefinition and reclassification” oncoplastic surgery published in 2019. In his original publication, Clough provided guidance with respect to patient selection for oncoplastic surgery. Specifically, as it relates to oncoplastic level-1 surgery, Clough very clearly emphasized that these techniques are reserved for patients with glandular breasts. In other words, dense, well-vascularized breast tissue is a prerequisite for the wide dual plane undermining and tissue rearrangement performed in

Oncoplastic- level-1 techniques. Glandular breasts allow for glandular advancement and rotation flaps to fill a partial mastectomy defect, while minimizing the risk of fat necrosis. Unfortunately, the newly adopted definition and classification by the ASBRS, does not mention breast density with respect to patient selection for Oncoplastic level-1 surgery, again implying that these techniques are appropriate for all patients having small tumors removed.

In this review paper the authors compare oncoplastic surgery to standard breast conservation, but they failed to provide a definition for the latter. Is standard breast conservation referring to a lumpectomy where the defect is left open allowing a seroma to accumulate? Or does it refer to a lumpectomy with direct parenchymal and no parenchymal mobilization? I would argue that direct parenchymal closure without mobilization is the operation of choice for many small tumors in patients with fatty breasts. Again, no referral to specialist plastic or Oncoplastic surgeons is required for these operations, as it simply comes down to appropriate patient selection. Patient selection is not a topic brought up by this review with respect oncoplastic surgery. The authors imply that it is appropriate to consult with an expert plastic or oncoplastic surgeon for all breast conservation cases- this is not feasible.

Reply 4: Standard breast conservation in the context of this article refers to lumpectomy without any additional volume displacement or replacement technique, including parenchymal mobilization. We agree that certain patients with small tumors may not need significant parenchymal rearrangement and would have minimal added cosmetic benefit from oncoplastic reconstruction, though data exists that the rate of unacceptable cosmetic outcome following standard breast conservation may be as high as 40% (see section on patient satisfaction following oncoplastic surgery). We do not suggest that standard breast conservation requires involvement of a plastic surgeon or oncoplastic surgeon. As above, risks and benefits of oncoplastic surgery should be discussed with patients on an individual basis. Risk factors for post-operative complications are discussed in detail in the section on oncoplastic safety.

5) In this review the authors outline number of different training models to achieve competence in oncoplastic surgery. Interestingly, they require that oncoplastic surgeons obtain an approved one-year Society of Surgical Oncology fellowship. There are many formal Breast Oncology Fellowships that are not “certified” by Society of Surgical Oncology for one reason or another. Furthermore, there are many breast surgeons in practice without an “SSO approved” fellowship. Why is obtaining an “SSO approved” fellowship a prerequisite to becoming an oncoplastic breast surgeon?

Reply 5: This is simply a description of the training options available in the United States. The most important point is that all involved surgeons take advantage of available training opportunities, which vary by geographic region and practice setting, to ensure the best patient outcomes. We make no claim that there is one universal prerequisite to becoming an oncoplastic breast surgeon.

6) Based on the way this article is written, the “two surgeon model” requires that the breast surgeon and plastic surgeon understand the nuances of oncoplastic surgery. However, in the two-surgeon model, they can acquire oncoplastic knowledge through “informal” seminars and weekend courses. This is in stark contrast to the rigorous requirements of the “one surgeon” model involving years of extra training to obtain expertise in oncology and plastic surgery. If I was a patient, would I prefer to have my operation done by a formally trained expert in Oncoplastic surgery, or an informal two team approach, where neither party has formal oncoplastic training?

[Reply 6: Differences in opinions among providers regarding preference for single-team vs two-team approach are discussed in section on “Multidisciplinary Team Approach.”](#)

7) The authors suggest that in situations “where the ability to coordinate with plastic surgery is limited” (presumably rural setting), it would be okay to train the local general surgeon or low-volume breast surgeon in advanced oncoplastic techniques in order to deliver a higher quality of care. If training rural breast surgeons or general surgeons in advanced oncoplastic techniques is better for the patients, why not train high-volume breast surgeons in academic centres in the same techniques to improve patient care overall? As stated above, it is not feasible to consult plastic surgery for every breast conservation case, even in academic centres with many plastic surgeons available.

[Reply 7: Regional differences in plastic surgeon availability and comfort with oncoplastic techniques are discussed in this review in the section “Multidisciplinary Team Approach.”](#)

8) Finally, I take some issue with the sentence “all parties can agree that achieving the best possible aesthetic breast appearances is in the best interest of the patient”. I have seen many patients suitable for oncoplastic techniques, for whom their number one interest is not the final appearance of their breast but instead, adequate removal of their cancer using a standard lumpectomy. Extensive oncoplastic surgery with increased operative time, increased recovery time, and a greater potential for postoperative complications- for cosmetic gains- is not appropriate for all patients. Again, it comes down to patient selection. Oncoplastic surgery is not for everyone. This point is lost in the article, and should be addressed prior to publication.

[Reply 8: We agree that patients often care more about their oncologic outcome than breast cosmesis. We stated that “breast aesthetics are secondary in importance to oncologic safety and efficacy,” and that “to be considered a safe surgical option for patients with breast cancer, oncoplastic techniques must not sacrifice the oncologic efficacy achievable with standard breast conservation or mastectomy.” Achieving the best possible aesthetic outcome does not mean that every patient gets an oncoplastic procedure, and as with any surgical procedure requires an individualized discussion of the potential risks and benefits of surgery. We feel that this point has been adequately addressed in the text.](#)

Reviewer B

Excellent revision. I agree with your point of view. The most important point is that the surgeon interested in the oncoplastic procedure and breast reconstruction, either if it is a plastic surgeon or a breast surgeon, must have access to good training for the benefit of the patients. That's what we are all working on.

Reviewer C

1) Lines 201-212 are opinion of the authors, this should be explicitly detailed in the description.

Reply 1: This section has been revised to clarify that these are “potential options” for a achieving a single – or two-team approach based on available resources in the United States.