

Peer Review File

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**Reviewer A**

The authors are to be congratulated on performing this study on the very important topic on equality in health care. The paper emphasizes the importance of the breast cancer multidisciplinary team-approach including the plastic surgeon and thus the access to reconstructive surgery in whichever geographical setting.

**ABSTRACT**

Covers the paper sufficiently and provides the reader with a relevant overview of the study.

**INTRODUCTION**

This paragraph covers in short the current literature and sufficiently describes the incentive to perform the study on the possible influence of the outcome of breast reconstructive procedures on accessibility to follow-up and access to optimize the breast reconstruction.

**PATIENTS AND METHODS**

The study is designed as a single center retrospective study - studying patients over a period of 4 years. The study population was followed up for a minimum of 6 months and is representative for a smaller center - therefore the somewhat lower number of patients. The reconstructive methods applied are representative for a breast reconstruction center - offering the patients the whole plethora of the available procedures. Inclusion and exclusion criteria are very relevant to assess the aim of the study. The criteria for dividing the patient population into far and not-far, according to local geography is deemed relevant. The geography in other parts of the world could be similar.

Ethical considerations: no comments

Statistical methods: are all deemed relevant and performed according to standard.

**RESULTS**

The obtained results are presented clearly in the text. The submitted tables and figures describe the main findings of the study and further illustrate and elucidate the results. However, the authors should consider including the supplementary tables 1A and 1B in the paper as they in more detail support the findings and conclusion of the paper.

**Reply 1:** The authors agree and will include these tables within the main set of included Tables.

**Changes in text:** Supplementary tables 1A and 1B have been converted to Tables 3A

and 3B, respectively. As a result, the original Table 3 is now Table 4; Table 4 is now Table 5; and Table 5 is now Table 6 throughout the text of the manuscript.

The reconstructive procedures and rates of complications are in accordance the current literatures; thus, the results of the study may be generalizable at least in the more developed part of the world.

## DISCUSSION

The authors discuss the findings in view of the current and relevant literature. The strengths and weaknesses of the study is discussed. The impact of telemedicine is touched upon as well and is pointed out to be a major progress in patient care after 2019.

## CONCLUSION

Nicely summarizes the obtained results and emphasizes the need for the access to plastic surgery to reinforce the multidisciplinary approach in this fragile patient population. The authors should mention the possible use of telemedicine as a major player in follow-up in the geographical setting of this study.

**Reply 2:** This is a good suggestion and we have added a sentence at the end of the Conclusion to confirm that future work will seek to address the impact of telemedicine on the associations identified in our pre-COVID-19 study.

**Changes in text:** See Lines 394-395.

## REFERENCES

The relevant references are included.

## FIGURES 1+2

Very illustrative, legends sufficient

## TABLES 1-5 AND SUPPLEMENTARY TABLES

See above.

The tables are relevant and emphasizes the obtained results.

Table 1 - please specify the length of stay/length of follow-up (days?) in the table itself.

**Reply 3:** Addressed.

**Changes in text:** Table 1 has been edited to include the unit (days) in the headings of the last two rows (Length of stay, Length of follow up).

**Reviewer B**

In this study the authors investigated the relationship between travel time to their medical center and outcomes of postmastectomy breast reconstruction. This is relevant topic especially for institutions with large catchment areas. Please find below some of my comments/suggestions:

- The authors discuss revisional surgery but the shortest follow up was 180 days. Sometimes the first revision is done after 6 to 9 months and wouldn't be captured. Why did the authors decide on such a short follow up? It will be ideal to increase the follow up to at least 1 year or even 18 months to capture most revisions.

**Reply 4:** We agree with this comment and as stated in the Methods section (Line 182): “Additionally, patients with less than 1.5 years of follow-up were excluded from revision procedures analyses as the BR process is commonly considered complete at two years after the primary operation.”

**Changes in text:** None

- Line 119: CPT should not be abbreviated since it is the first time mentioned.

**Reply 5:** Addressed.

**Changes in the text:** Full terminology added (Line 128)

- Line 199: BMI should not be abbreviated since it is the first time mentioned.

**Reply 6:** Addressed.

**Changes in the text:** Full terminology added (Page 5, Line 153)

- The authors mentioned the introduction of telemedicine in their practice after 2019. Indeed, telemedicine has become a lot more popular over the last 3 years. Could this affect their results? Perhaps something to be mentioned in the limitations section.

**Reply 7:** The authors thank the reviewer for this excellent point. Indeed, our study period occurred just prior to the COVID-19 pandemic, after which there has been a rapid adoption of telemedicine by our surgeons. Rather than a limitation of this study, we consider it a logical next step for a future study to analyze the effects of telemedicine on the disparities identified here. We have, therefore, added a paragraph to the Discussion section acknowledging this new, relevant factor and proposing future directions.

**Changes in the text:** Added a paragraph (Lines 345-363) to the Discussion section to address the incorporation of telemedicine into a future analysis on the impacts of geographical access challenges in plastic surgery.

**Reviewer C**

Congratulations on your article bringing some solid conclusions into a very complex topic. It is certainly a challenge to determine whether or not, distance to the hospital may lead to less frequent follow-ups and more complications and how this is related to the fact that these patients usually get less RT.

#### **Reviewer D**

Overall, this is an important issue that has clinical, public health and psychosocial implications. The paper is relatively transparent in its method but would benefit from consideration of the following:

Lines 87-101: the paper focuses on BR outcomes but the preamble is too long perhaps and could be compressed into a single paragraph

**Reply 8:** The authors largely agree with this comment and have compressed the first two paragraphs into one. However, we believe this preamble is necessary for establishing that 1) postmastectomy BR is beneficial and covered by law for all women who have had mastectomy and 2) many women still do not undergo BR—disproportionately those who are affected by specific socioeconomic and demographic factors, including geography. This part of the Introduction may serve the role alluded to in the next Comment.

**Changes in the text:** Compressed first two paragraphs into one.

From line 103: the paper suggests that little is known about BR outcomes and geography which tallies with the available evidence. However, some contextual anchoring of the research using what is known about BC, BR and access and outcomes more broadly would be useful. Linking the research described briefly to the broader research base on geography, urban-rural divide in cancer treatment and management more generally would be useful.

**Reply 9:** We strongly agree with the sentiment of this comment. We believe that this contextual anchoring was done in the first paragraph of the Introduction: “Furthermore, several studies have shown that disparities in the rates of BR among patients who have undergone mastectomy align with specific socioeconomic and demographic factors. Older age, <sup>6-9</sup> African American and Latino race, <sup>6,9-17</sup> and public insurance <sup>9,11,13,16</sup> have each been independently correlated with reduced rates of BR. Geographical access to a plastic surgeon is another predictor of postmastectomy BR, with patients from rural areas significantly less likely to have reconstruction compared to their urban counterparts.<sup>13,18-23”</sup>

**Changes in the text:** None

Lines 110-112: not sure these are needed - they seem to repeat earlier content

**Reply 10:** We agree and have edited this sentence to remove redundancy.

**Changes in text:** Edited for concision (Line 119).

Line 116 Study Design: were BRCA patients included? Also, there is a tendency here and throughout to refer to variables 'included' when for clarity stating which ones were used would be preferable (e.g. Patient Characteristics line 138-148 is an example of this).

**Reply 11:** Yes, BRCA patients were included (as mentioned in Line 155 in Patient Characteristics and Table 1). We understand the suggestion to avoid the word “included” and have replaced it with different terms to improve clarity.

**Changes in text:** “Included” replaced with less ambiguous terminology throughout the Methods section.

Line 154: were readmissions included as a separate complication?

**Reply 12:** Yes, readmissions were included as a separate complication as mentioned in Line 170 of the Methods section.

**Changes in text:** None

Line 164-166: the use of 1.5 year cut-off for inclusion could have removed patients with lengthy BR complications. How many patients were excluded using this heuristic? Characteristics compared to included in ways that are important clinically?

**Reply 13:** The 1.5-year cut-off was applied to the analyses on revision procedures only. The 6-month cutoff for inclusion in the study was applied to all other analyses, including those on complication rates. Thus, no patients were excluded from the complications analyses specifically and the average length of follow-up was 823 days.

The authors acknowledge that there are some complications of BR that can present late, even years, post-operatively (eg, capsular contracture, delayed seroma). A very long follow-up period would be required to reliably capture all BR complications. However, most BR complications are either surgical site infections (SSIs) or related to surgical disruption of blood supply (eg, hematoma, fat necrosis, breast skin necrosis, flap loss) and, therefore, occur in the early post-operative period, within days to weeks of surgery.

Still this is a very good point, and we have added a sentence to the limitations

section of the Discussion in acknowledgment.

**Changes in text:** See Lines 378-380.

Lines 169-171: other variables known to be linked with clinical outcomes such as SES, education, marital status, social support, other medical or even psychiatric diagnoses were not included. Were these available? Also, there is no indication as to whether those included and their analysed data were first diagnoses or second, recurrences and so forth.

**Reply 14:** This is a very good point. Unfortunately, the majority of those variables were not available in the database queried to perform this retrospective study. Insurance type may serve as somewhat of a proxy for SES, though clearly not perfect. Some relevant medical diagnoses were included, such as diabetes, BMI, smoking, and cancer stage; psychiatric diagnoses were not. Cancer recurrence status data was also not available, but every patient considered represented a unique instance of breast reconstruction and no patients were included more than once.

**Changes in text:** None

Lines 243-248: there are other data that might be available that could have been useful to support the claims being made (or alluded to) about distance to travel. The issue here is one of causality or probably causal direction and process. For example, if distance per se is a barrier to positive BR outcomes and distance limits access because of 'travel' (as implied) then were there data on number of appointments missed or rearranged by patients because of geographic distance to travel? This is linked to a broader point about the messaging in the discussion (e.g. lines 296-300 suggests that alerting patients to risk of not attending follow-up appointments will help remedy the disparity between far and not far groups BR outcomes and by implication that the differences between the groups lie in factors within the patients (e.g. even aspects of individual differences such as Type D behaviour or health beliefs). This whole issue of the underlying processes that could link variables is not considered. It is alluded to as 'complex' but the conclusions imply otherwise. A little consideration (in the form of caveats for example) might help nuancing the conclusions and mitigate any simplifications.

**Reply 15:** The authors thank the Reviewer for this excellent comment. We were very careful throughout the manuscript to point out associations rather than causality. We wholeheartedly agree that our study reveals associations but cannot prove directionality of the relationships between distance, clinic follow-up, and outcomes. We have added a section to the Discussion section acknowledging these caveats.

In lines 296-300 (now 334-341), we hope to convey a more nuanced message: that 1) surgeons are responsible for emphasizing the importance of follow-up especially in the early, high-risk post-operative period, and 2) that surgeons should set expectations appropriately for patients who live far away and may not be able to attend the average number of follow-up visits. We believe these takeaway points are supported by our study, and prompt surgeons to better understand and educate their patients, rather than blame them.

**Changes in text:** Added to and revised Discussion, Lines 336-343

Lines 330-335: the previous issue is also reflected in the conclusion - there is little indication of how alerting plastic surgeons to these 'associations' could lead to useful clinical or related changes. Perhaps some consideration of how the service design and delivery might also contribute to the disparity between groups. In other words the paper implies causal conclusions when the design, data and analysis do not enable this. Some critical consideration of this, however brief, would help clinicians use of the findings as signpost rather than as conclusive evidence of where the issues lie.

**Reply 16:** We agree with this comment and have revised the Conclusion to include the recommendation that plastic surgeons educate their patients on expectations for follow-up and revision procedures, accounting for their specific travel challenges. We believe this recommendation is sound, though we agree that our study provides association data rather than causal conclusions. The Conclusion section is careful to describe associations (patients who overcome geographical challenges to have BR with a plastic surgeon are seen in follow-up less promptly and less frequently after surgery and receive fewer revision procedures) rather than any statements of causal direction.

**Changes in text:** Revised Conclusions section, Page 13, Lines 392-394