Peer Review File

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Reviewer A

Comment 1: Page 4-first paragraph: It is known that nicotine has negative adverse effects on wound healing. What is the evidence for increased risk of perf thrombosis and flap loss (a reference is mandatory)

Reply 1: Thank you for pointing out that we did not have a reference at the end of this sentences. Another reviewer had a similar comment, so we have added in references to this portion of the manuscript and have also adjusted the text to read as the following: "Further, strict cessation of negative behavioral activities including nicotine use which is known to have adverse effects on wound healing is recommended. Additionally, smoking has recently been suggested to increase flap failure in breast reconstruction underscoring the importance of controlling this modifiable risk factor."

Comment 2: Page 4- 3rd paragraph: These are the two common options, rather than the two options. Other options include using different recipients in the chest such as IMA perforators, Thoracodorsal, acromiothoracic or lateral thoracic. This has to be highlighted. It would be a good addition to add notes on the challenges and risks associated with each of these two options discussed, to make the review of greater value to the reader.

Reply 2: Thank you for this point. Regarding other options for recipient vessels, we have added the following: "Though the internal mammary vessels are commonly used, other options are available for anastomosis including appropriately sized internal mammary perforators, branches of the thoracodorsal, thoracoacromial, and lateral thoracic vessels." We have now also briefly highlighted the challenges associated with the discussed options in this paragraph.

Reviewer B

Comment 1: The running title is Maximizing volume in autologous recon. It seems like the title is not complete, please change.

Reply 1: Thank you for this comment. We have amended the running title to now be "Volume in Autologous Breast Reconstruction".

Abstract:
Comment 2: Abdominal tissue is frequently used as donor tissue due to numerous benefits, and surgical advancements 29 have continued to improve patient outcomes and decrease operative times. This is a very long and difficult sentence, splitting it up would be recommended.
Reply 2: Thank you for pointing this out. The sentence has been broken into two separate sentences and has been reworded for clarity to the following: "While abdominal tissue is frequently used as the principal donor site, other flap options are available. Microsurgical advancements in recent years have continued to improve patient outcomes and decrease operative times."

Comment 3: One technique is the use of stacked/conjoined 30 abdominal-based free flaps or stacked flaps from other anatomic areas, which can be used when additional breast volume 31 is needed. Where the stacked/conjoined flaps are harvest from is not relevant in an abstract.
Reply 3: Thank you for this comment. This sentence has been altered to remove the location of flap harvest to read as the following: "One innovative technique is the use of stacked or conjoined free which can be used when additional breast volume is needed."

Comment 4: In this review, we aim to highlight the use of stacked/conjoined free flaps for autologous breast reconstruction, 32 as well as highlight recent data on these techniques and provide recommendations for their safe use. Which techniques do you mean? The only technique that is described is the use of stacked/conjoined free flaps. Please specify the other techniques.
Reply 4: Thank you so much for this comment. You are correct that there is only one technique that is being described. We have changed the verbiage of this sentence in order to better reflect that there is just one technique. The sentence now reads as the following: "In this review, we aim to highlight the use of stacked/conjoined free flaps for autologous breast reconstruction, as well as highlight recent data on this technique and provide recommendations for its safe use."

Introduction:

Comment 5: Furthermore, the widespread increase of microsurgery trained plastic surgeons has increased 50 the feasibility of performing autologous breast reconstruction at a more extensive level. This sentence is not correct. Please check your manuscript for errors like this, there are more of them.
Reply 5: Thank you for this comment. We have edited the sentence in hopes of making it clearer to the reader to read as the following: "Furthermore, the widespread training of plastic surgeons with microsurgical skills has increased the feasibility of performing autologous breast reconstruction at a broader level."

Comment 6: Though useful, these stacked/conjoined flaps introduce 59 added complexity and operative time to already lengthy operations. To introduce extra complexity or add more complexity.
Reply 6: Thank you for this comment. This sentence has been adjusted based on your suggestion to now read: "Though useful, these stacked/conjoined flaps add more complexity and operative time to already lengthy operations."

Comment 7: In this same meta-analysis, operative time averaged nearly 8 hours despite being performed at established microsurgical programs7 60. And this is significantly more than in regular free flap surgery? Or why is this relevant for this study? that point is missing
Reply 7: Thank you for this comment. This reflects a common point mentioned by authors writing on this topic that the added complexity of this technique may introduce added operative time which increases the risk to the patient. One study has specifically found that stacked/conjoined flaps had significantly operative time compared to standard DIEP flap reconstructions. We have added two sentences that provide better context and explanation of this point. These added sentences are included here: "One study has reported that operative times in stacked/conjoined flap reconstruction were significantly higher than single flap breast reconstruction (Haddock et al 2019). The risks associated with increased operative time and duration of anesthesia should be taken into consideration when performing these cases."

Comment 8: In this review, we will highlight the use of stacked/conjoined free flaps as well as compile the recent data on this technique. Which data? In the sentence before, you say that the data is limited, and you are not adding any data yourself in this study. It would be better to adjust the aim of the study to what you actually investigated.
Reply 8: Thank you for this comment. This study was an invited review in which we were asked to synthesize the available data (although it is limited) on stacked/conjoined flap breast reconstruction. We have adjusted this sentence to read as the following to improve its clarity: "In this review, we will highlight the use of stacked/conjoined free flaps as well as compile the existing data from the literature on this technique."

Indications and contraindications for use:
Comment 9: This part should provide information about indications and contraindications for the use of stacked/conjoined free flaps. But this is not the case

Reply 9: Thank you for this comment. It is difficult to provide exact indications and contraindications for this technique given the wide array of patient related factors that may affect the decision to pursue stacked/conjoined flap breast reconstruction. Thus, we have altered the title of this subsection to "Considerations for Use of Stacked/Conjoined Flaps" as the subsequent section discusses more broadly various important considerations that should be taken into account.

Comment 10: Certain clinical histories may also indicate using stacked/conjoined free flaps for autologous breast reconstruction. What do you mean with clinical histories?
Reply 10: Thank you for this question. With this, we were using clinical histories as a synonym for patient history, patient presentation, clinical presentation, and patient factors. We have reviewed this sentence and have adjusted the term to "clinical presentations" in order to provide more clarity to this sentence. The sentence now reads: "Certain clinical presentations may also indicate using stacked/conjoined free flaps for autologous breast reconstruction."

Comment 11: It is not clear if BMI is a contraindication or notReply 11: Thank you for this comment. In line with the comments in Reply 9, there is not a strict BMI cut-off for indicating or contraindicating this technique. High BMI patients are generally at higher risks of complications, however we cite a publication that demonstrates comparable levels of complications between both high and low BMI cohorts. Patients that may have insufficient abdominal laxity or tissue (which may occur in the setting of a low BMI) may be good candidates for stacked/conjoined flaps to help maximize volume that could not otherwise be achieved with a single flap. This paragraph reflects these nuances.

Comment 12: The part about adequate vascular in and outflow is also no indication or contraindication. It is absolutely an important issue, but a comparison between two options for anastomosing is no indication/contraindication whether a patient should or should not receive a stacked/conjoined free flap. This paragraph needs to be revised. Information about indication of contraindication for receiving a stacked/conjoined free flap needs to be added and the part about options for anastomosing the flap needs to be shift to another position in the manuscript.
Reply 12: Thank you for this comment. As referenced in Reply 9 and Reply 11, we have altered the title of this subsection to be more encompassing of the contents of this subsection. Regarding discussion of specific indications and contraindications, we are not able to provide clear cut guidelines given the various nuances discussed throughout the manuscript and clinical variability of utilization of this technique.

Described options for stacked/conjoined flaps
Comment 13: Clearly written part of the manuscript
Reply 13: Thank you for this comment.

Comment 14: After the first and third sentence in this paragraph, references are missing
Reply 14: Thank you for pointing this out. References were added to both of these sentences in the text.

Comment 15: Why is figure 2 relevant? It is not and result of tour study?
Reply 15: Thank you for this question. In order to assist the diverse readership with understanding this topic, we thought that a visualization of the results that can be achieved would be nice adjunct to the text. We believe that the figure and caption help synthesize many of the points discussed in the article. While we believe it to be useful, if you and the editors believe the article is better without it, then we would be happy to remove it.

Comparative outcomes

Comment 16: A recent study from Haddock et al. also reported that BREAST-Q scores in bilateral stacked DIEP-PAP 177 patients demonstrate overall patient satisfaction that is similar to non-stacked bilateral DIEP and non-stacked bilateral PAP reconstruction patients. As this is a different study of Haddock, this sentence can be better changed in: Another study of Haddock *et al.* reported that BREAST-Q scores in bilateral stacked DIEP-PAP 177 patients demonstrate overall patient satisfaction that is similar to non-stacked bilateral DIEP and non-stacked bilateral PAP reconstruction patients[45].
Reply 16: Thank you for this suggestion. The text has been edited to read exactly as the edits you proposed to this sentence.

Comment 17: Another study 179 also identified a lower rate of contralateral symmetrizing reductions in patients undergoing unilateral abdominally based 180 breast reconstruction, which could be an important consideration for patient that like their preoperative breast size and would prefer to maintain its size and shape[4]. Another study of whom? Perhaps another can be changed in additional.
Reply 17: Thank you for this point. We have adjusted this sentence to now read: "Salibian et al. identified a lower rate of contralateral symmetrizing reductions in patients undergoing unilateral abdominally based breast reconstruction, which could be an important consideration for patient that like their preoperative breast size and would prefer to maintain its size and shape."

Reviewer C
Comment 1: This is a well written review of stacked flap options for breast reconstruction. The authors summarize the literature nicely and present the published literature.
Reply 1: Thank you for your review.

Comment 2: Minor aspects of the manuscript do warrant revision, however.
Reply 2: Thank you for your review.

Comment 3: In the Introduction, the authors state that Holmstrom used a myocutaneous flap. This is, in fact, not accurate, rather aperforator-based flap harvest was described. Please revise.
Rely 3: Thank you for pointing this out. This sentence has been revised by removing the myocutaneous descriptor so that it now reads: "Abdominally based tissue breast reconstruction was first reported by Holmstrom when he described moving a free flap involving the rectus abdominis muscle (the transverse rectus abdominis or "abdominoplasty" flap) to reconstruct mastectomy defects."

Comment 4: In Indications/Contraindications, the authors imply in the first paragraph that smoking is associated with flap loss. However, numerous clinical studies have not been able to demonstrate such an association. While wound healing complications may arise secondary to tobacco use, free flap failure is not believed to be a sequela of smoking. Please revise.
Reply 4: : Thank you for pointing out that we did not have a reference at the end of this sentences. Another reviewer had a similar comment, so we have added in references to this portion of the manuscript and have also adjusted the text to read as the following: "Further, strict cessation of negative behavioral activities including nicotine use which is known to have adverse effects on wound healing is recommended. Additionally, smoking has recently been suggested to increase flap failure in breast reconstruction underscoring the importance of controlling this modifiable risk factor."

Comment 5: It would be desirable, if the authors could present the readership with an algorithm to aid in the decision-making process when evaluating a patient preoperatively.
Reply 5: Thank you for this comment. We have added Figure 3 to the text to help address this in the manuscript. We have added the following text to the manuscript in addition to Figure 3: "In order to help facilitate decision making regarding these various flap options, we have constructed a general recon-structive algorithm for addressing these cases (Figure 3)."