

## Peer Review File

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### Review Comments

#### Reviewer A

Comment 1: Please describe the length of follow-up for the studies discussed. You mention Djohan at 4 years follow-up but the other studies are not described.

Reply 1: Additional information on follow-up for some of the included studies has been reported. See additions to the outcome section.

Comment 2: A table that shows the different studies discussed or at least a discussion that directs the reader to the optimal approach for neurotization with the different techniques (medial vs lateral IC nerves, time to restoration of sensation and improvement of sensation) would be helpful. There are so many techniques and it would be nice if the paper could offer some guidance as to what is felt to provide the best outcomes with the information we currently have.

Reply 2: Agree that guidance around the different techniques would be helpful, have added a table to better define terms with some recommendations. See new table.

Comment 3: What nerve graft lengths are you using for neurotization of the mastectomy flaps 5 cm? 7 cm? Is this different based on the tissue expander/implant placement and are you seeing differences in restoration of sensation?

Reply 3: We use both 5 and 7cm grafts and tailor selection based on the nerve gap. While we haven't formally assessed outcomes with different lengths yet, anecdotally we are not seeing differences, consistent with RANGER study data in other peripheral nerve sites. This information has been added to the section on nerve reconstruction

#### Reviewer B

Sensate breast reconstruction has become more important for QOL of the patients who undergoing mastectomy and reconstruction of the breast. The authors presented comprehensive and informative review of the sensate breast reconstruction. Figures and

illustrations are high quality and informative. Some of the comments need to be considered.

Comment 1: Because of lack of large or prospective comparative studies on neurotization, I recommend authors to comment limitations of this technique, such as need for future large, prospective comparative studies, controversies of the current techniques;

(1) Allo vs. auto graft or conduit, impact of the length of the nerve graft on the outcomes.

(2) Different aspects between implant and flap reconstructions: Suture the (allo) nerve to the dermis of NAC, or to subareolar nerve in implant reconstruction. However most neurotization is performed to the sensory nerve of the donor flap. Therefore, the outcome of the neurotization can be different btw implant and flap reconstruction.

**Reply 1: There are certainly limitations to the current data and research. These have been added to the outcomes section.**

Comment 2: Compared to references on implant-based reconstructions, small number of references of DIEP flap neurotization were included in the manuscript. I recommend the authors to consider adding references of recent DIEP flap neurotization.

**Reply 2: Additional reference has been added.**

### **Reviewer C**

Nice review article. Some recommendations as follow prior to acceptance:

Comment 1: line 150 states to identify lateral intercostal nerve 2 cm lateral to pec minor, in line 265 it states to identify the lateral intercostal nerve 2 cm lateral to pec major. please clarify.

**Reply 1: This should be pec major, thank you for the clarification. “Minor” has been changed to “Major”**

Comment 2: since the nomenclature is confusing, would be helpful to have a table listing all the different options and their definitions or pearls and outcomes.

**Reply 2: Agreed that the nomenclature is confusing and have added a table as suggested. See new table.**

Comment 3: for operative photos, i recommend using photos without blood on gloves or operative field.

Reply 3: This is a good point – we went back and cropped them out as best we could of the existing photos. See new intra-operative photos.

Comment 4: do you have any more operative photos showing the actual anastomosis or grafts similar to your last photo.

Reply 4: We added an additional one. See updated Figure 6.