

Response to “Letter to the Editor: Predictors of internal mammary vessel diameter: A computed tomographic angiography-assisted anatomic analysis”, Madada-Nyakauru, *et al.*

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Dear Sir,

We appreciate the comments from Dr. Malata and their group and are delighted that our study has been received with such interest and generated additional discussion.

Dr. Malata reports their experience in rib-preserving approaches for autologous breast reconstruction with a preference to accessing the second intercostal space (ICS) for microanastomoses. Their clinical experiences are similar to our study results, namely that “the second intercostal space is consistently wider than the third” and the caliber of the internal mammary vein is larger in the second intercostal space<sup>1</sup>. However, we disagree with the notion that the second intercostal space is the “optimal” site for microsurgical anastomosis in autologous breast reconstruction. It is certainly an *option*, but may not be *optimal* for a variety of reasons.

First, Dr. Malata and colleagues do not disclose the type of mastectomy and location of mastectomy incision in their series. These factors can have a significant impact on the ability to access the second intercostal space, especially in nipple-sparing mastectomy and in inframammary fold approaches. In addition, the second ICS has the disadvantage of access, exposure, and ability to harvest additional cephalad recipient vessels if microvascular revision is necessary. Second, although microanastomoses revisions are rare, they may require the need to access vessels more cephalad, and dissection within the first ICS is not ideal in our practice. One may argue that this occurrence may not be of significance, as the on-table anastomotic revision rate of 8.3% reported by Dr. Malata still allowed for a 100% flap survival rate. The etiology for intraoperative revisions and how they were resolved, and if additional cephalad dissection of the mammary vessels was required, were not disclosed. As such, it is questionable to advocate for this approach and claim it to be “optimal”. Our preference for selecting the third ICS to perform microanastomoses are due to: 1) its location in the center of the mastectomy defect to increase access and ease of microsurgery, 2) its position with adequate expected recipient vessel caliber, and 3) its

ideal location for flap positioning of the breast mound on the chest wall. As such, our algorithm is less rigid about absolute rib or rib space and more guided by clinical judgment. Lastly, our study gives useful normative data about ICS height and intraluminal size of vessels at each ICS, which differs with laterality and ICS location. We defer to surgeons' clinical judgment to determine what ICS is best for the individual patient and if rib-sparing techniques are expected to be feasible. While there are numerous advantages, as well as disadvantages, for rib-sparing, our report shows that 25% of patients may not be candidates due to ICS heights less than 1.5cm<sup>2</sup>.

Lastly, we wish to emphasize that we did not advocate for routine, preoperative CT angiography. In fact, we explicitly state that “the findings of this study can be used as a presurgical planning guide,” as our study characterized the anatomic average size and branching pattern of internal mammary vessels, ICS height, and patient variables that may influence these vessel differences. This data can be used as a reference and guide for surgeons and allow preoperative planning to determine best location to perform microanastomoses.

Thank you to Dr. Malata and his colleagues for an interesting discussion.

Sincerely,

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## REFERENCES

1. Cook JA, Tholpady ST, Momeni A, Chu MW. " Predictors of internal mammary vessel diameter: A computed tomographic angiography-assisted anatomic analysis", *Journal of Plastic, Reconstructive & Aesthetic Surgery*, Oct 2016;69(10):1340-8.
2. Sacks JM, Chang DW. Rib-sparing internal mammary vessel harvest for microvascular breast reconstruction in 100 consecutive cases. *Plast Reconstr Surg*, 2009;123(5):1403-7.

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