Received: 4 April 2018 | Accepted: 8 May 2018

DOI: 10.1002/micr.30336

LETTER TO THE EDITOR

WILEY MICROSURGERY

Reply to comment on: Ileocecal vascularized lymph node transfer for the treatment of extremity lymphedema: A case report

Dear Editor,

We greatly appreciate Ring, Stern, and Udrescu's (2018) comments on our manuscript. So far, there are several intra-abdominal lymph node flaps that have been described in the literature for vascularized lymph node transfer (VLNT) (Ciudad et al., 2017; Ciudad, Manrique, Date, et al., 2016; Ciudad, Manrique, Agko, et al., 2017). While, the laparoscopically harvested gastroepiploic vascularized lymph node flap (VLNF) has become our flap of choice due to its versatility and low donor site morbidity, in certain situations we use alterative intra-abdominal flaps. Indeed, we were the first to describe the mesenteric VLNFs from the appendicular and ileocecal region. The appendicular VLNF is often our second choice when the gastroepiploic VLNF is not available. Nevertheless, if the appendix has been removed, then an ileocecal VLNF based on the main ileocolic artery, as depicted in our initial manuscript, is used. By doing so, we preserve an interrupted vascular arcade at the peripheral mesentery spanning the ileocecal region and we have not encountered any issues with intestinal ischemia.

Avoiding devascularization of any adjacent structure is a goal that we share with Ring et al. However, their point of preserving the vascular supply to the appendix does not apply to our initial case report, as the patient had a previous appendectomy. With an intact appendix vermiformis though, the preservation of the main and or even accessory appendicular arteries is undoubtedly important. As we have gained more experience with VLNFs from the ileocecal region with a total of 11 cases so far, we have been able to safely harvest an ileocecal VLNF while preserving the appendix vermiformis and its blood supply. To achieve this, we have followed the following principles:

1. As the vascular arborization in the ileocecal region is variable, mobilization and transillumination of the mesentery is important to allow visualization of the vascular network. A group of lymph nodes with a reliable vascular pedicle can then be easily designed without compromising the adjacent structures.
2. We always dissect the mesentery very carefully under the operating microscope so that the blood supply of the intestine is not compromised, and the vascular pedicle of the harvested lymph node flap can be healthy for subsequent anastomosis. It is advised to use ligation of vessels instead of cauterization or hemoclips. Extreme care should be taken when there are intestinal adhesions, because inadvertent dissection while harvesting the lymph node flap can result in devascularization of an intestinal segment or potentially cause bowel perforation.
3. The appendicular artery usually emerges from the ileal branch of the ileocolic artery and occasionally from the main artery itself. Thus, the lymph nodes around the colic branch can be safely harvested when the following criteria are met: there is a peripheral arcade connecting the distal colic branch to the ileal branch and the appendicular artery does not arise from the colic branch (Figure 1).

The ileal and jejunal mesenteries can both supply vascularized lymph node flaps. Yet, for the reasons we elaborated in our case report, we prefer the lymph nodes from the ileocecal region. In summary, if possible, minimally invasive techniques are preferable to laparotomy for harvest of intra-abdominal flaps. When a previous laparotomy has been performed, appendicular and ileocecal VLNFs can be safely harvested without compromising the neighboring intestinal segments.

ACKNOWLEDGMENTS

All authors hereby declare not to have any potential conflict of interests and not to have received funding for this work from any of the following organizations: National Institutes of Health (NIH); Wellcome Trust; Howard Hughes Medical Institute (HHMI); and other(s). Each author participated sufficiently in the work to take public responsibility for the content.

ORCID

Pedro Ciudad MD, PhD http://orcid.org/0000-0003-4646-2676
Mouchammed Agko MD http://orcid.org/0000-0003-0242-0941

Pedro Ciudad MD, PhD[1,2,3], Oscar J. Manrique MD[4], Mouchammed Agko MD[1], Chieh-Ting Huang MD[4], Wei-Ling Chang BS, MSc[1], Ricardo Delgado B MD[2], César Reynaga MD[3], Bulent Sacak MD[1], Hung-Chi Chen MD, PhD[1]

[1]*Department of Plastic and Reconstructive Surgery, China Medical University Hospital, Taichung, Taiwan*

[2]*Department of Plastic and Reconstructive Surgery, National Cancer Institute of Peru (INEN), Lima, Peru*

[3]*Department of Plastic and Burn Surgery, Arzobispo Loayza National Hospital, Lima, Peru*

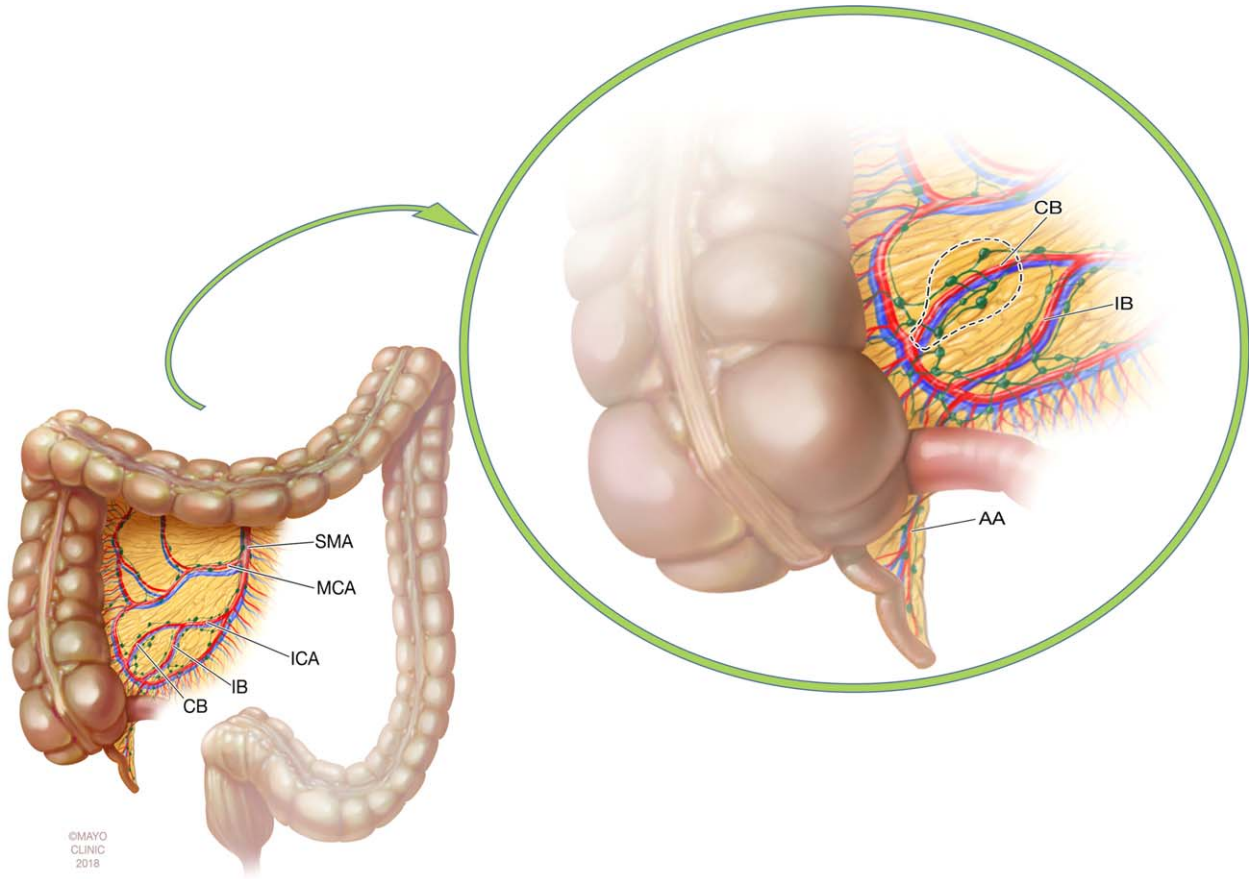

FIGURE 1 Schematic anatomical representation for ileocecal vascularized lymph node transfer. CB: colic branch of ileocolic artery; IB: ileal branch of ileocolic artery; SMA: superior mesenteric artery; MCA: middle colic artery; ICA: ileocolic artery

[4]*Division of Plastic and Reconstructive Surgery, Mayo Clinic, Rochester, Minnesota*

Correspondence
Hung-Chi Chen, MD, PhD., Department of Plastic Surgery, China Medical University Hospital, 2 Yuh-Der Road, Taichung 40447, Taiwan.
Email: D19722@mail.cmuh.org.tw

Conflict of interest: None of the authors received any funds or has any financial interests to disclose.

REFERENCES

Ciudad, P., Agko, M., Perez Coca, J. J., Manrique, O. J., Chang, W. L., Nicoli, F., … Chen, H. C. (2017). Comparison of long-term clinical outcomes among different vascularized lymph node transfers: 6-year experience of a single center's approach to the treatment of lymphedema. *Journal of Surgical Oncology*, *116*, 671–682.

Ciudad, P., Manrique, O. J., Agko, M., Liu, E. W., Chang, W. L., Sze-Wei Yeo, M., …, Chen, H. C. (2017). Ileocecal vascularized lymph node transfer for the treatment of extremity lymphedema: A case report. *Microsurgery*.

Ciudad, P., Manrique, O. J., Date, S., Chang, W. L., Nicoli, F., Sapountzis, S., … Chen, H. C. (2016). Vascularized appendicular lymph node transfer for treatment of extremity lymphedema: A case report. *Microsurgery*.

Ring, A., Stern, J., & Udrescu, G. (2018). Comments on "Ileocecal vascularized lymph node transfer for the treatment of extremity lymphedema: A case report". *Microsurgery*, *38*, 234–235.