Sir:

In this article, we present 3 easy-to-learn technical modifications in microsurgery designed to facilitate the arterial and venous anastomoses. Although some surgeons may be familiar with these or similar techniques, the following modifications are distinct from both classical microsurgical teaching and most published literature. These techniques are demonstrated in the attached videos, and demonstrations of the traditional techniques are included for comparison.

First, traditional tying for a right-handed surgeon involves creating a suture loop with the left hand around the instrument in the right hand.1 The right hand (with the suture loop around it) then moves right to grasp the free end of the suture. Finally, the hands must be crossed to lay down a flat knot. In our modification, we reverse the hands, using the right hand to create a loop around the instrument in the left hand. In this fashion, the instrument in the left hand points directly at the free end of the suture, making it easy to grasp, particularly when adherent to the adventitia or clamps. The right and left instruments are then pulled away from the anastomosis, allowing direct visualization of the first throw of the square knot as it is tied. Between throws, the suture must be passed from one instrument to the other. Although this technique is potentially difficult for the surgeon initially, we have found that the movement quickly becomes second nature with practice (See Video 1, Supplemental Digital Content 1, which shows a demonstration of the classic and modified instrument tie. This video is available in the “Related Videos” section of the Full-Text article on PRSGO.com or available at http://links.lww.com/PRSGO/A116).

Second, use of a continuous suture (tied in an interrupted fashion) facilitates visualization of the back wall by keeping the front wall open while placing sutures.2 Most microsurgery manuals illustrate cutting of the continuous loop at its summit before tying all sutures.1 This practice, however, can lead to complications in isolating the correct ends of a given suture. We avoid this issue by cutting the loops individually, only after the first throw is ready to be tied. As a result, there are no multiple free ends of a suture, which can lead to confusion. The remaining loops are kept in continuity and are easily separated from the first knot. This process is then repeated for the remaining loops (See Video 2, Supplemental Digital Content 2, which displays a demonstration of classic and modified techniques for tying the continuous suture in an interrupted fashion. This video is available in the “Related Videos” section of the Full-Text article on PRSGO.com or available at http://links.lww.com/PRSGO/A117).

Third, we have developed a hands-free suction device with distinct advantages over those devices pre-

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Supplemental digital content is available for this article. Clickable URL citations appear in the text.
The suction apparatus is rapid and easy to fashion, provides large caliber suction, and is highly resistant to clogging. It also carries no risk of iatrogenic suction injury to the vessels. The device includes a square of Merocel foam (Medline Industries, Mundelein, IL) sandwiched between a size 8 pediatric feeding tube and a yellow microsurgical background (Fig. 1). The components are sutured together, and the feeding tube is connected to standard operating room suction set to low pressure. The apparatus replaces the background behind the anastomosis, providing continuous, hands-free suction. The suction tube can be sutured to tissue near the anastomosis area for further stabilization.

We describe 3 modifications that have greatly benefited our microsurgical training and practice. These techniques do not replace traditional techniques, but build on them to improve accuracy, decrease operative time, and provide additional tools for use in routine or difficult microsurgical cases.

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**DISCLOSURE**
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**REFERENCES**
1. Acland RD. *Practice Manual for Microsurgery*. 2nd ed. Mosby-Year Book; St. Louis, MO. 1989.
2. Alghoul MS, Gordon CR, Yetman R, et al. From simple interrupted to complex spiral: a systematic review of various suture techniques for microvascular anastomoses. *Microsurgery* 2011;31:72–80.
3. Zienowicz RJ, Jupiter JB, Yaremchuk MJ. A microsurgical suction mat. *J Hand Surg Am*. 1994;19:519–520.
4. Shermak MA, Wofort SF, Thomas D, et al. A universal micro-suction mat to optimize TRAM breast reconstruction. *Plast Reconstr Surg*. 1999;103:1099–1100.

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**Video Graphic 2.** Demonstration of classic and modified techniques for tying the continuous suture in an interrupted fashion ([http://links.lww.com/PRSGO/A117](http://links.lww.com/PRSGO/A117)).

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**Fig. 1.** Sequential images depicting the components of the suction apparatus before assembly (A) and after assembly (B).