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Use of Preoperative Doppler for Distally Based Sural Flap Planning

Sir:

We read with interest the article entitled “The Distally Based Sural Flap” by Follmar et al.,¹ in which an excellent, comprehensive examination of all aspects of the reverse flow sural artery flap has been provided. We would like to comment on preoperative planning of the reverse flow sural island flap, which is actually considered a reliable method for covering defects of the lower third of the leg.

Various studies on cadavers have demonstrated that the anatomy of the sural nerve and its vascular axis can be inconsistent. The vascular axis of the sural nerve can be either a true artery or an interlacing network; this network of vessels connects the distal portion of the superficial sural artery with the perforators of the peroneal artery and opens up only under increased pressure conditions. We believe in the need for a preoperative study of the main vascular axis of the flap, but we consider as too invasive the use of preoperative selective angiography to locate and determine the size of perforators.

In 1994, Hasegawa et al.² affirmed that the pivot point of the flap must be at least 5 cm above the tip of the lateral malleolus, but, as demonstrated by Zhang et al.³ in 2005, the vascular pivot point of the distally based sural flap can be safely designed even 1.5 cm proximal

to the lateral malleolus. We believe that individual skin marking is fundamental in the preoperative phase because preestablished landmarks, based on previous anatomical studies, are out of date.

Yeng and Wei,⁴ considering the previously reported high failure rate in performing this flap because of variable vascular anatomy, advised the use of preoperative Doppler examination to identify perforators and their distance from the lateral malleolus in each clinical case. Bocchi et al.⁵ stated that the constant use of a Doppler probe during the preliminary evaluation provides more safety to the surgical procedure and increases the success rate of the sural artery flap. We suggest the use of preoperative Doppler examination during flap planning, with the following objectives:

1. Exact determination of the most distal peroneal artery perforator(s) emergently, which is the flap pivot point. Figure 1, left, shows the Doppler determination of the most distal perforator.
2. Skin marking of the course of the sural nerve accompanying vessels in the lower leg; in doing that, it is possible to encounter a mute tract at the level of the vascular network that connects the superficial sural artery and the course of the peroneal artery perforator(s) course; the Doppler signal could be found again proceeding along the course



Fig. 1. (Left) Perforator identification. Doppler determination of the most distal peroneal artery perforator (x), in contrast to a pre-established landmark (5 cm above the lateral malleolus). (Right) The mute tract. Doppler preoperative planning showing the sural artery, short saphenous vein, and flap perforators. Note the mute tract at the level of the vascular network between the superficial sural artery and the peroneal artery perforators.

of the nerve in those specific circumstances. Figure 1, *right*, clearly shows the mute tract.

- Determination of sural artery skin perforators in the proximal third of the leg, when present, on which the flap island can be centered. This design makes the harvesting of the flap quicker and safer. DOI: 10.1097/PRS.0b013e3181a076ee

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Reply

Sir:

I thank Dr. Schonauer and colleagues for their kind remarks regarding the article recently published in the *Journal*.¹ Multiple articles addressing preoperative planning and modified surgical techniques have been published with the main goal of improving flap survival.²

The sural flap has been widely accepted as a suitable alternative, specifically, if free tissue transfer to the distal lower extremity is not an option. However, complications occur mainly in patients with peripheral vascular disease and other comorbidities.³ The comments of Dr. Schonauer and colleagues are a helpful contribution and should be taken into consideration when planning a future distally based, reversed sural flap.

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The Dilemma of the Expert Witness: Part II

Sir:

I enjoyed the editorial entitled “The Dilemma of the Expert Witness: Part II,” in the July 2008 issue of *Plastic and Reconstructive Surgery*. As you know, a number of our colleagues have become expert witnesses as a main source of revenue. Nonetheless, most experts in our field do not rely on testimony for their practice flow. Most of our colleagues donate on a yearly basis to their undergraduate school or medical school.

Whenever I have had the occasion to be placed in the potentially embarrassing position of receiving remuneration for giving testimony, I simply state the fact that I donate the entire expert testimony fee to one of my prior institutions of learning. I believe that it is certainly appropriate to divert this controversy during cross-examination by the opposing attorney, although a number of our colleagues have become expert witnesses and earn a significant portion of their income from giving testimony. I recognize this tact may be a very prudent way of deflecting an attorney’s persistent attempt to embarrass a plastic surgeon and serve a benefit to our prior educational centers.

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Correction: Treating Chronic Wound Infections with Genetically Modified Free Flaps

The article entitled “Treating Chronic Wound Infections with Genetically Modified Free Flaps,” by Shadi Ghali, Kirit A. Bhatt, Marlese P. Dempsey, Deidre M. Jones, Sunil Singh, Shahram Arabi, Peter E. Butler, Robert L. Gallo, and Geoffrey C. Gurtner (*Plast Reconstr Surg.* 2009;123:1157–1169), was published without an abstract. A corrected version of the article that includes the abstract is available online at the *Journal’s* website (www.PRSJournal.com).

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