Designing the Anterolateral Thigh Flap without Preoperative Doppler or Imaging

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ABSTRACT

The anterolateral thigh (ALT) flap is now considered a workhorse for head and neck reconstruction in many centers. However, designing and raising the ALT flap has been traditionally recognized as being difficult, tedious, and technically demanding due to its variation in perforator anatomy. Designing the ALT flap on data gained solely using the handheld Doppler can be misleading, as its specificity and sensitivity varies greatly depending on amount of subcutaneous fat and the Doppler itself. Authors have investigated multiple imaging modalities in the search of the best way to predict and map the site and size of perforators before dissecting a flap. In this article, we describe a simplified technique for the ALT flap design and dissection without the use of preoperative imaging or vascular studies. Utilizing anatomic landmarks, the location of the three perforators (A, B, and C) can be anticipated and safely dissected. We conclude that accurate use of the ABC system is one approach in consistently dissecting the ALT flap.

KEYWORDS: Anterolateral thigh flap, Doppler, head and neck, thigh-based reconstruction, ALT flap

The ultimate goal in reconstructive surgery is to replace tissue with similar tissue, with minimal donor site morbidity. Currently, it is possible to dissect a perforator flap consisting of skin and subcutaneous fat with its neurovascular supply through perforating vessels and nerves while preserving underlying structures (e.g., muscle). Depending on the location of the donor site, there may be anatomic variability with flap dissection. Blondeel et al observed that there is significant variability in the anatomy of the perforators of the deep inferior epigastric perforator (DIEP) and the thoracodorsal artery perforator (TAP) and recommended the use of color duplex scanning for planning the DIEP and TAP flaps.[1]

Although preoperative imaging may provide useful information to aid flap design, it may not be feasible in many centers and may not be necessary for all perforator flaps. The anterolateral thigh (ALT) flap is now considered the workhorse for head and neck reconstruction in many centers due to its numerous advantages.[2–4] It is also a good option for pelvic, chest wall, and extremity reconstruction.[5–7] The ALT flap has many advantages, including a reliably long and good-caliber vascular pedicle; the possibility of combination with cutaneous sensation; minimal donor site morbidity; an inconspicuous donor site that can be closed primarily in most cases; the possibility of being harvested as fasciocutaneous or musclocutaneous flap; and, importantly, the opportunity of being harvested simultaneously at the same time of tumor ablation. However, the ALT flap has been traditionally criticized for its variations of perforator anatomy, making flap dissection difficult. Early reports with small series seem to show confusing

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