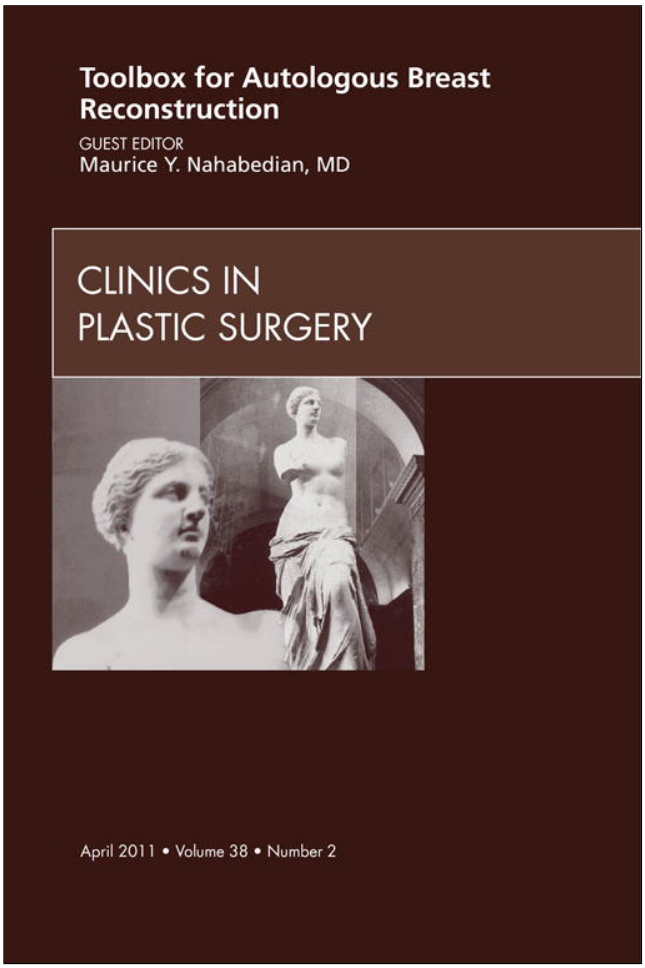

Minimizing Obstacles and Maximizing Outcomes in Microvascular Breast Reconstruction

Maurice Y. Nahabedian, MD
Guest Editor

During the era of pedicle musculocutaneous flaps, plastic surgeons performed operations such as the latissimus dorsi and the TRAM with confidence and regularity. We have now entered the era of microvascular perforator flap reconstruction as patients and surgeons have recognized the benefits of muscle preservation. Microvascular perforator flaps such as the DIEP, SGAP, and TUG are arguably more complicated to perform and have the potential for morbidities that include total flap necrosis, partial flap necrosis, and fat necrosis. As such, the number of surgeons performing these procedures has remained less than those performing pedicle flap reconstruction. Reasons have included selecting appropriate patients for microvascular breast reconstruction, uncertainty regarding perforator caliber and location, determining perfusion quality within a flap, and the subjectivity of postoperative flap monitoring. In order to facilitate surgeon confidence and ability to perform these microvascular operations, a number of technological advancements have generated selective tools that have enabled microvascular surgeons to perform these operations with confidence and regularity.

Surgeons now have the ability to optimize patient selection, select suitable perforators, assess flap perfusion, and monitor flaps with accuracy and reliability. These tools can be applied preoperatively, intraoperatively, and postoperatively.

Preoperatively, it is now possible to identify perforators and map their course using devices that include computerized tomographic angiography, magnetic resonance angiography, color duplex ultrasound, and dynamic infrared thermography. Intraoperatively, it is possible to assess flap perfusion and minimize the incidence of fat necrosis using fluorescent angiography.

Postoperatively, monitoring tools such as near-infrared spectroscopy and the hand-held acoustic Doppler permit reliable information. Having these tools in our toolbox has enabled more surgeons to perform these microvascular operations with

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confidence and with the end result of optimizing surgical outcomes.

This issue of *Clinics in Plastic Surgery* is organized to provide an update of the existing technological advancements and how they are used to improve outcomes. I am grateful to all of the contributors of the various topics. They are all experts in the field who have made significant contributions to the specialty and literature. The current toolbox for autologous reconstruction will hopefully provide useful information for the novice and experienced microsurgeon when planning, executing, and monitoring free tissue transfer operations.

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