

# The Posterior Tibial Artery Perforator Flap: An Alternative to Free-Flap Closure in the Comorbid Patient

Brian M. Parrett, M.D.,<sup>1</sup> Jonathan M. Winograd, M.D.,<sup>2</sup> Samuel J. Lin, M.D.,<sup>1</sup> Loren J. Borud, M.D.,<sup>1</sup> Amir Taghinia, M.D.,<sup>1</sup> and Bernard T. Lee, M.D.<sup>1</sup>

## ABSTRACT

Wounds of the distal third of the leg with exposed bone traditionally require free flaps for coverage. Although this often provides good results, patients with multiple comorbidities cannot undergo the long operating times and multiple surgical sites required for these complex procedures. We reviewed the use of posterior tibial (PT) perforator flaps as an alternative to free flaps for distal leg wound coverage in ill patients. Six patients (mean age, 53 years) with multiple comorbidities that precluded free-flap closures were treated with PT perforator flaps to cover complex distal leg wounds. The most common comorbidity was cardiac disease. Five patients had Gustilo grade IIIB open tibial fractures and one had a chronic wound. Mean flap size was  $8 \times 5.5$  cm with a mean of one perforator per flap. Mean operating room time was 103 minutes. Four flaps were done without general anesthesia. There were no perioperative cardiopulmonary events. With a mean follow-up of 15 months, all flaps survived and all patients were ambulatory. There were no cases of malunion, nonunion, infection, wound breakdown, or partial flap loss. The PT perforator flap is a reliable choice for patients with open leg wounds and comorbidities precluding free-flap closure.

**KEYWORDS:** Perforator flap, posterior tibial artery perforator flap, lower extremity reconstruction

Complex open wounds of the distal third of the lower leg with exposed bone, tendon, or hardware are traditionally treated with free tissue transfer.<sup>1-3</sup> Studies have shown the benefits of free flaps in covering wounds in this difficult area because there is limited local soft tissue.<sup>2-4</sup> However, free-tissue transfer is complex surgery and not ideal for patients with multiple comorbidities because long operation times are directly correlated with the development of postoperative complications, both medical and surgical.<sup>5-7</sup> Patients undergoing free

flaps are known to have an increased risk of cardiac and pulmonary complications.<sup>8,9</sup> In addition, postoperative care of the free flap depends on a reliable patient who can follow instructions regarding weightbearing, cessation of smoking, and rehabilitation. For example, this compliance can be impossible in patients with uncontrolled psychiatric illnesses.<sup>7</sup>

Local perforator flaps have become reliable in the lower extremity and provide a simpler, more rapid coverage approach to complex wounds.<sup>10,11</sup> The anatomy of

<sup>1</sup>Division of Plastic Surgery, Beth Israel Deaconess Medical Center, and <sup>2</sup>Division of Plastic Surgery, Massachusetts General Hospital, Harvard Medical School, Boston, Massachusetts.

Address for correspondence and reprint requests: Bernard T. Lee, M.D., Beth Israel Deaconess Medical Center, 110 Francis St., Suite 5A, Boston, MA 02215 (e-mail: blee3@bidmc.harvard.edu).

J Reconstr Microsurg 2009;25:105-110. Copyright © 2009 by Thieme Medical Publishers, Inc., 333 Seventh Avenue, New York, NY 10001, USA. Tel: +1(212) 584-4662.

Received: March 21, 2008. Accepted: June 13, 2008. Published online: October 15, 2008.

DOI 10.1055/s-0028-1090616. ISSN 0743-684X.