

Subtotal Thigh Flap and Bioprosthetic Mesh Reconstruction for Large, Composite Abdominal Wall Defects

Samuel J. Lin, M.D.
Charles E. Butler, M.D.

Houston, Texas

Background: Transposition of well-vascularized flap tissue with or without implantable mesh is often required to repair full-thickness, composite abdominal wall defects. The authors hypothesized that the combination of an inlay of bioprosthetic mesh and a subtotal thigh flap would enable a reliable reconstruction for large, composite abdominal wall defects.

Methods: The authors retrospectively reviewed data on patients who underwent repair of large, composite abdominal wall defects with bioprosthetic mesh and free or pedicled subtotal thigh flaps at a major cancer center from 2004 to 2007. Patient, defect, surgical technique, and outcome data were obtained from a prospectively maintained database and medical charts.

Results: Seven patients who received eight subtotal thigh flaps (five pedicled and three free flaps with vein grafts to the femoral vessels) met the study criteria. Indications for reconstruction were tumor resection, enterocutaneous fistula, and abdominal wall osteoradionecrosis. All but one patient received preoperative radiotherapy (mean dose, 54.8 Gy). The musculofascial defect was repaired with a mean of 536.4 cm² of bioprosthetic mesh. The mean subtotal thigh flap skin paddle size was 514 cm². Complications included partial flap necrosis in one patient, a cerebrospinal fluid leak in one patient, partial split-thickness skin graft loss in two patients, a focal asymptomatic musculofascial repair-site bulge in one patient, and a hernia (not requiring surgery) in one patient. No bioprosthetic mesh infections, wound dehiscences, bowel obstructions, or seromas occurred (mean follow-up, 27.7 months).

Conclusion: Massive, composite abdominal wall defects can be repaired successfully with relatively minor complications using a combination of bioprosthetic mesh and subtotal thigh flaps. (*Plast. Reconstr. Surg.* 125: 1146, 2010.)

Various thigh flaps have been used successfully to repair abdominal wall defects. These include tensor fasciae latae myocutaneous, rectus femoris muscle or myocutaneous, anterolateral thigh fasciocutaneous, and sartorius muscle or myocutaneous flaps.¹⁻⁶ However, when the abdominal defect is too large for these flaps, alternatives must be considered to provide reliable reconstruction in a single stage. One alternative

for large, composite abdominal wall defects is thigh flaps based on the lateral circumflex femoral vascular supply. The lateral circumflex femoral vessels supply the rectus femoris, vastus lateralis, and tensor fasciae latae muscles and the overlying skin; all these structures may be used for abdominal wall reconstruction if needed. We refer to thigh-based chimeric flaps that include muscles supplied by the lateral circumflex femoral vessels as "subtotal thigh flaps." The subtotal thigh flap differs from other thigh-based flaps, such as the anterolateral thigh flap, in that it is based on one

From the Department of Plastic Surgery, University of Texas M. D. Anderson Cancer Center.

Received for publication September 23, 2009; accepted October 28, 2009.

Presented in part at the 23rd Annual Scientific Meeting of the American Society of Reconstructive Microsurgery, in Rio Grande, Puerto Rico, January 13 through 16, 2007, and the 53rd Annual Meeting of the Plastic Surgery Research Council, in Springfield, Illinois, May 28 through 31, 2008.

Copyright ©2010 by the American Society of Plastic Surgeons

DOI: 10.1097/PRS.0b013e3181d18196

Disclosures: Charles E. Butler, M.D., serves on the Speakers' Bureau for LifeCell Corporation. Neither of the authors has a financial interest in any of the products, devices, drugs, or procedures mentioned in this article.