Indications and Controversies for Abdominally-Based Complete Autologous Tissue Breast Reconstruction

Blake D. Murphy, MD, PhD, FRCS(C)[a], Isabel Kerrebijn, MSc[a],
Jian Farhadi, MD, FMH (Plast), EBOPRAS[b],
Jaume Masia, MD, PhD[c],
Stefan O.P. Hofer, MD, PhD, FRCS(C)[a,*]

KEYWORDS

• Breast reconstruction • Autologous breast reconstruction • Microsurgical breast reconstruction
• Deep inferior epigastric artery perforator flap • Superficial inferior epigastric artery flap
• Transverse rectus abdominis myocutaneous flap

KEY POINTS

- Abdominally based autologous reconstruction has undergone significant improvements in techniques, safety, and outcomes.
- Through careful optimization of modifiable risk factors and preoperative planning, abdominally based autologous reconstruction can be successfully performed in most patients with few absolute contraindications.
- Based on the available evidence, this should be the preferred reconstructive option in patients requiring postmastectomy radiation, those who are overweight or obese, and those undergoing unilateral reconstruction.

INTRODUCTION

Reconstruction of the breast in either the immediate or delayed setting can be performed in a variety of ways including autologous and alloplastic options. Although patient preference and suitability are the most important factors, other considerations exist when determining what type of breast reconstruction a patient will undergo. In the appropriately selected patient, complete autologous reconstruction using abdominal tissue provides an excellent option while minimizing donor site morbidity. This procedure has been shown to be oncologically safe with excellent patient satisfaction in the appropriately selected and informed patient.[1–3]

The first abdominally based flap was the pedicled transverse rectus abdominis myocutaneous flap (pTRAM), which later evolved to the free TRAM, the muscle-sparing TRAM (MS-TRAM), deep inferior epigastric artery perforator flap (DIEP), and superficial inferior epigastric artery (SIEA) flaps.[4–8] Potential benefits of the pTRAM are that it may be performed more quickly than other abdominally

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[a] Division of Plastic Surgery, University Health Network, 200 Elizabeth Street, 8N-865 Toronto, Ontario M5G 2C4, Canada; [b] Department of Plastic Surgery, St. Thomas' Hospital, Guy's and St. Thomas' Hospitals NHS Foundation Trust, London, UK; [c] Department of Plastic Surgery, Hospital de la Santa Creu I Sant Pau, Universitat Autònoma de Barcelona, Sant Quintí 89, Barcelona 08026, Spain
* Corresponding author.
E-mail address: stefan.hofer@uhn.ca

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based procedures that require microsurgical techniques. However, it is more commonly associated with abdominal wall morbidity and carries an elevated risk of fat necrosis and partial flap loss.[9]

The introduction of the free TRAM led to decreased partial flap loss and fat necrosis compared with the pTRAM. However, these advantages are partially offset by the need for microsurgical expertise, increased operating time, and increased potential for total flap loss.[10] Each of the subsequent iterations of abdominally based free flaps for breast reconstruction were developed to minimize donor site morbidity. MS-TRAM options are found to result in decreased abdominal bulge rates when compared with free TRAM flaps.[11] Modifications to the MS-TRAM led to the DIEP and SIEA flap with the goal of further reducing or eliminating the need for muscle and fascia harvest. However, studies have not conclusively found the benefit of a DIEP over MS-TRAM with respect to donor site morbidity.[11–14] SIEA flaps do not require any subfascial dissection, but are not possible in all patients and have been associated with higher rates of flap failure.[15]

This article focusses on complete autologous breast reconstruction using abdominally based flaps. Techniques using alloplastic reconstruction and autologous tissue from elsewhere are beyond the scope of this article. This article reviews the literature and discusses appropriate indications and contraindications based on available evidence. In addition, some of the current controversies in abdominally based autologous breast reconstruction are highlighted and the evidence supporting or refuting these factors is reviewed. Finally, an overview is provided of the technique used at the authors' institution for autologous reconstruction using abdominal tissue.

INDICATIONS FOR ABDOMINALLY BASED AUTOLOGOUS BREAST RECONSTRUCTION

Abdominal donor sites are the most common site for autologous reconstruction after mastectomy and are considered by some to be the gold standard for breast reconstruction.[1] When choosing a plan for breast reconstruction with a patient, numerous factors need to be considered by the patient, reconstructive surgeon, and the breast oncology surgeon. Patient preference is likely the most important factor, as it has been shown that patient satisfaction is directly related to their preoperative knowledge and contribution to the decision-making process.[3,16] Patient preference must be balanced with safety and reliability of the procedure, the surgeon's experience and skill, and the overall suitability of the patient for the desired procedure (**Box 1**).

Box 1
Requirements for abdominally based autologous reconstruction

- Informed consent
  - Risks and benefits of the procedure
  - Realistic expectations
  - Alternative treatments
- Adequate abdominal donor tissue
- No known contraindications to the planned procedure

Absolute requirements for complete autologous breast reconstruction in the immediate or delayed setting are limited. The patient's consent and desire to proceed with the procedure coupled with adequate abdominal tissue are among the only requirements. If the patient meets these minimum criteria, history, physical examination, and investigations should follow to ensure there are no specific contraindications that preclude the patient from successfully undergoing the planned procedure. Autologous reconstruction should be considered preferentially in patient groups in which it is found to be superior to alloplastic reconstruction (**Box 2**).

Patients who are overweight or obese and those undergoing postmastectomy radiation therapy, are at an elevated risk of complications in both alloplastic and autologous reconstruction. However, autologous reconstruction is associated with significantly lower complication and complete failure rates than alloplastic options and is found to achieve superior patient satisfaction scores.[17–21] Patients undergoing unilateral breast reconstruction also show increased satisfaction with autologous over alloplastic reconstruction.[22,23] These advantages should be conveyed to the patient during the decision-making process.

CONTROVERSIES FOR ABDOMINALLY BASED AUTOLOGOUS RECONSTRUCTION

Abdominally based autologous breast reconstruction continues to evolve and improve, and in its

Box 2
Indications for autologous over alloplastic reconstruction

- Patient preference
- Postmastectomy radiation patients
- Overweight or obese patients
- Unilateral reconstruction