

Indications and Controversies for Complete and Implant-Enhanced Latissimus Dorsi Breast Reconstructions

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KEYWORDS

- Latissimus dorsi flap • Breast reconstruction • Fat grafting • Autologous breast reconstruction
- Postmastectomy reconstruction • Breast implant

KEY POINTS

- The latissimus dorsi flap is a viable alternative in autologous breast reconstruction, whether an implant or fat-enhanced modality is used.
- Implant-enhanced latissimus dorsi flaps are useful in situations in which microvascular techniques are unavailable, other donor sites are unfavorable, or local tissues provide insufficient implant coverage.
- High-volume fat grafting has given this traditional reconstructive alternative new life, and it may now be considered a primary option in selected patients.

INTRODUCTION

The latissimus dorsi (LD) has been used by reconstructive surgeons for more than 120 years, with Tansini first describing use of an LD myocutaneous flap in 1896.¹ Its use in postmastectomy reconstruction was first reported by D'Este in 1912,² but it was not until the late 1970s that the use of LD flaps was widely reintroduced as a method of autologous breast reconstruction.³ Factors associated with its popularity include its straightforward dissection, varying orientations and shapes possible, and a consistent, reliable vascular pedicle.⁴⁻⁶

Drawbacks of this technique include potentially insufficient volume necessitating prosthetic

inclusion and donor site issues including dehiscence and seroma.⁶ Additionally, the initial enthusiasm regarding LD use in breast reconstruction has been tempered over ensuing years by the advent of abdominally based pedicled and free tissue transfer options.

Recently, the LD flap has had a resurgence in popularity. High-volume fat grafting to enhance flap volume, quilting sutures at the donor site, and changing reimbursement patterns for free tissue transfer have all been implicated in this resurgence. The purpose of this article is to describe the contemporary indications and areas of controversy surrounding the use of total-autologous and implant-enhanced LD flaps in breast reconstruction.

The authors have nothing to disclose.

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INDICATIONS FOR LATISSIMUS DORSI BREAST RECONSTRUCTION

Given the reliability and versatility of the LD flap, almost any patient is a potential candidate for an LD flap.⁴ Its traditional use is in patients for whom prosthetic reconstruction is not desirable, including both tissue expander or single-stage implant-based reconstruction. Specific situations that make the flap appealing include patients with unsuitable donor sites elsewhere. These situations include patients in whom an abdominally based flap would not be appropriate, such as in very thin or extremely obese individuals or those who have undergone previous abdominal body contouring procedures. The flap is also a useful option when microvascular tissue transfer is not preferred or available. High-volume fat grafting has also enabled use of the flap in situations that were previously not possible, such as a medium- or large-breasted patient who requests complete autologous reconstruction but whose back has insufficient volume without use of an implant.

CONTROVERSIES FOR LATISSIMUS DORSI BREAST RECONSTRUCTION

- There is still debate as to whether harvest of the LD results in a significant functional deficit for shoulder and upper extremity function.
- There has been question regarding the adequacy of volume for transfer and the role of nerve preservation to maintain volume.
- Some have questioned the caliber of aesthetic results using the LD, in terms of the donor site and final breast reconstruction, as well as patient satisfaction.

EVIDENCE BASE FOR LATISSIMUS DORSI BREAST RECONSTRUCTION

Indications

Patients who prefer not to have prosthetic devices, have a history of ipsilateral breast radiation, or have a high likelihood of requiring radiation are candidates for autologous reconstruction. There are several reasons why an LD flap may be preferred over other reconstructive options. Previous abdominal surgeries may prohibit the use of the usual abdominal donor site for autologous reconstruction.⁷ Abdominal body contouring procedures, for example, typically divide perforators, which would otherwise be used to support a pedicled or free TRAM or DIEP. Although there is evidence to support revascularization, the caliber of the vessels is not typically adequate to support an abdominally based reconstruction.⁷

Another scenario in which LD flaps may be preferred is when microsurgical techniques are not available. Recent studies have found that few patients have access to a practicing microsurgeon,⁸ with surveys finding that only one-fourth of practicing US plastic surgeons perform any microsurgical breast reconstruction.⁹ Furthermore, even practicing microsurgeons can be deterred by procedure length and poor reimbursement associated with free tissue transfer in some markets.⁹ Pedicled TRAMs have become a popular alternative when free tissue transfer is not available; however, such flaps can have significant abdominal morbidity, especially in bilateral cases.¹⁰ The LD myocutaneous flaps offer an excellent option for the patient seeking autologous reconstruction without microsurgery and furthermore allows for the avoidance of the donor site issues associated with the pedicled TRAM flap.

Even among individuals with access to a microsurgeon, there are several reasons why free tissue transfer may not be advisable. Relative contraindications include patients with multiple comorbidities, diabetes, cigarette smoking, and a history of multiple abdominal surgeries.^{11,12} Others have noted obesity to be associated with an elevated incidence of overall donor site and flap complications in abdominal tissue transfer. The pedicled LD flap has a reliable pedicle, and is associated with less flap fat necrosis in the flap in the obese population.⁴ Similarly, although donor site wound healing issues have been noted in smokers undergoing abdominal free tissue transfer, the same has not been observed in this cohort of patients receiving LD flaps.

Controversies

Concern over residual weakness after harvest of the LD has been one concern among critics. However, this concern has not been substantiated in the literature. Yang and colleagues¹³ prospectively followed up with 31 patients after immediate, pedicled LD reconstruction using standardized surveys at 3-month and 1-year intervals. One year after LD flap surgery, shoulder strength and range of motion returned to preoperative baseline. Similarly, Russell and colleagues¹⁴ reported that most patients with free and pedicled LD flaps had transient mild-to-moderate shoulder weakness initially, but this recovered after several months. Thus, although sacrifice of the LD muscle may initially cause some functional impairment, with time it is very well tolerated and only noticeable in particularly athletic patients, even then with only mild loss of function noted.⁴

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