Analysis of Postoperative Outcomes in Unilateral Versus Bilateral DIEP Flap Reconstructions: A Single-Center Retrospective Study

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1. Introduction

The DIEP flap is among the preferred techniques in autologous breast reconstruction due to better long-term outcomes, including higher satisfaction and more natural breast shape.

With the rise in genetic testing, bilateral DIEP reconstructions are becoming more common,
though they carry a higher risk of complications.

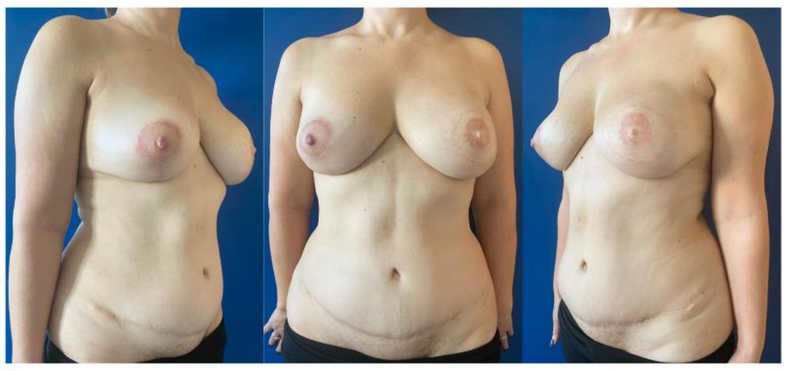

Figure 1. Postoperative views of a delayed unilateral left breast reconstruction using a DIEP flap at 16 months follow-up. The patient previously underwent a unilateral skin-sparing mastectomy of the left breast and immediate implant-based reconstruction. In the delayed procedure, the implant was removed and the unilateral autologous reconstruction was performed. Later, the patient underwent symmetrization mastopexy of the right breast with a superior pedicle and simultaneous nipple–areola complex reconstruction of the left breast using a full-thickness skin graft harvested from the medial aspect of the right thigh for the areola and an arrow flap for the nipple.

2. Aim of the study

This study aims to compare the risks between unilateral and bilateral procedures to improve surgical decision-making.

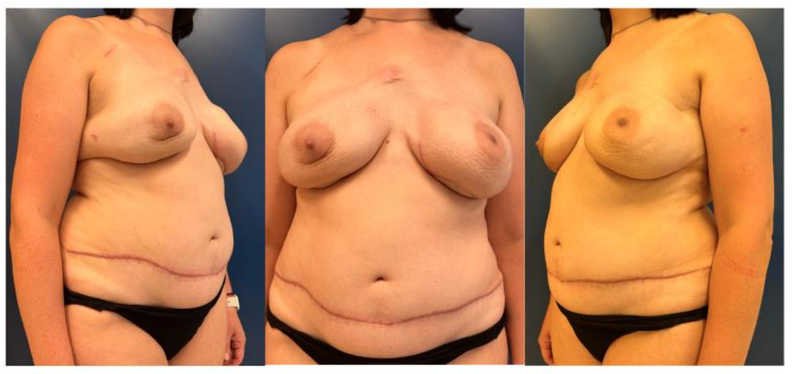

Figure 2. Postoperative views of a delayed bilateral breast reconstruction using a double DIEP flap at 4.5 months follow-up. The patient previously underwent a bilateral nipple-sparing mastectomy (prophylactic on the right) with immediate implant-based reconstruction. In the delayed procedure, the implants were removed and the bilateral autologous reconstruction was performed. The monitoring skin paddles are still in place, and their removal is planned.

3. Methods

- retrospective, single-center review.
- female patients who underwent DIEP flap breast reconstruction between January 2018 and May 2024.
- patient characteristics, operative details, and complications were thoroughly analysed, with donor site complications assessed per patient and recipient site complications per breast.

Table 1. Patient baseline characteristics.

	Unilateral (n = 87)	Bilateral (n = 27)	p-Value
Age [years], mean (SD)	51 (9.3)	48 (7.7)	0.11
BMI [kg/m^2] (SD)	26 (4.3)	28 (4.2)	0.22
Smoker, n (%)	21 (24%)	7 (26%)	0.76
Hypertension, n (%)	14 (16%)	3 (11%)	0.76
Diabetes, n (%)	1 (1.1%)	0 (0%)	>0.99
Abdominal Scar, n (%)	46 (53%)	12 (44%)	0.59
Radiotherapy, n (%)	30 (34%)	15 (56%)	0.083
Chemotherapy, n (%)	41 (47%)	23 (85%)	0.0011
Hormone Therapy, n (%)	48 (55%)	14 (52%)	0.94
Follow-up [months], mean (SD)	17 (15)	18 (14)	0.64

4. Results

- **During the study, 141 DIEP flaps were performed on 114 women, with 87 unilateral and 27 bilateral reconstructions.**
- **Age and BMI were similar between groups.**
- **However, chemotherapy was more common in the bilateral group (85% vs. 47%, p = 0.0011).**
- **Operative time was significantly longer in bilateral procedures (650 vs. 460 min, p < 0.0001).**
- **There were no statistically significant differences in recipient and donor site complications across groups. The hospital stay was significantly longer in the bilateral group (11 vs. 8.8 days, p = 0.024).**

Table 2. Operative characteristics.

	Unilateral (n = 87)	Bilateral (n = 27)	p-Value
Primary reconstruction, n (%)	11 (13%)	7 (26%)	0.13
Secondary reconstruction, n (%)	76 (87%)	20 (74%)	0.13
Curative, n (%)	83 (95%)	11 (41%)	<0.0001
Prophylactic, n (%)	4 (4.6%)	16 (59%)	<0.0001
Mean operation time [minutes], mean (SD)	460 (85)	650 (160)	<0.0001
Mean ischemia time (SD) [minutes], per breast	95 (33)	92 (34)	0.69

Table 3. Recipient site complications.

	Unilateral (n = 87)	Bilateral (n = 54)	p-Value
Breast recipient site			
≥1 complication, n (%)	16 (18%)	9 (17%)	0.79
Seroma, n (%)	1 (1.1%)	0 (0%)	>0.99
Hematoma, n (%)	4 (4.6%)	2 (3.7%)	>0.99
Wound infection, n (%)	1 (1.1%)	1 (1.9%)	>0.99
Wound dehiscence, n (%)	4 (4.6%)	1 (1.9%)	0.65
Delayed wound healing, n (%)	4 (4.6%)	1 (1.9%)	0.65
Partial NAC necrosis, n (%)	1 (1.1%)	1 (1.9%)	>0.99
DIEP flap			
Venous congestion, n (%)	1 (1.1%)	1 (1.9%)	>0.99
Venous thrombosis, n (%)	1 (1.1%)	0 (0%)	>0.99
Arterial thrombosis, n (%)	1 (1.1%)	1 (1.9%)	>0.99
Total flap loss, n (%)	1 (1.1%)	1 (1.9%)	>0.99
Partial flap loss, n (%)	1 (1.1%)	2 (3.7%)	>0.99

Table 4. Donor site complications.

	Unilateral (n = 87)	Bilateral (n = 27)	p-Value
≥1 complication, n (%)	29 (33%)	11 (50%)	0.48
Seroma, n (%)	6 (6.9%)	0 (0%)	0.33
Hematoma, n (%)	3 (3.4%)	1 (3.7%)	>0.99
Wound infection, n (%)	1 (1.1%)	1 (3.7%)	0.42
Wound dehiscence, n (%)	7 (8.0%)	3 (11%)	0.70
Delayed wound healing, n (%)	8 (9.2%)	4 (15%)	0.47
Hypertrophic scar, n (%)	2 (2.3%)	1 (3.7%)	0.56
Dog-ear scar deformity, n (%)	3 (3.4%)	2 (7.4%)	0.59
Incisionial hernia, n (%)	1 (1.1%)	0 (0%)	>0.99

5. Conclusion

Bilateral and unilateral DIEP flap breast reconstructions have similar complication and early take-back rates.

4. Limitations

- small sample size, especially for the bilateral group.
- retrospective nature of the study relies on existing medical records, which may lead to incomplete data and potential biases.

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