

## TRAM Flap in Breast Reconstruction: A Forgotten Technique? Case Report Series at A Breast Cancer Referral Center in Southern Mexico City

David Arturo Ruiz Villalba<sup>\*1</sup>, Daniel Garza Arriaga<sup>2</sup>, Erick César Ochoa Contreras<sup>3</sup>, Laura Elisa Dávalos Durán<sup>4</sup>, Ricardo Baltierra Gómez<sup>5</sup>, Juan Jesús Ortega Landeros<sup>6</sup>, Juan Daniel Coria Ramírez<sup>7</sup>, Sergio Armando Mora Razo<sup>8</sup>, Monserrath De La Torre Rivera<sup>9</sup>, Jonathan Gómez Aguilar<sup>10</sup>

<sup>1</sup>Hospital General Regional #1 IMSS, 0009-0002-5743-0223

<sup>2</sup>Fundación de Cancer de mama. FUCAM CDMX, 0009-0007-6680-8669

<sup>3</sup>Hospital Central Universitario de Chihuahua, 0000-0002-7147-9624

<sup>4</sup>Hospital general de León, León GTo, SSA, 0000-0002-8999-5117

<sup>5</sup>Hospital General de Zona IMSS No. 35, 0009-0007-7493-5836

<sup>6</sup>Hospital Regional Lic Adolfo López Mateos 0009-0003-6300-3241

<sup>7</sup>H.G Jose Vicente Villada, 0009-0007-7669-0502

<sup>8</sup>SSA Hospital General León, 80009-0004-1037-1320

<sup>9</sup>IMSS Bienestar Cuautitlan 0009-0002-8492-7673

<sup>10</sup>Hospital General de Cancún, 0009-0002-0616-5618

### ABSTRACT

With the evolution of microsurgery and the development of the DIEP flap, muscle preservation has become the new gold standard in many centers (1).

However, the availability of microsurgical resources is not universal, and not all patients are ideal candidates for prolonged procedures. In this context, the pedicled TRAM flap retains its relevance as a reconstructive strategy dependent on the clinical and institutional context (2).

This paper presents four cases of breast reconstruction using the TRAM flap, evaluating age, operative time, length of hospital stay, postoperative outcomes, and complications.

The pedicled TRAM flap relies on vascularization from the superior epigastric arteries, which allows the transfer of abdominal tissue without the need for microvascular anastomosis.

### ARTICLE DETAILS

**Published On:**  
17 August 2026

**Available on:**  
<https://ijmscrs.com>

### INTRODUCTION

Autologous breast reconstruction represents a fundamental component in the comprehensive management of patients undergoing mastectomy for breast cancer. For decades, the pedicled TRAM (Transverse Rectus Abdominis Myocutaneous) flap was one of the most widely used techniques due to its vascular reliability and surgical reproducibility.

### OBJECTIVE

To present the outcomes of four breast reconstruction cases achieving favorable aesthetic results at a breast cancer referral center in Mexico City, where microvascular surgery is unavailable and patient out-of-pocket costs are a limiting factor.

### Case 1

A 53-year-old female diagnosed with left breast cancer and positive for the BRCA1 gene. The patient initially underwent immediate breast reconstruction with bilateral tissue expander placement. During the postoperative period, she experienced exposure of the left implant. Due to limited financial resources, the patient requested a single-stage reconstructive alternative. A pedicled TRAM flap was performed on June 7, 2023, with an operative time of 240 minutes. No postoperative complications occurred, and she was discharged on the third day with an adequate aesthetic result and high patient satisfaction.

## TRAM Flap in Breast Reconstruction: A Forgotten Technique? Case Report Series at A Breast Cancer Referral Center in Southern Mexico City



### Case 2

A 49-year-old female presented with a 11x11cm Phyllodes tumor in the left breast. Resection was performed by the surgical oncology department, leaving a skin defect 12cm in diameter. A TRAM flap reconstruction was performed on April 23, 2019, with a total operative time of 190 minutes.

There were no immediate complications, and the patient was discharged on the third postoperative day. During follow-up, mild abdominal bulging was noted without palpable hernias, which remains under surveillance. The patient achieved an adequate aesthetic outcome.



### Case 3

A 42-year-old female presented with sequelae of right breast cancer, having undergone a mastectomy one year prior. She desired reconstruction but lacked the financial means for a two-stage surgical approach. A TRAM flap was performed on September 7, 2021. To achieve contralateral symmetrization, a 275cc breast implant was placed in the

right breast and a 375cc implant in the left breast. The total operative time was 300 minutes. The patient developed a complication of wound dehiscence in the abdominal region, which resolved via secondary intention healing. The length of hospital stay was 3 days, resulting in an adequate aesthetic outcome and patient satisfaction

## TRAM Flap in Breast Reconstruction: A Forgotten Technique? Case Report Series at A Breast Cancer Referral Center in Southern Mexico City



### Case 4

A 56-year-old female presented with sequelae of right breast cancer, having undergone a mastectomy two years prior. She desired reconstruction but lacked the financial resources for a two-stage procedure. A TRAM flap was performed on

October 9, 2020, with an operative time of 240 minutes. The patient was discharged on the third day without postoperative complications, achieving an adequate aesthetic outcome and high satisfaction. The patient is currently seeking nipple-areola complex (NAC) reconstruction.



# TRAM Flap in Breast Reconstruction: A Forgotten Technique? Case Report Series at A Breast Cancer Referral Center in Southern Mexico City

## RESULTS

| Age | Time        | Length of Stay | Complications              | Patient Satisfaction |
|-----|-------------|----------------|----------------------------|----------------------|
| 53  | 240 minutes | 3 days         | No                         | Yes                  |
| 49  | 220 minutes | 3 days         | Bulging                    | Yes                  |
| 42  | 300 minutes | 3 days         | Abdominal wound dehiscence | Yes                  |
| 56  | 240 minutes | 3 days         | No                         | Yes                  |

In our patient cohort, operative times ranged between 220 and 300 minutes. As is well established, surgical duration is a critical postoperative factor determining a higher risk of complications, such as deep vein thrombosis (DVT) or pulmonary embolism (PE). Therefore, the time required to perform the TRAM flap did not compromise our patients' safety profiles.

All four patients were discharged on the third postoperative day and experienced only minor complications that did not require surgical reintervention, a favorable contrast to the inherent risk of flap failure associated with microvascular flaps such as the DIEP flap.

Successful reconstructive satisfaction was achieved in all patients; however, objective assessment tools, such as the BREAST-Q, were not utilized to obtain measurable data.

## DISCUSSION

In our case series, the operative time ranged from 190 to 300 minutes, a range comparable to or even lower than that reported for autologous microsurgical reconstructions like the DIEP flap, where average operative times can exceed 6–8 hours depending on the surgical team and the learning curve [1,2].

Surgical duration is a critical determinant of postoperative morbidity, as prolonged times are associated with an increased risk of venous thromboembolism (VTE), deep vein thrombosis, and pulmonary complications [3,4]. Recent studies in autologous breast reconstruction have demonstrated that each additional hour of surgery increases the risk of thromboembolic events and systemic medical complications [3].

In this context, the operative range observed in our patients suggests that the pedicled TRAM flap allows for efficient reconstruction in terms of time, without exposing patients to additional risks derived from prolonged surgeries. This is particularly relevant in patients with comorbidities or intermediate anesthetic risk, where minimizing operative time can directly impact overall patient safety [4].

All four patients were discharged on the third postoperative day with favorable progression and only minor complications that did not require surgical reintervention. In contemporary

literature, the reintervention rate in free flaps like the DIEP due to vascular compromise ranges from 5–15%, with total flap loss reported between 1–5% [1,5]. Although these rates are low in high-volume centers, they imply an inherent risk tied to the need for microvascular anastomosis and intensive postoperative monitoring.

The pedicled TRAM flap, by not depending on microsurgical anastomosis, eliminates the risk of acute microvascular failure, representing a clear advantage in resource-limited settings or where intensive postoperative monitoring is unavailable [2,6]. Several authors have noted that while the DIEP flap offers lower abdominal site morbidity, the pedicled TRAM flap maintains a high rate of flap viability and low total loss rates, delivering reproducible results [1,6].

Regarding the length of hospital stay, recent comparative studies have shown that Enhanced Recovery After Surgery (ERAS) protocols have reduced hospitalization in autologous reconstructions to 2–4 days for both TRAM and DIEP flaps [7]. Our results align with these contemporary standards, reinforcing that the pedicled TRAM flap does not necessarily imply a prolonged recovery when performed under optimized protocols.

Regarding reconstructive satisfaction, our patients reported subjectively successful outcomes. Current literature emphasizes that post-reconstruction satisfaction depends on volume, symmetry, and natural look rather than exclusively on the technique employed [8]. Nonetheless, the absence of validated tools such as the BREAST-Q limits the objectification of these results, as this instrument is currently the international standard for evaluating quality of life and satisfaction in breast reconstruction [9].

The systematic integration of validated scales in future series would allow for the objective quantification of aesthetic and functional perception, thereby strengthening the scientific impact of the procedure [9].

Taken together, our findings suggest that the pedicled TRAM flap continues to be a safe, efficient, and reproducible reconstructive option, particularly when reduction of operative time and vascular predictability are prioritized. In the microsurgical era, its role should not be interpreted as

## TRAM Flap in Breast Reconstruction: A Forgotten Technique? Case Report Series at A Breast Cancer Referral Center in Southern Mexico City

obsolete, but rather as contextually and strategically indicated [2,6].

### CONCLUSION

In the microsurgical era, the pedicled TRAM flap remains a valid tool when correctly indicated. Innovation does not necessarily imply absolute replacement, but rather the expansion of the therapeutic spectrum. The pedicled TRAM flap remains a pragmatic and contextualized reconstructive strategy, focusing on the social and economic environment, as well as the available resources of each institution.

### REFERENCES

- I. He WY, et al. Complications and patient-reported outcomes after TRAM and DIEP flaps: systematic review and meta-analysis. *Plast Reconstr Surg Glob Open*. 2020;8:e3120.
- II. Semple JL, et al. A safe and efficient technique for pedicled TRAM flap breast reconstruction. *Plast Reconstr Surg*. 2023;151:1022e-1034e.
- III. Taghioff SM, et al. Risk stratification of surgical-site outcomes by BMI and flap type in autologous breast reconstruction. *J Plast Reconstr Aesthet Surg*. 2023;80:115-125.
- IV. Pannucci CJ, et al. Evaluation of the Caprini model and venous thromboembolism risk in plastic surgery patients. *Plast Reconstr Surg*. 2020.
- V. Li L, et al. Bayesian network meta-analysis of autologous breast reconstruction flaps. *Front Med*. 2024;11:1440139.
- VI. Saks D, et al. Unipedicled TRAM flap breast reconstruction. *StatPearls*. 2025.
- VII. Offodile AC, et al. Enhanced recovery after surgery in autologous breast reconstruction. *Plast Reconstr Surg*. 2021.
- VIII. Yoon JS, et al. Outcomes of pedicled TRAM flap reconstruction. *J Plast Reconstr Aesthet Surg*. 2020.
- IX. Pusic AL, et al. BREAST-Q Reconstruction Module: updated validity and reliability. *Plast Reconstr Surg*. 2020.