

Breast reconstruction through thoracoepigastric fasciocutaneous flap. short case report

Summary

Large chest wall defects develop secondary to tumor resection, radiotherapy, trauma, and infection. Primary goals of chest wall restoration include protecting underlying thoracic structures and preserving respiratory functionality while achieving aesthetic outcomes. Fasciocutaneous flaps have been historically documented as a viable option for breast reconstruction.

Objective: Report a breast reconstruction through thoracoepigastric fasciocutaneous flap in a female patient after breast cancer resection.

Clinical case: 64 years old female patient, with a left breast cancer who was taken to the operating room by the breast oncological service under general anesthesia to perform a Forrest total mastectomy and at the same surgical time an immediate reconstruction through a fasciocutaneous thoracoepigastric flap by the Plastic and Reconstructive Service.

Conclusion: Thoracoepigastric flaps; also referred to as thoracoabdominal flaps have a segmental blood supply. Relevance of segmental abdominal wall anatomy to transverse thoracoepigastric flaps was delineated by Brown et al. in 1975. Three main sources of vessels supply the anterior and lateral abdominal wall: perforating branches of the intercostal and lumbar arteries; perforators of the epigastric arcade; and the superficial inferior epigastric artery. Thoracoepigastric fasciocutaneous is a well-documented reconstructive option to those defects after breast cancer resection with oncological, functional and aesthetic results Figure 1.

Keywords: Thoracoepigastric flap, fasciocutaneous flap, breast reconstruction

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Introduction

Large chest wall defects develop secondary to tumor resection, radiotherapy, trauma, and infection.¹ Reconstructive breast surgery describes techniques that combine the principles of surgical oncology with those of plastic surgery in an attempt to achieve a desirable esthetic result while maintaining low cancer recurrence rate.² Primary goals of chest wall restoration include protecting underlying thoracic structures and preserving respiratory functionality while achieving aesthetic outcomes.³ Fasciocutaneous flaps have been historically documented as a viable option for breast reconstruction Figure 2.



Figure 1 Caracas University Hospital. Caracas, Venezuela.

Case report

64 years old female patient, with a left breast cancer: lobulillar infiltrating breast carcinoma stratification IIIB who was taken to the operating room by the breast oncological service of the Oncological

Hospital “Padre Machado” under general anesthesia to perform a Forrest total mastectomy with a huge thoracic defect (20 x 16 cm) and at the same surgical time an immediate reconstruction through a fasciocutaneous thoracoepigastric flap of 18 x 16 cm by the Plastic and Reconstructive Service. The flap was designed based on the vascular axis of the superior epigastric and the internal mammary artery. A line is drawn that is an extension of the contralateral submammary fold (middle axis of the flap). The width of the flap is obtained by pinching the excess skin in the external thoracic area. The flap covered the entire chest defect. The pivot point of the flap was next to the left border of the sternum. Satisfactory evolution, adequate oncological management and acceptable aesthetic result Figure 3, 4.



Figure 2 Breast Reconstruction through Thoracoepigastric Fasciocutaneous flap.



Figure 3 Double active drainage at the donor site.



Figure 4 Oncological Hospitalary Service "Padre Machado, Caracas, Venezuela".

Discussion

According Simsek Arife (2021) the thoracoepigastric flap technique refers that the incision begins at the inferior border of the mastectomy defect extending from the sternal border to the posterior axillary line, then proceeded down to the area of the anterior superior iliac spine. Perforators of the superior epigastric vessels were preserved.¹ A fact that has relation with our case because was the same surgical approach.

Thoracoepigastric flaps, also referred to as thoracoabdominal flaps, have a segmental blood supply. Relevance of segmental abdominal wall anatomy to transverse thoracoepigastric flaps was delineated by Brown et al. in 1975.⁴ Three main sources of vessels supply the anterior and lateral abdominal wall: perforating branches of the intercostal and lumbar arteries; perforators of the epigastric arcade; and the superficial inferior epigastric artery.⁵

Thoracoepigastric flaps are designed as transposition flaps. However, has no relation by the report of Garcia A, Acea-Nebril et al.⁵ (Local Flaps to Cover Skin Necrosis after Skin-sparing Mastectomy and Prepectoral Reconstruction from PreQ-20 Trial 2024) who said that the thoracoepigastric flap is a rotation advancement flap that allows for the ascension toward the chest of the skin and subcutaneous tissue located in the anterior part of the abdomen. A random pattern flap is performed, with vascular support based on the fifth or sixth perforator of the internal thoracic artery. Its design consists of making

a rectangle with a line in the inframammary fold and another parallel line in the abdomen, with inframammary fold distance determined by the width of the defect to cover. The length of the flap is determined by the distance between the inframammary fold and the most distal portion of the defect to cover.

According Matsen C, Mehrara B et al.⁶ in contrast to lumpectomy, which is an outpatient surgical procedure with very low complication rates, mastectomy with reconstruction generally requires an overnight stay and has higher complication rates. Wound complications, including flap necrosis, are the most common complication and may significantly impact both cosmetic outcomes and costs. Severe flap necrosis may delay adjuvant chemotherapy or radiotherapy.⁶

Reported rates of skin flap necrosis range from 2%–22% in retrospective studies.⁷ This operation carries some risks and complications, including an operation to correct complications (reoperation), spontaneous reopening of the surgical wound (dehiscence), infection, blood pooling outside of a blood vessel (haematoma) and a pocket filled with blood plasma underneath the skin (seroma).⁸ The prolonged wound management with skin flap necrosis, including outpatient appointments, dressings and equipment and possibly repeat admission and surgery if indicated all produce an additional financial burden on health care resources.⁹ No clearly defined course of action exists, with management often decided on a case-by-case basis, in line with the surgeon's preference. The risk of further operation in order to expedite wound healing must be weighed up against a protracted course of wound healing, requiring long-term dressing care.¹⁰

Conclusion

Thoracoepigastric fasciocutaneous is a well-documented reconstructive option to those defects after breast cancer resection with oncological, functional and aesthetic results.

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Conflicts of interest

The author declares no conflicts of interest.

Ethical approval

This research complies with the World Medical Association Declaration of Helsinki on medical protocols and ethics.

References

1. Ertaş N, Yüce S, Özpolat B et al. Göğüs ve karın ön duvarı rekonstrüksiyonlarında torakoepigastrik flep deneyimlerimiz. *Turk J Plast Surg.* 2005;13:170–174.
2. Lee J, Jung JH, Kim WW, et al. Oncologic outcomes of volume replacement technique after partial mastectomy for breast cancer: a single center analysis. *Surg Oncol.* 2015;24(1):35–40.
3. Shah N, Stacia S, Rui Min M, et al. Oncoplastic reconstruction of a large chest wall defect using dual fasciocutaneous flaps: A case report. *Int J Surg Case Rep.* 2022;93:107010.
4. Brown RG, Vasconez LO, Jurkiewicz MJ. Transverse abdominal flaps and the deep epigastric arcade. *Plast Reconstr Surg.* 1975;55(4):416–421.
5. Matros E, Disa J. Uncommon Flaps for Chest Wall Reconstruction. *Semin Plast Surg.* 2011;25(1):55–59.

6. Matsen C, Mehrara B, Eaton A, et al. Skin Flap Necrosis After Mastectomy With Reconstruction: A Prospective Study. *Ann Surg Oncol*. 2016;23(1):257–264.
7. Spear SL, Ducic I, Cuoco F, et al. Effect of obesity on flap and donor-site complications in pedicled TRAM flap breast reconstruction. *Plast Reconstr Surg*. 2007;119(3):788–795.
8. Pruijboom T, Schols R, Van Kuijk S, et al. Indocyanine green angiography for preventing postoperative mastectomy skin flap necrosis in immediate breast reconstruction. *Cochrane Database Syst Rev*. 2020;(4):Art No: CD013280.
9. Lawson EH, Hall BL, Louie R, et al. Association between occurrence of a postoperative complication and readmission: implications for quality improvement and cost savings. *Ann Surg*. 2013;258(1):10–18.
10. Robertson S, Jeevaratnam J, Agrawal A, et al. Mastectomy skin flap necrosis: challenges and solutions. *Breast Cancer - Targets and Therapy*. 2017;9:141–152.