Serratus anterior fascia flap versus muscle flap for implant coverage in immediate subpectoral breast reconstruction

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Introduction

- Breast reconstruction (BR) is an essential component of breast cancer treatment, contributes to quality of life. Implant-based techniques are the most commonly used for immediate reconstruction following mastectomy.
- Subpectoral implant placement offers benefits such as reduced implant palpability and decreased risk of rippling. Complete implant coverage also provides greater protection and prevents lateral migration of the implant.
- Traditionally, the inferolateral coverage in total submuscular reconstruction is achieved using the serratus anterior muscle flap (SMF). However, this approach is associated with potential donor site morbidity. Alternatives include synthetic meshes, acellular dermal matrices (ADMs), dermal flaps, and the serratus anterior fascia flap (SFF) (Figure 1). The high cost limits the widespread use of ADMs.
- The SFF has emerged as a promising autologous alternative. Despite its potential, limited data exist on the use of SFF in immediate BR.
- This study aims to compare clinical, surgical and oncologic outcomes, including time to first adjuvant therapy between patients undergoing subpectoral BR with either the SFF or the SMF for inferolateral implant coverage.

Methods and Materials

- A retrospective review was conducted of 209 medical records of women aged 18 years or older diagnosed with stage I–III invasive breast carcinoma. All patients underwent mastectomy followed by immediate subpectoral implant-based BR and received subsequent adjuvant chemotherapy or radiotherapy at Aristides Maltez Hospital, Salvador-BA, Brazil from January 2018 to December 2022.
- Patients were grouped based on the type of inferolateral implant coverage used: SFF (n=53; 25.4%) or SMF (n=126; 60.3%). Thirty patients with unrecorded flap details were excluded from analysis. Clinical, oncologic, and demographic data were extracted from medical records.
- The time from surgery to the initiation of adjuvant therapy (defined as either first chemotherapy cycle or first radiotherapy session) was calculated.

Results

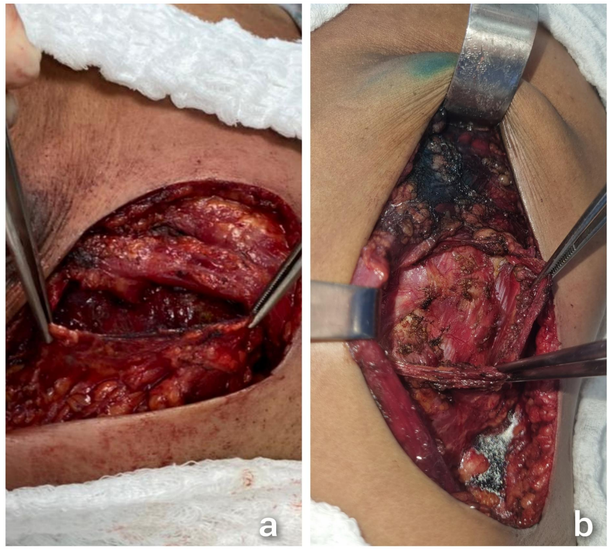


Figure 1. a. serratus anterior fascia flap; **b.** serratus anterior muscle flap

- The median age was 44 years (IQR 38–50), with a predominantly black women population (90.5%).
- The SFF group received significantly larger implants and had a higher rate of direct-to-implant reconstruction.
- The median time from surgery to initiation of adjuvant therapy was 11 weeks in both groups.

Characteristics	All patients n = 179 N (%)	Serratus fascia n = 53 N (%)	Serratus muscle n=126 N (%)	*p*-value
Age at surgery years median (IQR)	44.0(38-50)	44.0(40-50)	44.5(37 – 51)	0.91
Menopausal status (n=158)	122 (72.2)	40 (88.9)	82 (72.6)	0.05
Premenopause	36 (22.8)	5 (11.1)	31 (27.4)	
Postmenopause				
BMI kg/m2 (n=128) median	25.38	25.40	25.36	0.88
Clinical stage (n=149)				0.05
I	23 (15.4)	9 (20.0)	14 (13.5)	
II	89 (59.7)	24 (53.3)	65 (62.5)	
III	37 (24.8)	12 (26.7)	25 (24.0)	
Mastectomy type				0.02
Total	53 (29.6)	8 (15.1)	45 (35.7)	
SSM	99 (55.3)	35 (66.0)	64 (50.8)	
NSM	27 (15.1)	10 (18.9)	17 (13.5)	
Axillary surgery				0.07
SLNB	78 (43.6)	29 (54.7)	49 (38.9)	
ALND	101 (56.4)	24 (45.3)	77 (61.1)	
Implant volume mL (n=126) median (IQR)	350	375	330	0.01
Implant type (n=173)				< 0.01
Direct-to-implant	125 (72.3)	51 (98.1)	74 (61.2)	
Tissue expander	48 (27.7)	1 (1.9)	47 (38.8)	

SLNB, Sentinel Lymph Node Biopsy; ALND, Axillary Lymph Node Dissection; SSM, Skin Sparing Mastectomy; NSM, Nipple Sparing Mastectomy; BMI, Body Mass Index

Conclusions

- **The SFF is a viable and cost-effective alternative to SMF or ADMs in immediate BR. It supports the use of larger implants, does not delay the initiation of adjuvant therapy. These findings highlight the broader applicability of SFF in reconstructive planning, particularly in resource-constrained settings.**

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