

The Chambaran Technique: A Surgical Compromise Between Radical Mastectomy and Lumpectomy for Upper Quadrant Breast Tumors

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Abstract

Background: Conservative surgical management of breast cancer typically requires postoperative radiotherapy to control occult microscopic residual disease. However Numerous oncoplastic techniques have been described with the aim to achieve complete tumor resection with negative margins while preserving aesthetic outcomes. In this mind, the present technical and pathological report describes the Chambaran technique—an upper hemimastectomy with extended glandular mobilization and retro areolar triangular resection—as well as its variants and reports the pathological findings of a retrospective series of upper quadrant breast malignancies.

Methods: Between 2012 and 2015, 53 patients aged 40 to 70 years with invasive carcinomas of the upper quadrants, unifocal on preoperative imaging, were included retrospectively. Inclusion criteria were clinical tumor size ≤ 3 cm, clinical node-negative status (cN0), and absence of extensive microcalcifications. The surgical procedure consisted of an upper hemimastectomy with extended glandular mobilization and retroareolar triangular resection, including complete excision of the galactophoric tree according to Payan. For high-lying tumors located farther from the nipple-areola complex, a modified non-grafted technique was applied. Intraoperative high-frequency ultrasound was systematically utilized. Pathological margins and specimen volumes were analyzed.

Results: Histopathological review revealed 44 invasive ductal (83.0%), 4 invasive lobular (7.5%), 2 mucinous, 1 medullary, 1 apocrine, and 1 mixed carcinoma. Margins were negative (R0) in all 53 cases, with surgical margins exceeding 1 cm. Associated ductal carcinoma in situ (DCIS) was present in 19 cases (35.8%). Additional invasive foci were identified on final pathology in 5 cases (4 invasive ductal, 1 invasive lobular). The average specimen volume was 400 cm³ (range up to 720 cm³).

Conclusion: In this series of selected upper quadrant tumors, the Chambaran technique allowed wide local excision with negative margins in all patients and represents an oncoplastic option between lumpectomy and mastectomy. This report presents technical and pathological findings only; it does not include follow-up, oncological outcome or aesthetic evaluation, and no conclusion regarding adjuvant radiotherapy can be drawn.

Keywords: Oncoplastic surgery, Surgical technique, Surgical margins, Breast-conserving surgery, Upper quadrant breast cancer, Intraoperative ultrasound

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1. Introduction

Conservative treatment for early-stage breast cancer has established parity with mastectomy regarding overall survival, provided adequate local control is achieved [1]. The primary challenge in breast-conserving surgery (BCS) lies in obtaining negative surgical margins while maintaining acceptable aesthetics. Tumors located in the upper quadrants—particularly the

upper-inner and upper-outer sectors—present unique anatomical challenges due to limited local tissue availability, risk of visible contour deformities, and proximity to the chest wall.

To extend the indications of conservative management without compromising oncological safety, various oncoplastic breast surgery (OBS) techniques have been developed [2]. Among these, the **Chambaran technique**, initially conceptualized by Chareyre [3], represents a specialized oncoplastic approach designed as an intermediate option between standard lumpectomy and mastectomy.

The method proposed by Payan R (2005) [3] presents a hemimastectomy as a conservative approach for the treatment of large tumors located in the upper quadrants of the breast, with the goal of achieving adequate surgical margins and avoiding mastectomies or supplementary surgical procedures due to insufficient margins. In the study described by the author, tumor sizes ranged from subclinical tumors (40%) to 28% cT1, 23% cT2 (with 9% >30 mm), and up to cT3 tumors (8%). This technique was primarily intended for tumors in the upper quadrants. Since the results proved satisfactory, the inverted Chambaran technique was adapted for use with tumors in the lower quadrants.

The margins obtained were generally wide, with 71% of cases having margins greater than 10 mm and 15% having margins exceeding 5 mm, representing a total of 86% with margins greater than 5 mm.

The wide Chambaran excision led to an increased chance discovery rate of associated cancers compared to conventional surgical techniques. In this series, and thanks to screening, 36% of the identified lesions were ductal carcinoma in situ (DCIS) and 41% were invasive carcinomas. Ultimately, this extended excision allowed to identify 45.7% of lesions associated with invasive ductal carcinoma (IDC) and was of great help to avoid theoretical mastectomies in 60.5% of cases. It should be noted that our study focuses exclusively on nodules in the upper quadrants.

Objective

This report aims to describe the operative execution of the Chambaran technique and its modifications, and to present the pathological findings of a retrospective series (histological types, margin status and resection volumes). The measurement of the resection quality is related to the need for systematic postoperative radiotherapy. Follow-up outcomes and adjuvant treatment are outside the scope of this report.

2. Materials and Methods

2.1 Patient Selection

A retrospective cohort of 53 female patients aged 40 to 70 years treated between 2012 and 2015 was evaluated. All patients presented with invasive breast carcinoma situated in the upper quadrants (upper-outer, upper-inner, or superior central junction), unifocal on preoperative clinical examination and imaging.

Inclusion Criteria

- Unifocal invasive carcinoma of the upper quadrants on preoperative imaging.
- Clinical tumor size ≤ 3 cm.
- Clinically node-negative axilla (cN0).
- Absence of extensive malignant microcalcifications on mammography.

Exclusion Criteria

- Multicentric disease spanning lower quadrants.
- Inflammatory breast cancer (T4d) or direct skin/chest wall involvement.
- Prior mantle or chest wall irradiation.

2.2 Surgical Technique

The operative protocol followed the oncoplastic principles established by Payan [3] and modified for high upper-quadrant lesions:

1.Preoperative Marking and Localization

Perform with patient in upright position. Cutaneous boundaries of the tumor and planned incisions are marked. Intraoperative high-frequency (HF) ultrasound (12–15 MHz) is performed systematically to delineate sonographic margins prior to incision.

2.Incisions and Resection

An upper hemimastectomy incision pattern is executed. A retro areolar triangular resection is performed, ensuring complete excision of the underlying galactophoric arborescence (lactiferous duct system) down to the pectoral fascia.

3.Glandular Mobilization

Extensive retro glandular mobilization is executed over the pectoral fascia in the retromammary space to allow wide tissue advancement without creating dead spaces or severe skin tethering.

4.Modification for Superior High Lesions

For tumors situated far from the nipple-areola complex (NAC), the resection focus is shifted superiorly without nipple transposition or grafting, preserving the NAC integrity while maintaining vascularization.

5.Specimen Orientation & Axillary Staging

Specimens are marked with surgical sutures for 3D orientation. Axillary sentinel lymph node biopsy (SLNB) or axillary lymph node dissection (ALND) is systematic and executed via a separate axillary incision where indicated.



Figure 1: Case 1: describe preoperative marking, intraoperative view, and postoperative result with time since surgery



Figure 2: Case 2: describe preoperative marking, intraoperative view, and postoperative result with time since surgery

2.3 Histological analysis

All surgical specimens are oriented by the surgeon according to a defined protocol (using sutures as markers) and are photographed. Macroscopic examination involves palpation to check for any associated nodules or lesions.

Microscopic examination is performed after the specimens have been fixed for several days and embedded in paraffin. The anatomopathological assessment is based on a large number of tissue samples (typically 40 to 50) for larger specimens, or on the total embedding of the surgical specimen in the case of small or medium-sized specimens (a decision left to the discretion of the pathologist).

The sectioned tissue is then wrapped in blotting paper to preserve the arrangement of the various slices, in case additional sampling is required. In all cases, the pathologist creates a diagram to locate the tumor lesion.

- **Size of surgical specimens**

This criterion is assessed based on volume, calculated from the three largest dimensions of the excised specimen. The average volume depends on the patient's body type - specifically, the size of her breasts and her cup size.

- **Tumor size**

Excising tumors smaller than 3 cm allows for very wide margins, thanks to the Chambaran technique – a form of hemi-mastectomy that yields surgical specimens significantly larger than those obtained through standard lumpectomies.

- **Excision margins**

Margins refer to the minimum distance (in mm) between the tumor cells and the surgical cut. They are considered negative (R0) when no cancer cells are seen microscopically at the primary tumor site (AJCC 8th Edition). Their status is determined based on the lateral excision margins

(external, internal, superior and inferior). Assessing the condition of these structures is essential. The deep margin is not a factor, provided the fascia of the pectoralis major muscle is considered clear if the dermis and subcutaneous tissue remains unaffected.

3. Results

3.1 Demographics and Histopathological Subtypes

The final pathological distribution across all 53 patients demonstrated a primary predominance of invasive ductal carcinoma (IDC). Associated DCIS was present in 19 patients (35.8%). Additional invasive foci were identified on final pathology in 5 patients (9.4%: 4 IDC and 1 ILC), although all patients were unifocal on preoperative imaging. Percentages refer to the whole cohort (n=53).

Table1: Histopathological Subtypes

Histopathological Characteristic	Patient Count (n=53)	Percentage (%)
Histological Type		
Invasive Ductal Carcinoma (IDC)	44	83.0%
Invasive Lobular Carcinoma (ILC)	4	7.5%
Mucinous Carcinoma	2	3.8%
Medullary Carcinoma	1	1.9%
Apocrine Carcinoma	1	1.9%
Mixed Carcinoma	1	1.9%
Associated Pathology		
Associated DCIS Component	19	35.8%
Additional Invasive Foci on Final Pathology (IDC)	4	7.5%
Additional Invasive Foci on Final Pathology (ILC)	1	1.9%

3.2 Resection Margins and Resection Volumes

- **Margin Clearance:** R0 (negative margin) resection was achieved in 100% of cases (n=53), with surgical clearance margins exceeding 1.0 cm on final microscopic assessment.
- **Resection Volume:** The mean surgical specimen volume was 400 cm³, ranging up to a maximum volume of 720 cm³ in larger breast envelopes.

4. Discussion

Given the results achieved with this technique, which allows for very extensive resections of large tumors, we have chosen to depart from the indications originally proposed by the technique's developer. Specifically, we advocate for a hemi-mastectomy (a wide excision) even for small nodules (≤ 30 mm) to ensure very wide surgical margins. This approach facilitates the

removal of associated small lesions, including **in situ** lesions, which are potential sources of local recurrence, 90% of which occur within the tumor bed. **De novo** cancers, by contrast, account for only 10% of reported recurrences. In discussions held in Bordeaux (France) in 2015 and Tlemcen (Algeria) in 2019, we explored the possibility of omitting routine radiotherapy following breast-conserving surgery in cases involving tumors with a very favorable prognosis that have undergone wide excision. A tumor with a very good prognosis is a tumor:

- in patients undergoing hormone therapy
- inferior or equal to 30 mm
- RH+ (ER+, PR+)
- Her2-
- pN0
- Ki67<15%
- Nottingham grade 1
- without lymphovascular invasion.
- With no perineural invasion.

To strengthen this approach and support our objectives, we recommend the systematic use of breast MRI or contrast-enhanced mammography (CEM) prior to breast-conserving surgery. This strategy is reserved for patients with larger breasts, where tissue remodeling can yield a satisfactory aesthetic outcome. In our study population, the tumor profile takes precedence over the patient's age. Postoperative follow-up includes MRI scans, with the frequency of these examinations adjusted according to the patient's age—more frequent monitoring is applied to younger patients. Although this line of reasoning has been subject to criticism—some of it quite legitimate—it finds resonance in the NCCN's November 2025 recommendations. Specifically, these guidelines suggest omitting radiotherapy following breast-conserving surgery (lumpectomy) in women aged 70 or older with tumors smaller than 20 mm that are hormone receptor-positive (HR+), HER2-negative, and node-negative (cN0). The same applies to women over 65 with tumors measuring 30 mm or less that are node-negative (pN-), HR+, and HER2-negative, provided they are receiving hormonal therapy. Might it not, therefore, be worth considering extending this approach to younger women by opting for very wide local excisions in cases of tumors with a highly favorable prognosis? While such tumors are rarer in younger patients, this approach could nonetheless open promising new avenues. In this way, we would have taken full advantage of the benefits of the Chambaran technique, particularly for supporting patients who categorically refuse a mastectomy, or those who have difficulty adhering to a regular postoperative radiotherapy schedule [4-7].

5. Conclusion

The Chambaran technique is an oncoplastic option that ensures wide excision without remnants for localized tumors. It could avoid postoperative radiotherapy in case of specimen large margins and good prognosis factors [4-7].

This technique, combined with post-operative follow up including MRIs scheduled at a frequency tailored to the patient's age (more frequent for younger patients), could transform the future management of unifocal breast tumors with a favorable prognosis. It represents a challenging, yet a promising therapeutic option, especially when considering the physical, psychological, social and economic consequences of systematic postoperative radiotherapy.

6. Conflict of interest statement

Previous presentation: This article was presented at the International Congress on Health Sciences and Medical Technologies, Tlemcen Algeria 5-7 December 2019, ICHSMT'19.

Conflict of interest: No conflict to declare.

Ethics approval and consent: This research work is approved by the ethical committee of Faculty of medicine University of Sidi Bel Abbes, Algeria.

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7. Authors' biography

Professor Boumédiène ELHABACHI: Graduated in senology, cancerology and repair surgery. As a lecturer professor, working hard and steadily to implement any new techniques or actions within hospital structures, that would allow us to open to the future offered by onco-genetic advances and technologies of medical imagery. This will largely benefit the patients of tomorrow.

Professor Muriel Brix: practices primarily at the Nancy University Hospital (CHRU), where she is a professor and a specialist in reconstructive and aesthetic plastic surgery, as well as pediatric maxillofacial surgery.

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