

Conservative Surgery in the Treatment of Breast Cancer in Women at the CHU Point G Hospital, Mali

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Abstract

Original Research Article

Background: Conservative surgery is currently a major option in the surgical treatment of breast cancer in women. This study aimed to report our experience with this practice in a resource-limited setting in Mali. **Patients and Methods:** The study was a cross-sectional, descriptive, and retrospective study involving breast cancer patients treated with conservative surgery between January 2016 and December 2023 in the Surgery B Department of the Point G University Hospital. Data collected included: patient characteristics, clinical features of the lesions, reasons for choosing conservation, surgical techniques and their indications, and oncological and cosmetic outcomes. **Results:** Conservative surgery was performed in 73 patients, representing 32.6% of female breast cancers. The mean patient age was 39.6 years. Tumors were early stage (Tis, T1, and T2) in 54.8% of cases. Breast-conserving surgery was often preceded by neoadjuvant chemotherapy in 60.3% of patients. Oncoplastic techniques were used in 82.2% of cases. The adjuvant radiotherapy success rate was 45.2%. Results were marked by a local recurrence rate of 5.5% and a good cosmetic outcome in 76.7% of cases. **Conclusion:** Despite local constraints, breast-conserving surgery is feasible in Mali, with good cosmetic and oncological results. Improving access to screening, radiotherapy, and specialized training is essential to expand its use.

Keywords: breast cancer, breast-conserving surgery, oncoplastic surgery, Mali.

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INTRODUCTION

Breast cancer is the second most frequently diagnosed cancer in women, with an annual incidence rate of 11.6% and a mortality rate of 6.9%, according to Globocan 2022 data [1]. For several decades, the standard treatment for breast cancer has been mastectomy [2], a procedure consisting of the total removal of the breast. This procedure, although effective, is perceived as traumatic due to the symbolic and functional value associated with this organ. In 1952, Keynes introduced a less mutilating approach by combining lumpectomy with external and interstitial radiotherapy [3]. Since the 1980s, conservative treatment has emerged as a major option, with protocols integrating breast conservation combined with adjuvant irradiation, offering very encouraging results [4-6]. Breast-conserving surgery consists of partial excision of the mammary gland in healthy areas, combined with glandular remodeling aimed at preserving aesthetics [7]. Numerous studies show that lumpectomy followed by radiotherapy offers results equivalent to mastectomy in terms of overall survival and recurrence-free survival

[8,9]. Data from various randomized trials confirm this equivalence in overall survival between radical surgery and breast-conserving surgery, subject to optimal management [6, 9,10]. The indications for the latter mainly concern early tumors (T1 and T2, less than 5 cm, non-inflammatory) [8,10]. Mammographic screening programs have made it possible to detect subclinical tumors, thus increasing the frequency of breast-conserving surgery. However, in Mali, the lack of systematic screening favors a predominance of advanced forms, with 44.9% of cases at stage III and 11.2% at stage IV, according to a study conducted at the second largest hospital in Mali, Gabriel Touré University Hospital [11]. In this context, oncoplastic techniques, combining oncological and plastic surgery, as well as adjuvant treatments (chemotherapy, radiotherapy, hormone therapy), have expanded the indications for conservative surgery, including for tumors larger than 5 cm [12,13]. Despite evidence of the effectiveness of these treatments for early cancers, major challenges persist in resource-limited countries where diagnosis is most often delayed. These challenges include inequalities in access to care, lack of equipment, and specialized training [14-16]. Is

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conservative surgery feasible in this context? The aim of the study was to report our experience of conservative surgery in the treatment of breast cancer in women in terms of indications, results and limitations of this practice in Mali.

PATIENTS AND METHODS

The study was descriptive and cross-sectional, including breast cancer patients treated with conservative surgery between January 2016 and December 2023 in the Surgery Department B of the Point G University Hospital. Data were collected retrospectively using the department's archived medical records and recorded on a specially prepared form. These data included: patient characteristics (age, risk factors), clinical characteristics of the lesions (clinical appearance, topography, stage of progression, histological type, duration of progression), reasons for choosing conservation, surgical techniques and their indications, oncological outcomes (complications, recurrence, survival), and aesthetic outcomes (cosmetic assessment, patient satisfaction). All patients were contacted by telephone to collect information on oncological outcomes, survival, and aesthetic outcomes.

RESULTS

Frequency: Of the 224 patients treated for breast cancer, 73 underwent conservative surgery, representing a frequency of 32.6%.

Patient characteristics: The mean age of patients was 39.6 ± 12.3 years (range 16 to 63 years). Risk factors were identified in 69 patients, including obesity/overweight (39.7%), family history (27.5%), hormonal treatment (35.6%), and benign breast disease (5%).

Clinical and histopathological characteristics of the cases: The main reason for consultation was a breast nodule (97.3%) and breast discharge (2.7%). The lesions were located on the left breast in 56.2% of cases, the right breast in 39.7%, and bilateral in the remaining cases. Table I Tumors were smaller than T3 in 54.8%, with T3 and T4 representing 45.2%. The mean duration of lesion progression was $5.6 \text{ months} \pm 7.9$. The main breast tumor locations were the superior-outer (56.2%) and inferior-inner (17.8%) quadrants. Table II Histological types primarily included nonspecific invasive carcinoma (91.8%), followed by high-grade phyllodes tumors (6.8%) and Paget's disease of the nipple (1.4%).

Reasons for choosing breast conservation: Reasons for choosing breast-conserving surgery included refusal of mastectomy due to near-disappearance of the tumor after neoadjuvant chemotherapy (45.2%) and early stages (54.8%). Surgical practices and protocols followed: Treatments included chemotherapy (91.8%), surgery (100%), and adjuvant radiotherapy (45.2%). The main procedures were quadrantectomy with axillary

dissection (56.2%), lumpectomy (39.7%), and pamectomy in 1 case. Table III Oncoplastic techniques were used in 82.2% of cases, including the Mackissock method (Fig. 1) (30.1%), the Dufourmentel and Mouley method (Fig. 2) (27.4%), and other specific techniques depending on tumor location (Table IV). These techniques were indicated in the superior and inner quadrants for Batwin (Fig. 3) (12.3%), in lesions of the superior and inferior quadrants for Mackissock (30.1%), and in lesions of the superior and external quadrants for Dufourmentel (27.4%). Table IV

The round block technical has also been used in some peri-areolar locations, notably (Fig. 4).

Oncological results: Resection was complete (R0) in all cases. The 5-year follow-up showed a 10.9% loss to follow-up rate, a 31.5% overall survival rate, and a 5.5% local recurrence rate (Table V). Complications included infections (3 cases) and lymphoceles (1 case). Aesthetic results: The Clough cosmetic assessment showed 76.7% type I (normal-appearing breasts) and 21.9% type II (deformed breasts) results. According to a satisfaction scale, 73.9% of patients were very satisfied (Table V).

DISCUSSION

The aim of the study was to report the results of our practice in breast-conserving surgery. Some shortcomings may have influenced the results, including:

- selection bias in data collection (single center, missing or incomplete records),
- limited sample size
- insufficient follow-up of patients with a significant number lost to follow-up
- limited follow-up times (patients recruited after 2020 did not have a 5-year follow-up),
- specific challenges of the local context (lack of infrastructure, regional inequalities).

Despite these limitations, this study, conducted at the Point G University Hospital in Bamako, provides relevant information on the breast-conserving approach to the management of breast cancer in women and allows for comparison with those of other studies conducted in different geographic regions and clinical settings.

Frequency:

In our series, conservative surgery affected 73 patients out of 224 breast cancer cases treated, representing a frequency of 32.6%. This rate appears relatively low compared to data from the international literature, where reported frequencies range between 50% and 80% in high-income countries [6, 9, 17, 18]. A retrospective study conducted at a leading center in France showed a significant increase in conservative surgery between 2016 and 2023, from 66.2% to 80.7%, linked to the rise of oncoplastic surgery [17]. This trend is explained in particular by changes in surgical practices, improvements in imaging techniques, and

better selection of eligible patients. The relatively low rate of conservative surgery in our setting could be explained by unfavorable tumor characteristics (size, multifocality, lymph node involvement) and limitations in access to radiotherapy. Indeed, conservative surgery can only be considered if postoperative radiotherapy is available within a reasonable timeframe [18,19]. Furthermore, a survey of surgeons in India highlighted that the lack of specific training in oncoplastic surgery and the lack of radiotherapy infrastructure were major obstacles to the practice of conservative surgery [18]. Surgeons trained in specialized breast surgery were 35 times more likely to offer conservative surgery, and those practicing in a center equipped with radiotherapy were 9 times more likely to recommend it [18]. Oncologically, several meta-analyses have confirmed the equivalence of results in terms of overall survival between conservative surgery followed by radiotherapy and mastectomy in patients with early-stage breast cancer [19]. In addition, conservative surgery is associated with a better postoperative quality of life, a preserved body image and a better psychological experience [20]. Finally, the emergence of oncoplastic surgery has broadened the indications for breast conservation, including for intermediate-sized or locally advanced tumors, thanks to the use of breast remodeling techniques [17]. These advances should encourage a wider adoption of conservative surgery in settings where it remains limited.

Patient and clinical case characteristics:

With an average age of 39.6 years, the population is predominantly young. This profile could reflect genetic, environmental, or healthcare-related differences. Furthermore, the prevalence of advanced forms (T3 and T4 in 45.2% of cases) highlights a delay in diagnosis, often due to a lack of systematic screening and low awareness [11]. Reasons for choosing breast conservation: The main reasons justifying the use of conservative surgery included: early forms (Tis, T1, T2), tumor regression after neoadjuvant chemotherapy, and patient preference. Indeed, some tumors, even those classified as T3 or T4 (45.2%), responded well to neoadjuvant chemotherapy, with near-disappearance of the initial lesion, prompting patients to refuse any mastectomy offer. The use of conservative surgery after tumor regression on neoadjuvant chemotherapy and according to the patient's opinion, is in line with international recommendations that highlight the key role of neoadjuvant chemotherapy in making patients initially deemed inoperable conservatively eligible for conservation, as well as the patient's choice [21,22]. The role of patients in decision-making was also an important factor, highlighting the importance of clear communication and psychological support to meet their expectations. Early stages represented the majority of indications for conservation, at 54.8%, in accordance with the initial criteria that prevailed regarding the choice of conservative surgery [6, 8,10]. Retroareolar cancers are most often treated by breast ablation, whereas it has

now been demonstrated that breast conservation for a central tumor is entirely justified on oncological grounds as soon as the excision of the lesion passes into a healthy zone [22]. The main problem is related to invasion of the nipple-areolar plaque (MAP) [22]. Conventionally, breast-conserving treatment is performed for unifocal infiltrating tumors up to 3 centimeters histologically measured with healthy gland margins at the periphery of the tumor. This value of three centimeters can be adjusted depending on the tumor volume to breast volume ratio, thanks to the combined use of plastic surgery techniques to ensure perfect oncological excision and quality aesthetic results. Lumpectomy techniques must offer maximum oncological safety with minimal risk of local relapse. This is made possible by the integration of breast plastic surgery techniques [22]. Contraindications to conservative treatment typically remain the existence of multifocal tumors, certain T4 tumors, and inflammatory tumors [22].

Oncoplastic techniques and protocols followed:

Oncoplastic techniques were widely used (82.2%), reflecting successful adaptation of practices to local constraints. Methods such as those of Mackissock and Dufourmentel have made it possible to treat tumors in complex locations while maintaining good cosmetic results [22]. However, the limited use of adjuvant radiotherapy (45.2%) represents a major shortcoming, likely related to a lack of equipment, which could compromise locoregional tumor control. Indeed, the ability to perform radiotherapy, even abroad, was a requirement for accepting conservative surgery. However, some patients did not honor their commitment for various reasons (home equipment failure, limited resources, negligence). The frequent use of neoadjuvant chemotherapy (60.3%) in this cohort highlights its importance in improving operability and expanding the indications for conservative surgery. The decision-making factors influencing the type of incision are: - the proximity of the tumor to the skin; - the tumor location: superior-external quadrant, inner quadrant, inframammary fold, union of the inferior quadrants, proximity to the nipple-areolar plate; - the breast volume; - the possible conversion to mastectomy after definitive histological results, with the possibility of immediate reconstruction; which is often foreseeable during the initial management of the patient [22].

Oncological results:

The local recurrence rates in this study (5.5%) corroborate international data, where recurrences after conservative surgery vary between 5% and 10% depending on the techniques used and the quality of adjuvant management [6, 9, 14, 16]. This suggests that, despite contextual limitations, the surgical protocols adopted are effective. Hence the importance of standardized protocols and adjuvant radiotherapy, used here in only 45.2% of cases. However, the low five-year overall survival rate (31.5%) is concerning and reflects the challenges of long-term follow-up, treatment of

advanced forms, and frequent loss to follow-up (10.9%). These results highlight the urgent need to strengthen

local radiotherapy capacity and standardize treatment protocols to improve long-term outcomes.

Table I: Main breast tumor locations

Affected breast	Frequency	Percent
Tumor location(n=73)		
Left breast	41	56.2
Right breast	29	39.7
Bilateral	3	4.1
Affected quadrant (n=73)		
QSE	41	56.2
QII	13	17.8
QSI	9	12.4
QIE	8	11
Retro-areolar	2	2.7

Table II: Tumor Size

Tumor Size	Frequency	Percent
Tis	2	2.7
T1	9	12.3
T2	29	39.7
T3	26	35.6
T4	7	9.6
Total	73	100

Table III: Therapeutic wherewithal Deployed

Therapeutic wherewithal	Frequency	Percent
Chemotherapy (n=67; 91.8%)		
Neoadjuvant	44	60.3
Adjuvant	23	31.5
Surgery (n=73; 100%)		
Quadrantectomy	43	58.9
Lumpectomy	29	39.7
Pamectomy	1	1.4
Radiotherapy	33	45.2

Table IV: Main surgical techniques and their indications

Topography of the lesions	Central	QSI/QII	Inf. quadrant	Sup. quadrants	Total
Surgical technique					
Batwin type omega scar	0	2(22.2%)	5(55.6%)	2(22.2%)	9(12.3%)
Inverted T-shaped scar with inferior pedicle	0	0	0	1(100%)	1(1.4%)
Inverted T-shaped scar with superior pedicle	0	0	2(50%)	2(50%)	4(5.5%)
Mackissock bipedicular inverted T scar	1(4.5%)	0	8(36.4%)	13(59.1)	22(30.1%)
External scar by radial incision	0	0	2(16.7%)	10(83.3%)	12(16.4%)
Dufourmentel and Mouley eternal scar	1(5%)	0	2(10%)	17(85%)	20(27.4%)
Round Block periareolar scar	1(25%)	0	0	3(75%)	4(5.5%)
Total	3(4.1%)	2(2.7%)	19(26%)	49(67.1%)	73(100%)

Table V: Oncological and aesthetic results

Results	Frequency	Percent
Oncological results (n=73)		
Alive without recurrence	19	26%
Alive with recurrence/mastectomy	4	5,5
Patients who did not reach 5 years of follow-up	41	56,2%
Lost follow-up	8	10,9
Deaths Deaths	1	1,4
Clough and Baruch Sequelae (n=73)		
Type I (normal-appearing breast without deformity but asymmetry in volume and shape)	56	76,7

Type II (deformity that can be treated by partial breast reconstruction)	16	21,9
Type III (major deformity with diffuse fibrosis requiring a mastectomy)	1	1,4
Patient satisfaction (n=73)		
Highly satisfactory	54	73,9
Satisfactory	12	16,4
Not very satisfactory	5	6,8
Not satisfied	2	2,7

**A: preop. drawing, QSE lesion****B: Sup. pedicle de-epidermization****C: Inf. pedicle de-epidermization****D: remodeling after resections****E: Profile 1 week later****F: Photo 6 months later****Figure 1: oncoplasty using the bipedicular technique (Mackissock) then contralateral symmetrization****Figure 2: oncoplasty (quadrantectomy) according to external scar (Dufourmentel and Mouly)****A: preoperative tracing****B: Scar at the end of the procedure****Figure 3: oncoplasty for superior quadrant junction tumor excision (Batwing)**

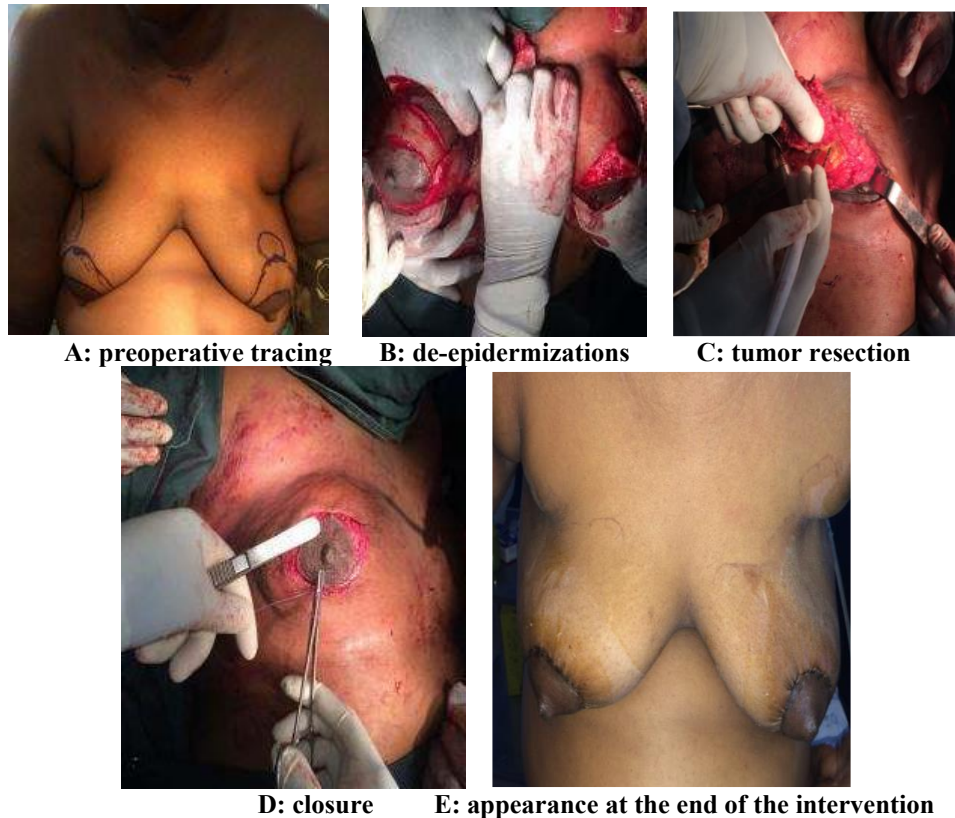


Figure 4: oncoplasty for peri-areolar tumor excision and symmetry (Round Block)

Aesthetic outcomes: Predictors of poor aesthetic outcomes include:

- tumor size relative to breast volume: for some, significant tumor resection of more than 20% of breast volume poses a risk of poor outcomes;
- tumor location, particularly tumors located in the lower, internal, or central quadrants, or in the inframammary fold, are major risk factors for poor aesthetic outcomes [22]. These factors justify the use of higher-level oncoplastic techniques such as Mackissock, Dufourmentel, Batwin, or Round-Block. The aesthetic assessment of our series revealed a significant proportion (76.7%) of cases classified as type I according to Clough [23,24] (normal-appearing breasts) and 73.9% of patients were highly satisfied. These results demonstrate the effectiveness of the oncoplastic techniques used and the importance of considering aesthetics as a key factor in breast cancer management [22]. Challenges and limitations in a resource-limited context: The lack of systematic screening programs in Mali explains the high prevalence of advanced forms (T3 and T4 in 45.2% of cases), thus limiting the indications for conservative surgery [11,10]. Material and technical constraints, including the lack of radiotherapy equipment and specialized training, also reduce therapeutic options [13-15]. The study highlights the role of oncoplastic techniques, used in 82.2% of cases, in expanding the indications for conservative

surgery. These techniques, such as the Mackissock and Dufourmentel methods, help preserve aesthetic results even in complex clinical situations [22].

CONCLUSION

Despite local constraints, conservative surgery is feasible in Mali, with good cosmetic and oncological results. Improving access to screening, radiotherapy, and specialized training is essential to expand its use.

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