

Retrospective analysis of the surgical management of breast cancer at the Yaoundé General Hospital

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Abstract

Introduction: Breast cancer is the most common female cancer worldwide. Its management has evolved overtime. This study aimed to review the surgical management of breast cancer at the Yaoundé General Hospital (YGH) from 2018 to 2023.

Methodology: We conducted a retrospective cross-sectional study at the YGH. We studied the records of patients who underwent breast cancer surgery from January 2018 to July 2023. Data were analysed using R version 4.2.3. Quantitative variables were represented by means or medians, and qualitative variables by proportions. The χ^2 test was used to assess associations between variables.

Results: We reviewed 202 surgically managed breast cancer cases. The median age was 46 years, mostly women (196/202, 96%). Most patients had a breast nodule, usually in the upper outer quadrant of the left breast. Advanced disease was common, with 95 (47%) at stage T4 and 108 (53.5%) involving lymph nodes. Invasive ductal carcinoma was the most common histologic type (161, 79.7%). Mastectomy was the predominant surgical technique (186/202, 92.08%), while 16 (7.9%) patients had conservative surgery. Tumour stage influenced surgery type. Mastectomy was mainly for stage T3 (41/186, 22%), oncoplastic procedure for T2 (5/8, 62.5%) and lumpectomies for T1 (6/8, 75%). Postoperative complications occurred in 41 (20.3%) patients, with superinfection and lymphocele being the most common.

Conclusion: Breast cancer at YGH is frequently diagnosed at advanced stages, with invasive ductal carcinoma being the most common type. Radical mastectomy with axillary dissection is the most common surgical approach. Postoperative complications include superinfection and lymphocele.

Keywords: *breast cancer, mastectomy, oncoplastic surgery, lymphocele, superinfection, Yaoundé*

Introduction

Breast cancer is a malignant tumour characterised by the uncontrolled growth of breast epithelial cells due to the loss of normal growth regulation mechanisms. Owing to its

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frequency and severity, it constitutes a major public health concern globally. It is the most commonly diagnosed cancer worldwide and the leading cause of cancer-related mortality among women [1–3]. According to the World Health Organisation and the GLOBOCAN 2022 report, about 2.2 million new cases were diagnosed globally in 2022, with an estimated 670,000 deaths [4, 5]. The disease accounts for approximately 23% of all female cancers and 11.6% of cancers across both sexes [3].

The burden of breast cancer is much higher in high-income countries, with standardised incidence peaks observed in North America, Europe and Australia [5, 6]. In the United States, about 260,000 new cases are reported annually, resulting in approximately 40,000 deaths [2]. Similarly, in France, breast cancer remains the most common malignancy among women, with an incidence rate of 88 per 100,000 in 2012. In sub-Saharan Africa, however, while the incidence is lower, mortality remains significantly higher due to late-stage diagnosis and limited access to quality care. In Cameroon, breast cancer is equally the leading female cancer, with an estimated incidence rate of 27.9 per 100,000 women. It remains the leading cause of cancer-related deaths among women, making it a significant national health concern [3, 5, 7].

Surgical management remains the optimal curative treatment for operable breast cancers. Over the past decades, surgical approaches have evolved remarkably from radical mastectomy to breast-conserving and oncoplastic techniques. Similarly, sentinel lymph node biopsy has replaced extensive lymph node dissection. All these attest to advances in early detection, systemic therapies and reconstructive options [8–10]. The introduction of organised screening, radiotherapy and neoadjuvant chemotherapy has led to more conservative procedures, resulting in improved cosmetic outcomes. The St. Gallen consensus highlights that modern breast cancer management is now case-dependent, based on factors like tumour size, stage, lymph node status, genomic markers and other patient-specific factors [11].

In developing countries like Cameroon, achieving optimal surgical care remains challenging because the resources required to meet international standards are limited. Therefore, understanding local patterns of surgical management is important in improving care delivery and reducing morbidity. This study aims to review the surgical management of breast cancer at the Yaoundé General Hospital (YGH) from 2018 to 2023, assessing the various surgical techniques employed, their indications and postoperative complications.

Materials and methods

Study design and setting

This was a retrospective descriptive study conducted at the YGH, a tertiary-level referral and teaching hospital located in Yaoundé, Cameroon. The study was conducted between January 2023 and August 2023, and it included data from all breast cancer surgeries performed between January 2018 and July 2023 (a period of 5 years and 6 months). The study population consisted of all patients with histologically confirmed breast cancer at the YGH during the study period. We included all medical records of patients who underwent breast surgery for cancer, regardless of age, sex or type of procedure. All incomplete files and records of patients with a prior history of breast irradiation were excluded from the study.

Sampling and variables

Sampling was consecutive and exhaustive, including all eligible cases during the defined period. A minimum sample size of 87 participants was obtained using the Schwartz's formula.

The variables collected included:

Sociodemographic characteristics (age, sex, residence, level of education and occupation), clinical features (tumour size, laterality, stage at diagnosis and comorbidities), paraclinical findings (histological type, tumour grade, hormonal receptor status (ER, PR) and immunohistochemical characteristics Human epidermal growth factor receptor 2 (HER2)), surgical management (indication, type of procedure (radical, conservative, oncoplastic, lymph node dissection or sentinel node biopsy), duration of surgery and length of hospital stay) and surgical outcomes (complications such as infection, hematoma, seroma, necrosis or lymphedema).

Prior to data collection, we obtained ethical clearance from the Institutional Ethical Review Board of the Faculty of Medicine and Biomedical Sciences of the University of Yaoundé 1 and administrative authorisation from the management of the study site. To ensure the privacy and

confidentiality, all personal information was coded and data were kept on a password-protected device. The study was carried out in respect of the Helsinki Declaration.

Statistical analysis

Data were collected from hospital archives and surgical registers using a structured and pretested questionnaire. To ensure confidentiality, all patient identifiers were coded before data entry. The collected data were then cleaned and analysed using R Statistical Software (version 4.2.3). Descriptive statistics were used to summarise the findings: Quantitative variables were expressed as means with standard deviations or medians with interquartile ranges. Categorical variables were expressed as frequencies and percentages. Associations between categorical variables were calculated using the chi-square test. All p -value less than 0.05 were considered statistically significant, with a 95% confidence interval. Multivariate analysis was done to identify factors associated with postoperative complications.

Results

After reviewing the operating room registers, we observed that 240 patients underwent breast cancer surgery at YGH between January 2018 and July 2023. Out of these, we found 221 records, but 19 were excluded due to incomplete data. Our sample therefore comprised 202 patients.

Sociodemographic profile of participants

The age range of our study population was 24 to 77 years, with a median age of 46 years (41 to 54 years). The most represented age group was 40 to 49 years ($n = 66$, 32.7%). Notably, 96% ($n = 196$) of participants were women. A significant portion of the participants ($n = 68$, 33.7%) were unemployed. However, it is worth noting that the majority of them had attained higher education ($n = 75$, 37.1%). Additionally, 71 (35.1%) patients had a parity of 5 or higher (Table 1).

Clinical and paraclinical profile of participants

Clinical profile of participants

As shown in Table 2, a majority ($n = 168$, 83.2%) of participants presented with a breast nodule as the initial symptom. Similarly, the most common sign on physical examination was a breast nodule ($n = 179$, 88.6%). Other physical signs regularly found were lymphadenopathy ($n = 111$, 55%) and increased breast volume ($n = 96$, 47.5%).

The tumour was most frequently located in the upper outer quadrant ($n = 77/202$, 38.1%), and two or more quadrants were affected in 15.8% ($n = 32/202$) of patients. The left breast was more commonly involved, accounting for 65% ($n = 131/202$) of cases. Additionally, 95 (47%) patients presented with stage T4 disease, while 53.5% ($n = 108/202$) had lymph node involvement, most commonly stage N1 ($n = 67/202$, 33.2%). Furthermore, 13.9% ($n = 28/202$) of participants had evidence of metastatic disease, with the most frequent sites being the lungs (18/28, 64.3%) and the liver (11/28, 39.3%) (Table 3).

Paraclinical characteristics of tumours

The predominant histological type identified was invasive ductal carcinoma ($n = 161$, 79.7%). Most tumours were classified as histological grade 2 ($n = 91$, 45%). Among participants with complete immunohistochemical data, 84 (41.6%) were identified as triple-negative breast cancers (Table 4).

Table 1. Distribution of the study population according to sociodemographic and obstetric characteristics (N = 202).

Variable	Category	n (%) N = 202
Age	<20	0
	20–29	3 (1.5%)
	30–39	19 (9.4%)
	40–49	66 (32.7%)
	50–59	63 (31.2%)
	60–69	31 (15.3%)
	≥70	20 (9.9%)
Sex	Male	8 (4.0%)
	Female	194 (96%)
Profession	Civil servant	63 (31.1%)
	Formal private sector	16 (7.9%)
	Informal private sector	31 (15.3%)
	Unemployed	68 (33.7%)
	Not specified	24 (11.9%)
Level of education	Primary	42 (20.8%)
	Secondary	28 (13.9%)
	Higher	75 (37.1%)
	None	2 (1%)
	Not specified	55 (27.2%)
Marital status	Single	42 (20.8%)
	Married	100 (49.5%)
	Divorced	8 (4%)
	Widow	13 (6.4%)
	Not specified	39 (19.3%)
Gravidity	0	10 (5%)
	1–2	54 (26.7%)
	3–4	52 (25.7%)
	≥ 5	86 (42.6%)
Parity	0	13 (6.4%)
	1–2	53 (26.2%)
	3–4	65 (32.2%)
	≥ 5	71 (35.1%)

Table 2. Distribution of participants according to clinical characteristics N = (202).

Variable	Category	n (%) N = 202
Initial symptoms on entry	Nodule	168 (83.2%)
	Ulceration	20 (9.9%)
	Nipple discharge	20 (9.9%)
	Peau d'orange	24 (11.9%)
	Increased breast volume	71 (35.1%)
	Breast or nipple reaction	14 (6.9%)
	Lymphadenopathy	2 (1%)
	Pain	75 (37.1%)
	Itching	7 (3.5%)
Physical signs	Nodule	179 (88.6%)
	Ulceration	24 (11.9%)
	Nipple discharge	14 (6.9%)
	Peau d'orange	69 (34.1%)
	Increased breast volume	96 (47.5%)
	Breast or nipple reaction	50 (24.8%)
	Lymphadenopathy	111 (55%)
Comorbidities	Hypertension	45 (22.3%)
	Diabetes	11 (5.4%)
	HIV	11 (5.4%)
	Menopause	68 (33.7%)

Surgical indications

Frequency of different types of surgery

In our study, mastectomy was the predominant surgical procedure, performed in 92.08% (186/202) of cases, while oncoplastic surgery and lumpectomy were each performed in 8 (3.96%) patients. Among the patients who underwent mastectomy, there were 97.3% (181/186) cases of Madden mastectomies and 2.7% (5/186) cases of Patey mastectomies. Among the oncoplastic surgeries, there were 62.5% (5/8) inverted T-plasties, 25% (2/8) Thorek plasties and 12.5% (1/8) external plasty. All patients underwent lymph node dissection. Neoadjuvant chemotherapy was performed in 53% (107/202) of cases.

Surgical indications according to;

Tumour size: Tumours larger than 3 cm were observed in 70.4% (131/186) of patients who underwent mastectomy and in 62.5% (5/8) of those who had oncoplastic surgery. Lumpectomies were primarily performed for tumours measuring ≤ 3 cm (5/8, 62.5%) (Table 5).

Tumour location: The upper outer quadrant was the most common tumour site for mastectomy (71/186, 38.2%) and oncoplastic surgeries (8/8, 100%). Conversely, lumpectomies were mostly performed on the upper inner quadrant (3/8, 37.5%) (Table 6).

Table 3. Distribution of participants according to tumour characteristics N = (202).

Variable	Category	n (%) N = 202
Tumor location (N = 202)	Upper outer quadrant	77 (38.1%)
	Upper inner quadrant	22 (10.9%)
	Lower outer quadrant	32 (15.8%)
	Lower inner quadrant	18 (8.9%)
	Retromammary	14 (6.9%)
	Both upper quadrants	13 (6.4%)
	Both lower quadrants	9 (4.5%)
	Both inner quadrants	2 (1%)
	Both outer quadrants	4 (2%)
	All four quadrants	4 (2%)
	Not specified	8 (4%)
Affected breast (N = 202)	Left breast	131 (65%)
	Right breast	71 (35%)
Clinical stage of tumor (N = 202)	T	
	Tis	1 (0.5%)
	T1	10 (5%)
	T2	43 (21.3%)
	T3	41 (20.3%)
	T4	95 (47%)
	Tx	12 (5.9%)
	N	
	N0	79 (39.1%)
	N1	67 (33.2%)
	N2	36 (17.8%)
	N3	5 (2.5%)
	Nx	15 (7.4%)
	M	
	M0	132 (65.3%)
	M1	28 (13.9%)
	Mx	42 (20.8%)
Metastasis location (N = 28)	Pleura	6 (21.4%)
	Bone	10 (35.7%)
	Liver	11 (39.3%)
	Lungs	18 (64.3%)
	Kidney	1 (3.6%)

Table 4. Paraclinical characteristics of the lesions.

Variable	Category	n (%) N = 202
Histological type	Invasive ductal carcinoma	161 (79.7%)
	Unspecified invasive carcinoma	18 (8.9%)
	Lobular carcinoma	1 (0.5%)
	Mucinous tumor	2 (1%)
	Carcinoma in situ	5 (2.5%)
	Papillary carcinoma	2 (1%)
	Tubular carcinoma	2 (1%)
	Page't's disease	5 (2.5%)
	Malignant phyllodes tumor	1 (0.5%)
	Not specified	6 (3%)
Vascular emboli	Yes	22 (10.9%)
	No	19 (9.4%)
	Not specified	161 (79.7%)
Histological grade	Grade 1	37 (18.3%)
	Grade 2	91 (45%)
	Grade 3	33 (16.3%)
	Not specified	41 (20.3%)
Immunohistochemical characteristics	ER	
	Positive	48 (23.8%)
	Negative	47 (23.3%)
	Not specified	107 (53%)
	PR	
	Positive	32 (15.8%)
	Negative	63 (31.2%)
	Not specified	107 (53%)
	HER 2	
	Positive	21 (10.4%)
	Negative	71 (35.1%)
	Not specified	110 (54.5%)
	Ki 67 (N = 76)	
	< 15%	62 (81.6%)
	≥15%	14 (18.4%)

Table 5. Distribution of surgical indications among the study population according to tumour size.

Type of surgery	Category	N (%)
Mastectomy (N = 186)	≤ 3 cm	39 (21%)
	> 3 cm	131 (70.4%)
	Not specified	16 (8.6%)
Oncoplastic surgery (N = 8)	≤ 3 cm	0
	> 3 cm	5 (62.5%)
	Not specified	3 (37.5%)
Lumpectomy (N = 8)	≤ 3 cm	5 (62.5%)
	> 3 cm	0
	Not specified	3 (37.5%)

Table 6. Distribution of surgical indications among the study population according to location.

Type of surgery	Category	Number (n)
Mastectomy (N = 186)	Upper outer quadrant	71 (38.2%)
	Upper inner quadrant	16 (8.6%)
	Lower outer quadrant	33 (17.7%)
	Lower inner quadrant	17 (9.1%)
	Retromammary	15 (8.1%)
	Both upper quadrants	15 (8.1%)
	Both lower quadrants	7 (3.8%)
	Both inner quadrants	2 (1.1%)
	Both outer quadrants	4 (2.2%)
	All four quadrants	6 (3.2%)
Oncoplastic surgery (N = 8)	Upper outer quadrant	8 (100%)
Lumpectomy (N = 8)	Upper outer quadrant	2 (25%)
	Upper inner quadrant	3 (37.5%)
	Retromammary	1 (12.5%)
	Both lower quadrants	1 (12.5%)
	Both inner quadrants	1 (12.5%)

TNM classification: Mastectomy was mainly indicated for stage T3 (41/186, 22%) and T2 (37/186, 19.9%) tumours. Oncoplastic procedures were most frequently performed for stage T2 tumours (5/8, 62.5%) and lumpectomies were predominantly carried out for T1 tumours (6/8, 75%) (Table 7).

Postoperative complications

A total of 41 patients (20.3%) experienced postoperative complications. Among those who underwent mastectomy, 20.4% (38/186) had complications, predominantly superinfection ($n = 17$, 9.1%) and lymphocele ($n = 13$, 7%). Following conservative surgery, superinfection occurred in one patient (12.5%), while lymphocele developed in two patients (25.0%) after a lumpectomy (Table 8).

Table 7. Distribution of surgical indications among the study population according to TMN class.

Type of surgery	Category	n (%)
Mastectomy (N = 186)	Tx	8 (4.3%)
	T1	5 (2.7%)
	T2	37 (19.9%)
	T3	41 (22%)
	T4a	21 (11.3%)
	T4b	36 (19.4%)
	T4c	15 (8.1%)
	T4d	23 (12.4%)
Oncoplastic surgery (N = 8)	Tx	2 (25%)
	T2	5 (62.5%)
	Not specified	1 (12.5%)
Lumpectomy (N = 8)	Tx	1 (12.5%)
	T1	6 (75%)
	Not specified	1 (12.5%)

Table 8. Distribution of the study population according to postoperative complications.

Type of surgery	Complication	% (n)
Mastectomy (N = 186)	Hemorrhage	4 (2.2%)
	Hematoma	2 (1.1%)
	Skin necrosis and/or nipple necrosis	2 (1.1%)
	Superinfection	17 (9.1%)
	Lymphocele	13 (7%)
Oncoplastic surgery (N = 8)	Superinfection	1 (12.5%)
Lumpectomy (N = 8)	Lymphocele	2 (25%)

Factors associated with superinfection and lymphocele

Multivariate analysis revealed a statistically significant association between M1 metastatic status and the occurrence of superinfection ($p = 0.018$). There was no statistically significant association between the type of surgery and the occurrence of superinfection (Table 9).

Additionally, menopause ($p = 0.011$) and pruritus ($p = 0.001$) were significantly associated with the occurrence of lymphocele this should be Table 10

Discussion

The objective of this study was to review the surgical management of breast cancer at the YGH, assessing the surgical techniques used, their indications and postoperative complications. We reviewed a total of 202 breast cancer cases surgically managed between January 2018 and July 2023.

The median age was 46 years and patients were predominantly women ($n = 196/202$, 96%). The majority of patients presented with a breast nodule as the initial symptom, most commonly located in the upper outer quadrant and affecting the left breast. Advanced disease was frequent, 95 (47%) presenting at stage T4 and 108 (53.5%) with lymph node involvement. Invasive ductal carcinoma was the most common histological type ($n = 161/202$, 79.7%) and 84 (41.6%) of tumours were triple-negative. Mastectomy was the predominant surgical technique ($n = 186/202$, 92.08%), while oncoplastic and lumpectomy techniques were each performed in 3.96% ($n = 8/202$) of cases. Tumour size and stage strongly influenced the type of surgery, as larger and more advanced tumours were managed by mastectomy. Postoperative complications occurred in 41 (20.3%) patients, with superinfection and lymphocele being the most frequent.

Sociodemographic, clinical and paraclinical profile

Sociodemographic profile

Age

Participants' ages ranged from 24 to 77 years, with a median age of 46 years (IQR: 41–54). The most represented age group was 40–49 years ($n = 66/202$, 32.7%). Similar findings were reported by Ngowa *et al* [2] and Sando *et al* [12] who found mean ages of 47.5 and 47.9 years, respectively.

Table 9. Multivariate analysis of factors associated with superinfection.

Variable	Superinfection		aOR (95% CI)	p value
	Yes, n (%)	No, n (%)		
Sex				
Male	4 (50.0%)	4 (50.0%)	—	
Female	14 (7.2%)	180 (92.8%)	7.66 (0.69–1.06)	0.099
Occupation				
Informal private sector	1 (3.2%)	30 (96.8%)	7.54 (0.69–1.90)	0.127
Symptoms				
Increased breast volume	11 (15.5%)	60 (84.5%)	0.47 (0.12–1.75)	0.264
Physical signs				
Lymphadenopathy	16 (14.4%)	95 (85.6%)	0.02 (0.03–0.87)	0.053
Location				
Upper outer quadrant	2 (2.6%)	75 (97.4%)	9.16 (0.79–3.11)	0.127
Lower outer quadrant	8 (25.0%)	24 (75.0%)	0.33 (0.05–1.88)	0.219
TNM classification				
M0	10 (7.6%)	122 (92.4%)	0.30 (0.02–1.62)	0.255
M1	7 (25.0%)	21 (75.0%)	0.07 (0.00–0.45)	0.018
Metastases site				
Pleura	3 (50.0%)	3 (50.0%)	2.30 (0.06–3.49)	0.685
Lungs	7 (38.9%)	11 (61.1%)	0.92 (0.03–2.92)	0.291

p value < 0.05 statistically significant

Table 10. Multivariate analysis of factors associated with lymphocele.

Variable	Lymphocele		aOR (95% CI)	p-value
	Yes, n (%)	No, n (%)		
Comorbidities				
Menopausal	11 (16.2%)	57 (83.8%)	0.15 (0.03–0.59)	0.011
Symptoms				
Ulceration	4 (20.0%)	16 (80.0%)	0.27 (0.05–1.50)	0.118
Itching	4 (57.1%)	3 (42.9%)	0.03 (0.00–0.23)	0.001
Physical signs				
Nodule	11 (6.1%)	168 (93.9%)	4.33 (0.82–19.8)	0.064
Location				
Upper outer quadrant	5 (6.5%)	72 (93.5%)	0.28 (0.04–1.54)	0.163
Upper inner quadrant	1 (4.5%)	21 (95.5%)	0.38 (0.03–9.47)	0.465

p value < 0.05 statistically significant

Sex

Eight male patients (4%) were identified in our study population, consistent with earlier findings by Engbang *et al* [13] who reported 2.4% male cases among 3,044 patients. Notably, one male patient in our study had a family history of breast cancer in both first and second-degree relatives, attesting to the established genetic predisposition associated with male breast cancer.

Parity

In our study, 71 (35.1%) patients were grand multiparous. This observation aligns with the findings of Motolouze [14] and Essiben *et al* [15] in Yaoundé. However, these results contradict the conventional view that nulliparity is a significant risk factor for breast cancer. This could possibly be explained by the increasingly delayed age at first pregnancy, shorter breastfeeding durations and lifestyle factors such as obesity and exposures to carcinogens in urban areas, which may affect the protective effects of multiparity. Additionally, another factor could be the presence of many triple-negative tumours in our study population, possibly suggesting a molecular subtype less influenced by reproductive factors.

Marital status, occupation and education level

Nearly half of the patients were married ($n = 100/202$, 49.5%). A majority ($n = 75/202$, 37.1%) had attained higher education, and 31.1% ($n = 63/202$) were civil servants. These findings suggest a higher incidence of breast cancer among women of relatively high socioeconomic status. Ngowa *et al* [2] reported similar results. The higher occurrence of breast cancer in this group may be linked to lifestyle factors such as cholesterol-rich diets and residence in urban environments, which may increase exposure to certain carcinogenic pollutants.

Clinical and paraclinical profile of patients

Background and comorbidities

Among women who underwent surgery for a breast tumour, 68 (33.7%) were postmenopausal. However, prior Cameroonian studies by Ngowa *et al* [3] and Motolouze *et al* [16] revealed slightly higher percentages of postmenopausal women, with 37.1% and 42.2%, respectively. Additionally, 67 patients (32.3%) presented with at least one comorbidity, the most common being hypertension ($n = 45/202$, 22.3%), followed by HIV infection ($n = 11/202$, 5.4%) and diabetes ($n = 11/202$, 5.4%). These findings are comparable to those of Mapoko *et al* [17]

who reported that 24% of patients had similar profiles as ours, with hypertension (12%) being the most prevalent, followed by HIV and diabetes at 5% each. The slight differences in our study could be explained by the increasing incidence of breast cancer among younger women in sub-Saharan Africa, as well as comorbidities among younger populations.

Diagnostic circumstances

The most common presenting complaints were the presence of a breast nodule ($n = 168/202$, 83.2%) and an increase in breast volume ($n = 71/202$, 35.1%). Similarly, Essiben *et al* [18] reported that 67.6% of patients presented with a breast lump as the first sign of disease. Another study conducted in Togo equally identified a palpable breast nodule as the most frequent presentation [19]. Unlike high-income countries, where cancers are often detected at preclinical stages through organised screening programs like screening mammography, diagnosis in sub-Saharan Africa is usually at a symptomatic stage. This is mainly due to the absence of well-established screening programs and delayed healthcare-seeking behaviour common in the region. Consequently, most cancers are discovered at advanced stages [2].

Clinical stage and tumour location

The upper outer quadrant ($n = 77/202$, 38.1%) and left breast ($n = 131/202$, 65%) were the most frequently affected, consistent with findings from several African and international studies [19–21]. This preferential localisation is likely due to the higher density of glandular tissue in this quadrant. In our study, 67.3% ($n = 136/202$) of tumours were diagnosed at an advanced tumor-node-metastasis (TNM) stage (T3 or T4). Similar results have been reported in earlier studies conducted in Cameroon. In 2015, Ngowa *et al* [2] reported 71.3%, while Motolouze [14] reported 69.3%. In contrast, a Swedish study by Ekdahl Hjelm *et al* [22] found only 18.1% of patients with advanced-stage tumours. A possible explanation is the much shorter diagnostic delays and the well-structured breast cancer screening programs in high-income countries like Sweden. These programs ensure that breast cancer is detected at an early, preclinical stage.

Furthermore, 53.5% ($n = 108/202$) of cases had lymph node involvement, aligning with findings from other African studies [2, 14, 20]. This once again confirms delayed presentation and the lack of organised screening. In addition, Darré *et al* [19] reported that such diagnostic delays are often due to ignorance, fear and sociocultural barriers.

Histological and immunohistochemical findings

Invasive ductal carcinoma was the predominant histologic type ($n = 161/202$, 79.7%), consistent with the literature [12, 13, 23]. Most tumours were classified as histologic grade II ($n = 91/202$, 45%), similar to findings by Motolouze [14] (54.2%) and Guy *et al* [23] (64.3%). The slight difference may be due to incomplete histopathologic data in some of our records. Regarding immunohistochemical characteristics, 23.8% ($n = 48/202$) were estrogen receptor (ER) positive, 15.8% ($n = 32/202$) progesterone receptor (PR) and 10.4% ($n = 21/202$) HER2 positive. Triple-negative breast cancers represented 41.6% ($n = 84/202$) of cases, while 18.4% ($n = 14/76$) were Ki-67 positive. These findings differ from those of Motolouze [14] who reported a much higher Ki-67 positivity (70%), possibly due to the greater percentage of grade II and grade III tumours in their study population.

Surgical indications

Mastectomy was performed in 186 (92.08%) patients, while oncoplastic surgery and lumpectomy were each performed in 8 (3.96%) patients. These findings are consistent with those of Nguefack *et al* [24] in Cameroon, who reported 92.9% mastectomies and 7.1% conservative treatments. Similarly, Tagar *et al* [25] in Nigeria observed 9.5% of breast-conserving surgery in their study. In contrast, Omar *et al* [26] in Egypt reported a lower rate of mastectomy (67%) and a much higher rate of breast-conserving surgery (33%). The predominance of mastectomy in sub-Saharan Africa can be attributed to the late hospital presentations at locally advanced stages, limited access to radiotherapy services and the restricted practice of conservative procedures.

Additionally, oncoplastic and lumpectomy procedures were mainly indicated for early-stage tumours (Tis, T1, T2), a finding consistent with that of Omar *et al* [26]. However, mastectomy was performed in 22.6% ($n = 42/186$) of patients with early-stage (T1 or T2) tumours, likely due to a limited number of functional radiotherapy units, a shortage of surgeons trained in oncoplastic techniques and physician preference.

Axillary lymph node dissection was performed in all operated patients, driven by the unavailability of the sentinel lymph node technique and the high prevalence of locally advanced tumours.

Postoperative complications

Postoperative complications were recorded in 41 patients (20.3%), most commonly superinfection, lymphocele and hemorrhage. This overall morbidity rate is comparable to the 28.7% reported by Bawoke *et al* [27] in Ethiopia. In our cohort, the primary complications following mastectomy were superinfection ($n = 17/186$, 9.2%) and lymphocele ($n = 13/186$, 7%). Among patients who underwent breast-conserving surgery, superinfection occurred in 12.5% ($n = 1/8$) of oncoplastic procedures, while lymphocele was found in 25% ($n = 2/8$) of lumpectomies.

Similar to our cohort, Bawoke *et al* [27] identified lymphatic collection (17.2%), wound infection (14.9%) and hematomas (4.6%) as their most frequent complications. The higher rate of superinfection observed in our study could be attributed to the higher prevalence of lymphocele and diabetes, a well-established risk factor for postoperative wound infection, which was absent in Bawoke's study.

After multivariate analysis, metastatic disease (M1) was significantly associated with postoperative infection ($p = 0.018$). Other studies have identified immunosuppression and history of neoadjuvant chemotherapy as contributing factors to wound infection [27]. Similarly, the increased infection risk among our metastatic patients may be related to tumour-induced immunosuppression [28]. Regarding lymphatic complications, axillary lymph node dissection, which was performed in all our cases, likely accounts for the high rate of lymphocele formation. The factors significantly associated with lymphocele occurrence in our study were menopause ($p = 0.011$) and pruritus ($p = 0.001$).

Limitations

Being a retrospective study, a good number of patient files were either missing or contained incomplete information, and may have affected the accuracy of collected data. Also, long-term postoperative complications were not assessed. Finally, surgeries were performed by different surgical teams, which may have introduced variability in procedure-related outcomes.

Conclusion

Breast cancer at YGH is frequently diagnosed at advanced stages, with invasive ductal carcinoma being the most prevalent histologic subtype. Radical mastectomy with axillary lymph node dissection remains the primary surgical approach, while breast-conserving procedures such as oncoplastic surgery and lumpectomy are rarely performed. A quarter of mastectomies were performed for early-stage tumours. Early postoperative morbidity is relatively common, mainly superinfection, lymphocele and hemorrhage. All these findings emphasise the need to promote early screening, increase access to breast-conserving surgeries and implement more measures to reduce surgical complications.

Conflicts of interest

None declared.

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Ethical approval

The study was approved by the Institutional Ethical Review Board of the Faculty of Medicine and Biomedical Sciences, University of Yaoundé 1.

Author contributions

All authors contributed significantly to this work. The study's concept and design were developed by Jimmy Mouthe, Junie Metogo and Kemfang J Ngowa. Data collection was done by Jimmy Mouthe, Ndah Akelekeh, Bah Felix Juweh, Boah-Ju Bill Brisbane and Aponglen A Ndah. Data analysis and interpretation, as well as manuscript drafting, were done by Jimmy Mouthe, Ndah Akelekeh and Aponglen A Ndah. The manuscript was reviewed and revised by Jimmy Mouthe, Ndah Akelekeh, Kemfang J Ngowa, Junie Metogo and Aponglen A Ndah. Kemfang J Ngowa and Junie Metogo provided overall supervision.

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