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Outcomes of Ovarian Cancer Management at the Yaoundé Gynaeco-Obstetric and Pediatric Hospital, Cameroon: A Decade in Review

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Abstract

Introduction: Ovarian cancer continues to present significant therapeutic challenges in sub-Saharan Africa, where late diagnosis and limited resources often compromise outcomes. This study examines the management and survival outcomes of ovarian cancer patients at a major referral center in Cameroon. **Methods**: We conducted a retrospective cohort analysis of 72 ovarian cancer patients treated between 2015 and 2024 at the Yaoundé Gynaeco-Obstetric and Pediatric Hospital. Data encompassing demographic characteristics, clinical presentation, treatment modalities, and survival outcomes were meticulously extracted from medical records. Survival analysis was performed using Kaplan-Meier curves and Cox regression models to identify prognostic factors. **Results**: The majority of patients (40.3%) were aged 40 - 59 years, with a mean age of 48.7 years. Most women (56.9%) identified as housewives. Alarmingly, 73.6% presented with advanced-stage disease (FIGO stages III/IV). Epithelial ovarian cancer predominated (86.1%), with high-grade serous carcinoma being the most frequent. Primary debulking surgery followed by adjuvant chemotherapy was the most common treatment approach (62.5%), though optimal cytoreduction was achieved in only 46.9% of cases. The median overall survival was 29 months, with 5-year survival reaching 25%. Multivariate analysis revealed that neoadjuvant chemotherapy followed by interval debulking surgery independently predicted improved survival (HR = 0.18, p = 0.037),

while suboptimal debulking significantly compromised outcomes (HR = 8.86, p = 0.043 for progression-free survival). **Conclusion**: Our findings paint a sobering picture of ovarian cancer management in Cameroon, characterized by late presentation and suboptimal surgical outcomes. The demonstrated survival benefit of neoadjuvant chemotherapy approaches suggests a promising pathway for improving outcomes in resource-constrained settings where achieving optimal cytoreduction remains challenging.

Keywords

Ovarian Cancer, Cameroon, Survival Outcomes, Neoadjuvant Chemotherapy, Surgical Cytoreduction

1. Introduction

Ovarian cancer remains one of the most formidable challenges in gynecologic oncology, characterized by its insidious onset and frequent late-stage diagnosis. Globally, it represents the eighth leading cause of cancer-related mortality among women, with particularly concerning incidence patterns in developing nations [1]. The situation in sub-Saharan Africa warrants special attention, where diagnostic and therapeutic challenges are compounded by epidemiological particularities that remain poorly documented.

International literature has well established that ovarian cancer prognosis is intimately tied to disease stage at diagnosis and the quality of initial surgical cytoreduction [2]. However, these data predominantly originate from high-income countries, where healthcare systems enable more effective screening and access to specialized care. The African context presents radically different realities, marked by significant diagnostic delays and limitations in accessing optimal treatments [3].

In Cameroon, as in many countries across the region, comprehensive data on ovarian cancer management remain fragmented. A recent study conducted in a major referral hospital in Yaoundé revealed that nearly 50% of patients presented with advanced-stage disease, reflecting both healthcare access barriers and diagnostic delays [4]. This reality raises crucial questions about the most appropriate treatment strategies for our specific context.

Faced with this reality, it becomes imperative to systematically evaluate treatment outcomes and prognostic factors within our setting. The Yaoundé Gynaeco-Obstetric and Pediatric Hospital (YGOPH), as a national referral center, provides an ideal framework for this assessment. This study, therefore, aims to retrospectively analyze the therapeutic journey and survival outcomes of patients managed for ovarian cancer at YGOPH over a ten-year period. More specifically, we seek to identify survival-influencing factors and determine the most effective treatment strategies within the real-world practice conditions of Cameroon.

2. Methodology

2.1. Study Design and Setting

We conducted a retrospective cohort analysis of ovarian cancer patients treated at the Yaoundé Gynaeco-Obstetric and Pediatric Hospital (YGOPH), a major tertiary referral center serving the central region of Cameroon and receiving complex cases from across the country. This design was selected to comprehensively evaluate the real-world management and outcomes of this malignancy in our setting.

2.2. Study Duration and Period

The investigation spanned a ten-year period, from January 1st, 2015, to December 31st, 2024. This extended timeframe was chosen to ensure a robust sample size and to capture potential trends in diagnosis, management, and survival over a significant period.

2.3. Study Population

The source population consisted of all patients diagnosed with and managed for gynecological or breast malignancies at YGOPH during the study period. The target population was specifically all patients with a confirmed histological diagnosis of ovarian cancer.

Inclusion criteria comprised: 1) female patients of any age, 2) with a histologically confirmed diagnosis of ovarian cancer, and 3) who received at least part of their primary treatment (surgery or chemotherapy) at YGOPH.

Exclusion criteria were: 1) cases in which the diagnosis of ovarian cancer was based solely on clinical or radiological findings without histological confirmation, and 2) patients with incomplete medical records that precluded a meaningful analysis of their management or outcomes.

2.4. Sampling and Sample Size

A comprehensive (census) sampling approach was employed. We aimed to identify and include all eligible cases meeting the inclusion criteria during the study period. A total of 93 patients was identified from hospital registries. After applying the exclusion criteria, 72 patients formed the final study cohort for analysis.

2.5. Patient Recruitment and Data Collection

Patient identification was initiated by reviewing surgical logbooks, oncology unit registries, and pathology department records. A structured, pre-tested data abstraction form was used to systematically extract information from the medical files of eligible patients. Information concerning the vital status (death, alive, lost to follow-up) was obtained by calling the patients or their family members through the telephone. The study was explained to the patients and/or family members to obtain informed consent. Follow-up of patients was stopped on the 31st of August 2025. The form captured several domains:

- Sociodemographic data: age, marital status, occupation, level of education.
- Clinical presentation: symptoms, signs, FIGO stage at diagnosis.
- Histopathological characteristics: tumor type and histology.
- Treatment details: type of surgery, debulking status, and chemotherapy regimens (neoadjuvant, adjuvant, or palliative).
- Outcome data: vital status at last follow-up, date of last contact, and date of death or progression, where applicable.

Data collection was conducted by a team of trained physicians to ensure consistency and accuracy.

2.6. Data Analysis

Collected data were entered and analyzed using IBM SPSS Statistics for Windows, Version 26.0 (Armonk, NY: IBM Corp). Descriptive statistics were computed for categorical variables (presented as frequencies and percentages) and continuous variables (presented as means with standard deviations or medians with interquartile ranges, depending on their distribution).

Survival analysis was the cornerstone of our outcome assessment. Overall survival (OS) was defined as the time from diagnosis to death from any cause. Progression-free survival (PFS) was defined as the time from diagnosis to disease progression or death. Survival curves were generated using the Kaplan-Meier method, and comparisons between groups (e.g., by stage or treatment modality) were performed using the log-rank test.

To identify independent predictors of survival, we employed Cox proportional hazards regression models. Variables with a p-value < 0.1 in univariate analysis were considered for inclusion in the multivariate model. Results were reported as Hazard Ratios (HR) with their 95% Confidence Intervals (CI). A two-sided p-value of less than 0.05 was considered statistically significant for all tests.

2.7. Ethical Considerations

This study received approval from the Institutional Review Board of the Yaoundé Gynaeco-Obstetric and Pediatric Hospital. Given the retrospective nature of the study, the requirement for individual informed consent was waived. However, strict confidentiality was maintained throughout the research process. All patient identifiers were removed during data abstraction, and each patient was assigned a unique study code to ensure anonymity. The data were stored on a password-protected computer accessible only to the principal investigators.

3. Results

3.1. Proportion of Ovarian Cancer

During the 10 years under review (2015-2024), there were a total of 1088 cases of gynaecological & breast malignancies. There were 93 patients managed with a diagnosis of ovarian cancer during these periods. However, case notes of only 72 of these patients were successfully retrieved for analysis from the medical records

department of the hospital (18 files were not found, and 3 files were excluded). These 93 cases constituted 8.54% of the gynaecological & breast cancers managed.

3.2. Sociodemographic Characteristics of the Study Population

The mean age at diagnosis for our study population was 48.67 ± 15.77 years, with a range of 6 to 78 years. As shown in Table 1 below, the majority of participants were in the age group 40 - 59 years (N = 29, 40.3%), were married (N = 34, 47.2%), housewives (N = 41, 56.9%), and had a secondary school level of education (N = 39, 54.2%).

Table 1. Sociodemographic characteristics of the study population.

Variables	Number (N = 72)	Frequency (%)
Age at diagnosis (years)		
<20	02	2.8
20 - 39	19	26.4
40 - 59	29	40.3
60 - 79	22	30.6
Marital status		
Single	25	34.7
Cohabiting	01	1.4
Widow	12	16.7
Profession		
Formal employment	19	26.4
Self-employment	05	6.9
Housewife	41	56.9
Student	07	9.7
Level of education		
Primary	04	5.6
Secondary	39	54.2
University	29	40.3

Formal employment = teacher, nurse, lawyer, accountant, banker, etc.; Self-employment = farmer, tailor, hairdresser, trader, etc.

3.3. Clinical Characteristics of the Study Population

3.3.1. Past Medical History of Participants

As presented in Table 2, most of our study participants were multiparas (N = 21, 29.2%), menopausal (N = 38, 52.8%), did not use combined oral contraceptives (N = 68, 94.4%), did not have co-existing morbidities (N = 51, 70.8%) , and did not have a family history of ovarian cancer (N = 70, 97.2%) or breast cancer (N = 69, 95.8%).

Table 2. Past history characteristics of the study population.

Variables	Number (N = 72)	Frequency (%)
Parity		
Nullipara	16	22.2
Primipara	16	22.2
Multipara	21	29.2
Grand-multipara	19	26.4
Use of COCs		
Yes	04	5.6
No	68	94.4
Co-morbidity		
Yes	21	29.2
No	51	70.8
Menopaused		
Yes	38	52.8
No	34	47.2
Family history of ovarian cancer		
Yes	02	2.8
No	70	97.2
Family history of breast cancer		
Yes	03	4.2
No	69	95.8

COCs = Combined oral contraceptives.

3.3.2. Symptoms and Signs of Ovarian Cancer Identified in the Study Population

Study participants presented with a variety of symptoms, including abdominal distention (N = 54, 75%), abdominal pain (N = 53, 73.6%), gastrointestinal tract upset (N = 22, 30.6%), weight loss (N = 19, 26.4%), dyspnoea (N = 7, 9.7%), per-vaginal bleeding (N = 7, 9.7%), and urinary tract upset (N = 5, 6.9%). Gastrointestinal tract upset was characterised by nausea/vomiting, constipation, watery stools, early satiety, or indigestion. Urinary tract upset was characterised by urgency, hesitancy, pollakiuria, or urinary retention.

Physical examination of patients was remarkable for the presence of palpable adnexal masses (N = 63, 87.5%), ascites (N = 51, 70.8%), pleural effusion (N = 9, 12.5%), lower limb oedema (N = 7, 9.7%), and palpable inguinal lymph nodes (N = 3, 4.2%) (Table 3).

Table 3. Symptoms and signs identified in study participants.

Variables	Number (N = 72)	Frequency (%)
Abdominal distention		
Yes	54	75.0
No	18	25.0
Abdominal pains		
Yes	53	73.6
No	19	26.4
Gastrointestinal tract upset		
Yes	22	30.6
No	50	69.4
Urinary tract upset		
Yes	05	6.9
No	67	93.1
Per-vaginal bleeding		
Yes	07	9.7
No	65	90.3
Weight loss		
Yes	19	26.4
No	53	73.6
Dyspnea		
Yes	07	9.7
No	65	90.3
Ascites		
Yes	51	70.8
No	21	29.2
Adnexal mass		
Yes	63	87.5
No	09	12.5
Pleural effusion		
Yes	09	12.5
No	63	87.5
Inguinal lymphadenopathy		
Yes	03	4.2
No	69	95.8
Lower limb oedema		
Yes	07	9.7
No	65	90.3

3.3.3. Clinical Stage of Patients at Diagnosis and Histological Types of Ovarian Cancer

A greater proportion of patients in our study population presented when the disease was at stage III (N = 34, 47.2%). This was followed by stage IV (N = 19, 26.4%), stage I (N = 12, 16.7%), and then stage II (N = 7, 9.7%). A total of 53 patients (73.6%) presented at an advanced stage (Stages III and IV).

Epithelial ovarian cancer was the most common histological type identified following histopathological analyses (N = 51, 70.8%). These are shown in Table 4.

Table 4. Clinical stage of patients and histological types of ovarian cancers.

Variables	Number (N = 72)	Frequency (%)
Stage I	**12**	**16.7**
IA	06	8.3
IC	06	8.3
Stage II	**07**	**9.7**
IIA	04	5.6
IIB	03	4.2
Stage III	**34**	**47.2**
IIIA	03	4.2
IIIB	03	4.2
IIIC	28	38.9
Stage IV	**19**	**26.4**
IVA	08	11.1
IVB	11	15.3
Epithelial tumours	**62**	**86.1**
Serous	50	69.4
Mucinous	04	5.6
Endometrioid	08	11.1
Germ-cell tumours	**06**	**8.3**
Yolk sac tumor	03	4.2
Immature teratoma	03	4.2
Sex-cord stromal tumours	**03**	**4.2**
Stromal sarcoma	01	1.4
Granulosa cell tumour	02	2.8
Mixed tumours	**01**	**1.4**

3.4. Treatment Modalities Offered to Patients

The most common treatment pattern received by patients in our study was pri-

mary debulking surgery followed by adjuvant chemotherapy (N = 45, 62.5%). However, in most cases, debulking was sub-optimal (N = 34, 53.1%). The majority of patients received the carboplatin-paclitaxel chemotherapy protocol (N = 44, 61.1%) (Table 5).

Table 5. Treatment modalities offered to patients.

Variables	Number (N)	Frequency (%)
Treatment modality	**N = 72**	
PDS + ACT	45	62.5
NACT + IDS	19	26.4
Palliative chemotherapy	08	11.1
Debulking status	**N = 64**	
Optimal	30	46.9
Sub-optimal	34	53.1
Chemotherapy regimen	**N = 72**	
VAC	03	4.2
Endoxan-CDDP	05	6.9
Carboplatin-Paclitaxel	44	61.1
Carboplatin-Paclitaxel-Bevacizumab	10	13.9
Bleomycin-Etoposide-Cisplatin	10	13.9

PDS = Primary debulking surgery; ACT = Adjuvant chemotherapy; NACT = Neoadjuvant chemotherapy; IDS = Interval debulking surgery; VAC = Vincristine-Actinomycin-D-Cyclophosphamide; CDDP = Cis-diamine-dichloro-platinum.

3.5. Outcome of Patients Following Management

At the end of our follow-up on the 31st of August 2025, a total of 27 patients (37.5%) were lost to follow-up, 24 died (33.3%), and 21 (29.2%) were still alive and on follow-up. Most of the patients who died were those who presented with advanced disease (Figure 1).

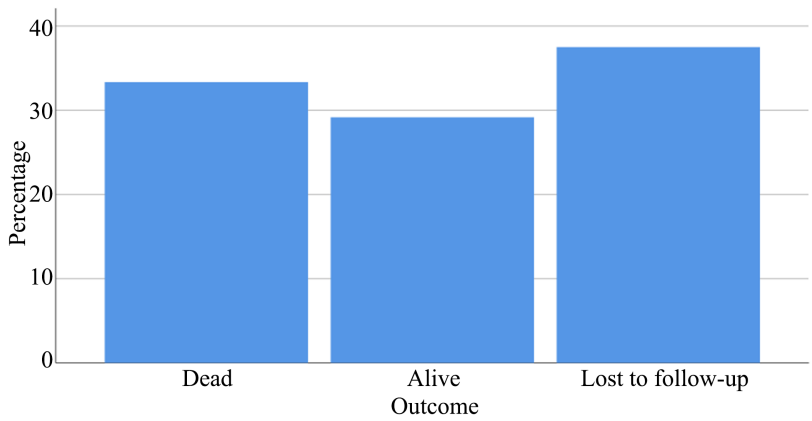

Figure 1. Outcome of patients following management.

3.5.1. Overall Survival

Figure 2 presents the Kaplan-Meier survival analysis for all patients, with a median overall survival of 29 months (95% confidence interval = 16.5 - 41.4), and a 5-year survival rate of 25%.

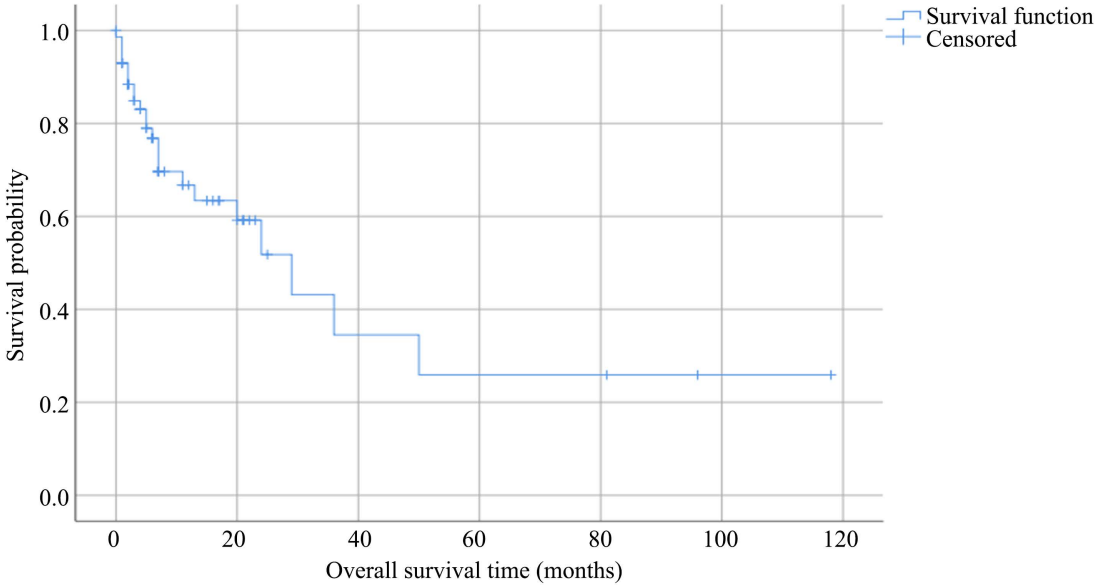

Figure 2. Overall survival for all patients.

On analysis of survivals using the Kaplan-Meier estimates and log-rank statistics, it was found that FIGO stage of tumours (p-value = 0.017), treatment modality (p-value = 0.000), and surgical debulking status (p-value = 0.001) were associated with overall survival outcomes. This is shown in Figures 3-5 below.

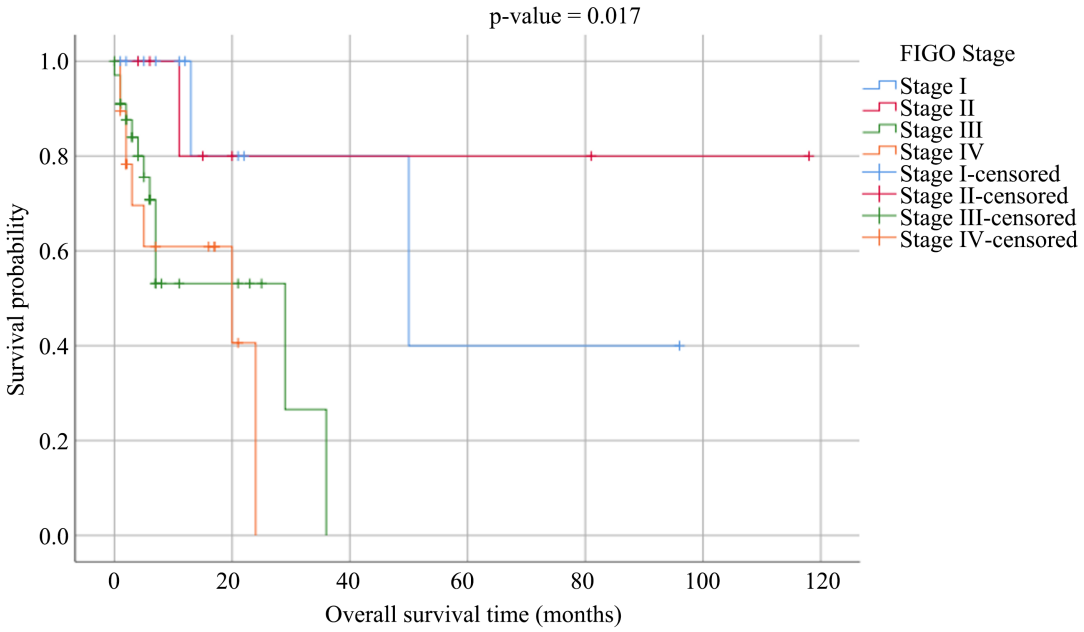

Figure 3. Kaplan-Meier curve of overall survival stratified by FIGO stage.

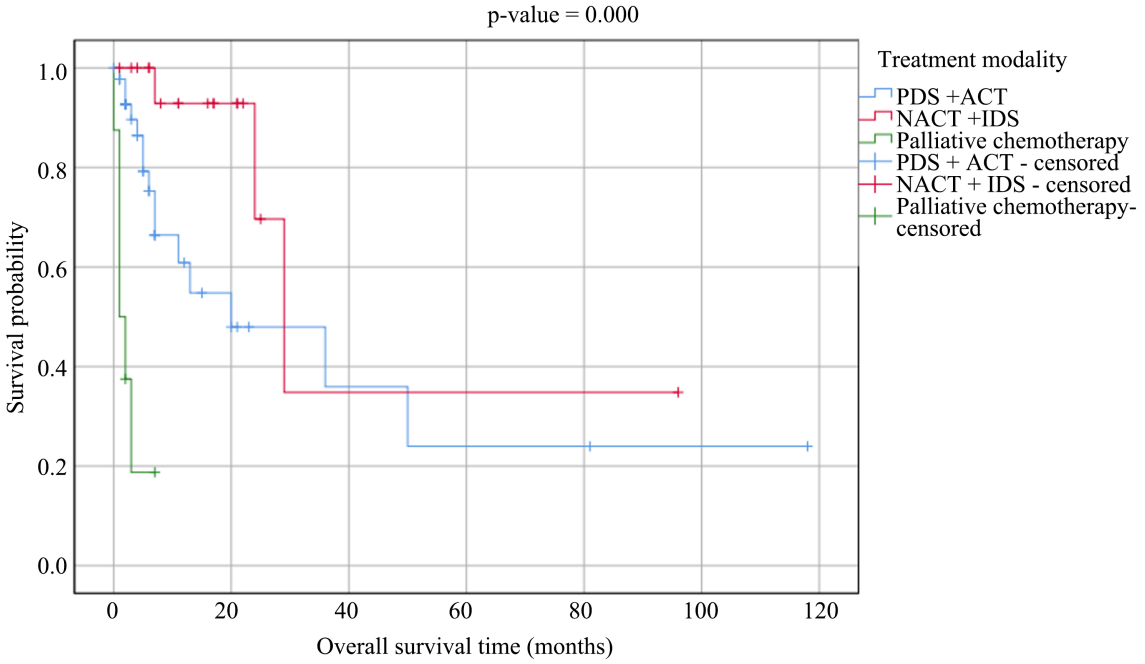

Figure 4. Kaplan-Meier curve of overall survival stratified by treatment modality.

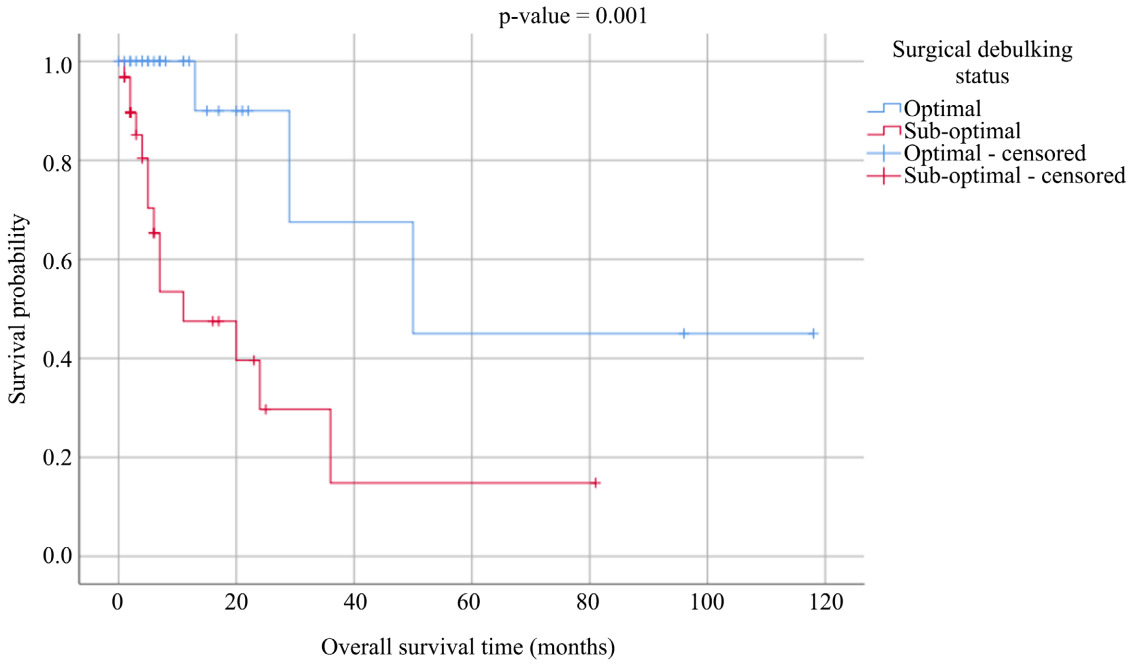

Figure 5. Kaplan-Meier curve of overall survival stratified by debulking status.

Cox regression analysis for median overall survival was performed for patients. Univariate analysis identified FIGO stages III/IV (HR = 5.98, p = 0.038/HR = 7.53, p = 0.026), and sub-optimal debulking (HR = 6.33, p = 0.004) as predictors of reduced overall survival. Whereas, treatment patterns starting with primary debulking surgery (HR = 0.13, p = 0.000) and with neoadjuvant chemotherapy (HR = 0.04, p = 0.000) were predictors of improved overall survival.

After adjusting for covariates in the multivariate analysis, the treatment pattern with neoadjuvant chemotherapy followed by interval debulking surgery was the only independent predictor of improved overall survival (HR = 0.18, 95% CI: 0.03 - 0.90, p = 0.037) (Table 6).

Table 6. Cox regression analyses of prognostic factors for overall survival.

Variables	HR (95% CI) Univariate	p-value	HR (95% CI) Multivariate	p-value
Comorbidity				
Yes	Reference	/		
No	1.03 (0.42 - 2.51)	0.945	/	/
Menopaused				
Yes	Reference	/		
No	0.51 (0.22 - 1.18)	0.117	/	/
Histological type				
EOC	Reference	/		
Non-EOC	0.79 (0.24 - 2.67)	0.708	/	/
FIGO Stage				
Stage I	Reference	/	Reference	/
Stage II	0.59 (0.05 - 6.58)	0.671	0.15 (0.009 - 2.74)	0.204
Stage III	5.98 (1.10 - 32.49)	**0.038***	1.59 (0.12 - 20.27)	0.721
Stage IV	7.53 (1.27 - 44.43)	**0.026***	2.05 (0.13 - 33.57)	0.613
Treatment modality				
Palliative chemotherapy	Reference	/	Reference	/
PDS + ACT	0.13 (0.04 - 0.37)	**0.000***	/	/
NACT + IDS	0.04 (0.01 - 0.18)	**0.000***	0.18 (0.03 - 0.90)	**0.037***
Debulking status				
Optimal	Reference	/	Reference	/
Sub-optimal	6.33 (1.80 - 22.23)	**0.004***	4.29 (0.54 - 33.67)	0.16

*Significant p-value; HR = Hazard ratio; CI = Confidence interval; EOC = Epithelial ovarian cancer; PDS = Primary debulking surgery; ACT = Adjuvant chemotherapy; NACT = Neoadjuvant chemotherapy; IDS = Interval debulking surgery.

3.5.2. Progression-Free Survival

Figure 6 presents the Kaplan-Meier survival analysis for all patients, with a median progression-free survival of 27 months (95% confidence interval = 16.63 - 37.36).

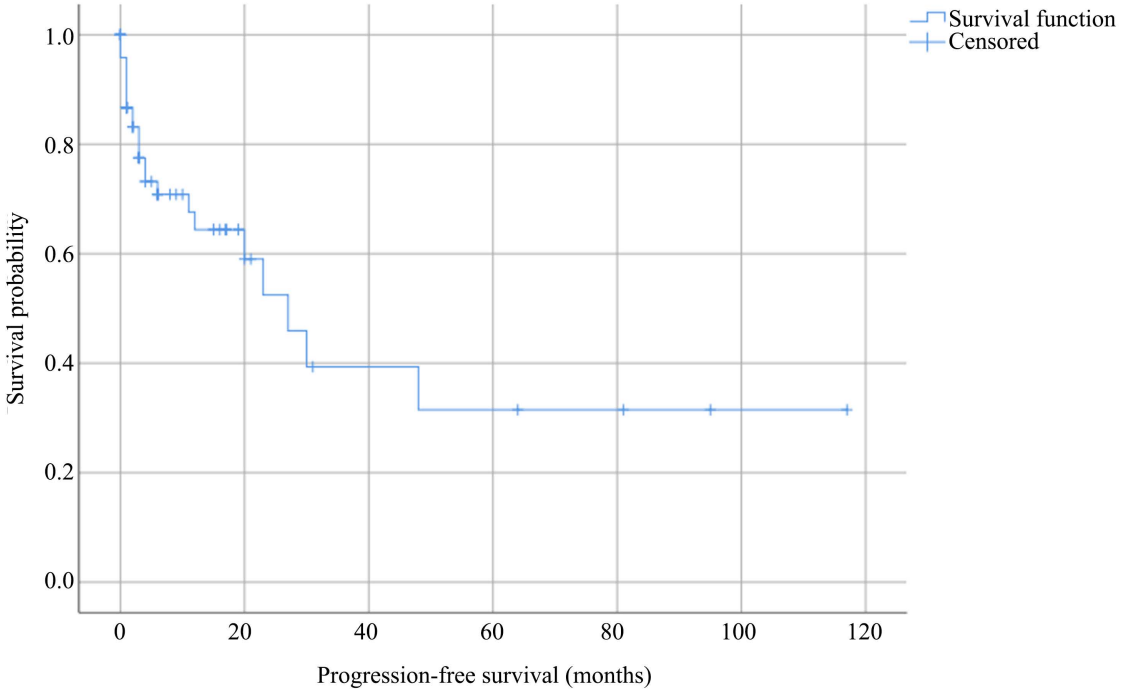

Figure 6. Progression-free survival for all patients.

On analysis of survivals using the Kaplan-Meier estimates and log-rank statistics, it was found that the FIGO stage of tumours (p-value = 0.017), treatment modality (p-value = 0.000), and surgical debulking status (p-value = 0.001) were associated with progression-free survival outcomes. This is shown in **Figures 7-9** below.

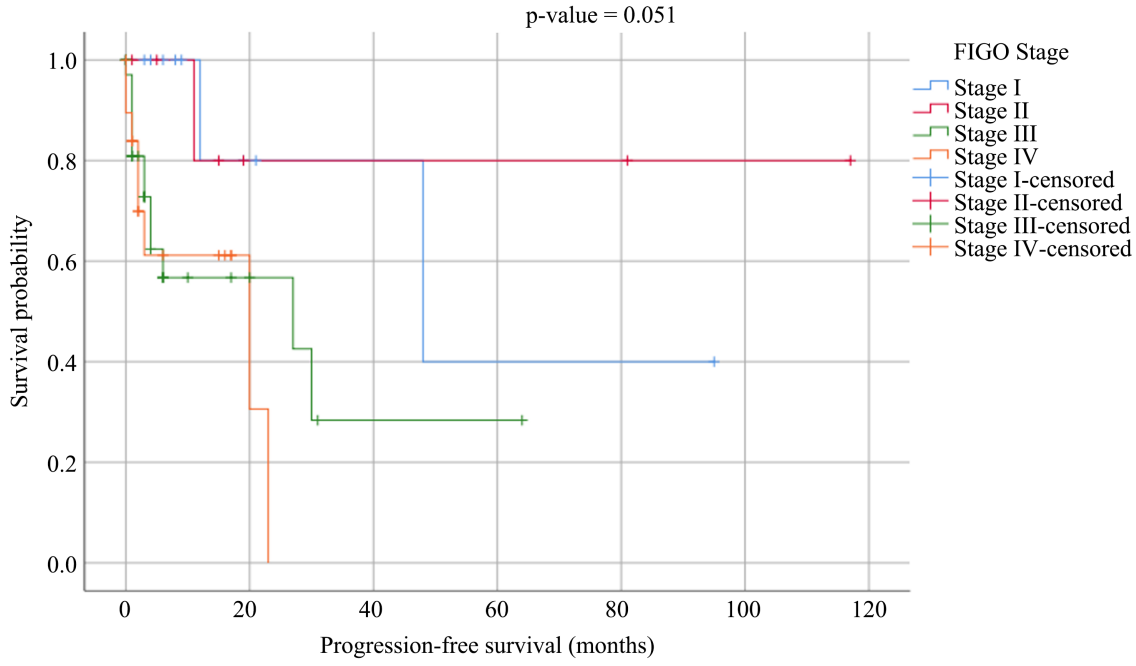

Figure 7. Kaplan-Meier curve of progression-free survival stratified by FIGO stage.

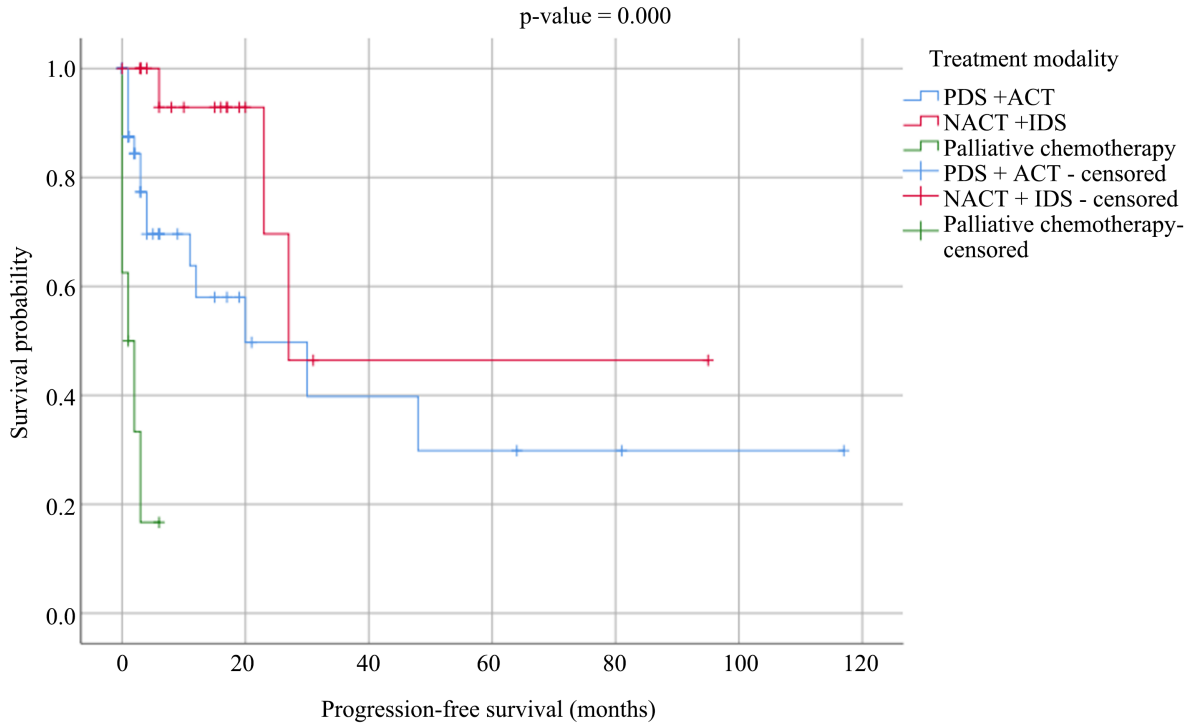

Figure 8. Kaplan-Meier curve of progression-free survival stratified by treatment modality.

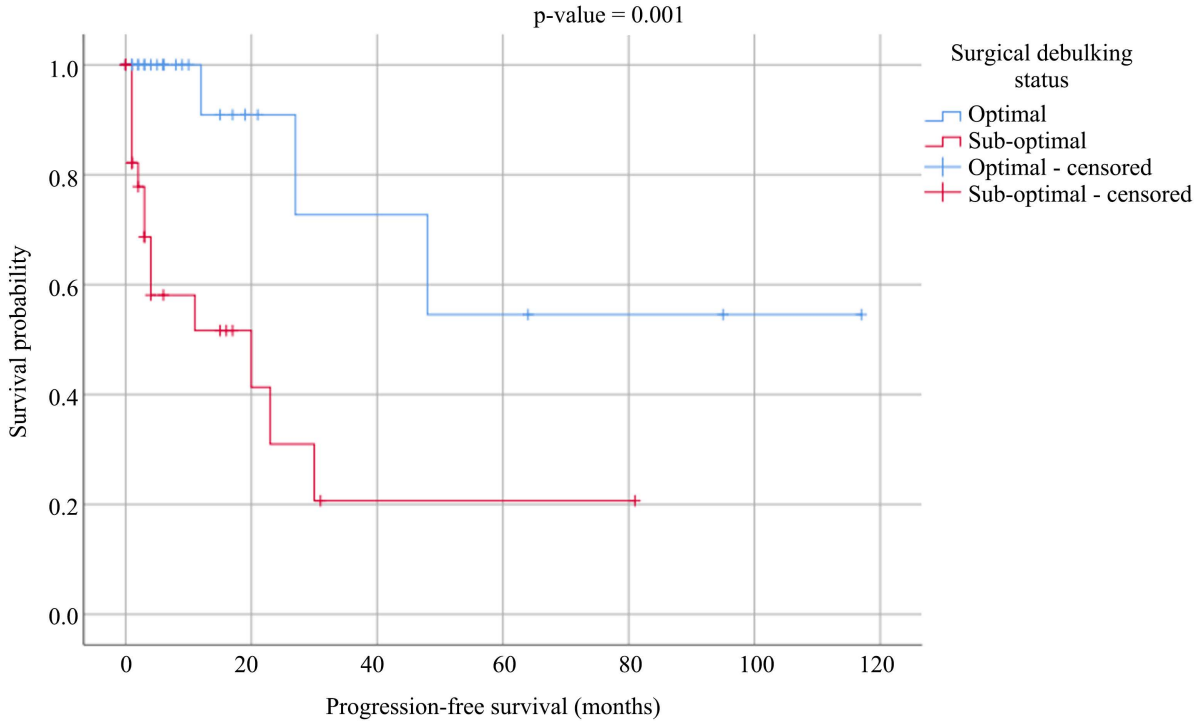

Figure 9. Kaplan-Meier curve of progression-free survival stratified by debulking status.

Univariate Cox regression analysis for progression-free survival identified FIGO stage IV (HR = 4.97, p = 0.049) and sub-optimal debulking (HR = 6.16, p = 0.005) as predictors of reduced survival. On the other hand, treatment patterns

starting with primary debulking surgery (HR = 0.16, p = 0.001) and with neoadjuvant chemotherapy (HR = 0.05, p = 0.000) were predictors of improved progression-free survival.

After adjusting for covariates in the multivariate analysis, treatment pattern with neoadjuvant chemotherapy followed by interval debulking surgery was the only independent predictor of improved progression-free survival (HR = 0.18, 95% CI: 0.04 - 0.86, p = 0.033). Whereas, sub-optimal debulking (HR = 8.86, 95% CI: 1.07 - 73.25, p = 0.043) was the only predictor of reduced progression-free survival (Table 7).

Table 7. Cox regression analyses of prognostic factors for progression-free survival.

Variables	HR (95% CI) Univariate	p-value	HR (95% CI) Multivariate	p-value
Comorbidity				
Yes	Reference	/		
No	1.15 (0.47 - 2.79)	0.750	/	**/**
Menopaused				
Yes	Reference	/		
No	0.58 (0.25 - 1.33)	0.198	/	/
Histological type				
EOC	Reference	/		
Non-EOC	0.90 (0.27 - 3.03)	0.86	/	/
FIGO Stage				
Stage I	Reference	/	Reference	
Stage II	0.64 (0.05 - 7.12)	0.720	0.09 (0.004 - 1.99)	0.128
Stage III	3.58 (0.79 - 16.20)	0.097	0.62 (0.05 - 7.00)	0.700
Stage IV	4.97 (1.01 - 24.65)	**0.049***	0.77 (0.05 - 11.08)	0.848
Treatment modality				
Palliative chemotherapy	Reference	/	Reference	/
PDS + ACT	0.16 (0.05 - 0.46)	**0.001***	/	/
NACT + IDS	0.05 (0.01 - 0.23)	**0.000***	0.18 (0.04 - 0.86)	**0.033***
Debulking status				
Optimal	Reference	/	Reference	/
Sub-optimal	6.16 (1.74 - 21.77)	**0.005***	8.86 (1.07 - 73.25)	**0.043***

*Significant p-value; HR = Hazard ratio; CI = Confidence interval; EOC = Epithelial ovarian cancer; PDS = Primary debulking surgery; ACT = Adjuvant chemotherapy; NACT = Neoadjuvant chemotherapy; IDS = Interval debulking surgery.

4. Discussion

This comprehensive review of ovarian cancer management at a major Cameroonian referral hospital reveals several critical findings that merit careful consideration in the context of the existing literature and regional healthcare challenges.

4.1. Proportion and Sociodemographic Profile

The proportion of ovarian cancer among gynecological malignancies at our institution (8.54%) aligns with patterns observed across sub-Saharan Africa. Studies from Cameroon and Nigeria report similar proportions, ranging from 7.4% - 10.75% of gynecological cancers [4]-[6]. However, our result is higher than the 3.4% reported by Tanko *et al.* [7] in Botswana, and lower than the 11.9% reported by Gharoro *et al.* [8] in Benin. A wide difference is therefore noted based on the geographical location.

The mean age at diagnosis of 48.7 years in our cohort is notably younger than the typical presentation in high-income countries (often mid-60 s), but consistent with patterns across Africa where ovarian cancer appears to affect women a decade earlier [4]-[8]. This younger age distribution has significant implications for both the socioeconomic impact of the disease and treatment approaches. The predominance of housewives (56.9%) in our study may reflect both societal structures and potential barriers to healthcare access for working women, though this requires further investigation. Importantly, this status often serves as a proxy for unemployment or informal employment, which is frequently associated with lower socioeconomic status. This, in turn, can present significant financial barriers to accessing timely diagnostic and therapeutic care, thereby contributing to the advanced stage at presentation observed in our cohort.

4.2. Clinical and Histopathological Characteristics

Nulliparity is known to be a risk factor for ovarian cancer [9]; however, findings from this study showed that most patients with ovarian cancer were multiparous women. This pattern was consistent with what was seen in other studies [4] [6] [7]. Perhaps, this finding may be due to a small sample size, or possibly nulliparity may not be a strong factor in this environment.

More than half of our participants were menopausal, which is in line with data from the literature. Indeed, ovarian cancer is most often diagnosed during the peri-menopausal period [4] [10].

The top two symptoms among patients from our study were abdominal distention and abdominal pain. These are features of advanced disease, and similar presentations were seen in other studies [6] [11] [12]. Patients with ovarian cancer hardly seek medical assistance early because symptoms are usually non-specific and will only present when the disease has become obvious and unbearable. This is further compounded by the lack of specific screening methods [13].

The overwhelming presentation with advanced disease (73.6% stages III/IV) represents one of our most concerning findings. This pattern mirrors reports

across sub-Saharan Africa [4] [6] [8] [11]. The reasons are multifactorial, including limited awareness, cultural beliefs, financial constraints, and delayed referrals. The symptom triad of abdominal distension, pain, and gastrointestinal upset seen in our patients closely matches classical descriptions, yet these often manifest late in the disease course.

Histopathologically, the predominance of epithelial tumors (86.1%), particularly high-grade serous carcinoma, aligns with global distributions [14]-[16]. However, the relatively higher proportion of germ cell tumors (8.3%) compared to Western populations (2% - 3%) likely reflects our younger patient demographic [17].

4.3. Treatment Patterns and Challenges

The primary treatment approach of debulking surgery followed by adjuvant chemotherapy reflects international standards, yet the high rate of suboptimal cytoreduction (53.1%) highlights systemic challenges. This contrasts sharply with rates from specialized centers in high-income countries where the mean rate of optimal cytoreduction was 62.3% [18]. The constraints in our setting include limited access to advanced surgical equipment, insufficient intensive care support for extensive procedures, and late disease presentation.

Given that nearly three-quarters of our patients presented with advanced stage disease, accurately determining the feasibility of optimal Primary Debulking Surgery (PDS) is paramount. In resource-rich settings, this assessment is often refined through diagnostic laparoscopy and the calculation of the Fagotti score, which evaluates seven predictive factors of resectability, including carcinomatosis, mesenteric retraction, omental cake, diaphragmatic disease, bowel infiltration, liver surface metastasis, and stomach infiltration, assigning a score of 0 or 2 to each parameter [19] [20]. A low Fagotti score (typically < 8) strongly predicts optimal cytoreduction and favors PDS, whereas a high score often leads to Neoadjuvant Chemotherapy (NACT).

However, at our institution, routine diagnostic laparoscopy for formal staging and calculation of the Fagotti score is rarely performed. This is primarily due to the significant financial constraints faced by patients and the limited availability of specialized laparoscopic equipment and dedicated theatre time, compelling reliance on less precise tools. Consequently, our selection relies heavily on clinical examination, cross-sectional imaging (CT), and assessment of performance status. Key criteria favoring an NACT-first strategy include: radiological or clinical evidence of high-volume disease (e.g., extensive upper abdominal involvement, large-volume ascites, or poor performance status) where complete resection is deemed highly unlikely; and significant medical co-morbidities that preclude upfront major surgery.

The survival advantage associated with neoadjuvant chemotherapy followed by interval debulking surgery (HR = 0.18, p = 0.037) in our multivariate analysis suggests that this approach may be particularly valuable in resource-limited settings where primary optimal cytoreduction is challenging to achieve.

4.4. Survival Outcomes and Predictors

The median overall survival of 29 months lags behind high-income country standards. For instance, a study conducted in 2009 in Greece [21] reported a value of 51 months, one conducted in 2023 in Cyprus [22] reported a value of 41 months, and another one conducted in 2017 in Malaysia reported a value of 38 months [23]. The disparity in median overall survival between our study and these previous studies could be attributed to differences in sample sizes, populations, and types of ovarian cancers included in those studies.

In the present study, the 5-year survival rate of ovarian cancer patients was 25%. This finding is higher than 13.3% reported in Senegal [24]. However, it is lower than 35.2% reported in Malaysia [23], 38% reported in Sudan [16], and 44% reported in Canada [25]. The relatively low survival rates reported among ovarian cancer patients could be due to most of them presenting with an advanced stage of the disease, as was observed in our setting.

The identified predictors of poor survival, advanced stage, and suboptimal debulking reinforce established oncological principles while highlighting areas for quality improvement.

The high loss to follow-up rate (37.5%) represents a critical challenge in cancer care continuity in our setting. This phenomenon, commonly reported across sub-Saharan Africa, undermines accurate outcome assessment and reflects systemic barriers including financial constraints, transportation difficulties, and preference for traditional medicine [26]. Furthermore, in the context of survival analysis, this high attrition rate introduces a potential bias by likely underestimating the true mortality; patients lost to follow-up may be systematically those with poorer prognoses or deteriorating health, who are less able to return for scheduled visits, thus leading to an overestimation of survival times in the remaining cohort.

Of the variables associated with predicting survival in ovarian cancer in the literature, co-morbidities, menopausal status, histological type, clinical stage at diagnosis, treatment pattern, and surgical debulking status were the ones considered in our study. Of these variables, the only significant factor influencing overall survival outcomes after multivariate analysis was the treatment pattern received by patients. Our study revealed that neoadjuvant chemotherapy followed by interval debulking surgery (NACT + IDS) was an independent predictor of improved overall survival when compared to primary debulking surgery followed by adjuvant chemotherapy (PDS + ACT) and palliative chemotherapy for patients with advanced disease.

We also identified predictors of progression-free survival (PFS) in our study. Both the treatment pattern and surgical debulking status showed significant associations with PFS. NACT + IDS predicted improved PFS, while suboptimal debulking was associated with reduced PFS.

Our finding that NACT + IDS is independently associated with improved overall and progression-free survival aligns with the study conducted by Vergote *et al.* [27] in England. Fagotti *et al.* [28] reported that NACT and PDS have the same

efficacy when used at their maximal possibilities. The EORTC-55971 and CHORUS trials, and subsequent pooled analyses [29], have shown that NACT + IDS is not inferior to PDS + ACT in terms of survival and may increase rates of optimal cytoreduction while reducing perioperative morbidity; advantages that are particularly relevant when primary complete cytoreduction is less frequently achievable. These trial data support consideration of NACT-first strategies for appropriately selected patients in low-resource environments.

Despite the role of NACT, residual disease after surgery remains the dominant modifiable predictor of outcome. Meta-analyses and systematic reviews confirm a strong, dose-dependent relationship between the amount of residual tumour and both progression-free and overall survival; complete macroscopic resection confers the best prognosis, while sub-optimal debulking is associated with markedly poorer outcomes [30]. In our study, sub-optimal debulking was associated with substantially reduced survival, emphasizing that whether treatment begins with chemotherapy or surgery, strategies must aim to maximize the probability of minimal residual disease at the end of cytoreduction.

4.5. Implications for Practice and Research

Our findings underscore the urgent need for earlier detection strategies, possibly through improved clinical awareness and ultrasound access at the primary care level. The demonstrated effectiveness of neoadjuvant chemotherapy approaches supports their considered use in appropriately selected patients. Furthermore, investments in surgical training and infrastructure are crucial to improve cytoreduction outcomes. In this regard, efforts should be made to integrate low-cost or adapted methods of determining respectability, possibly through enhanced radiologic scoring, to mitigate the inability to use diagnostic laparoscopy and the Fagotti score due to financial and logistical barriers.

Future research should focus on developing validated risk stratification tools appropriate for our context and exploring innovative follow-up strategies to reduce loss to follow-up. Qualitative studies examining patient perspectives and barriers to care would complement these quantitative findings.

4.6. Strengths and Limitations

This study provides valuable insights into the management of ovarian cancer in a resource-constrained setting, yet several limitations warrant acknowledgment. The retrospective design inherently limits data completeness and introduces potential selection biases. The significant proportion of patients lost to follow-up (37.5%) represents a particular challenge, as it may lead to an underestimation of mortality rates and limit the precision of our survival analyses. Specifically, if patients with more aggressive disease or poorer response to treatment are disproportionately lost, our survival estimates could be optimistically biased. Furthermore, our single-center experience, while reflective of a major referral hospital, may not fully capture the spectrum of care across different healthcare levels in

Cameroon. The absence of detailed data on surgical complexity scores, specific chemotherapy toxicities, and quality-of-life outcomes restricts our ability to fully evaluate the comprehensive impact of treatments on patients' lives. A notable methodological limitation is our inability to routinely employ predictive tools like the Fagotti score due to the financial burden of diagnostic laparoscopy on patients. This limits the objectivity of our selection for NACT and may introduce selection bias.

Despite these limitations, our study possesses notable strengths. The extended ten-year study period provides a substantial timeframe to capture trends and outcomes in ovarian cancer management. The use of robust statistical methods, including multivariate Cox regression analysis, strengthens our ability to identify independent predictors of survival in this population. The detailed characterization of treatment patterns, including surgical outcomes and chemotherapy regimens, offers practical insights for clinicians working in similar settings. Most importantly, this work contributes meaningful data from Central Africa, a region historically underrepresented in the global oncology literature, thereby enhancing our understanding of ovarian cancer presentation and outcomes across diverse populations and healthcare systems.

5. Conclusions

This ten-year review of ovarian cancer management at our institution paints a sobering yet instructive picture of the challenges and opportunities in cancer care in Central Africa. Our findings reveal a disease that predominantly affects women in their most productive years, presenting at advanced stages when treatment options are limited and outcomes are often compromised. The stark reality that nearly three-quarters of our patients presented with advanced disease underscores the critical need for earlier detection strategies in our setting.

The treatment pathways we have documented reflect both our adherence to international standards and the pragmatic adaptations necessary in a resource-constrained environment. The demonstrated survival benefit of neoadjuvant chemotherapy approaches, coupled with the challenges in achieving optimal cytoreduction, suggests that we must thoughtfully reconsider our primary treatment algorithms to maximize outcomes within our constraints.

Perhaps most importantly, our study highlights that improving ovarian cancer outcomes in Cameroon will require a multifaceted approach. Beyond medical interventions, we must address the systemic barriers, from delayed presentation to high rates of loss to follow-up, that currently undermine our best treatment efforts. The path forward demands not only improved surgical training and chemotherapy access but also community education, better referral networks, and innovative strategies to maintain patients in care.

While our outcomes may not yet match those reported from better-resourced settings, they represent important baseline data against which future improvements can be measured. They also serve as a call to action for healthcare planners,

clinicians, and researchers to work collaboratively toward solutions that are both evidence-based and context-appropriate for the women of Cameroon and similar settings across the region.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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