

Laparoscopy in Gynaecological Cancers: Experience at the Gynaecology, Obstetrics and Paediatrics Hospital in Yaoundé, Cameroon

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Abstract

Introduction: Laparoscopy has transformed the management of gynecological cancers in developed countries, providing considerable advantages during and after surgical procedures. However, its adoption in sub-Saharan Africa is progressing at a slow pace. This study aimed to evaluate the feasibility of this technique in a Cameroonian context. **Methods:** We carried out a retrospective descriptive study at HGOPY, spanning three years from 2022 to 2025. Our analysis included fifty-four patients who underwent laparoscopic surgery for gynaecological cancer, representing 29.5% of the 183 patients who were operated on for gynaecological cancer. **Results:** The average age of the patients was 50 years. The predominant diagnosis was cervical cancer, which comprised 61% of the cases. Endometrial cancer accounted for 33%, while ovarian cancer was less common, making up 6%. The rate of laparo-conversion was recorded at 7.4%, primarily due to difficulties in exposure and the presence of adhesions. The length of hospital stays was less or equal to 2 days in 88.9% of patients. Complications were rare, with just one instance of intraoperative bleeding, resulting in a rate of 1.85%. There were no significant post-operative complications, and no fatalities were reported. **Conclusion:** Laparoscopy represents a feasible and effective approach for managing gynaecological cancers in sub-Saharan Africa. Despite the technical and resource-related challenges faced, it yields positive perioperative results.

Keywords

Laparoscopy, Gynaecological Cancers, Feasibility, Cameroon

1. Introduction

Gynaecological cancers represent a significant public health issue on a global scale, particularly impacting low- and middle-income nations [1]. In Cameroon, cervical cancer stands out as the most prevalent cancer affecting women. It is also the primary cause of cancer-related deaths among females, with an estimated incidence rate of 40.2 per 100,000 each year [2]. Historically, surgeons have depended on laparotomy for managing these cases, a method that often resulted in considerable morbidity. Patients frequently experienced substantial blood loss, intense post-operative pain, a heightened risk of infections, and extended recovery periods [3].

In the past thirty years, the landscape of surgical treatment has been transformed by the advent of minimally invasive surgery. Laparoscopy, which was initially employed for diagnostic and staging purposes, has rapidly established itself as the preferred method for treating various cancers, including early-stage endometrial cancer [4]. The existing international literature robustly supports its advantages. Numerous studies have demonstrated that laparoscopy achieves oncological results comparable to those of laparotomy. The key benefits of this approach include reduced blood loss, diminished post-operative discomfort, shorter hospital stays, and a quicker return to normal activities [5] [6]. The extensive LAP2 randomized trial further validated these findings, confirming the safety and practicality of laparoscopic staging for endometrial cancer [7].

In sub-Saharan Africa, the implementation of advanced surgical techniques encounters significant challenges. Key obstacles include the unavailability of specialized equipment, the prohibitive costs of instruments, equipment maintenance, cost barriers, a steep learning curve for technical skills, and a lack of organized training programs [8]. Nevertheless, innovative practices are starting to surface from various African institutions, showcasing the potential for oncological laparoscopy within this unique context. A study conducted in Cameroon by Tompeen *et al.* [9] found that laparoscopic radical hysterectomy for early-stage cervical cancer led to fewer complications compared to the conventional laparotomy method. This outcome highlights laparoscopy as a safe and effective option. In Senegal, Diallo *et al.* [10] shared a successful experience with laparoscopic treatment of endometrial cancer, achieving perioperative outcomes that align with international standards. Although such studies remain uncommon, they reflect an increasing interest and capability for surgical advancement in the region.

The Yaoundé Gynaecology, Obstetrics and Paediatrics Hospital (HGOPY) stands out as a prominent gynaecology center in Cameroon. Recently, it has initiated a specialized programme for laparoscopic oncology surgery. Thus, assessing this developing practice has become crucial. Our study aims to outline the preliminary exper-

rience with laparoscopy for gynaecological cancers at HGOPY.

2. Materials and Methods

2.1. Study Design and Setting

We carried out a descriptive cross-sectional study. It was conducted at the Yaoundé Gynaecology, Obstetrics and Paediatrics Hospital (HGOPY), a tertiary referral and training centre for gynaecology, obstetrics, and gynaecological oncology. Data collection was retrospective.

2.2. Study Duration and Period

The research investigation lasted for 10 months, starting from 1st November 2024 to 1st September 2025. However, the data we collected covered a three-year clinical period, starting from 1st January 2022 to 1st January 2025.

2.3. Study Population and Sampling

Our target population included all patients who underwent surgery for a gynaecological cancer at HGOPY during the period under consideration, regardless of the surgical approach. The source population was narrowed to those who had specifically undergone a laparoscopic procedure for diagnosis, staging, or treatment of a histologically confirmed gynaecological cancer. Patients were excluded in cases of incomplete medical records. This exclusion applied in the presence of missing essential data about the type of surgery performed, the histological diagnosis, or significant perioperative parameters. A non-probabilistic sampling method was used. Recruitment was consecutive and exhaustive, including all eligible cases that were found throughout the study period.

2.4. Procedure

The entire research protocol was first drafted and submitted for approval. We obtained ethical approval from the Institutional Ethics Committee, and recruitment authorization from the management of HGOPY before beginning the investigation. Data collection was initiated by consulting the records of the operating theatre. We first counted all the patients who had undergone surgery for gynaecological cancers. From this list, we identified those who had a laparoscopic procedure. Their medical records were then retrieved from the hospital archives. We selected only complete records, which included detailed surgical reports and documented pathology results. Data were collected using a previously tested and validated form. The variables studied included socio-demographic, clinical, oncological, perioperative, and post-operative characteristics.

2.5. Statistical Analysis

Data entry and analysis were performed using IBM SPSS Statistics software, version 26.0. Quantitative variables are expressed as means with standard deviations, and if their distribution was not normal, we used medians with interquartile

ranges. Qualitative variables were summarized as numbers and percentages. Statistical analysis was mainly descriptive.

2.6. Ethical Considerations

Patient confidentiality was strictly observed. Anonymity was assured through the use of unique identification codes on all data collection forms instead of personal identifiers. The HGOPY Institutional Ethics Committee approved the complete study protocol before the commencement of data collection.

3. Results

During the three-year recruitment period, 183 women underwent surgery for a gynaecological cancer. Of these procedures, 120 were performed via laparotomy. The remaining 63 surgeries used a laparoscopic approach. But 9 patients were excluded, and 54 were included. This represents a proportion of 29.5% for laparoscopy. The complete patient flow is detailed in **Figure 1**.

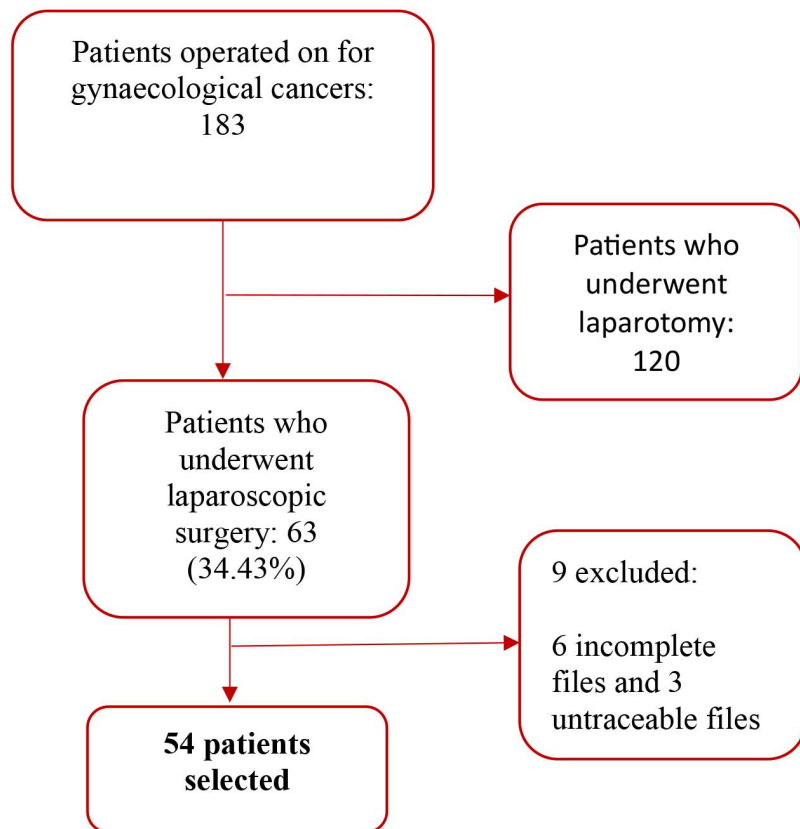


Figure 1. Patient flow diagram.

3.1. Socio-Demographic and Clinical Characteristics

The age group most represented in our study population was 45 to 55 years. Regarding education, 39.4% of participants had attained a higher level. Furthermore, more than half of the women resided in urban areas (**Table 1**).

Table 1. Socio-demographic characteristics of the population.

Socio-demographic characteristics	Type of cancer Total			Total
	Cervix n(%)	Ovary n(%)	Endometrium n(%)	
Age				
[25 - 35]	1(3.0)	0(0.0)	0(0.0)	1(1.9)
[35 - 45]	7(21.2)	1(33.3)	5(27.8)	13(24.1)
[45 - 55]	21(63.6)	0(0.0)	10(55.6)	31(57.4)
> 55	4(12.1)	2(66.7)	3(16.7)	9(16.7)
Marital status				
In a relationship	22(66.7)	0(0.0)	15(83.3)	37(68.5)
single	11(33.3)	1(33.3)	1(5.6)	13(24.1)
widowed	0(0.0)	2(66.7)	2(11.1)	4(7.4)
Level of education				
Primary	11(33.3)	0(0.0)	2(11.1)	13(24.1)
Secondary	9(27.3)	0(0.0)	0(0.0)	9(16.7)
Higher	13(39.4)	3(100.0)	16(88.9)	32(59.3)
Place of residence				
Urban area	20(60.6)	3(100.0)	18(100.0)	41(75.9)
Rural area	13(39.4)	0(0.0)	0(0.0)	13(24.1)

3.2. Clinical Characteristics of the Study Population

An analysis of patient histories revealed distinct clinical profiles. Among those undergoing surgery for cervical cancer. Several factors were predominant. These included early onset of sexual activity (66.7%). A history of sexually transmitted infections (93.9%), and multiparity (75.8%). In contrast, the ovarian cancer population was characterized mainly by nulliparity. For patients with endometrial cancer. Two-thirds presented with obesity. These findings are detailed in **Table 2**.

Before surgery, patient complaints also varied by cancer type. Metrorrhagia was the primary complaint for women suffering from both cervical and endometrial cancers. For those operated on for ovarian cancer. The main symptoms were a sense of pelvic heaviness and pain, reported in 66.7% of cases (**Table 3**).

Table 2. Background of the study population.

		History Type of cancer Total			Total
		Cervix n (%)	Ovary n (%)	Endometrium n (%)	
1rst sexual intercourse	< 16 y/o	22(66.7)	0(0.0)	0(0.0)	22(40.7)
	≥ 16 y/o	11(33.3)	3(100.0)	18(100.0)	32(59.3)
STI	Yes	31(93.9)	3(100.0)	0(0.0)	34(63.0)
	No	2(6.1)	0(0.0)	18(100.0)	20(37.0)
Multiple sexual partners	Yes	12(36.4)	0(0.0)	1(5.6)	13(24.1)
	No	21(63.6)	3(100.0)	17(94.4)	41(75.9)
Parity	Nulliparous	5(15.2)	3(100.0)	0(0.0)	8(14.8)

Continued

	Pauciparous	3(9.1)	0(0.0)	9(50.0)	12(22.2)
	Multiparous	25(75.8)	0(0.0)	9(50.0)	34(63.0)
Obesity	Yes	2(6.1)	0(0.0)	12(66.7)	14(25.9)
	No	31(93.9)	3(100.0)	6(33.3)	40(74.1)
Age at menopause	40 - 55 ans	19(100.0)	2(100.0)	0(0.0)	21(87.5)
	>55 ans	0(0.0)	0(0.0)	3(100.0)	3(12.5)

Table 3. Functional signs of the study population.

Fonctional signs		Type of cancer			Total
		Cervix n (%)	Ovary n (%)	Endometrium n (%)	
Pelvic pain	Yes	1(3.0)	2(66.7)	0(0.0)	3(5.6)
	No	32(97.0)	1(33.3)	18(100.0)	51(94.4)
Pelvic heaviness	Yes	0(0.0)	3(100.0)	5(27.8)	8(14.8)
	No	33(100.0)	0(0.0)	13(72.2)	46(85.2)
Vaginal discharge	Yes	2(6.1)	0(0.0)	2(11.1)	4(7.4)
	No	31(93.9)	3(100.0)	16(88.9)	50(92.6)
Metrorrhagia	Yes	24(72.7)	0(0.0)	8(44.4)	32(59.2)
	No	9(27.3)	3(100.0)	10(55.6)	22(40.8)

3.3. Operative Aspects of Laparoscopy for Gynaecological Cancers

The distribution of cancers treated laparoscopically showed cervical cancer to be the most common at 61.1%. Endometrial cancer followed at 33.4%, with ovarian cancer being less frequent at 5.6%.

Regarding surgical details, the principal procedure performed was an extended colpohysterectomy combined with lymphadenectomy. This procedure was performed for all cervical cancer patients (100%) with subclinical or early-stage disease. It was also used in 16.7% of endometrial cancer cases, specifically those at stage II. The duration of surgery was less than three hours for nearly all patients. The main intraoperative difficulty encountered was pelvic adhesions. Importantly, no metastases were identified in these patients during surgery, and no intraoperative complications were recorded. All operative data are presented in **Table 4**.

Table 4. Operative aspects of laparoscopy for gynaecological cancers.

Operative aspects		Type of cancer			Total
		Cervix n (%)	Ovary n (%)	Endometrium n (%)	
Procedure	Diagnostic L.	0(0.0)	3(100.0)	0(0.0)	3(5.6)
	RH + PL	33(100)	0(0.0)	3(16.7)	36(66.7)
	HRT + BSO + PL	0(0.0)	0(0.0)	15(83.3)	15(27.7)
Duration of procedure	≤3h	32(97.0)	3(100.0)	18(100.0)	53(98.1)
	>3h	1(3.0)	0(0.0)	0(0.0)	1(1.9)
Indication	Endometrial cancer (IA)	0(0.0)	0(0.0)	15(83.3)	15(27.8)

Continued

	Endometrial cancer (II)	0(0.0)	0(0.0)	3(16.7)	3(5.6)
	Cervical cancer (IA2)	5(15.2)	0(0.0)	0(0.0)	5(9.3)
	Cervical cancer (IB1)	28(84.8)	0(0.0)	0(0.0)	28(51.8)
	Ovarian cancer	0(0.0)	3(0.0)	0(0.0)	3(5.6)
	Subclinical	5(15.2)	0(0.0)	0(0.0)	5(9.3)
Stage	Early	28(84.8)	0(0.0)	18(72.2)	46(85.2)
	Locally advanced	0(0.0)	0(0.0)	0(0.0)	0(0.0)
	Metastatic	0(0.0)	3(100)	0(0.0)	3(5.6)
Procedures	Excision	33(100.0)	0(0.0)	18(100.0)	51(94.4)
	Peritoneal Biopsy	0(0.0)	3(100.0)	6(33.3)	9(16.7)
Laparo-conversion	Yes	2(6.1)	0(0.0)	2(11.1)	4(7.4)
	No	31(93.9)	3(100.0)	16(88.9)	50(92.6)
Difficulties	Adhesive pelvis	12(36.4)	1(33.3)	2(11.1)	15(27.8)
	Uterine size >15 weeks	2(6.1)	0(0.0)	2(11.1)	4(7.4)
	Haemorrhage	0(0.0)	0(0.0)	0(0.0)	0(0.0)
	Bladder injury	0(0.0)	0(0.0)	0(0.0)	0(0.0)
Intraoperative complications	Ureteral injury	0(0.0)	0(0.0)	0(0.0)	0(0.0)
	Digestive tract injury	0(0.0)	0(0.0)	0(0.0)	0(0.0)

Diagnostic L. = Diagnostic laparoscopy; HRT + BSO + PL = Hysterectomy + Bilateral Salpingo-Oophorectomy + Pelvic Lymphadenectomy; RH + PL = Radical Hysterectomy (type C1) + Pelvic Lymphadenectomy.

3.4. Post-Operative Patient Progress

Following their laparoscopic surgery, the hospital stay for almost all patients was two days. Throughout this post-operative period, no complications were reported. These outcomes are summarized in **Table 5**.

Table 5. Progression of the patient after laparoscopy.

Progressive aspects		Type of cancer			Total
		Cervix n (%)	Ovary n (%)	Endometrium n (%)	
Length of hospital stay (in days)	≤2	31(93.9)	1(33.3)	16(88.9)	48(88.9)
	>2	2(6.1)	2(66.7)	2(11.1)	6(11.1)
Post-operative Complications	Haemorrhage	0(0.0)	0(0.0)	0(0.0)	0(0.0)
	Infection	1(3.0)	0(0.0)	0(0.0)	1(1.9)
	Thromboembolism	0(0.0)	0(0.0)	0(0.0)	0(0.0)

4. Discussion

Our study found that 29.5% of surgeries for gynaecological cancers were per-

formed laparoscopically. The global rate of laparoconversion stands at 6.1%, mainly for reasons related to uterine size >15 weeks. This result attests to the rapid integration of the technique into our centre's therapeutic armamentarium. Our adoption rate surpasses that often documented in the initial experiences of other African institutions, both as a result of strong institutional commitment and increasing surgical know-how [10]. Leroux *et al.* reported in 2011 that 51.1% of procedures for gynaecological malignancies were performed via a laparoscopic approach in France [11]. Such a discrepancy is understandable, since laparoscopy has been recognized for more than two decades as a standard of care in France.

Our patient profile shows several important social determinants. This population was predominantly urban (75.9%) and highly educated (59.3%), suggesting that access to this advanced technology may be related to socioeconomic status. This is a common bias in resource-limited settings, where innovations often first reach the most informed and geographically accessible patients [12].

Although it is not an analytical study, the distribution of identified risk factors agrees with data in current epidemiological literature. In cervical cancer, the proportions of 66.7% early sexual intercourse, 93% history of STIs, and 75.8% multiparity confirm the known role of HPV and high parity among major risk factors for the disease [13]. The robust association we found between obesity and endometrial cancer is also widely reported as a result of peripheral hyperoestrogenism [14]. Nulliparity, likewise demonstrated in all our ovarian cancer cases is well recognized as a risk-enhancing factor for this malignancy [15].

In our series, ovarian cancer represented only 5.6% of the laparoscopic procedures. These were mainly performed for diagnosis and staging. This small percentage reflects the particular challenges of this malignancy. The indications for laparoscopy in ovarian cancer are mainly confined to the staging of suspected early-stage tumours and assessment of resectability [16]. Our patients presented with classic symptoms of pelvic heaviness (100%) and pain (66.7%), often associated with large masses. All these patients received neoadjuvant chemotherapy followed by cytoreductive laparotomy. The role of laparoscopy in ovarian cancer remains highly controversial, mainly due to the risk of cyst rupture and potential tumor spillage [17]. Gallotta *et al.*, however, demonstrated that trained surgeons can safely use laparoscopy to select patients for primary cytoreduction without compromising oncologic outcomes compared to laparotomy [18]. In our environment, where all encountered cases were metastatic, the laparoscope was useful in diagnosis and staging without complications. Its extension to cytoreductive surgery must be approached with extreme caution and within the framework of prospective studies.

Endometrial cancer accounted for 33.4% of our series, a proportion likely to grow. The main risk factor is obesity, present in 66.7% of these patients, which also forms one of the most important technical challenges for minimally invasive surgery [14]. Despite this laparoscopy is now the standard for surgical staging of early-stage disease, as per international consensus [19]. The landmark LAP2 trial firmly established its feasibility and non-inferiority in terms of survival despite a

higher conversion rate in obese patients [3]. This has been reinforced by studies like Janda *et al.*, which found no difference in recurrence-free survival between approaches [5]. In our study, we performed total hysterectomy with bilateral salpingo-oophorectomy and lymphadenectomy in 83.3% of endometrial cancer cases without intraoperative complications. This confirms that, despite a high prevalence of obesity, laparoscopy is feasible and safe in the management of endometrial cancer in our practice.

Cervical cancer was the main indication for laparoscopy in our series (61.1%). In contrast, in high-income countries, this indication is usually surpassed by endometrial cancer, but our figure agrees with local epidemiology [2]. Laparoscopy is useful for the staging of locally advanced disease and for performing radical hysterectomy with lymphadenectomy in the early stages of the disease (FIGO IA2-IB1) [20]. However, the LACC trial created significant controversy, showing worse overall survival for minimally invasive radical hysterectomy compared to open surgery [21]. While several methodological criticisms exist, more recent studies. In particular, those who introduced the no-look, no-touch technique with a closed vaginal cuff have not found differences in oncological results [22]. The “no-look, no-touch” technique is a direct surgical response to the oncological risks highlighted by the LACC trial, and it is designed to mitigate the two primary mechanisms believed to cause tumor dissemination during conventional minimally invasive surgery: the mechanical disruption of the tumor by instruments and aerosolization of cells by the pneumoperitoneum. This can be achieved through two key principles: “no-touch” meaning avoid use of a uterine manipulator, which can crush the tumor and dislodge malignant cells. Instead, the uterus is handled only by its supporting ligaments, preventing direct instrumentation near the cervix and its draining lymphatics, “no-look” refers to sealing and closure of the vagina before the colpotomy. This contains the tumor within a closed compartment, preventing the escape of exfoliated cells into the peritoneal cavity where they could implant. In the present series, the radical procedure was performed in 100% of the cases involving cervical cancer. The conversion rate was low (6.1%) and there were no complications. All tumours were less than 2 cm and we used the technique of vaginal cuff closure without uterine manipulator described by other authors [23] [24]. Technical data support that mastering a rigorous, tumor-free technique is essential; our findings are associated with these. Thus, laparoscopy keeps an important place in cervical cancer management, particularly in regions with high incidence, where benefits from rapid recovery are very important. Its use must be guided. However, by rigorous selection of patients, informed consent with regard to the risks, and demonstrated surgical experience.

This is among the first studies detailing the practice of gynaecological oncological laparoscopy in Central Africa. We show significant adoption of this minimally invasive approach. Coupled with very favourable perioperative outcomes. Our study’s strengths reside in the fact that we provide. For the first time in the region. Accurate quantitative data that may serve as a benchmark for other centres. Limitations include the retrospective. Single-centre nature of our study design. The

absence of information on long-term survival and quality of life is a limitation for a comprehensive oncological evaluation. Furthermore, while the cohort provides valuable insights. The small sample size for ovarian cancer ($n = 3$). limits the generalizability of our findings for this cancer. A further comparative study between laparoscopy and laparotomy would. In our context, provide stronger evidence to prove the benefit of the minimally invasive approach.

5. Conclusions

Our study confirms the feasibility and safety of laparoscopic surgery in gynaecological cancers. This finding holds true for Cameroon and holds relevance throughout the African continent. An adoption rate of 29.5% demonstrates the successful integration of this minimally invasive approach into our practice. The absence of major complications in the perioperative period and the short lengths of stay we observed further confirm its enormous benefits. The predominance of cervical cancer as the main indication is a relevant adaptation to our local epidemiological reality.

To continue this success, we suggest concrete recommendations for resource optimization and improvement of patient care. We emphasize that structured training programmes in minimally invasive techniques should be implemented without delay. Centres are to be provided with surgical equipment at the same time. There is a need for a prospective evaluation of long-term oncological outcomes now. Cost-effectiveness analyses are also required, which will be helpful for further health policies. Finally, this technique must be incorporated into the standardized multidisciplinary pathways of care for gynaecological malignancies.

Conflicts of Interest

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

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