RADICAL HYSTERECTOMY FOR EARLY-STAGE CERVICAL CANCER IN A LOW-RESOURCE SETTING: SURGICAL OUTCOMES AND LESSONS FROM A RETROSPECTIVE CROSS-SECTIONAL STUDY

A.M. Olumodeji[1,2], A.K. Adefemi[1], M.O. Adedeji[1], O.Q. Edun[2], U.O. Olumodeji[3], K.A. Rabiu[1,2], O.I. Akinola[1,2]

1. Gynae-oncology Unit, Department of Obstetrics and Gynaecology, Lagos State University Teaching Hospital, Lagos, Nigeria.
2. Department of Obstetrics and Gynaecology, Lagos State University College of Medicine, Lagos, Nigeria.
3. Department of Ophthalmology, Lagos State University Teaching Hospital, Lagos, Nigeria.

Correspondence:
Dr. A.M. Olumodeji
Dept. of Obstetrics and Gynaecology, Lagos State University Teaching Hospital, Lagos, Nigeria.
Email: ayokunleolumodeji@yahoo.com

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ABSTRACT

Background: **Cervical cancer remains the leading cause of cancer-related deaths among women in low- and middle-income countries, with Sub-Saharan Africa bearing a disproportionate burden. In low-resource settings, cervical cancer often presents at advanced stages due to delayed diagnosis, limiting options for curative surgery.**

Objective: **This study describes the feasibility and outcomes of radical hysterectomy (RH)—an infrequently performed surgical procedure in our context—for early-stage disease at Lagos State University Teaching Hospital (LASUTH), Nigeria.**

Methods: **A retrospective review of all radical hysterectomies performed in 2024 at LASUTH included 7 cases (5.3% of 132 cervical cancer evaluations). Radical hysterectomy represented 0.87% of 804 major gynecologic surgeries. Data collected encompassed demographics, operative details, histopathology, and outcomes. Bilateral internal iliac artery ligation was routine. Statistical analysis was descriptive.**

Results: **The cohort (mean age 48 years, median parity 4) presented after a mean of 28.29 symptom weeks, with 71.4% (5/7) delaying care for more than one month. No patients had prior screening; 28.6% (2/7) wrongly had screening tests requested post-symptom onset. Mean surgery duration was 177.14 minutes and estimated blood loss was 655 mL. Histology showed squamous cell carcinoma (85.7%, 6/7) and adenocarcinoma (14.3%, 1/7). Postoperatively, 28.6% (2/7) had parametrial involvement and 20% (1/5) had nodal metastasis. Adjuvant therapy was initiated in 71.4% (5/7: chemoradiation 42.9%, chemotherapy 28.6%), while 28.6% (2/7) declined due to cost. One post-operative complication of neurogenic bladder (14.3%) was observed, which resolved with conservative management. All patients survived at 12 months.**

Conclusion: **Despite the small series and short follow-up, our findings suggest that radical hysterectomy is safe and feasible within a tertiary centre in Nigeria. This study also highlights the persisting gaps in cervical cancer screening and timely referral in our setting, which limit the number of women eligible for curative surgery.**

Keywords: Hysterectomy, Cervical cancer, Radical hysterectomy

INTRODUCTION

Cervical cancer remains a leading cause of cancer-related deaths among women in low- and middle-income countries (LMICs), with Sub-Saharan Africa bearing a disproportionate burden of the disease.[1,2] Globally, cervical cancer is the fourth most common cancer in women, but in many LMICs, including Nigeria, it is the second most common and often the deadliest.[2,3] The high mortality rates in these regions are largely attributed to late-stage presentation, weak health systems, poor access to preventive services, and limited availability of timely, definitive treatment options.[4]

Despite the preventable nature of cervical cancer through vaccination and early detection by screening, most women in Nigeria and similar settings do not benefit from these interventions.[5] Organized screening programs are scarce, and opportunistic screening is

underutilized.[5,6] Consequently, many women present with symptoms of advanced disease—often months after symptom onset—making them ineligible for potentially curative surgical management such as radical hysterectomy (RH).[7] In contrast, in high-income countries, RH is routinely performed for early-stage cervical cancer, offering favorable long-term survival and quality-of-life outcomes.[7]

In Nigeria, the surgical option of radical hysterectomy is rarely offered or performed due to factors including delayed diagnosis, limited surgical expertise, concerns about perioperative morbidity, and inadequate infrastructure for post-operative support in many settings. As such, most patients are either referred for palliative care or chemoradiation—which is often unavailable or delayed—while the few who present at an early stage may undergo a simple hysterectomy, which is frequently inadequate for definitive cancer treatment.[7] However, RH remains an important option for selected early-stage cases, especially where access to radiotherapy is limited, delayed, or unaffordable. There is a need to document and understand the feasibility, safety, and outcomes of RH in resource-limited contexts to inform practice and policy.

This study aims to describe the characteristics and surgical outcomes of women who underwent RH for early-stage cervical cancer at the Lagos State University Teaching Hospital (LASUTH), a major tertiary referral center in Southwest Nigeria, and to highlight the practical lessons and implications for surgical oncology practice in resource-limited settings. Its findings provide preliminary insights into the feasibility and safety of radical hysterectomy in a low-resource setting, and may help inform future studies and strategies aimed at improving early detection and referral."

MATERIALS AND METHODS

This retrospective study was conducted at the Lagos State University Teaching Hospital, a tertiary health institution located in Ikeja, Lagos, Nigeria. The study reviewed all cases of radical hysterectomy performed at the hospital between January and December 2024. LASUTH serves as a major referral center for gynecologic oncology and provides both diagnostic and advanced surgical services for female pelvic malignancies.

All women who underwent radical hysterectomy during the study period were identified from the theatre register, operative logbooks, and case files in the Department of Obstetrics and Gynaecology. Data extracted included patient demographics, clinical indications for surgery, intraoperative findings, operative techniques, histopathological diagnoses, and early postoperative outcomes.

All patients underwent Type C radical hysterectomy as defined by the Querleu–Morrow classification[8], performed via the open abdominal approach under general anaesthesia using a standardized surgical protocol.[7] The patient was placed in a supine position, and both the abdomen and vagina were prepped and draped in sterile fashion. A Foley catheter was inserted into the bladder pre-operatively. A vertical midline incision extending from approximately 3 cm above the umbilicus to the pubic symphysis was made to provide adequate exposure. A malleable retractor was used to retract the abdominal wall, and the entire peritoneal cavity was surveyed for metastatic disease prior to pelvic dissection.

Bilateral ligation of the internal iliac arteries was routinely performed to minimize intraoperative blood loss. The parametrial and paravaginal tissues were carefully dissected and ligated, followed by transection of the vagina approximately 3 cm below the cervix. Systematic lymphadenectomy was performed, involving the removal of pelvic and para-aortic lymph nodes with meticulous identification and preservation of key anatomical structures, including the ureters and obturator nerves.[7] Hemostasis was achieved, and the vaginal cuff was closed using absorbable sutures. Drains were placed at the surgeon's discretion. The abdomen was closed in layers.

Data were compiled and analyzed using descriptive statistics. Variables were expressed as frequencies and percentages for categorical data, and as means or medians for continuous variables, where appropriate. Ethical approval for the study was obtained from the Health Research Ethics Committee of LASUTH (approval number LREC/06/10/2520). It was a retrospective review with no direct patient contact. Patient confidentiality was maintained throughout the data collection and analysis process.

RESULTS

A total of seven radical hysterectomies were performed in 2024 at Lagos State University Teaching Hospital, representing 5.3% of the 132 women who underwent examination under anaesthesia (EUA) for suspected cervical cancer during the study period. Radical hysterectomy accounted for 0.87% of the 804 major elective gynecologic surgeries conducted within the same timeframe. Notably, approximately 94% of all cervical cancer cases evaluated at our hospital during this period presented at advanced stages, underscoring the limited pool of early-stage surgical candidates.

Table 1: Sociodemographic characteristics of the women

Variable	Frequency	Percent
Mean age (years) ± SD	48 ± 5.86, Range = 15 (39 - 54)	
Occupation		
Trade	4	57.1%
Teacher	1	14.3%
Farmer	1	14.3%
Accountant	1	14.3%
Tribe		
Yoruba	4	57.1%
Edo	2	28.6%
Others	1	14.3%
Marital Status		
Single	1	14.3%
Married	6	85.7%
Marriage type		
Monogamous	6	85.7%
Polygamous	0	0.0%
Unmarried	1	14.3%

SD – Standard deviation

The mean age of the women was 48.0 years (SD ± 5.86). The majority were traders, and most were of Yoruba ethnicity. Six of the seven women were married (Table 1). The women had a median parity of 4 (range: 0–7). None of the women had undergone cervical cancer screening prior to diagnosis, although two had screening tests requested at the referring centres following symptom onset. All patients were HIV-negative. The most common presenting symptoms were abnormal vaginal bleeding (57.1%) and post-coital bleeding (42.9%). Most of the patients had no medical comorbidities; others had co-existing diabetes and hypertension, or a history of peptic ulcer disease (Table 2).

Pre-operative staging, oncologic characteristics, and surgical outcomes are summarized in Table 3. Pre-operative radiological staging showed that five women (71.4%) were at stage I and two (28.6%) were at stage II. Histologically, six tumours (85.7%) were squamous cell carcinomas, while one (14.3%) was adenocarcinoma. The mean duration of surgery was 177.1 minutes (SD ± 41.82) and the mean estimated intraoperative blood loss was 655.0 mL (SD ± 249.3).

Table 2: Gynaecologic and clinical characteristics of the women

Variable	Frequency	Percent/Range
Mean Number of prior pregnancies	5.29 ± 2.29	2 – 8
Median Parity	4	0 - 7
Menopausal Status		
Pre-menopausal	5	71.4%
Post-menopausal	2	28.6%
Prior Cervical cancer screening*		
Yes	0	0.0%
No	7	100%
Retroviral Status		
Positive	0	0.0%
Negative	7	100%
Presenting symptoms		
Post-coital bleeding	3	42.9%
Abnormal vaginal bleeding	4	57.1%
Medical Co-morbidities		
None	5	71.4%
Diabetic and Hypertensive	1	14.3%
Peptic Ulcer Disease	1	14.3%

**Two of the women had screening tests requested at the referring centre after onset of symptoms of cervical cancer.*

Table 3: Oncologic and surgical characteristics of the population

Variable	Frequency	Percent/Range
Pre-operative Radiological Staging		
Stage 1	5	71.4%
Stage 2	2	28.6%
Stage 3	0	0.0%
Stage 4	0	0.0%
Pre-operative Radiological Lymph Node Involvement		
No lymph node involvement	6	85.7%
Lymph node involvement	1	14.3%
Pre-operative Clinical Staging		
Stage 1A	3	42.9%
Stage 1B	2	28.6%
Stage 2A	2	28.6%
Stage ≥ 2B	0	0.0%
Histological type		
Squamous Cell Carcinoma	6	14.3%
Adenocarcinoma	1	85.7%
Cancer Grade		
Grade 1 (Well differentiated)	2	28.6%
Grade 2 (Moderately differentiated)	1	14.3%
Grade 3 (Poorly differentiated)	4	57.1%
Grade 4 (Undifferentiated)	0	0.0%
Means		
Mean Duration of Surgery (Minutes)	177.14 ± 41.82	110 (120 - 230)
Mean Largest Diameter of Lesion (mm)	38.08 ± 13.70	37 (21 - 58)
Mean Pre-op Packed Cell Volume (%)	33.37 ± 4.55	15.1 (25.2 – 40.3)
Mean Intra-op EBL (mls)	655.00 ± 249.30	700 (400 - 1100)
Mean Duration of Admission Post-op (days)	6.67 ± 5.20	13 (4 - 17)
Post-Operative Complications		
Nil	6	85.7%
Neurogenic bladder	1	14.3%
Post-operative Histologic Evidence of Parametrial Involvement		
Yes	2	28.6%
No	5	71.4%
Adjuvant Therapy		
Chemoradiation	3	42.9%
Chemotherapy only	2	28.6%
Radiotherapy only	0	0.0%
None	2	28.6%
Health Status (12 months post-op)		
Alive and well	6	85.7%
Lost to follow-up	1	14.3%
Resumption of coital activity (6 months post-op)		
Yes	1	14.3%
No	4	57.1%
Not stated	2	28.6%

Post-op: Post-operative, Intra-op: Intra-operative, Pre-op: Pre-operative, EBL – Estimated blood loss.

Post-operative complications were observed in only one patient (14.3%) who developed neurogenic bladder, which resolved with conservative management.

Histologic examination revealed parametrial involvement in two patients (28.6%). Following surgery, three women (42.9%) received adjuvant chemoradiation, two (28.6%) received chemotherapy only, and two (28.6%) had not commenced further treatment due to financial constraints. At 12 months post-operatively, six women (85.7%) were alive and well, while one (14.3%) was lost to follow-up.

Discussion

Radical hysterectomy remains uncommon in our setting, accounting for only 5.3% of cervical cancer cases evaluated under anaesthesia in 2024 and just 0.87%

of all major non-emergency (elective) gynecologic surgeries. This sample size, though small, reflects the real-world volume of RH procedures in a resource-constrained setting where most cervical cancer cases still present at late stages.[9,11,15,16] With only seven radical hysterectomies performed in one year, our institution falls within the low-volume category (fewer than 32 surgeries in 5 years) as defined by Matsuo *et al.*[9], who demonstrated significantly improved survival outcomes for early-stage cervical cancer patients treated at high-volume centres. The low rate of surgical management in our setting reflects the advanced stage at presentation in most of the women evaluated for cervical cancer. In many other Nigerian hospitals, where surgery is feasible, procedures are often performed by general gynaecologists without formal oncologic training, potentially compromising oncologic outcome.[10,11]

A striking finding in our study is that none of the patients had undergone cervical cancer screening prior to the onset of symptoms, and notably, only two had screening tests requested after they presented with complaints. This points to a significant problem at the level of initial care: rather than performing appropriate diagnostic evaluations such as a vaginal examination, cervical inspection, or biopsy, some healthcare providers at primary and secondary levels inappropriately resort to ordering screening tests even in clearly symptomatic women. This not only delays diagnosis but also risks missed diagnoses, as screening tests are not designed for symptomatic evaluation and may return false reassurance. These missteps, combined with poor public awareness and weak health system structures, contribute to delayed presentation and treatment.[12] Strengthening the diagnostic capacity of frontline health workers—through training in proper assessment protocols and ensuring access to essential diagnostic tools—is essential to improve early detection and timely referral.

The clinical profiles of the women in our cohort—mostly premenopausal, multiparous, HIV-negative, and symptomatic—mirror the typical demographic at risk in low- and middle-income settings. Abnormal vaginal bleeding and postcoital bleeding were the most common presenting complaints, consistent with literature describing these as classic warning signs of cervical cancer. Similar trends have been documented in India, where Jain *et al.*[13] reported that abnormal bleeding was a predominant symptom among women with cervical cancer, the majority of whom presented at an advanced stage, were multiparous, and had low literacy levels. Likewise, Dahiya *et al.*[14] found that abnormal vaginal discharge, postmenopausal bleeding, and pelvic pain were the leading presenting complaints in women with advanced disease, with most participants being multiparous, of low socioeconomic status, and with limited formal education. Although our study population differs in being largely premenopausal and HIV-negative, the overlap in reproductive profile and symptomatology points to the persistence of common risk patterns—particularly high parity and delayed health-seeking behaviour—across LMICs. These findings emphasize the need for prioritized awareness and screening interventions among multiparous women in this demographic, even before menopause, to facilitate earlier diagnosis and improve outcomes.

Pre-operative staging identified 71.4% of the women in our cohort as stage I and the remainder as stage II. This is comparable with findings from other Nigerian studies, where over 60% of patients present with advanced disease at diagnosis.[15,16] Furthermore, this mirrors findings reported by Musa *et al.* in Jos, Nigeria, that an alarming 72.3% of cervical cancer cases present at late stages[11], largely due to inadequate screening and delayed diagnosis in our country. Histologically, squamous cell carcinoma predominated (~90%) and a high proportion of tumours were poorly differentiated—consistent with global high-burden trends, similar to other specific Nigerian data.[15,17] Notably, parametrial involvement was present in nearly 30% of cases despite early clinical staging, pointing to the limitations of preoperative assessments. Indeed, some evidence shows that standard imaging and clinical staging often underestimate parametrial invasion in early-stage disease, which has critical implications for surgical planning.[18]

Surgical outcomes in our cohort were overall favourable, with minimal complications and perioperative metrics—such as operative time and estimated blood loss—falling within ranges commonly reported in open radical hysterectomy (500–900 mL). Only one patient developed neurogenic bladder, which resolved with conservative management. These findings align with outcomes from European cohorts: for example, the SUCCOR study among early-stage FIGO IB1 patients reported a 10.3% rate of bladder dysfunction and serious complications (Clavien–Dindo grade III or higher) in just 4.8% of cases.[19] Nonetheless, our case volume remains modest, emphasizing the need to increase institutional exposure and surgical output—a necessary step not only for advanced training and resident proficiency but also to elevate surgical quality to international standards. Moreover, it is crucial to acknowledge the broader landscape of cervical cancer outcomes in Nigeria where appropriate surgical interventions are limited and survival remains poor. At Jos University Teaching Hospital, simple total

abdominal hysterectomy for early-stage disease—despite being performed by non-oncology specialists—was associated with a median overall survival of just 26.5 months, compared to only 11.6 months in non-surgical management arms.[11] This stark contrast highlights that even modest improvements in surgical capacity—in contexts lacking radical hysterectomy resources—can significantly impact survival. Taken together, while our institutional results are encouraging, scaling up surgical volume and enhancing technical expertise—thereby offering radical hysterectomy where appropriate—may drastically improve outcomes and reduce mortality from cervical cancer in Nigerian centres.

Postoperative follow-up revealed that only one woman had resumed coitus by six months, while two had not commenced adjuvant therapy due to financial constraints. These observations reflect the broader socioeconomic challenges facing cervical cancer survivors in Nigeria, including sexual health rehabilitation, psychological recovery, and equitable access to multimodal treatment. The integration of social welfare support, survivorship clinics, and treatment subsidies may be necessary to improve outcomes.

Limitations

This study has several limitations that should be considered when interpreting the findings. First, the small sample size (n=7) limits the statistical power and generalizability of the results to broader populations. Second, the retrospective study design is inherently subject to selection bias and reliance on the completeness and accuracy of existing medical records. Third, the follow-up period of 12 months is relatively short for assessing oncologic outcomes such as recurrence-free survival and overall survival, which typically require a minimum of two to five years of follow-up. Fourth, as a single-centre experience, the findings may not be representative of other institutions in Nigeria or other low-resource settings with different surgical capabilities and patient populations. Finally, the absence of long-term quality-of-life data, including sexual function, urinary outcomes, and psychological well-being, limits the comprehensiveness of the outcome assessment. Despite these limitations, this study provides valuable preliminary data on the feasibility of radical hysterectomy in a resource-constrained setting and may serve as a foundation for future multi-centre prospective studies with larger cohorts and longer follow-up.

CONCLUSION

Despite the small series and short follow-up, our findings suggest that radical hysterectomy is safe and feasible within a tertiary centre in Nigeria. This study also highlights the persisting gaps in cervical cancer screening and timely referral in our setting, which limit the number of women eligible for curative surgery. Strengthening of screening uptake, capacity-building at lower-tier facilities, and ensuring access to complete cancer care are pivotal if radical hysterectomy is to become more frequently deployed as a treatment option in Nigeria.

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