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Characterization and classification of clinical outcomes among ambulatory gynecologic surgery recipients at Kyabirwa Surgical Center, Budondo Sub-County, Jinja City: A Retrospective Chart Review

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Abstract

Background

The global burden of gynecological diseases is increasing, along with challenges in accessing necessary prophylactic and curative surgery due to high costs, especially in sub-Saharan Africa. Ambulatory gynecologic surgery offers a potential solution however; its adoption depends on evidence of a low rate of adverse outcomes.

Objective

To characterize and classify the clinical outcomes of ambulatory gynecological surgery at Kyabirwa Surgical Center, Budondo Sub-county, Jinja City, Uganda.

Method

A retrospective chart review of 112 women who underwent major ambulatory gynecologic surgery between April 2023 and October 2025 was conducted. A census was conducted and medical record abstraction was used to collect data, which were analyzed using descriptive statistics, principal component analysis, cluster analysis, and the Kruskal-Wallis test for variance analysis.

Result

The prevalence of adverse clinical outcomes was 2.7%. Nine principal outcomes were identified among women who underwent major ambulatory gynecological surgery, including cardiac arrest, nausea, vomiting on postoperative days 4 to 7, febrile morbidity, vaginal discharge, superficial thrombophlebitis, intestinal injury, incisional hernias, peripheral nerve injuries, and superficial surgical site infections (grade 1). In the cluster analysis, class 2 superficial SSIs were the most prevalent (16.2%), whereas the prevalence of all other outcomes was less than 1%. The Kruskal-Wallis test showed no statistically significant differences ($p > 0.05$) in the incidence of surgical site infections or adverse outcomes between or within groups of women based on their intrapersonal and clinical characteristics.

Conclusion

Only three of 112 patients undergoing major ambulatory gynecologic surgery experienced adverse outcomes, which was significantly lower than the reported global rate at non-ambulatory facilities, ranging from 3.7 to 10.8%, a testament to the safety of this mode of care. Surgical site infections, all superficial (grade 1), were the primary postoperative outcomes of ambulatory gynecology surgery. They were classified as Clavien-Dindo class 2 and managed with oral antibiotics and analgesics, making them

negligibly threatening. The incidence of surgical site infections did not differ significantly by any clinical or personal patient characteristics, suggesting that over three years of surgery, patients did not have an intraoperative, clinical, or personal trait that increased the risk of developing infections.

Introduction

Clinically relevant outcomes (CRO) reflect the quality of surgical care (Pannuti et al., 2020; Portuondo et al., 2022; Hyland et al., 2023), which explains why achieving non-adverse outcomes is a target set by the Lancet Commission on Global Surgery (Zadey et al., 2023). In clinical terms, Clavien-Dindo grade I and grade II outcomes, characterized by postoperative events that do not require major surgical or clinical intervention, are associated with a lower mortality risk (Souza et al., 2024; Endalamaw et al., 2023). These outcomes are also associated with higher patient satisfaction (Baumbach et al., 2023) and a greater likelihood of surgical uptake (Schacht et al., 2024; Ofili et al., 2022; Werkkala et al., 2022). The outcomes of these two classes are thus preferable as they can better guarantee a higher surgical volume (as needed under LCoGS target III), low perioperative mortality (as needed under LCoGS target IV), and consequently, a low risk of catastrophic health expenditure (as needed under LCoGS target VI). While good postoperative outcomes should be achieved after all types of surgery, some categories of surgery should fully achieve such outcomes. This is premised on the worrying epidemiological trends of the diseases that those surgeries ought to treat, implying that they must be linked with non-adverse outcomes, which can guarantee uptake. One such type of surgery is gynecological surgery.

Despite intermittent reductions between 1990 and 2024, the global burden of gynecological diseases has generally increased since 1990 and 2024 (Sun et al., 2026; Gao et al., 2025; Qiang et al., 2025; Cao et al., 2024; Medina-Perucha et al., 2022). Since 1990, there has been a remarkable increase in both mortality and age-standardized disability-adjusted life-year rate (ASDR) owing to non-neoplastic gynecological diseases among women of childbearing age (Gao et al., 2025; Gu et al., 2025; Sun et al., 2026). Over the past three decades, most increases in the prevalence of neoplastic and non-neoplastic gynecological diseases have been reported in low- and middle-income countries (LMICs) (Sun et al., 2026; Gu et al., 2025; Gao et al., 2025). Most of these countries are located in Sub-Saharan Africa, and recent reviews of the Global Burden of Disease study (Gu et al., 2025; Gao et al., 2025) called for immediate interventions targeting various gynecological diseases in that region. Undoubtedly, the most significant of those interventions is prophylactic and curative surgery (Cao et al., 2024; Lin et al., 2024; Wijeratne et al., 2024; Tulandi et al., 2025; Bizon et al., 2024; Stewart et al., 2021). However, gynecologic surgery is among the most expensive forms of surgery (Ginindza et al., 2026; Mutiso, 2025; Hazimeh, 2024), costing between $2017 and US $6,326 on average for some cases in Africa.

Sadly, health insurance coverage is low in Sub-Saharan Africa (SSA) (Odipo et al., 2024; Hooley et al., 2022), yet most countries therein are categorized as low sociodemographic index (SDI) countries. Thus, gynecologic surgery will remain unaffordable and hence inaccessible to most women unless coverage of ambulatory gynecologic surgery increases in SSA. Ambulatory gynecologic surgery refers to same-day surgery performed to treat a wide range of gynecologic conditions (Wijeratne et al., 2024) at a

comparatively lower cost than inpatient surgery. The cost of gynecological care is driven significantly by the long duration of postoperative hospitalization (Ginindza et al., 2026; Mutiso, 2025). Ambulatory surgery counters these costs, and is a same-day surgery. In addition to other dynamics such as low overhead costs, low cost to treat nosocomial infections, and specialized efficiency, ambulatory gynecologic surgery can indeed be a significant intervention to reduce the burden of gynecologic diseases in LMICs.

However, a novel approach to surgery, such as ambulatory gynecologic surgery, especially in Africa, can only be embraced as needed if it guarantees patient safety, as evidenced by its clinically relevant outcomes. This calls for an objective characterization of the outcomes of ambulatory gynecologic surgery, wherever it is provided. However, few such assessments have been performed in an ambulatory context. Studies, including those by Casarin et al. (2024), MacKoul et al. (2020), and Simko et al. (2022), have assessed gynecological surgery outcomes, although not explicitly in the ambulatory context. At Kyabirwa Surgical Center, the only standalone ambulatory surgery center in Uganda as of 2026, ambulatory gynecologic surgery has been performed since April 2023, with reports of postoperative complications being rare. However, no prior characterization of outcomes has been conducted at the center despite the great need to benchmark this novel surgical approach in Uganda. This study characterized and classified the clinical outcomes of ambulatory gynecological surgery at Kyabirwa Surgical Center, Budondo Sub-county, Jinja City.

Methodology

Study area and design

This study was conducted at the Kyabirwa Surgical Center (KSC), currently Uganda's only freestanding ambulatory surgical center. The facility is located in Kyabirwa village, Budondo sub-county, Jinja city and has been providing ambulatory surgery since 2019. The Kyabirwa Surgical Center provides a wide range of surgical procedures including hernia repair, thyroidectomy, mastectomy, colon resection, cholecystectomy, and excision. In 2023, the center began providing ambulatory gynecological surgery, and as of October 2025, it had provided gynecological surgical care to approximately 112 women. However, at that time, there was no typology or classification of outcomes of ambulatory gynecologic surgery performed among recipients of this type of surgery. This is even though it is a novel approach to surgery in the country, and its continued embracement by the surgical fraternity depends significantly on its association with good patient outcomes.

Assessment of clinical outcomes can be objective (clinician-based) or subjective (patient-reported) (Nasca et al., 2022). Subjective outcome assessment of ambulatory gynecologic surgery was performed at the KSC; however, objective assessment was not performed. Thus, to carry out an objective assessment, this study relied on secondary data collected and documented by the surgeon, implying that the most suitable study design was retrospective chart review (RCR). A retrospective chart review is a positivist study design, in which all data are prerecorded or derived from secondary sources (Worster &

Haines, 2004). Another reason that the RCR was suitable is that all data required for this study were clinical in nature and therefore could not be validly obtained from patient self-reports. In addition, the Kyabirwa Surgical Center maintains an electronic database of all patient characteristics and clinical histories, making RCR feasible (Matt & Matthew, 2013).

Study population, eligibility, and size

The study population included women who underwent major ambulatory gynecological surgery between April 2023 and October 2025 at the Kyabirwa Surgical Center. The ambulatory gynecologic surgery provision at KSC started in April 2023, and by October 2025, up to 217 gynecological surgeries had been conducted, 112 of which were major surgeries without prior objective characterization and classification of either. In this study, major gynecologic surgery was defined as surgery that requires or results in penetration of the abdominal cavity and/or has the potential to induce physiological or anatomical impairment. The procedures considered for inclusion in the study were abdominal (open or laparoscopic) procedures, including myomectomy, hysterectomy, adenomyomectomy, salpingo-oophorectomy, fertility-sparing oncology surgery, hysteropexy, transvaginal hysterectomy, anterior colporrhaphy, and posterior colporrhaphy. However, given that the study was an RCR, there was no physical contact between the principal investigator and women, and their records were accessed and reviewed. The study included records of women with no missing data on the variables of interest to avoid item non-response. Women who had undergone general laparotomy days before gynecologic surgery were excluded. This was due to the risk of data bias when grading surgical outcomes, as some outcomes may have resulted from prior non-gynecological surgery rather than gynecological procedures. Thus, including such patients would have distorted the grading of complications as they are not specific to gynecology.

The sample size for RCR studies should be based on the number of predictors included in a given study (Sackett, Haynes, Guyatt, & Tugwell, 1991). It has been suggested that to generate clinically useful findings in an RCR, between seven and ten charts should be extracted for each predictor in the data abstraction form (Sackett, Haynes, Guyatt, & Tugwell, 1991; Raykov & Wideman, 1995). Given that the data abstraction form used in this study had 14 predictors, 98 to 140 patient charts were reviewed. We reviewed all 112 available 112 patient charts, meaning that the sample size met the presumptions and standards of sample sizes for RCR studies.

Sampling procedures

The total number of women whose records were needed in this study was 112, which was the exact number of records that were needed. Therefore, a census of all these records was made, as it was impractical to use a probabilistic approach, which would necessitate the elimination of some charts and the sampling of others. This would have made it impossible to obtain even the minimum sample size based on the sample size determination rules of the RCR studies. Using a census, the records of women who had undergone ambulatory gynecological surgery were retrieved from the patient database (clinic

master) of the Kyabirwa Surgical Center and all appeared without any order. Each was comprehensively reviewed in the chronology in which they appeared.

Data collection techniques

As this study relied on secondary data, it used medical record abstraction (MRA) as its sole data collection method (Alzu'bi et al., 2021; Zozus et al., 2019). Medical record abstraction is a data collection method in which pre-recorded data are reviewed and items relevant to a given study are abstracted and captured (Zozus et al., 2019). Therefore, using MRA, each eligible patient record was critically reviewed and all study-relevant data, as specified in the data abstraction form, were captured. The data abstraction form was designed with closed-ended items organized into four sections covering patient sociodemographic characteristics, ambulatory gynecological surgery outcomes, clinical characteristics, and intrapersonal characteristics.

Measurement and classification of ambulatory gynecologic surgery outcomes

Indications for any of the 40 gynecological surgery outcomes were obtained from the clinical notes made by the surgeon. However, when it came to classification, the Clavien-Dindo outcome classification system (Clavien et al., 2009) was used. The Clavien-Dindo outcome classification system comprises five classifications (grades) of surgical complications/outcomes, all of which are objective. Grade I includes complications that require medical treatment including diuretics, antiemetics, analgesics, antipyretics, electrolytes, and physiotherapy. Grade I complications are considered favorable surgical outcomes, whereas Grade II complications require treatments or interventions other than those allowed for Grade I complications, such as antibiotics, blood transfusion, and parenteral nutrition, which are also considered largely favorable. However, Grade III complications require surgical, pharmacological, radiological, or endoscopic interventions with (Grade IIIa) or without (Grade IIIb) general anesthesia. Grade IV classification is applied when there is organ failure of one organ (IVa) or multiple organs (IVb), whereas Grade V refers to the death of a patient. Grades III, IV, and V were considered adverse outcomes. Following characterization, the outcomes were categorized as non-adverse (Grades I or II) or adverse (Grades III, IV, and V). The clinically relevant outcomes assessed in this study were as follows:

Data management and analysis

The principal investigator checked the abstracted data for completeness and validity before data entry commenced. Once all data were established as complete and valid, they were entered into SPSS version 26 for analysis. Each abstracted variable was assigned a name and label along with appropriate values and codes using SPSS's variable view. This was followed by the serial entry of data from each form into the program's data view, cleaning all the entered data, and focusing on identifying any entry errors that were then corrected. Data analysis proceeded with descriptive analyses of the frequency distributions for

all variables, including the surgical outcomes. Descriptive statistics were used to determine the prevalence of adverse outcomes among patients. This was followed by principal component analysis (PCA) of the surgical outcome data. Principal component analysis is a statistical technique used to identify the most important variables (key variables) in a multidimensional dataset (Raychaudhuri et al., 2000; Basilevsky, 1994; Pearson, 1901; Everitt & Dunn, 1992). It identifies key variables by reducing a large set of variables to a few essential variables known as principal components (Greenacre et al., 2022; Jolliffe & Cadima, 2016).

Therefore, using PCA, we identified the most essential clinical variables that defined the clinically relevant outcomes of ambulatory gynecological surgery among women who underwent surgery at the KSC between April 2023 and December 2025. PCA was performed using orthogonal rotation, with all eigenvalues exceeding one, indicating that they corresponded to the principal components (Jolliffe & Cadima, 2016). The identified principal components were then subjected to cluster analysis using the k-means algorithm. This approach assigns a cluster number to each patient; hence, a cluster is established, the largest of which is identified by running a frequency distribution. A cross-tabulation analysis was performed between the principal components and two clusters to determine the distribution of each principal component identified in the largest cluster. This process identified the outcomes that were most prevalent among the largest cluster of patients who underwent ambulatory gynecological surgery at the KSC.

In addition to the development of a typology for gynecological outcomes, we disaggregated patient and clinical characteristics with the classification of outcomes (adverse or non-adverse). Disaggregation was performed using cross-tabulation analysis in addition to the Kruskal-Wallis test for the analysis of variance between and within groups of women across various patient and clinical characteristics. Kruskal-Wallis test was used because the outcome (surgical site infections) was not continuous) And because almost all cross-tabulations between patient or clinical characteristics had a zero count, this could not be suitable for multivariate analysis. Statistical significance was set at 5% alpha, implying that significance occurred when the p-value of the test was less than 0.05.

Results

Patient profiles

The findings in Table 1 show that more than one-third of the women whose records were included were aged 31–40 years (43; 38.4%), the majority were formally educated (100; 89.3%) and married/cohabiting (62; 55.4%). More than a third (47, 42.0%) of the women underwent ambulatory gynecological surgery at the Kyabirwa Surgical Center in 2025, and most were employed (82, 73.2%). Most surgeries lasted for two–four hours (79, 70.5%), with a mean duration of three hours. More than three-quarters (67, 59.8) of the patients had stayed at the KSC for less than 24 hours, with a mean duration of stay of approximately 20 hours (1175 minutes). For most patients, it took between 12 and 24 h from the end of surgery to discharge (60, 53.6%), with a mean duration of approximately 14 h (859 min), and 94% of the patients who

underwent major ambulatory surgery were discharged within 24 h from the end of their surgical procedure. Almost all patients did not visit the outpatient emergency unit (106, 94.6), were not re-hospitalized/ readmitted (109, 97.3), and did not require re-operation (111, 99.1) within 30-days of the dates of their procedures.

Table 1
General characteristics of the women whose medical records were reviewed

Variable	n(%)
Age	
21–30	25(22.3)
31–40	43(38.4)
41–50	29(25.9)
More than 50	15 (13.4)
Education level	
Formally educated	100 (89.3)
Not formally educated	6 (5.4)
Unknown	6 (5.4)
Marital status of the patient	
Married / cohabiting	62 (55.4)
Single	27 (24.1)
Divorced/separated/widowed	23 (20.5)
Year of reception of surgery at Kyabirwa Surgical Center	
2023	22(19.6)
2024	43(38.4)
2025	47(42.0)
Employment status of the patient	
Employed	82 (73.2)
Not employed	30 (26.8)
Duration of surgery	
Less than 2 hours	16 (14.3)
Between 2 and 4 hours	79 (70.5)
More than 240 hours	17 (15.2)
Length of hospital stay (hours) at KSC	
< 24 hours	67 (59.8)

Variable	n(%)
Age	
> 24 hours	45 (40.2)
Time from the end of surgery to discharge	
< 6 hours	38(33.9)
6 to 12 hours	7(6.3)
12–24 hours	60 (53.6)
> 24 hours	7 (6.3)
Post-operative visit to the OPD emergency department within 30 days of the date of the procedure	
No emergency visit made.	106 (94.6)
Emergency visit made.	6 (5.4)
Unplanned re-operation within 30 days from the date of the procedure	
No unplanned re-operation done	111(99.1)
Unplanned re-operation done	1 (0.9)
Unplanned re-hospitalization (re-admission) within 30 days from the date of the procedure	
No unplanned re-hospitalization/ readmission	109 (97.3)
Unplanned re-hospitalization/ re-admission	3 (2.7)

Characterization of outcomes of ambulatory gynecologic surgery

Table 2 shows a rotated component matrix of the surgical outcomes and their coefficients, from which those with the highest coefficients per component were identified as the principal. Almost all ambulatory gynecology recipients at Kyabirwa Surgical Center did not experience any of the 40 outcomes that were assessed, and some did not occur at all. These characteristics included nausea and vomiting > 7 days postoperatively, myocardial infarction, postoperative hemorrhage, stroke, bone fracture, laparotomy conversion, bladder injury, vascular injury, burst abdomen, vaginal vault abscess, pelvic abscess, nerve injuries, emphysema (subcutaneous), external genital edema, acute pulmonary edema, and postoperative vaginal vault hematoma. These outcomes, along with other ambulatory gynecological surgery outcomes with a standard deviation (SD) of 0.000, were not subjected to principal component analysis.

Principal component analysis (Table 2) was performed for outcomes with a standard deviation greater than 0 to identify the variables that were most correlated with the coefficient. Each of those with an eigenvalue of 1 was considered a principal component (outcome), and there were 7 in total. Components 1 and 7 had two outcomes with similar coefficients, resulting in nine components (surgery outcomes). The two components with a coefficient tie under Component 1 included cardiac arrest (Coef. 0.976), and intestinal injury (Coef. 0.976). Component 2 is associated with febrile morbidity (Coef. 0.924), whereas component 3 was defined as nausea and vomiting on post-op days 4 to 7 (Coef. 0.818), and component 4 was vaginal discharge (Coef. 0.904), and component 5 was surgical site infection (Coef. 0.826). Component 6 was defined as an incisional hernia (trocar site/laparotomy incision site) more than 30 days after surgery (Coef. 0.915), and component 7 had two equally correlated postoperative outcomes: thrombophlebitis (Coef. -0.710) and nerve injuries (Coef. 0.710).

Table 2
Rotated matrix for the extraction of principal outcomes of ambulatory gynecology surgery

Postoperative outcome	Component						
	1	2	3	4	5	6	7
Severe post-op pain (above 7/10) post-op days 1–3	0.378	0.508	0.380	-0.109	0.078	0.429	0.000
Severe post-op pain (above 7/10) on post-op days 4–7	-0.002	0.607	0.509	-0.119	0.298	0.107	0.000
Nausea and vomiting on post-op days 1–3	-0.069	0.043	0.706	0.025	-0.403	-0.066	0.000
Nausea and vomiting on post-op days 4–7	0.071	-0.063	**0.818**	0.010	0.195	-0.018	0.000
Febrile morbidity	-0.010	**0.924**	-0.069	0.036	0.102	-0.036	0.000
Cardiac arrest	**0.976**	0.032	-0.059	0.000	-0.089	-0.004	0.000
Vaginal discharge	0.004	-0.065	0.022	**0.904**	0.092	0.001	0.000
Thrombophlebitis	-0.021	0.063	-0.008	-0.117	-0.223	-0.201	**0.710**
Bacteremia/sepsis	0.686	0.679	-0.091	0.025	0.010	-0.028	0.000
Intestinal injury	**0.976**	0.032	-0.059	0.000	-0.089	-0.004	0.000
Surgical site infection	-0.029	0.161	0.034	0.062	**0.826**	-0.106	0.000
Nerve Injuries	-0.021	0.063	-0.008	-0.117	-0.223	-0.201	**-0.710**
Paralytic ileus	0.721	-0.042	0.352	-0.035	0.260	0.033	0.000
Incisional hernia (trocar site/laparotomy incision site) > 30 days from date of surgery	-0.033	-0.010	-0.062	-0.006	-0.102	**0.915**	0.000
Urinary tract infection, Hematoma (postoperative)	-0.043	0.592	-0.061	0.618	-0.087	-0.047	0.000

Cluster analysis

Cluster analysis was conducted to determine the distribution of the nine principal components within the largest cluster of recipients of ambulatory gynecologic surgery. Figure 1 shows the findings from the cluster analysis, indicating that nearly all the women included in this study belonged to Cluster 1 (n = 111, 99%).

Cluster composition

The findings in Table 3 show that cardiac arrest (111, 100.0%) and intestinal injury (111, 100.0%) did not occur in the largest cluster. Nausea and vomiting on post-op days 4–7 (109, 98.2%), febrile morbidity

(110, 99.1%), vaginal discharge (109, 98.2%), thrombophlebitis (110, 99.1%), incisional hernia (trocar site/laparotomy incision site) (109, 98.2%), and Nerve Injuries (110, 99.1%) did not occur in almost all the women who underwent ambulatory gynecological surgery at the Kyabirwa Surgical Center. The only outcome among women in Cluster 1 with a substantial magnitude was superficial surgical site infection, which occurred in 16.2% of all women in the cluster.

Table 3
Disaggregation of principal components with cluster membership

Clinically Relevant Outcome (Principal Component)	Clusters		Total
	1	2	
Cardiac arrest			
Occurred	**0 (0.0%)**	1(100.0%)	1(0.9%)
Did not occur	**111(100.0%)**	0(100.0%)	111(99.1%)
Nausea and vomiting on post-op days 4–7			
Occurred	**2(1.8%)**	0(0.0%)	2(1.8%)
Did not occur	**109(98.2%)**	1(100.0%)	110(98.2%)
Febrile morbidity			
Occurred	**1 (0.9%)**	0(0.0%)	1(0.9%)
Did not occur	**110(99.1%)**	1(100.0%)	111(99.1%)
Vaginal discharge			
Occurred	**2(1.8%)**	0(0.0%)	2(1.8%)
Did not occur	**109(98.2%)**	1(100.0%)	110(98.2%)
Thrombophlebitis			
Occurred	**1 (0.9%)**	0(0.0%)	1(0.9%)
Did not occur	**110(99.1%)**	1(100.0%)	111(99.1%)
Intestinal injury			
Occurred	**0 (0.0%)**	1(0.9%)	1(0.9%)
Did not occur	**111(100.0%)**	0(100.0%)	111(99.1%)
Superficial Surgical site infection			
Occurred	**18(16.2%)**	0(0.0%)	18(16.1%)
Did not occur	**93(83.8%)**	1(100.0%)	94(83.9%)
Incisional hernia (trocar site/laparotomy incision site) > 30 days from date of surgery			
Occurred	**2(1.8%)**	0(0.0%)	2(1.8%)
Did not occur	**109(98.2%)**	1(100.0%)	110(98.2%)
Nerve Injuries			

Clinically Relevant Outcome (Principal Component)	Clusters		Total
	1	2	
Cardiac arrest			
Occurred	**1 (0.9%)**	0(0.0%)	1(0.9%)
Did not occur	**110(99.1%)**	1(100.0%)	111(99.1%)

Trend in incidence of superficial surgical site infections during the study period.

Figure (2) below demonstrates a trend analysis of surgical site infection incidence since the inception of the gynecology department (in 2023) at Kyabirwa Surgical Center. Despite a slight increase in 2024, the incidence of SSIs has steadily declined since the baseline year.

Classification of the clinical outcomes

A classification of the clinical outcomes of ambulatory gynecological surgery was also performed using the Clavien-Dindo classification approach, and as seen in Table 5, the few cases (8, 7.1%) of severe postoperative pain (> 7/10) on post-op days 1–3 that occurred only required/received oral analgesics and did not require any surgical, endoscopic, or radiological interventions. The same was true for patients with severe postoperative pain (> 7/10) on post-op days 4–7 (6, 5.4%), severe postoperative pain (> 7/10) on post-op days 8–14 (2, 1.8%), and severe postoperative pain (> 7/10) on postoperative day 30 (1, 0.9%). Cases of nausea and vomiting on post-op days 1–3 (5, 4.5%), nausea and vomiting on postoperative days 4–7 (2, 1.8%), and nausea and vomiting > 7 days postoperatively (1, 0.9%) were managed with oral antiemetics. There was one case of febrile morbidity (1, 0.9%) and one case of cardiac arrest (1, 0.9%). Both outcomes occurred in the same patient; the latter was a life-threatening complication requiring intensive care management. All patients with superficial surgical site infections (16 patients, 14.3%) required only oral antibiotic treatment. There were four cases (3.6%) of urinary tract infection, eight cases (8, 7.1%) of severe postoperative pain (> 7/10) post-op days 1–3, six cases (6, 5.4%) of severe postoperative pain (> 7/10) on post-op days 4–7 and five cases (5, 4.5%) of nausea and vomiting on post-op days 1–3, all of which were managed with oral antiemetics, analgesics, antipyretics, and antibiotics.

There were no cases of myocardial infarction (0, 0.0%), stroke (0, 0.0%), bone fracture (0, 0.0%), laparotomy conversion (0, 0.0%), bladder injury (0, 0.0%), vascular injury (0, 0.0%), or abdominal burst abdomen (0, 0.0%). There were no cases of vaginal vault abscess (0, 0.0%), pelvic abscess (0, 0.0%), urethral injury (0, 0.0%), emphysema (subcutaneous) (0, 0.0%), or external genitalia edema (0, 0.0%). There was one case of postoperative abdominal wall hematoma and a small pelvic/intra-abdominal hematoma (1, 0.9%) that was managed conservatively; there were no cases of postoperative vaginal vault hematoma (0, 0.0%).

Table 5
Distribution of Clavien-Dindo classifications among ambulatory gynecological surgery recipients

Variable	Required diuretics, antiemetics, analgesics, antipyretics, electrolytes, or physiotherapy only.		Required treatment stated in class 1 plus antibiotics, blood transfusion, or parenteral nutrition		Required surgical, endoscopic, or radiological Intervention after occurrence		It was a life-threatening complication requiring intensive care management.		Did not occur / Not applicable	
	n	%	n	%	n	%	n	%	n	%
Severe post-op pain (above 7/10) post-op days 1–3	8	7.1	0	0.0	1	0.9	0.0	0	103	92.0
Severe post-op pain (above 7/10) on post-op days 4–7	6	5.4	0	0.0	0	0.0	0	0.0	106	94.6
Severe post-op pain (above 7/10) on post-op days 8–14	2	1.8	0	0.0	0	0.0	0	0.0	110	98.2
Severe post-op pain (above 7/10) by post-op day 30	1	0.9	0	0.0	0	0.0	0	0.0	111	99.1
Nausea and vomiting on post-op days 1–3	5	4.5	0	0.0	0	0.0	0	0.0	107	95.5
Nausea and vomiting on post-op days 4–7	2	1.8	1	0.9	0	0.0	0	0.0	0	0.0
Nausea and vomiting > 7 days post-op	1	0.9	0	0.0	0	0.0	0	0.0	111	99.1
Febrile morbidity	1	0.9	0	0.0	0	0.0	0	0.0	111	99.1
Myocardial infarction	0	0.0	0	0.0	0	0.0	0	0.0	112	100.0
Cardiac arrest	0	0.0	0	0.0	0	0.0	1	0.9	111	99.1
Stroke	0	0.0	0	0.0	0	0.0	0	0.0	112	100.0
Bone fracture	0	0.0	0	0.0	0	0.0	0	0.0	112	100.0
Laparotomy conversion	0	0.0	0	0.0	0	0.0	0	0.0	112	100.0

Variable	Required diuretics, antiemetics, analgesics, antipyretics, electrolytes, or physiotherapy only.		Required treatment stated in class 1 plus antibiotics, blood transfusion, or parenteral nutrition		Required surgical, endoscopic, or radiological Intervention after occurrence		It was a life-threatening complication requiring intensive care management.		Did not occur / Not applicable	
	n	%	n	%	n	%	n	%	n	%
Bladder injury	0	0.0	0	0.0	0	0.0	0	0.0	112	100.0
Vascular injury	0	0.0	0	0.0	0	0.0	0	0.0	112	100.0
Burst abdomen	0	0.0	0	0.0	0	0.0	0	0.0	112	100.0
Vaginal discharge	3	2.7	0	0.0	0	0.0	0	0.0	109	97.3
Venous thromboembolism	0	0.0	0	0.0	0	0.0	0	0.0	112	100.0
Thrombophlebitis	0	0.0	0	0.0	0	0.0	0	0.0	112	100.0
Bacteremia/sepsis	2	1.8	0	0.0	0	0.0	0	0.0	110	98.2
Intestinal injury	1	0.9	0	0.0	0	0.0	0	0.0	111	99.1
Surgical site infection	0	0.0	**16**	**14.3**	0	0.0	0	0.0	96	84.8
Acute pulmonary edema	1	0.9	0	0.0	0	0.0	0	0.0	111	99.1
Vaginal vault abscess	0	0.0	0	0.0	0	0.0	0	0.0	112	100.0
Pelvic abscess	0	0.0	0	0.0	0	0.0	0	0.0	112	100.0
Nerve Injuries	1	0.9	0	0.0	0	0.0	0	0.0	111	99.1
Urethral injury	0	0.0	0	0.0	0	0.0	0	0.0	112	100.0
Emphysema (subcutaneous)	0	0.0	0	0.0	0	0.0	0	0.0	112	100.0
External genitalia edema	0.9	0	0.0	0	0.0	0	0.0	111	99.1	100.0
Paralytic ileus	1	0.9	2	1.6	0	0.0	0	0.0	109	85.2
Intestinal obstruction	0	0.0	0	0.0	1	0.9	0	0.0	111	99.1
Hernia at the trocar site	0	0.0	0	0.0	0	0.0	0	0.0	112	100.0

Variable	Required diuretics, antiemetics, analgesics, antipyretics, electrolytes, or physiotherapy only.		Required treatment stated in class 1 plus antibiotics, blood transfusion, or parenteral nutrition		Required surgical, endoscopic, or radiological Intervention after occurrence		It was a life-threatening complication requiring intensive care management.		Did not occur / Not applicable	
	n	%	n	%	n	%	n	%	n	%
Incisional hernia > 30 days post-op	0	0.0	0	0.0	0	0.0	0	0.0	112	100.0
Chronic pain	0	0.0	0	0.0	0	0.0	0	0.0	112	100.0
Urinary tract infection, Hematoma	4	3.6	0	0.0	0	0.0	0	0.0	108	96.4
Urine retention	1	0.9	0	0.0	0	0.0	0	0.0	111	99.1
Postoperative abdominal wall hematoma	1	0.9	0	0.0	0	0.0	0	0.0	111	99.1
Postoperative vaginal vault hematoma	0	0.0	0	0.0	0	0.0	0	0.0	112	100.0
Pelvic / intra-abdominal hematoma	1	0.9	0	0.0	0	0.0	0	0.0	111	99.1
Uterine artery embolization	0	0.0	0	0.0	0	0.0	0	0.0	112	100.0
Uterine artery ligation	0	0.0	0	0.0	0	0.0	0	0.0	112	100.0

Based on findings in Table 5 and the measurement shown in the methods section (non-adverse [Grade I or II] or adverse [Grade III, Grade IV, and Grade V]), the findings in Fig. 3 show that the prevalence of adverse clinical outcomes following ambulatory gynecological surgery was 2.7% (n = 3).

Disaggregation of outcome classification by patient characteristics

Table 6 presents findings from the analysis of differences in ambulatory gynecology outcome classification between and within groups of women, based on their individual characteristics. The findings obtained from the Kruskal-Wallis test revealed that there was no statistically significant difference in adverse outcome ($p < 0.05$), between and within groups of women, by gynecological surgical

procedure undergone, year of reception of surgery at KSC, length of hospital stay (hours) at KSC, status of surgery received, number of myomas, size of the largest myoma, BMI, duration of surgery, preoperative Hb, type of anesthesia, duration under anesthesia, oncological status of gynecological disease treated, history of abdominal surgery or comorbidity.

Table 6
Disaggregation of outcome classifications by patient characteristics

Characteristic			Classification			
	n	%	Adverse (Grade III or IV)	Non-adverse (Grade I and II)	Kruskal-Wallis H	P - value
Year of reception of surgery at Kyabirwa Surgical Center						
2023	22	19.6	0(0.0%)	22(100.0%)		
2024	43	38.4	3(7.0%)	40(93.0%)	4.902	0.086
2025	47	42.0	0(0.0%)	47(100.0%)		
Length of hospital stay (hours) at KSC						
< 1440 minutes (24 hours)	67	59.8	1(1.5%)	66(98.5%)	0.547	0.460
> 1440 minutes	45	40.2	2(4.4%)	43(95.6%)		
Status of surgery received						
Emergency surgery	2	1.8	0(0.0%)	2(100.0%)	0.056	0.814
Elective	110	98.2	3(2.7%)	107(97.3%)		
If myomectomy is performed, the number of myomas						
< 10	25	54.3	0(0.0%)	25(100.0%)	1.190	0.275
More than 10	21	45.7	1(4.8%)	20(95.2%)		
If myomectomy is performed, the size of the largest myoma						
< 5 cm in diameter	9	22.0	0(0.0%)	9(100.0%)	0.281	0..596
> 5 centimeters in diameter	32	78.0	1(3.1%)	31(96.9%)		
Body Mass Index (BMI)						
< 24Kg/m2	56	50.0	0(0.0%)	56(100.0%)	3.055	0.080
> 24Kg/m2	56	50.0	3(5.4%)	53(94.6%)		
Duration of surgery (in hours)						

Characteristic			Classification			
	n	%	Adverse (Grade III or IV)	Non-adverse (Grade I and II)	Kruskal-Wallis H	P - value
Year of reception of surgery at Kyabirwa Surgical Center						
Less than 120 minutes	16	14.3	0(0.0%)	16(100.0%)		
Between 121 and 240 minutes	79	70.5	2(2.5%)	77(97.5%)	1.092	0.298
More than 240 minutes	17	15.2	1(5.9%)	16(94.1%)		
Time from end of surgery to discharge						
< 360 minutes	38	33.9	0(0.0%)	38(100.0%)		
361 to 720 minutes	7	6.3	0(0.0%)	7(100.0%)	1.382	0.242
721–1440 minutes	60	53.6	3(5.0%)	57(95.0%)		
> 1440 minutes	7	6.3	0(0.0%)	7(100.0%)		
Preoperative Hb (mg/dL)						
< 11g/DL	43	38.4	0(0.0%)	43(100.0%)	1.904	0.168
> 11g/DL	69	61.6	3(4.3%)	66(95.7%)		
The type of anesthesia						
General anesthesia / ETT	29	25.9	0(0.0%)	29(100.0%)		
Spinal anesthesia: Sedation without LMA	3	2.7	0(0.0%)	3(100.0%)		
Epidural anesthesia, Spinal anesthesia	41	36.6	3(7.3%)	38(92.7%)		
Epidural anesthesia	2	1.8	0(0.0%)	2(100.0%)		
Sedation with LMA	2	1.8	0(0.0%)	2(100.0%)		
Epidural anesthesia, Sedation without LMA	1	0.9	0(0.0%)	1(100.0%)	2.557	0.465
Spinal anesthesia, Tap block	3	2.7	0(0.0%)	3(100.0%)		
Epidural anesthesia, Tap block	1	.9	0(0.0%)	1(100.0%)		

Characteristic			Classification			
	n	%	Adverse (Grade III or IV)	Non-adverse (Grade I and II)	Kruskal-Wallis H	P - value
Year of reception of surgery at Kyabirwa Surgical Center						
Spinal anesthesia, General anesthesia, ETT	5	4.5	0(0.0%)	5(100.0%)		
Spinal anesthesia	20	17.9	0(0.0%)	20(100.0%)		
Epidural anesthesia tap block	3	2.7	0(0.0%)	3(100.0%)		
Epidural anesthesia, General anesthesia, Tap block	1	0.9	0(0.0%)	1(100.0%)		
Local anesthesia	1	0.9	0(0.0%)	1(100.0%)		
Duration under anesthesia						
< 200 Minutes	57	50.9	1(1.8%)	56(98.2%)	0.377	0.539
> 200 minutes	55	49.1	2(3.6%)	53(96.4%)		
Oncological status of gynecological disease treated						
Malignant	9	8.0	0(0.0%)	9(100.0%)	0.299	0.584
Not malignant	92	82.1	3(3.3%)	89(96.7%)		
Not applicable	11	9.8	0(0.0%)	11(100.0%)		
Patient has a history of abdominal surgery.						
Yes	25	22.3	1(4.0%)	24(96.0%)	0.214	0.644
No	87	77.7	2(2.3%)	85(97.7%)		
Comorbidity						
None	82	73.2	2(2.4%)	80(97.6%)		
Diabetes	3	2.7	0(0.0%	3(100.0%)		
Hypertension	14	12.5	1(7.1%)	13(92.9%)	1.085	0.105
Bronchial asthma, peptic ulcer disease, sinusitis	1	0.9	0(0.0%)	1(100.0%)		

Characteristic			Classification			
	n	%	Adverse (Grade III or IV)	Non-adverse (Grade I and II)	Kruskal-Wallis H	P - value
Year of reception of surgery at Kyabirwa Surgical Center						
HIV	5	4.5	0(0.0%)	5(100.0%)		
Peptic ulcer disease	6	5.4	0(0.0%)	6(100.0%)		
PTB	1	0.9	0(0.0%)	1(100.0%)		

Discussion

This study identified nine (9) principal outcomes of ambulatory gynecological surgery among women at the Kyabirwa Surgical Center (Table 3). Eight of them had negligible prevalence in the largest cluster of women, and only one superficial surgical site infection was highly prevalent (16%). This implies that among the 112 women who underwent ambulatory gynecology surgery between April 2023 and October 2025, almost all postoperative outcomes were not significantly prevalent in terms of magnitude, despite being present. Most of them were either nonexistent in the largest cluster of women or had a prevalence of less than 1%. The findings of this study are consistent with those of Aswita et al. (2025), in which the prevalence of most gynecological surgery outcomes was below 1%. However, contrary to the findings of this study, Aswita et al. (2025) reported a higher prevalence of febrile morbidity (8.5%), which was surprising, because almost half of the surgeries assessed in their study were obstetric. Febrile morbidity is one of the indicators of the quality of surgery received earlier (Wattanasiri et al., 2023; Davies et al., 2013), and as such, the fact that its prevalence was less than 1% attests to the safety of the ambulatory gynecology surgeries that were provided at KSC since 2023. Many studies have reported a higher prevalence of single outcomes after gynecologic surgery. Spear et al. (2025) reported an incisional hernia prevalence of 5.4%, while Keizerswaard et al. (2026) reported a prevalence of 2.7%. Still, contrary to the findings of this study, Lorchaivej et al. (2022) reported a post-gynecology surgery prevalence of thrombophlebitis of 5.4%, Qu et al. (2015) found it to be 9.2%, and Zhang et al. (2015) reported it to be as high as 11.6%. The prevalence of bowel injury reported in this study was also significantly lower than those reported by Yuk et al. (2022) (0.61%), Westby and Mannion (2022) (0.14%), and Picerno et al. (2017) (0.62). All studies reporting a higher prevalence assessed inpatient surgeries, which are known to be linked to a 70-fold risk of thrombophlebitis, compared with a 10-fold risk for ambulatory surgery (Sweetland et al., 2009).

Generally, the lower risk of all of the above-mentioned complications associated with ambulatory surgery is due to faster mobilization, shorter hospital stays, use of less invasive surgical techniques, and, in some cases, healthier patient selection compared to inpatient surgery (Madsen et al., 2023). This also explains why ambulatory gynecologic surgery-related mortality was non-existent at the KSC, contrary to what has

been reported by Kohut et al. (2018) (125 mortality cases), Matsuo et al. (2019) (1.8%), and Behbehani et al. (2019) (1.2–1.6). However, unlike the current study, these studies included only patients with malignancies, which could have modified the mortality risk. Notwithstanding, there was one adverse outcome that was registered during the study period in the form of a cardiac arrest, which was one of the principal outcomes. Cardiac arrest (Tables 2 and 3) occurred in a patient who underwent laparoscopy for deep infiltrating endometriosis. The patient returned on the third postoperative day with a distended abdomen, and further investigations identified severe sepsis and gut perforation. An emergency laparotomy was performed and the perforation was identified and repaired, but she developed cardiac arrest on the table, which was promptly and successfully managed. Surgery was completed, and she was transferred to another facility for post-cardiac arrest care; unfortunately, this patient did not survive following care at the referral site. In fact, the occurrence of perioperative cardiac arrest is not peculiar to ambulatory gynecology surgery and occurs in inpatient gynecology surgery settings, as has been noted by Gupta et al. (2017) and Sisay et al. (2021), at times with higher prevalence.

The findings of this study clearly indicate the high safety of ambulatory gynecological surgery at the Kyabirwa Surgical Center, which has been previously confirmed by Madsen et al. (2023), Keeratibharat et al. (2024), and Friedlander et al. (2021). Accordingly, it can be said that while outpatient gynecological surgery is known to be safely feasible on an outpatient basis, the same applies to ambulatory gynecological surgery, which comes with more merits like reduced cost. Nonetheless, one outcome was atypically prevalent: surgical site infections, which developed in 16.2% of the women. This prevalence is higher than those reported by Kulkarni and Kothari (2023) (9.2%), Collins et al. (2024) (3.5%), and Aswita et al. (2025) (1.5%). Studies by Zhang et al. (2023), Pathak et al. (2017), and Mehtar et al. (2020) also reported it to be in the range of 2.3%–8.1%, which is significantly lower than that reported among ambulatory gynecology recipients at KSC. Arguably, the main difference in the findings is due to the difference in surgical models used; while same-day surgery is renowned for reducing the risk of nosocomial infections (Chin and Wick, 2015), there are those that can occur non-nosocomially. Surgical site infections are in this category because they typically occur within 30 days of surgery, and can therefore be predicted by factors other than those within the surgery-providing facility or the surgery itself. Many studies (Imanishimwe et al., 2026; Sadrizadeh et al., 2021) have linked intra-household and patient characteristics to SSI risk; thus, it can be asserted that ambulatory gynecological surgery patients in this study developed SSIs following discharge, possibly due to hygiene and intra-household care gaps. This was confirmed by analyses run to disaggregate SSI prevalence according to surgical, clinical, and patient characteristics; none were found to be significant ($p > 0.05$).

It should also be noted that all 18 surgical site infections that were identified over the study period were superficial in nature because they all presented with only induration around the incision sites; there was no wound dehiscence, pus/purulent discharge, fever, or any other systemic sign of severe SSI in any participant. At KSC, the SSI management policy dictates that such occurrences should be handled promptly to prevent progression to severe full-blown SSI, and as such, they are also proactively treated with antibiotics. This explains why, upon classification (Table 5), all surgical site infection cases belonged to class II, implying that they needed only oral antibiotic treatment. All SSI cases were promptly identified

by the recovery-at-home team, a key component of the KSC ambulatory surgery model. In fact, outcome classification further showed that the prevalence of adverse outcomes was only 2.7%, implying that only 3 in every 100 women developed outcomes in classes III and IV. It should be recalled that almost all of the adverse outcomes registered were linked to a single patient, who was not technically an explicit ambulatory gynecology surgery case. However, the prevalence of adverse outcomes was negligible, contrary to the findings of Jensen et al. (2022), Swift et al. (2023), and Gaurav et al. (2024), in which patients required readmission, reoperation, perioperative blood transfusion, or intensive care after gynecological surgery. Interestingly, the Kruskal-Wallis test showed no statistically significant differences ($p > 0.05$) in the prevalence of adverse outcomes between or within groups of women, based on their intrapersonal and clinical characteristics. This finding is inconsistent with that of Yuk et al. (2022) and Aswita et al. (2025), who noted differences. This finding indicates that none of the clinical or intrapersonal characteristics analyzed had attributes that were significantly skewed in proportion to one end to cause a difference in the outcome. This was most likely because only one gynecologist provided surgery to all 112 women studied, in strict compliance with institutional surgery and/or clinical policies.

Limitations

This study used a retrospective chart review design, implying that it inevitably missed out on capturing primary data that could have revealed some predictors of surgical site infections and adverse outcomes. Thus, it is possible that surgical site infection and adverse outcome risk differed between and within groups of women who underwent ambulatory gynecology surgery at KSC because of intrapersonal and intrahousehold characteristics that this study could not capture.

Conclusion

Superficial Surgical site infections are the primary outcome of ambulatory gynecological surgery at the Kyabirwa Surgical Center. However, their frequency has decreased since the beginning of gynecological procedures in 2023. According to this classification, all surgical site infections require only oral antibiotic and analgesic treatment, making them negligibly threatening. In fact, the incidence of superficial surgical site infections did not differ significantly according to any clinical or personal patient characteristics, suggesting that over three years of surgery, no patient had an intraoperative, clinical, or personal trait that increased the risk of developing infections. Only three of 100 patients undergoing ambulatory gynecologic surgery experienced adverse outcomes, which is significantly lower than the reported global rate at non-ambulatory facilities, ranging from 3.7 to 10.8%.

It is prudent to affirm that ambulatory surgery may not increase the odds of developing or having adverse outcomes after laparoscopy for deep infiltrating endometriosis. The case (referenced above) at the index surgery did not have multi-organ involvement; she required observation overnight to receive additional intravenous antibiotics and analgesics (duration of admission 2354hours), and discharge standard operating procedures were observed, that is, postoperative pain control, tolerance of oral fluids, and oral medication. The same principles of surgery, duration of admission, and discharge SOPs were applied to

another ten patients who underwent laparoscopy for deep infiltrating endometriosis and all had good postoperative outcomes. Laparoscopy for deep infiltrating endometriosis can be safely performed within the spectrum of ambulatory surgery, albeit with specific modifications depending on the extent of the disease. The modifications include extension of the duration of surgery to 48hours, which is still defined as ambulatory surgery, and/or 3–5 days for those with multi-organ involvement.

Therefore, these findings are consistent with the fact that ambulatory gynecological surgery can be safely performed in a fully ambulatory surgery facility with a very low risk of adverse outcomes. Thus, the unmet need for gynecological surgery in Uganda and, more generally, across Africa, can be significantly reduced by establishing ambulatory facilities such as the Kyabirwa Surgical Center, which offers not only affordable, but also very safe and arguably comparatively safer gynecologic surgery than non-ambulatory facilities. However, there is a need to reduce the occurrence of superficial surgical site infections, although none have been found to vary according to clinical or patient characteristics. There is a need to strengthen pre-discharge education on surgical wound care and hygiene, as well as the recovery at home program of KSC, to enable the team to carry out surgical wound care practices and promptly identify infection symptoms at day 7-post-op, and refer them for management at the facility. This will go a long way toward preventing surgical site infections that are in an adverse state (require major clinical intervention). In addition, it would be prudent for the clinical team at the KSC to emphasize proper surgical wound care for all women who undergo gynecological surgery, both before and after discharge. At this point, the recovery-at-home team can follow up on the same educational level.

Abbreviations

ASDR
Age-standardized disability-adjusted life-year rate
CRO
Clinically relevant outcomes
KSC
Kyabirwa Surgical Center
LCoGS
Lancet Commission on Global Surgery
LMICs
Low- and middle-income countries
MRA
Medical Record Abstraction
PCA
Principal Component Analysis
RCR
Retrospective Chart Review
SD
Standard deviation

SDI
Sociodemographic Index
SSA
Sub-Saharan Africa
UCU-REC
Uganda Christian University Research Ethics Committee

Declarations

Ethics approval and consent to participate

In accordance with the 2025 World Medical Association Declaration of Helsinki (World Medical Association, 2024), this study observed the key ethical principles for retrospective studies. They include the obtainment of approval from an accredited research ethics committee, observation of privacy and confidentiality, obtainment of administrative clearance to access data at Kyabirwa Surgical Center, and use of participant-inclined language. This study was approved by the Uganda Christian University Research Ethics Committee (UCU-REC) and was conducted under REC number **UCU-REC-2024-1145**. Further approval to conduct this study in Uganda was obtained from the Uganda National Council of Science and Technology (UNCST) under number **HS5656ES**. This was followed by obtaining permission from the KSC administration to conduct the study using patient data from the KSC database. Because the study relied on secondary data, administrative consent was still sought from the management at the Kyabirwa Surgical Center. Once the data were officially accessed, they were handled with utmost confidentiality; the dataset was securely stored on the principal investigator's password-protected personal computer, which was only accessible to the principal investigator. The names or identifying information of every patient was not captured or abstracted to keep the data and study anonymous. All data abstraction was done by the principal investigator and other authors, in privacy; each abstraction process happened in an office-like environment with one occupant.

Consent for publication

Not applicable

Competing interests

The authors declare no conflict of interest.

JA, EGW, AE, JOD, AN, LZ, ATK and MM

supervised the study, reviewed the manuscript text, edited the manuscript, made a final review before publication, and approved the manuscript for publication.

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Author Contribution

CO, JN, JD and JM conceptualized the study, wrote the main manuscript text, trained data collection assistants, Abstracted, curated and coded data, analyzed frequency distributions, performed regression analysis, edited the manuscript, and made a final review before publication.JA, EGW, AE, JOD, AN, LZ, ATK and MM supervised the study, reviewed the manuscript text, edited the manuscript, made a final review before publication, and approved the manuscript for publication.

Data Availability

I have generated data, for this research study, and it is available upon request from the corresponding author.

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Figures

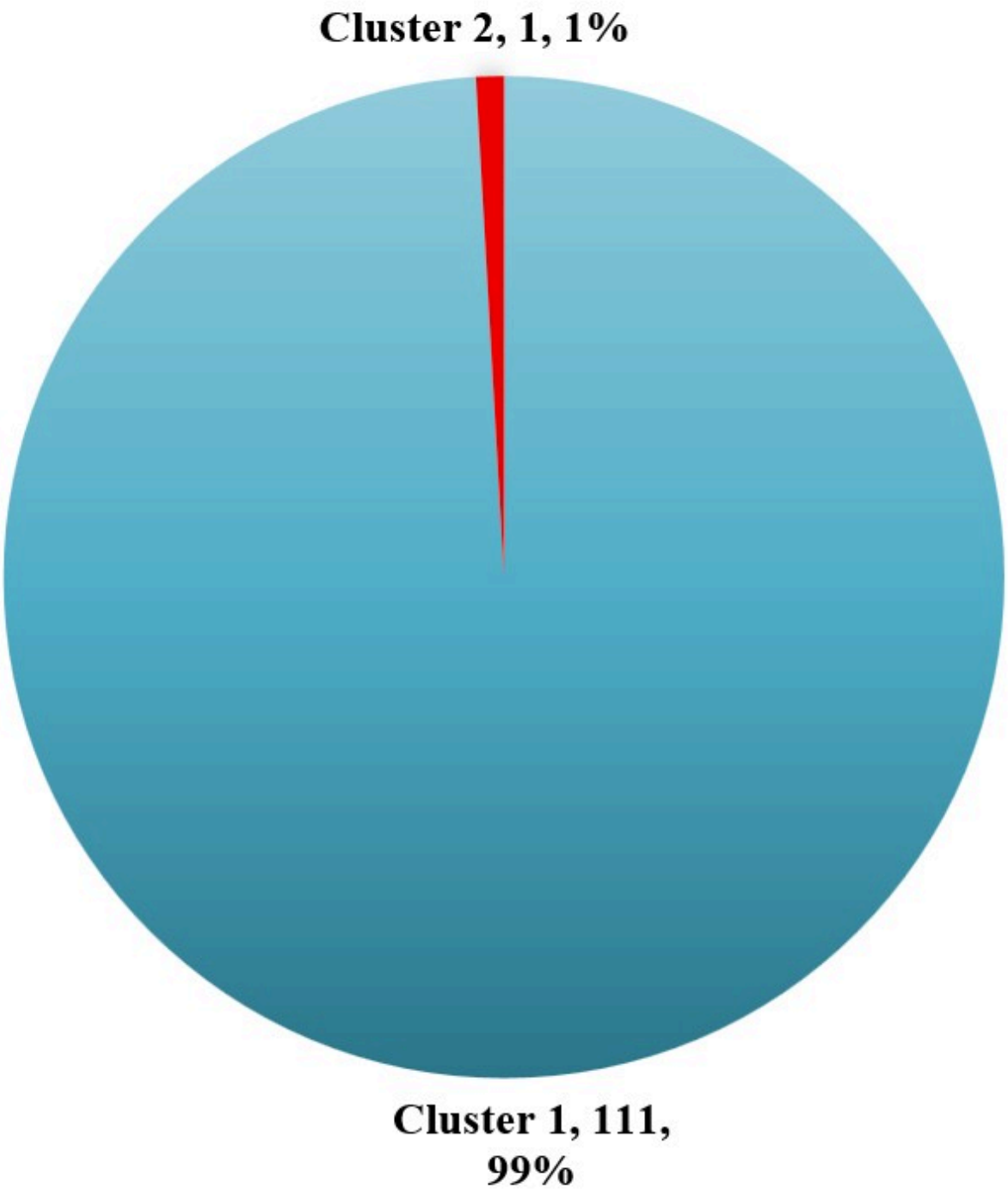


Figure 1

Cluster membership of women included

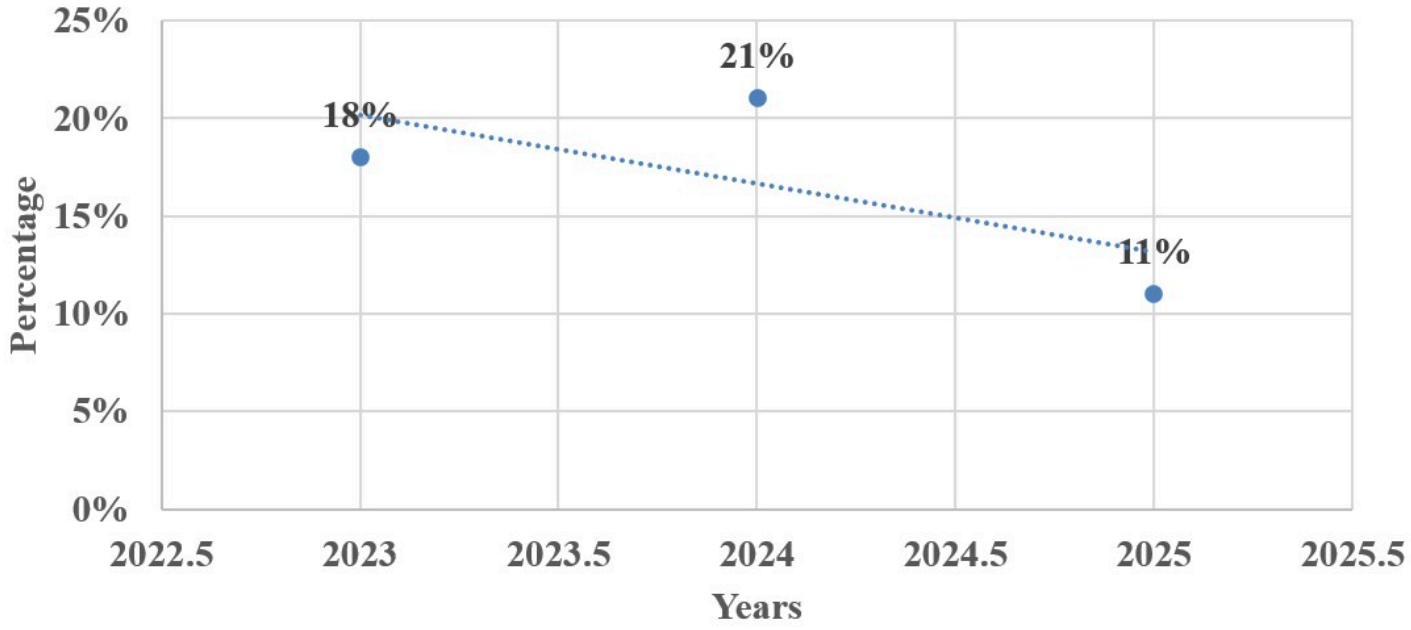


Figure 2

Trend in incidence of superficial surgical site infections during the study period.

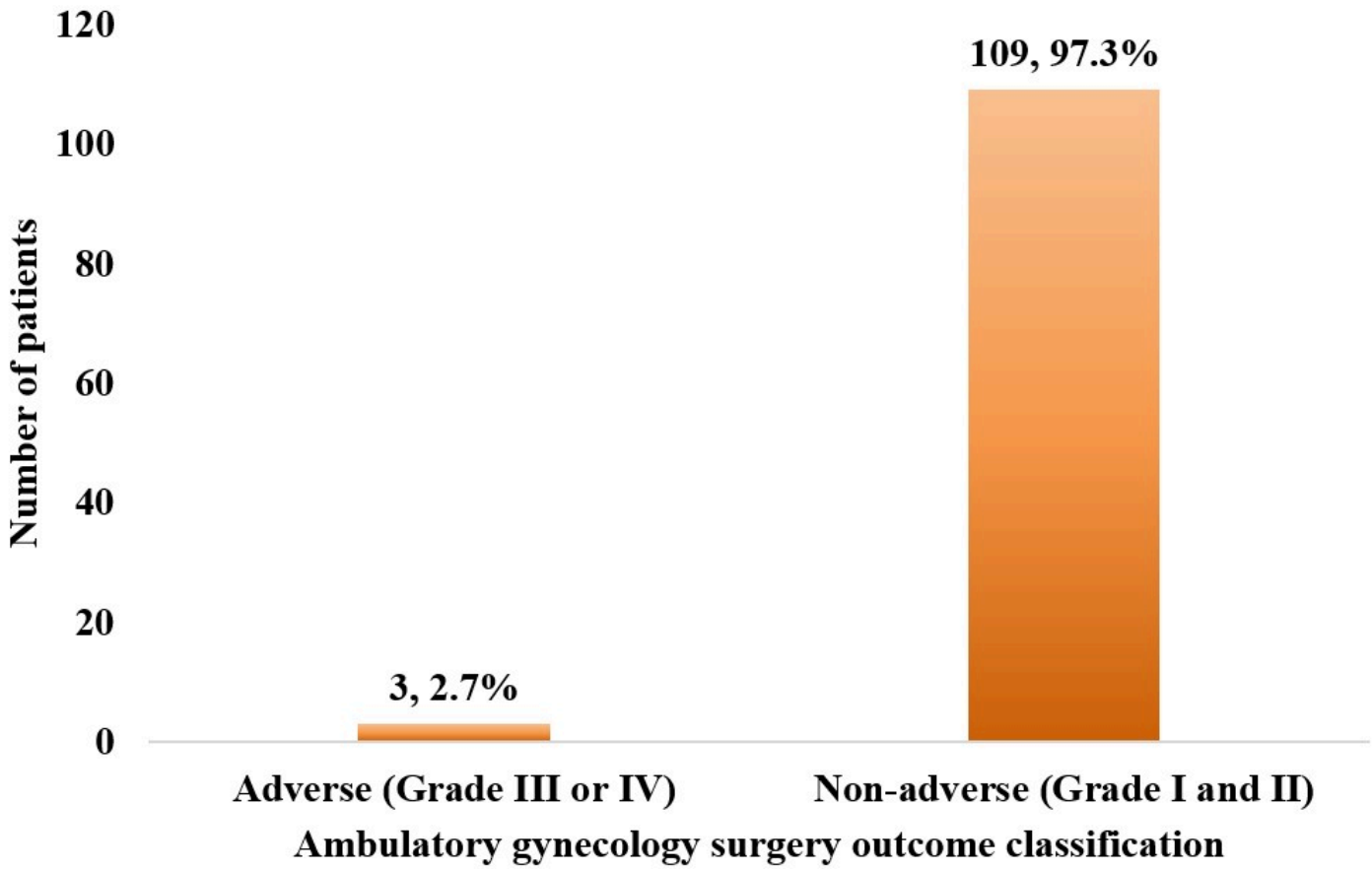


Figure 3

Classification of the clinical outcomes among ambulatory gynecological surgery recipients at Kyabirwa Surgical Center, Budondo Sub-County, Jinja City