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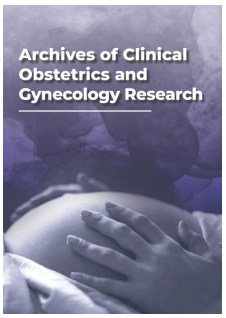
Original Article



Sutureless Vaginal Hysterectomy in the Gynecology and Obstetrics Department of the Teaching Hospital of Point "G": Indications and Prognosis

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Keywords

vaginal hysterectomy; perioperative complications; indications; costs

Abstract

Introduction: *Hysterectomy is the most commonly performed major surgical procedure worldwide. Vaginal hysterectomy provides several benefits, including its non-invasive nature, improved postoperative outcomes, and fewer complications.*

Objective: *To study the indications and prognosis of sutureless vaginal hysterectomy in our department. Materials and Methods: This was a retrospective cross-sectional study collecting data on all cases of vaginal hysterectomy (with or without sutures) performed for benign conditions between December 1, 2016, and June 30, 2022 (five years and six months) at the Teaching Hospital of Point "G".*

Results: *The frequency of sutureless vaginal hysterectomy was 0.38% of surgical procedures and 9.13% of hysterectomies. The median age of the study population was 57.5 years. The most common type of anesthesia was spinal anesthesia (85% for the sutureless group and 97.5% for the sutured group). The median duration of the procedure was 65.2 minutes for the sutureless group and 70 minutes for the sutured group. Intra- and postoperative complications were noted in the sutured group (hemorrhage in 2.5% and small bowel obstruction in 2.5%). The majority of patients in both groups had a hospital stay of 1 to 3 days (95% and 77.5%, respectively).*

Conclusion: *Sutureless vaginal hysterectomy appears to be well-suited to our indications for hysterectomy and has a good prognosis in our practice.*

Introduction

Hysterectomy, defined as the total or partial removal of the uterus, remains the most commonly performed major surgical procedure worldwide [1]. In the United States, approximately 600,000 hysterectomies are performed annually [2]. Several approaches are possible for this procedure: abdominal, vaginal, laparoscopic, and robot-assisted [3].

According to US statistics, 66% of hysterectomies indicated for benign conditions were still performed abdominally, 22% vaginally, and 12% laparoscopically [4].

Despite international recommendations favoring the vaginal approach for benign conditions, it remains underutilized in many settings, particularly in Africa. Indeed, the abdominal approach still predominates, although this approach has been associated with high complication rates [5].

The vaginal approach offers several advantages, including its non-invasive nature, improved postoperative outcomes, and fewer perioperative complications [3,6,7]. Furthermore, numerous learned societies recommend vaginal hysterectomy as the preferred method for benign conditions [7–9]. In addition, vaginal hysterectomy (VH) has been shown to be more cost-effective compared to other surgical approaches [10].

In Mali, the rate of VH was 27.3% at the Teaching Hospital of Point G [11].

In this context, the introduction of innovative techniques, such as sutureless hysterectomy, is generating increasing interest to optimize surgical outcomes and reduce costs [12].

The aim of this study was to investigate the indications and prognosis of sutureless vaginal hysterectomy (SLVH) at our center.

Materials and methods

Study Type, Period, and Site

This was a cross-sectional study with data collection covering all cases of VH performed for benign pathologies between December 1, 2016, and June 30, 2022 (five years and six months) at the Teaching Hospital of Point G. All the SLVHs were performed by the same surgeon, while those sutured hysterectomies were performed by several surgeons. All the

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surgeons were obstetrician-gynecologists.

Description of the procedure with suture:

We will describe the part where the uterine attachments are severed between two forceps before being tied with size 1 or 0 absorbable suture. The paracervix and uterosacral ligaments are then severed and tied with suture. The uterine arteries are then cut off and tied with suture. The remaining attachments, including the uterine rings and utero-ovarian pedicles, are finally severed and tied with suture [12].

Description of the equipment and the procedure without suture:

Description of the equipment: The European bipolar forceps with its cord is placed on the right side of the table, along with the instruments for vaginal surgery (Figure 1).

The sutureless procedure consisted of severing the uterine attachments between two Jean Louis Faure forceps, then coagulating them with the bipolar forceps. The vagina is closed with a suture of size 0 absorbable suture (Figures 2-5).

Study Design

This was a descriptive cross-sectional study comparing two surgical techniques used for VH: the sutured method and the sutureless method.

The study was conducted in the Gynecology-Obstetrics Department of the Teaching Hospital of Point G, where all the patients who had undergone a hysterectomy within the past 5 years were included, provided that relevant information was available in the department's records.

Patients were divided into two groups based on the surgical technique used. The first group consisted of patients who underwent hysterectomy using sutures (traditional technique). The second group of patients underwent hysterectomy without sutures (sutureless technique).

Clinical data, including information on intraoperative and postoperative complications, as well as vital prognoses (in terms of mortality and postoperative morbidity), were collected from the medical records of the Gynecology-Obstetrics Department. The study was conducted retrospectively, analyzing the records of the patients involved.

Study Population

The study population consisted of all patients who underwent a hysterectomy at the Gynecology-Obstetrics Department of the Teaching Hospital of Point-G within the past 5 years. These patients were selected from the department's medical records, which contained information on surgical procedures, complications, and postoperative outcomes.

Figure 1. *Surgical instruments for a sutureless hysterectomy, European bipolar forceps positioned on the right of the image (Photo source: Gynecology-Obstetrics Department, Teaching Hospital of Point G)*

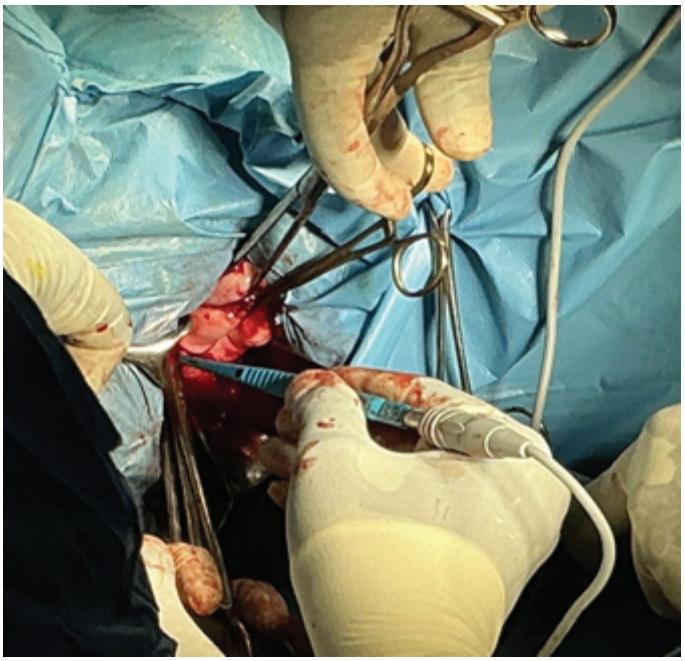

Figure 2. *Coagulation of straight attachments (paracervix, uterosacral ligaments) using European bipolar forceps after their sectioning. (Photo source: Department of Gynecology and Obstetrics, Teaching Hospital of Point G)*

Figure 3. *Coagulation of left-sided attachments (paracervix, uterosacral ligaments) using European bipolar forceps after their sectioning. (Photo source: Department of Gynecology and Obstetrics, Teaching Hospital of Point G)*

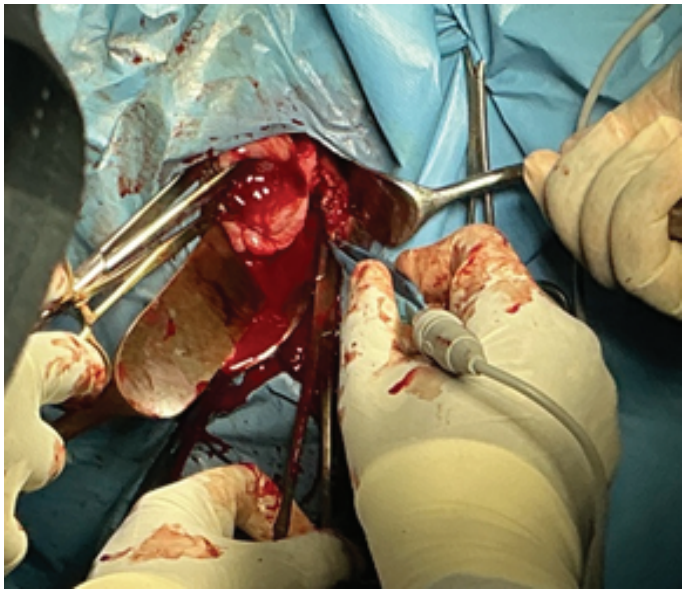

Figure 4. *Coagulation of the left utero-ovarian pedicle after its section. (Photo source: Department of Gynecology and Obstetrics, Teaching Hospital of Point G)*

Table 1. *Sociodemographic characteristics of patients in the two groups*

Characteristics	Type of hysterectomy		p
	Without suture N = 20 n (%)	With suture N = 40 n (%)	
Age groups			0.388
30 to 50 years	8 (40%)	10 (25%)	
51 to 70 years	11 (55%)	25 (62.5%)	
71 to 90 years	1 (5%)	5 (12.5%)	
School level			0.023
Primary	2 (10%)	8 (20%)	
Secondary	4 (20%)	4 (10%)	
Higher	6 (30%)	2 (5%)	
None schooling	8 (40%)	26 (65%)	

Sampling

The final sample consisted of all patients who met the inclusion criteria, with complete follow-up of peri- and postoperative complications, as well as information on their short-term prognosis.

Inclusion criteria: Patients who underwent a hysterectomy within the past 5 years in the Gynecology-Obstetrics Department of the Teaching Hospital of Point G, as well as those with complete data in the department's medical records, including information on the surgical technique used, complications encountered, and immediate postoperative prognosis.

Exclusion criteria: Patients with complex medical histories or conditions that led to uncontrolled variations in the surgical process (e.g., surgery combined with other major pathologies unrelated to hysterectomy) were excluded.

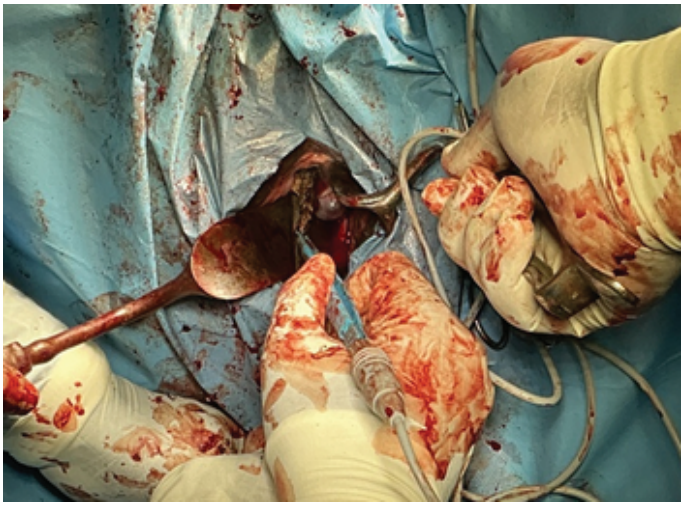

Figure 5. *Coagulation of the right utero-ovarian pedicle after its section. (Photo source: Gynecology-Obstetrics Department, University Hospital of Point G)*

Table 2. *Distribution of patients according to the clinical characteristics*

Characteristics	Type of hysterectomy		P
	Sutureless N = 20	With suture N = 40	
Surgical history			0.325
Prolapse repair	0 (0%)	3 (7.5%)	
Appendectomy	1 (5%)	1 (2.5%)	
C-section	1 (5%)	1 (2.5%)	
Cholecystectomy	0 (0%)	1 (2.5%)	
Ectopic pregnancy	1 (5%)	0 (0%)	
Hemorroidectomy	1 (5%)	0 (0%)	
None	16 (80%)	34 (85%)	
Parity			0.679
Nulliparous	0 (0%)	1 (2.5%)	
Primiparous	1 (5%)	0 (0%)	
Pauciparous	10 (50%)	21 (52.5%)	
Multiparous	9 (45%)	18 (45%)	
BMI in kg/m²			0.04
< 18.5	0 (0%)	3 (7.5%)	
18.5 to 25	11 (55%)	30 (75%)	
26 to 30	8 (40%)	4 (10%)	
Higher to 30	1 (5%)	3 (7.5%)	
n (%)			

Variables under study

The variables studied were sociodemographic characteristics, personal history, indications for surgery, type of anesthesia, type of procedure, duration of surgery and hospitalization, presence or absence of perioperative or postoperative complications, and cost of medications in the operating room.

Data Management and Analysis

Data analysis was performed by using SPSS software (Statistical Package for Social Sciences) version 21. Statistical

tests used for comparisons were Pearson's chi-squared test, Fisher's exact test, and Student's t-test, depending on the nature of the variable and the conditions of application. Observed differences were considered significant when the p-value was < 0.05.

Ethical Considerations

- **Ethical Approval:** Given the retrospective nature of the study, there was no submission to an ethics committee.
- **Informed Consent:** Informed consent was not obtained because patient records were consulted along with other healthcare resources.
- **Confidentiality:** Data were anonymized during collection to ensure confidentiality.

Results

We collected 20 matched cases of sutureless vaginal hysterectomy (SLVH) and 40 cases of sutured vaginal hysterectomy (SVH). Of the 5,235 surgical procedures, 219 were hysterectomies (4.18%). SLVHs represented 0.38% of surgical procedures and 9.13% of hysterectomies during the study period.

Sociodemographic data

The median age of the study population was 57.5 years, with a range of 35 to 78 years. The majority of patients in both groups were over 50 years of age, with respective proportions of 60% and 75%. The sociodemographic characteristics of the patients are summarized in Table 1.

The proportion of none schooled patients was significantly higher among patients who received a hysterectomy with sutures (65%) compared to those who received a hysterectomy without sutures (40%); p=0.023. For the frequency of age groups, the two groups were comparable (p=0.388) (Table 1).

The proportion of none schooled patients was significantly higher among patients who received a hysterectomy with sutures (65%) compared to those who received a hysterectomy without sutures (40%); p=0.023. For the frequency of age groups, the two groups were comparable (p=0.388) (Table 1).

Clinical data

The distribution of patients according to BMI was significantly different between the group that underwent hysterectomy without sutures (40%) and the group that underwent hysterectomy with sutures (10%), p=0.040. The

Table 1. *Operative Characteristics*

Characteristics	Type of hysterectomy				p
	Sutureless N=20		With suture N=40		
Operative Indication					
Adenomyosis	1 (5)		0 (0)		0.006
Severe dysplasia	7 (35)		5 (12.5)		
Uterine fibroid	2 (10)		3 (7.5)		
Ovarian cyst	1 (5)		0 (0)		
Abnormal uterine bleeding	4 (20)		4 (10)		
3rd degree genital prolapse	5 (25)		28 (70)		
Type of anesthesia					
Spinal anesthesia	17	-85	39	-97.5	0.103
General anesthesia	3	-15	1	-2.5	
Conservation of annexes					
Yes	11	-55	18	-45	0.465
No	9	-45	22	-55	
Operative Time	**Median : 65.2 min [Ext : 40 and 90 min]**		**Median : 70 min [Ext : 45 and 95 min]**		
< 1 hour	8	-40	12	-30	0.439
≥ 1 hour	12	-60	28	-70	
Perioperative complications					
Hemorrhage	0	0	1	-2.5	>0.999
None	20	-100	39	-97.5	
Post-operative complications					
None	20	-100	39	-97.5	>0.999
Small bowel obstruction	0	0	1	-2.5	
Duration of hospital stay	**Median : 2 days [Ext :1 to 4 days]/ Median :3 days [Ext :1 to 6 days]**				<0.001
1 – 3	19	-95	31	-77.5	0.142
4 – 6	1	-5	9	-22.5	

n (%); Median [Min - Max]

two groups were comparable in terms of frequency of previous surgeries and parity (p>0.325).

The operative clinical data are listed in Table III. The most common type of anesthesia was spinal anesthesia (85% for the sutureless group and 97.5% for the sutured group). The median operative time was 65.2 minutes for the sutureless group and 70 minutes for the sutured group. Intraoperative and postoperative complications occurring in the sutured group were hemorrhage (2.5%) and small bowel obstruction (2.5%, occurring on postoperative day 15), respectively (Table 3).

The majority of patients in both groups had a hospital stay of between 1 and 3 days (95% and 77.5%, respectively). The median number of days of hospitalization was 2 days for the sutureless hysterectomy group and 3 days for the sutured hysterectomy group. This difference was greater than expected by chance, p < 0.001.

The average cost of the procedure was 37,940 FCFA (approximately €57.84) for the sutureless technique and 67,360 FCFA (approximately €102.69) for the sutured technique. This cost covers the surgical supplies (data not shown).

Discussion

Epidemiological Data

Frequency

The frequency of SLVH in our series was 9.13% of hysterectomies (20/219). VH remains the gold standard whenever a vaginal approach is possible, according to gynecological surgery guidelines reported by several authors [1,3,4,9]. Our frequency was higher than that reported by Tebeu et al. (5.3%) [13], but lower than that of Traoré A. et al. (64.91%) [14]. These differences could be explained by the methodology used in the different studies.

Sociodemographic Characteristics

The median age of our study population was 57.5 years. The perimenopausal and menopausal periods are particularly conducive to benign pathologies that may often necessitate a hysterectomy. In the literature, several authors have reported age characteristics (medians or averages) around 50 years and over, close to ours [3,13–17].

Clinical Data

Clinical Characteristics

A history of surgery was found in 5% of subjects in the sutureless group (C-section) and 7.5% in the sutured group (prolapse repair). A history of pelvic or vaginal surgery is not a contraindication to VH according to some authors [4,18].

A history of vaginal delivery is a factor in assessing vaginal access. In our series, multiparous women (50% in the sutureless group and 55% in the sutured group) were the most represented. The concept of previous childbirth has been widely reported in the literature [1,3,4,13-20].

Operative Characteristics

The most frequent surgical indications in our series were severe dysplasia, accounting for 35% (7/20) of cases in the sutureless hysterectomy group, and third-degree prolapse, accounting for 70% (28/40) of cases in the sutured hysterectomy group.

In the literature, several authors have reported indications related to prolapse and other benign gynecological conditions [3,13–15,17,20]. However, VH has numerous indications beyond uterine prolapse. Indeed, several benign gynecological conditions requiring removal of the uterus can be managed vaginally [8,9,21]. Our indications are consistent with the data in the literature.

The most common type of anesthesia in our series was spinal anesthesia (85% in the sutureless group and 97.5% in the sutured group). Traoré et al. [14] also reported predominantly spinal anesthesia. Indeed, Stark et al. [8] maintain that regional anesthesia presents a lower risk of morbidity compared to general anesthesia. However, other authors have reported more cases of general anesthesia [3,20]. This difference could be explained by methodological preference.

Among the many advantages of VH is the shorter procedure time compared to other approaches [1,9]. The median procedure time in our study was 65.2 minutes for the sutureless hysterectomy group and 70 minutes for the sutured hysterectomy group. Sirota et al. [4] found a mean duration of 100.66 ± 34.35 minutes, longer than ours. The procedure time depends on several factors, including the size of the uterus, the performance of additional procedures, and the surgeon's experience, according to some authors [9,19].

Complications

The intra- and postoperative complications occurring in the hysterectomy group with sutures were hemorrhage (2.5%) and small bowel obstruction (2.5%), respectively (occurring on postoperative day 15). We observed no complications in the hysterectomy group without sutures. Perioperative complications during vaginal hysterectomy are primarily hemorrhagic (vaginal cut) and visceral injury (bladder, ureter, bowel), as reported by some authors [4,9,15].

Length of Hospital Stay

VH is recognized as allowing for a short postoperative stay [6,8]. We found a median length of stay for the sutureless group and the sutured group of 2 days and 3 days, respectively. Our results corroborate data from the literature, where some authors reported lengths of stay not exceeding 3 days [3,15]. However, Alamelu et al. [1] and Kala et al. [10] reported averages higher than ours: 6.47 days and 4.5 days, respectively. This difference can be explained by the demographic characteristics of the study population of Alamelu et al. [1] (rural setting, difficult access to the hospital). It can also be explained by the methodology used by Kala et al. [10], which focused on the costs of hysterectomy according to the technique.

Cost of VH according to technique

VH is recognized as the least expensive among minimally invasive techniques [7,8,21]. In our series, the cost of the procedure was 37,940 FCFA (approximately €57.84) for the sutureless group and 67,360 FCFA (approximately €102.69) for the sutured group. This cost covered only the surgical supplies.

Kala et al. [10] compared the costs between three hysterectomy techniques, and the vaginal approach was the least expensive, with €31.35 for medications in the operating room. We cannot compare our study to that of Kala et al. due to methodological differences.

Conclusion

Sutureless vaginal hysterectomy appears suitable for common hysterectomy indications and has a good prognosis in our practice. The cost difference between sutureless and sutured hysterectomy is a further argument for conducting additional studies with larger sample sizes.

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