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Assessing the Influence of Absent Vaginal Birth on Non-Descent Vaginal Hysterectomy (NDVH): A Retrospective Comparative Analysis of NDVH Outcomes in Women with Prior Vaginal Birth versus Women with Absent Vaginal Birth

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Abstract:

Background: Numerous alleged contraindications limit the adoption of Non-Descent Vaginal Hysterectomy (NDVH), notably the absence of prior vaginal birth (NPVB). This study investigates whether this holds true. **Aim:** To compare NDVH success rates and perioperative outcomes in women with and without PVB. **Patients and Methods:** This retrospective cohort study included 1,540 women who underwent NDVH between 2008 and 2025 at a university hospital and affiliated centers. **Results:** Of 1,540 patients, 694 (45%) were NPVB (reference group)—330 (47.56%) nulliparous and 364 (52.44%) cesarean-only (CSO); 846 (55%) had ≥1PVB—350 (41.66%) vaginal-only birth (VBO) and 496 (59.04%) mixed vaginal/cesarean (MC/VB) (investigational group). Both groups were comparable in baseline characteristics, with no significant differences in perioperative complications, transfusion rates, visceral injuries, infections, or conversion to total abdominal hysterectomy (TAH) ($p > 0.05$). NDVH was completed in 98.18% of nulliparas, 98.62% of CSO, and 98.41% of all NPVB cases. Similarly, ≥1PVB women had high success rates: 99.42% in VBO, 98.80% in MC/VB, and 99.06% overall. However, conversion to TAH significantly increased with higher-order cesareans: ≥3 CSs (RR = 4.45) and ≥4 CSs (RR = 8.05) in CSO; RR = 3.32 and 4.24 in MC/VB. Among nulliparas with prior hysterotomy or abdominal surgery, RR rose to 12.57 and 12.18, respectively. In contrast, uterine weight <280g in ≥1PVB was protective (RR = 0.27). **Conclusion:** NDVH is safe and effective regardless of PVB status. Mere APVB in nulliparous or CSO women should not preclude NDVH, and the necessity of laparoscopy in such cases should be reconsidered.

Key words: non- descent vaginal hysterectomy (NDVH), no prior Vaginal Birth (NPVB), Caesarean only birth (CSO), Nulliparous (NP), vaginal only birth (VBO).

Introduction

Vaginal hysterectomy (VH) has long been recognized as the preferred surgical route for the management of benign gynecological conditions due to its numerous advantages, including shorter operative time, reduced postoperative pain, quicker recovery, and lower complication rates compared to abdominal (TAH) or laparoscopic (TLH) approaches [1-5]. Despite these benefits, numerous myths, and alleged contraindications for VH have persisted throughout the 20th century, which contributed to the predominance of TAH. Over the past 25 years, the emergence and rapid adoption of minimally invasive techniques (MIH) such as TLH and robotic-assisted hysterectomy (RAH) have further shifted practice patterns away from VH in many centers worldwide [5-12]. One of the most frequently cited yet unsubstantiated contraindications to VH is the absence of prior vaginal birth (APVB) [2–5, 9, 13–17]. APVB refers to two distinct subpopulations: nulliparous women [18–22], who have never delivered a fetus beyond 28 weeks' gestation, and parous women with exclusively cesarean deliveries [23–33]. Despite differences in obstetric history, both groups share a lack of vaginal delivery experience and are often presumed to present technical challenges during VH, these challenges are generally attributed to anticipated reduced pelvic compliance, narrower vaginal dimensions, poor uterine descent, and—in the CSs-only subgroup(CSO)— possible adhesions or altered pelvic anatomy secondary to prior abdominal surgery [2–5,13–17]. Traditionally, these assumptions have discouraged attempts at VH in such cases, however, a growing body of evidence contests this notion[17, 19–22, 33]. Recent studies have demonstrated that VH remains both feasible and safe in women with no history of vaginal birth, including both nulliparous (NP) and CSs-only parous patients (CSO) [18–33]. These findings highlight the need to re-evaluate APVB as an assumed contraindication to VH and to shift surgical decision-making toward evidence-based assessments rather than supposed anatomical limitations.

Globally, hysterectomy remains one of the most performed gynecologic surgeries [1]. In high-income countries (HICs), such as the USA, Canada, and parts of Europe, MIH like TLH and RAH have grown in popularity, while VH rates have declined [5-12]. In contrast, developing countries often maintain a higher reliance on TAH due to limited access to laparoscopic technology and training. Egypt, like many middle-income nations (MINs), reflects this mixed practice pattern, with many hysterectomies still performed abdominally despite evidence supporting the safety and feasibility of the vaginal route [18,31]. The reluctance to adopt VH more broadly may be influenced by these myths, lack of training, surgeons' preferences which may influenced by higher financial incentives - particularly in relation to MIH and TAH in USA-as well as poor conceptualizations regards gynecologist-defined surgical procedures, precisely non-descent vaginal hysterectomy (NDVH), concerns over contraindications such as nulliparity or prior cesarean delivery and patient selection influenced by longstanding surgical dogmas [9,13-17].

Professional societies in alliance (s and gynecology worldwide, including the American College of Obstetricians and Gynecologists (ACOG) [34], the society of Obstetricians and Gynecologists of Canda(SOGC) [35], the International Federation of Gynecology and Obstetrics(FIGO) [36], National College of French Gynecologists and Obstetricians (CNGOF) [37] and DACH(GSA) alliance([38]), have consistently advocated for considering the vaginal route for hysterectomy when possible. ACOG's Practice Bulletin and Committee Opinions 701 released in 2017 and reaffirmed again 2021 emphasize VH as the route of choice for benign disease, highlighting that many traditionally cited contraindications, including nulliparity and prior CSs—are not absolute [34]. These

organizations encourage clinicians to assess patients individually and to avoid unnecessary switch to abdominal or laparoscopic routes when vaginal hysterectomy can be safely performed [34-38]. Recent meta-analyses and systematic reviews further reinforce this perspective. A 2017 systematic review published in the ACOG Green Journal analyzed outcomes of VH in patients with and without traditional contraindications and found no significant difference in success rates or complications [39]. Similarly, studies have shown that factors such as uterine size, obesity, and prior pelvic surgeries, including CSO, do not preclude the safe performance of VH when appropriate surgical expertise is available [1-5,9,13-17,33,39]. These data underscore the importance of reevaluating surgical decision-making and dispelling myths that limit VH utilization [1,39,40].

In this retrospective comparative study, we aimed to assess the impact of APVB encompassing both nulliparous women and those who have delivered only by CSs on the outcomes and achievability of NDVH. By comparing intraoperative (IO) and postoperative (PO) outcomes between women with and without a history of vaginal birth both nulliparous as well as only CSs parous women, we sought to determine whether the absence of vaginal delivery truly limits the feasibility or safety of NDVH. Given the increasing rates of exclusively CSs deliveries globally including Egypt as well as nulliparity [41-44], understanding this relationship is critical for optimizing surgical care, expanding VH applicability, and improving patient outcomes. Through this analysis, we hope to contribute to dispelling enduring myths and aligning clinical practice more closely with current guidelines and evidence-based recommendations.

Patients and Methods

This retrospective cohort analysis was conducted at Benha University Hospital (BUH) and associated private facilities in Egypt, covering the period from January 2008 through April 2025. Ethical clearance was obtained from the Research Ethics Committee of Benha Faculty of Medicine (Approval No: RC 20-9-2023). The study population included 1540 women undergoing NDVH for non-malignant indications. Patients were excluded if they had pelvic organ prolapse (POP) or if their medical documentation was incomplete. Data was collected across preoperative (PO), intraoperative (IO), and postoperative (PO)stages, following protocols described in a previously published reference [18,31]. All NDVH surgeries were conducted under regional anesthesia by skilled gynecologic surgeons. Initially, NDVH execution relied on the clamp–cut–ligate technique using standard curved longitudinally serrated clamps (fig:1a,b,c,e,h,i) but later, energy-based surgical devices like LigaSure Impact and Biclamp 200 were introduced (fig:1d,f,g) [45] and operative strategies dealing with opening anterior Cul de sac aligned with those outlined by professional bodies such as ACOG, AAGL, and SGS. Techniques including uterine bisection with unilateral adnexal management, round ligament-first dissection, retroversion of the uterus with elevation of the cervix and the use of extended lithotomy and Trendelenburg positioning facilitated enhanced exposure and operative ease. Also, we found availability of straight urinary metal Cather in operative table was helpful in demarcation the urinary blader limits as in Egypt the accessibility to cystoscopy is limited secondary to a lot of logistics difficulties.

We classified participants in this retrospective analysis into two primary groups based on their obstetric history regarding vaginal birth. The first group, referred to as the “No Prior Vaginal Birth’’ group or “Zero Vaginal Birth’’ (NPVB=APVB=0VB), included women who had never experienced a vaginal delivery (VD=VB). This group was further subdivided into two clinically distinct subgroups: (1) the “Nulliparous Subgroup’’ (NP), comprising women with no prior

deliveries ≥28 weeks' gestation, and (2) the "Cesarean-Only Subgroup'' (CSO), consisting of women whose obstetric history included only cesarean section(s)(CSs), without any vaginal birth. The second main group, termed the "Prior Vaginal Birth'' group (≥1PVB), included women with a documented history of at least one VD at or beyond 28 weeks' gestation. This group was also stratified into two subgroups: (1) the "Vaginal-Only Subgroup'' (VBO), including women whose all deliveries were via the vaginal route, and (2) the "Mixed Cesarean / Vaginal Delivery Subgroup'' (MC/VD), comprising women who had a combination of vaginal and cesarean deliveries.

Sample size calculation.

French gynecologic surgeons' group (FGSG) ([17]) reported successful completion of NDVH in 209 out of 227 women (92.1%), with 116 cases (51.2%) completed exclusively vaginally and 111 cases (48.9%) with laparoscopic assistance. We utilize online CLINCLAC sample size calculator, to detect a 5% higher success rate in NDVH among women with no prior vaginal birth (NPVB) compared to FGSG's results, so we would need, 391 NPVB women for 80% power, 523 NPVB women for 90% power, 646 NPVB women for 95% power at an alpha error of 0.05. If we anticipate our NDVH success rate to be 5% lower than FGSG's rate, we will need 626 NPVB women for 80% power, this increases to 904 NPVB women for 90% power and to 1118 NPVB women for 95% power , while if our success rate is estimated to be 10% lower, 201 NPVB women are required for 80% power, 269 NPVB women for 90% power and 332 NPVB women at an alpha error of 0.05. Since this analysis compares NPVB to prior vaginal birth (≥1PVB) groups with anticipated a 1:1 allocation ratio, so to detect a 5% higher success rate, total sample sizes required would be, 782 women for 80% power, 1046 women for 90% power, 1292 women for 95% power at an alpha error of 0.05, and for a 5% lower success rate, 1252 women are needed at 80% power, increasing to 1808 women at 90% power and increase to 2236 women at 95% power at an alpha error of 0.05, while for a 10% lower success rate, 402 women are needed at 80% power, increasing to 538 women at 90% power and to 664 women at 95% power at an alpha error of 0.05.

Statistical Analysis

Statistical analysis was performed using MedCalc software (MedCalc Software bvba, 2016; www.medcalc.org). Continuous variables were described using mean ± standard deviation and range. Differences between groups for continuous data were assessed using the unpaired Student's t-test. Categorical data were summarized as frequencies and percentages, and group comparisons were conducted using either Pearson's Chi-square test or Fisher's exact test, as appropriate. An unadjusted Odds Ratio for conversion route from vaginal to abdominal were calculated considering either NPVB or ≥1PVB group as reference group. A p-value of <0.05 was considered statistically significant throughout the analysis.

Results

This retrospective study included 1,540 women who underwent non-descent vaginal hysterectomy (NDVH) between 2008 and 2025. Participants were categorized into two groups based on their history of prior vaginal birth (≥1PVB), a factor that may affect the technical feasibility of NDVH. The first group comprised women with one or more prior vaginal births (≥1PVB), totaling 846 cases (55%). Among them, 350 women (22.72% of the total; 41.66% of the ≥1PVB group) had vaginal-only births (VBO), while 496 (32.20% of the total; 58.34% of the ≥1PVB group) had a combination of cesarean and vaginal births (MC/VB). The second group included 694 women (45%) with absence or no or zero prior vaginal birth (NPVB=APVB = 0VB), of whom 364 (23.63% of the total; 52.44% of the NPVB group) had only cesarean births (CSO), and 330 (21.42% of the total;

47.56% of the NPVB group) were nulliparous (NP).

Table (1) presents the baseline demographic and clinical parameters of the study cohort. Women in the ≥1PVB group demonstrated a statistically significant increase in body mass index (BMI) compared to those without prior vaginal births (34.6 ± 6.6 vs. 33.4 ± 6.7 kg/m²; p = 0.0004). They also exhibited higher parity (4.2 ± 1.5 vs. 2.3 ± 1.1; p < 0.0001) and a marginally greater mean number of previous cesarean deliveries (2.4 ± 0.8 vs. 2.3 ± 1.1; p = 0.039). The prevalence of postmenopausal status at the time of surgery was significantly lower among women in the ≥1PVB group [283 (40.77%) vs. 257 (30.59%), p < 0.0001]. Regarding prior abdominal surgical history, 297 women (35.10%) in the ≥1PVB group had no previous abdominal operations (classified as a "virgin" abdomen), compared to 282 women (40.63%) in the NPVB group (p = 0.0258). Conversely, a higher proportion of women in the ≥1PVB group had a history of cesarean sections [496 (58.62%) vs. 364 (52.44%), p = 0.0151]. Additionally, the occurrence of key preoperative clinical variables—including uterine weights exceeding 280 grams, histological diagnosis of endometrial hyperplasia (notably complex atypical hyperplasia), adenomyosis, chronic pelvic pain or endometriosis, and the need for preoperative intravenous iron supplementation—was significantly more frequent among women with prior vaginal births (p < 0.05 for all comparisons).

Table (2) demonstrates that patients in the ≥1PVB group encountered significantly more complex intraoperative outcomes. This group had longer actual operative times, higher estimated blood loss, and a greater need for intraoperative morcellation—particularly techniques such as myometrial coring and spiral morcellation. They also showed a higher postoperative uterine weight (in grams) compared to the NPVB group (p < 0.05). Although intraoperative challenges were more frequent in the ≥1PVB group, the number and rate of conversions to total abdominal hysterectomy (TAH) were comparable between the two groups: 8 out of 846 (0.94%) in the ≥1PVB group versus 11 out of 694 (1.58%) in the NPVB group (p = 0.25), indicating no significant difference in conversion rates.

Table (3) illustrates that patients in the ≥1PVB group experienced significantly more challenging postoperative outcomes. This group required higher analgesic consumption—including both narcotics and NSAIDs—had longer times to first mobilization and passage of flatus and exhibited a greater postoperative hemoglobin drop. They also experienced a delayed return to sexual activity, had extended hospital stays, and showed lower rates of same-day discharge compared to the NPVB group (p < 0.05 across all measures).

Table (4) illustrates the impact of ≥1PVB status either presence or absence on the outcomes of NDVH, specifically comparing cases that were successfully completed vaginally versus those that required conversion to TAH as this is the most relevant clinical item to be evaluated. Participants were categorized based on PVB history into two main groups: those with APVB, including cesarean-only (CSO) and nulliparous (NP) women, and those with ≥1PVB, which includes vaginal-only births (VBO) and mixed cesarean/vaginal births (MC/VB). The absence of prior vaginal birth alone did not independently predict failure of NDVH unless accompanied by a higher number of prior cesarean sections. Specifically, women with CSO and ≥3 prior cesareans (NPVB e ≥3 CSs) had significantly higher odds of conversion to TAH (OR = 4.45, p = 0.0163), which further increased in those with ≥4 cesareans (NPVB e ≥4 CSs) (OR = 8.05, p = 0.0009). Similarly, a uterine weight ≥280 grams was also associated with a higher risk of conversion (OR = 6.04, p = 0.0011). Notably, even among women with ≥1PVB, higher-order cesarean history remained a significant risk: those with ≥1PVB and ≥3

CSs had a conversion rate of 5.08% (6/118; OR = 3.32, p = 0.0011), and those with ≥1PVB and ≥4 CSs had a conversion rate of 7.69% (6/78; OR = 5.24, p = 0.0015). Conversely, having a uterine weight <280 grams in the presence of ≥1PVB was associated with significantly lower odds of conversion to TAH (OR = 0.27, p = 0.0483).

Table 1: Demographic and clinical baseline characteristics of 1540 women undergoing non-descent vaginal hysterectomy (NDVH), categorized into groups based on vaginal birth history: Absent or No Prior Vaginal Birth (NPVB= APVB=0VB) and One or More Prior Vaginal Births (≥1PVB).

Variables	NPVB(0VB) (n=694) (45%)	PVB(≥1PVB) (n=846) (55%)	Δ (95% CI)	P value
Age (year)	47.5 ± 5.9(36– 68)	48.1± 6.2 (35– 76)	0.6(-0.009to1.20)	0.053
BMI (kg/m2)	33.4 ± 6.7 (18.5– 45.9)	34.6 ± 6.6 (22.4 – 67.6)	1.2(0.53to1.86)	0.0004
Parity	2.3±1.1 (0-6)	4.2±1.5 (1-10)	1.9(1.76to2.03)	<0.0001
Prior Vaginal Birth 0	694(100%)	0(0%)	100(99.28to100%)	<0.0001
1	0(0%)	412(49.04%)	49(45.6to52.4%)	<0.0001
2	0(0%)	213(25.35%)	25(22.4to28.3%)	<0.0001
3	0(0%)	124(14.67%)	14(12.3to17.2%)	<0.0001
≥4	0(0%)	97(11.54%)	11(9.48to13.8%)	<0.0001
CSO (Caesarean only birth)	364(52.44%)	0(0%)	52(48.6to56.1%)	<0.0001
VBO (Vaginal only birth)	0(0%)	350(41.66%)	41(38.3to45.01%)	<0.0001
MC/VB	0(0%)	496(59.04%)	59(55.6to62.3%)	<0.0001
Nulliparity	330(47.56%)	0(0%)	47(43.84to51.27)	<0.0001
Nulligravida (NG)	134(19.30%)	0(0%)	19(16.49to22.40%)	<0.0001
≥ 1 Vaginal abortion	168(24.20%)	211(25.11%)	0.91(-3.43to5.20%)	0.68
≥ 1 hysterotomy	28(4.03%)	38(4.52%)	0.49(-1.62to2.52%)	0.63
Absent of prior VD	694(100%)	0(0%)	100(99.28to100%)	<0.0001
Post-menopausal	283 (40.77%)	257(30.59%)	10(5.37to14.94%)	<0.0001
CUS (weeks)	10.9 ± 4.8 (6 – 18)	11.1 ± 6.4 (6– 28)	0.2(-0.37to0.77)	0.49
USUV (Cm3)	256 ± 93 (60 – 1250)	265 ± 95 (60– 1800)	9(-045to18.45)	0.06
Parity Total	2.3±1.1 (0-6)	4.2±1.5 (1-10)	1.9(1.76to2.03)	<0.0001
Vaginal	0	1.8± 0.7(1-10)	1.8(1.74to1.85%)	<0.0001
CSs	2.3±1.1 (0-6)	2.4 ± 0.8(0-5)	0.1(0.004to0.19)	0.039
Uterine weight(g) <280	584 (84.14%)	676(79.90%)	4.24 (0.36 to 8.03%)	0.0319
>280	110 (15.85%)	170(20.09%)	4.24 (0.36 to 8.03%)	0.0319
IOH - Leiomyoma	214 (30.83%)	273(32.5%)	1.67 (3.01 to 6.3%)	0.4838
- AUB	421 (60.66%)	532(63.33%)	2.67 (2.18 to 7.53%)	0.2826
-EH includes CAEH	221 (31.84%)	334(39.47%)	7.63 (2.8 to 12.3%)	0.0019
- Adenomyosis	286(40.63%)	398(47.04%)	6.41 (1.42 to 11.3%)	0.0117
- Pain/endometriosis	224 (32.27%)	389(45.98%)	13.71 (8.82 to 18.47%)	0.0001
- CIN includes (I II III)	105 (15.12%)	145(17.13%)	2.01 (1.71 to 5.66)	0.2872
- Genetic prophylaxis	16(2.30%)	23(2.71%)	0.41 (1.25 to 2%)	0.6100
- Other	20(2.88%)	27(3.19%)	0.31 (1.50 to 2.04%)	0.7249
Comorbidity:	295(42.50%)	325(27.77%)	14.73 (9.9 to 19.4%)	0.0001
- HTN	106(15.27%)	135(15.95%)	0.68 (3 to 4.29%)	0.7148
- DM	95(13.68%)	112(13.23%)	0.45 (2.95 to 3.92%)	0.7967
- uncontrolled DM	42(6.05%)	53(6.26%)	0.21 (2.27 to 2.61%)	0.8647
- POHBA1C (%)	8.9 ± 2.5 (4.5%-18.4%)	9.3 ± 3.3 (4.5-21.5%)	0.4(0.10 to 0.69%)	0.0085
- LOPA (days)	2.9± 1.5 (0-5)	3.2±2.2(0-8)	0.30(0.10to0.49%)	0.0023
- others	94(13.54%)	80(9.45%)	4.09 (0.9 to 7.36)	0.0117
PO HB (g/dl)	10.9 ± 3.7 (9.5-13.2)	11.1± 3.6(9.7-12.7)	020(-0.16to0.56)	0.28
PO HCT %	37.2 ± 8.1 (31.4-41.4)	37.7 ± 7.1 (31.2-42.1)	050(-0.26to1.26)	0.19
PO transfusions	19(2.73%)	22 (2.60%)	0.13 (1.5 to 1.86%)	0.8747
PO IV Iron	283 (40.77%)	433 (51.18%)	10.41 (5.4 to 15.3%)	0.0001
PO erythropoietin	60 (8.64%)	68(8.03%)	0.61 (2.14 to 3.45%)	0.6661
Previous pelvic surgery:				
- CSs	364(52.44%)	496(58.62%)	6.18 (1.19 to 11.13%)	0.0151
- LAS (H&M&O)	48(6.91%)	53 (6.26%)	0.65 (1.82 to 3.2)	0.6082
- VLA	282(40.63%)	297(35.10%)	5.53 (0.66 to 10.38)	0.0258
ASA score:				
- ASA 1	398(57.34%)	436 (51.53%)	1.28 (3.65 to 6.22)	0.6127
- ASA 2	197(28.38%)	223 (26.35%)	2.03 (2.42 to 6.5)	0.3736
- ASA 3	75(10.80%)	145(17.13%)	6.33 (2.85 to 9.73)	0.0004
- ASA 4	24(3.45%)	42(4.96%)	1.51 (0.56 to 3.5)	0.1453

A- NPVB: Absent -No Prior Vaginal Birth,0VB: Zero vaginal birth, ≥1PVB: with at least one Prior Vaginal Birth, NDVH: Non-descent vaginal hysterectomy, CSO: Caesarean only birth, VBO: Vaginal only birth, MC/VB: Mixed Caesarean/ Vaginal birth, BMI: Body mass index, CUS: Clinical uterine size, USUV: Ultrasound uterine volume, HTN: Hypertension, DM: Diabetes mellitus, VD: Vaginal delivery, PO: preoperative, CSs: Cesarean sections, IV: Intravenous, POHBA1C: Preoperative Glycated Hemoglobin A1C, DOPHS: Duration of preoperative hospital stay, IOH: Indication for hysterectomy, ASA: American Society of Anesthesiologists, HB: Hemoglobin, HCT: Hematocrit, PO: postoperative, AUB: Abnormal uterine Bleeding, EH: Endometrial Hyperplasia, CAEH: Complex atypical endometrial hyperplasia, CIN: Cervical intraepithelial neoplasia, LAS (H&M&O): lower abdominal surgeries, including hysterotomy & myomectomy & others, VLA: virgin lower abdomen, Δ (95% CI): mean or percent difference with 95% confidence interval. Values were given as mean ± 2 standard deviations (range), or number (percent), P value< 0.05: significante.

Table 2: Intraoperative outcomes among 1540 women undergoing non-descent vaginal hysterectomy (NDVH), grouped according to vaginal birth history: No Prior Vaginal Birth (NPVB=0VB) and One or More Prior Vaginal Births (≥1PVB).

Variables	NPVB(0VB) (n=694) (45%)	PVB(≥1PVB) (n=846) (55%)	Δ (95% CI)	P value
Actual OR time	112± 28 (30– 220)	117± 35 (50-230)	5(1.78to8.21)	00023
EBL (ml)	275 ± 90 (60-1700)	291 ± 105 (100 -1600)	16(6.10to25.89)	0.0015
IO blood transfusion	16 (2.30%)	18 (2.12%)	0.12(-1.37to1.77)	0.87
Spinal anesthesia	694 (100%)	846 (100%)	N/A	
General anesthesia	109(15.70%)	119(14.06%)	1.64 (١.91 to 5.26)	0.3673
Endotracheal tube	39 (5.61%)	42 (4.96%)	0.65 (١.58 to 2.99)	0.5696
Morcellations techniques	409 (58.93%)	456(53.78%)	5.15(0.16to10.08%)	0.042
- Cervical amputation	211 (30.40%)	281(33.21%)	2.81 (1.8 to 7.44%)	0.2394
- bisection	233(33.57%)	312(36.87%)	3.30 (1.5 to 8.05%)	0.1779
- myometrial coring	147 (21.18%)	245(28.95%)	7.77	0.0005
- wedge resection	146 (21.03%)	204(24.11%)	(3.41 to 12.03%)	0.1514
- myomectomy	275 (39.62%)	366(43.26%)	3.08 (1.13 to 7.2%)	0.1495
- spiral morcellate	217 (31.26%)	335(39.59%)	3.64 (1.3 to 8.54%)	0.0007
			8.33 (3.5 to 13.04%)	
NDVH techniques				
Traditional	260 (37.46%)	272 (32.15%)	5.31(0.55 to 10.6%)	0.028
Energy based	434 (62.53%)	574 (67.84%)	5.31(0.55 to 10.6%)	0.028
Additional procedures				
- VOBS	542(76.09%)	635 (75.05%)	1.04 (3.29 to 5.31%)	0.6368
- VP/IBSO	114 (16.42%)	128 (15.13%)	1.29 (2.34 to 4.99%)	0.4890
- Conversion to TAH	11(1.58%)	8(0.94%)	0.64 (0.50 to 1.95%)	0.2567
PO uterine weight (g)	245 ± 63 (60 – 1280)	265 ± 67 (80 – 1800)	20(19.44to26.55%)	<0.0001
Uterus weight (category)				
- Tiny (≤100 g)	387(55.76%)	488(57.68%)	2.01 (-2.95to 6.97%)	0.428
- Average (101–280 g)	197(28.38%)	188(22.22%)	6.16(1.80 to 10.53%)	0.0055
- Substantial (280–600 g)	64(9.22%)	106(12.52%)	3.30(0.14to 6.38%)	0.0398
- Huge (>600 g)	46(6.62%)	64(7.56%)	0.94 (1.69 to 3.49%)	0.4760
IO complications				
- vesical injuries	8 (1.15%)	12(1.41%)	0.26 (0.99 to 1.44%)	0.6532
- rectal injuries	2(0.28%)	3(0.35%)	0.07 (0.71 to 0.78%)	0.8084
- ureteral injuries	0 (0%)	0 (0%)	0(to)	
- blood transfusion	5 (0.72%)	6(0.70%)	0.02 (0.9 to 1.04%)	0.9629
- conversion to laparotomy	11(1.58%)	8(0.94%)	0.64 (0.50 to 1.95%)	0.2567
- unintended organ injury	10 (1.44%)	15(1.77%)	0.33 (1.0٤ to 1.63%)	0.6100
- total IO complications	23(3.31%)	32(3.78%)	0.47 (1.47 to 2.33%)	0.6209
- bleeding requiring	4(0.57%)	7(0.82%)	0.25 (0.73 to 1.18%)	0.5604
conversion	12(1.17%)	14 (1.65%)	0.48 (0.81 to 1.72%)	0.4306
- anesthetic complications	4(0.57%)	4(0.47%)	0.10 (0.71 to 1.03%)	0.7851
- hematoma	11(1.58%)	8(0.94%)	0.64 (0.50 to 1.95%)	0.2567
- strategic conversion				

A-NPVB: Absent- No Prior Vaginal Birth,0VB: Zero vaginal birth, ≥1PVB: with at least one Prior Vaginal Birth, NDVH: Non-descent vaginal hysterectomy, Δ(95% CI): Point estimate difference with 95% confidence interval, OR: operative room, EBL: estimated blood loss. VOBS: Vaginal opportunistic bilateral salpingectomy, VP/IBSO: Vaginal prophylactic or indicated bilateral salpingo-oophorectomy, IO: intraoperative, PO: postoperative, TAH: total abdominal hysterectomy. Values were given as mean ± 2standard deviations(range) or number (percent), P value<0.05: significante.

Table 3: Postoperative outcomes in 1540 women who underwent non-descent vaginal hysterectomy (NDVH), stratified by history of vaginal birth into two groups: No Prior Vaginal Birth (NPVB = 0VB) and One or More Prior Vaginal Births (≥1PVB).

Variables	NPVB(0VB) (n=694) (45%)	PVB(≥1PVB) (n=846) (55%)	Δ (95% CI)	P value
PO severe pain - at 6h	414(59.65%)	485 (57.32%)	2.33(-2.61to7.244%)	0.35
- at 24 h	255 (36.74%)	309 (36.52%)	0.22(-4.56to5.03)	0.92
Analgesic requirements over 24h	19.7± 6.9 (10-40)	21.8 ± 7.2 (10-60)	2.1(1.39to2.80)	<0.0001
-Total narcotic (mg)	145 ± 65 (100-300)	155 ± 71 (100-300)	10(3.13to16.86)	0.0043
-Total parental NSAID (mg)				
PO nausea and vomiting	224 (35.15%)	274 (32.38%)	2.77 (1.96 to 7.51%)	0.2524
PO blood transfusion	9 (1.29%)	11 (1.30%)	0.01 (1.27 to 1.19)	0.9862
Perioperative BT	27(3.89%)	30(3.54%)	0.35 (1.54 to 2.35)	0.7173
PO HB (g/dl)	10.3 ± 1.2 (9.5-11.6)	10.1 ± 1.3 (9.4-12.2)	-0.2(-0.32to-0.07)	0.0019
PO HCT (%)	34.9 ± 12.4 (34-48)	35.2 ± 12.9 (33-46)	0.3(-0.97to1.57)	0.64
Time to get out of bed (h)	4.1 ± 2.8 (2-7)	4.9 ± 3.1 (2-8)	0.8(0.50to1.09)	<0.0001
Time to flatus (h)	5.1 ± 4.2 (3-14)	6.1 ± 4.8 (2-18)	1(0.54to1.45)	<0.0001
Absolute change in HB (g/dl)	1.1 ± 0.5 (0.6-1.4)	1.2 ± 0.7(0.7-1.7)	0.1(0.03to0.16)	0.0016
Return to usual activity time (d)	14.8 ± 7.6 (3-32)	15.3 ± 7.7 (5-36)	0.5(-0.27to1.27)	0.20
Resumption of coitus (d)	22.1 ± 8.4 (5-55)	24.2 ± 8.8 (7-56)	2.1(1.23to2.96)	<0.0001
Vaginal spotting	455 (65.56%)	560 (66.19%)	0.63 (4.10 to 5.3)	0.7953
Infectious morbidity				
- Pelvic cellulitis	46 (6.62%)	66 (7.80%)	1.18 (1.47to 3.75)	0.3750
- Granuloma formation	22 (3.17%)	23 (2.71%)	0.46 (1.24 to 2.2)	0.5937
- Cystitis	106 (15.27%)	126 (14.89%)	0.38 (3.18 to 4.01)	0.8357
- SSI within 30 d	3(0.34%)	4(0.47%)	0.13 (0.7 to 0.9)	0.6918
- Febrile morbidity	62 (8.93%)	72(8.51%)	0.42 (2.3٩ to 3.32)	0.7711
Wound complications	2 (0.28%)	3(0.35%)	0.07 (0.71 to 0.78)	0.8084
Reoperation for wound	2 (0.28%)	2(0.23%)	0.05 (0.6 to 0.82)	0.8458
VTE morbidity				
DVT	11(1.58%)	17(2.00%)	0.42 (1.01 to 1.7)	0.5387
Pulmonary embolism	2 (0.28%)	4 (0.47%)	0.19 (0.61 to 0.95)	0.5489
Need for VTE prophylaxis	59 (8.50%)	68 (8.03%)	0.47 (2.27 to 3.3)	0.7387
Duration of VTE prophylaxis (d)	1.6 ± 1.1(0.4-9)	1.7 ± 1.2 (1-7)	0.1(-0.01to0.21)	0.09
PO vaginal length (cm)	6.9 ± 1.7 (7-9)	7.1 ± 1.6 (7-9)	0.2(0.03to0.36)	0.017
Vesicovaginal fistula	0(0%)	2(0.23%)	0.23(-0.34to0.84)	0.206
Total PO complications	156(22.47%)	215 (25.41%)	3(-1.30 to7.23)	0.1707
Admission variables				
- LOHD (d)	1.1 ± 0.3 (0.3-4)	1.2 ± 0.4(0.3-10)	0.1(0.06to0.13)	<0.0001
- SDD	611(88.04%)	712(84.16%)	3.88 (0.38 to 7.30)	0.0295
- LOHD more than 3 days	12(1.72%)	25(2.95%)	1.23 (0.3 to 2.78)	0.1164
- Return to ED	126(18.15%)	148(17.49%)	0.66 (3.15 to 4.54)	0.7362
- Readmission within 30 days	27(3.89%)	34(4.01%)	0.12 (1.92 to 2.07)	0.9044

A-NPVB: Absent- No Prior Vaginal Birth,0VB: Zero vaginal birth, ≥1PVB: with at least one Prior Vaginal Birth, NDVH: Non-descent vaginal hysterectomy,PO: Postoperative, Δ(95% CI): Point estimate difference with 95% confidence interval, NSAID: Non-steroidal anti-inflammatory drugs, VTE: venous thromboembolism, LOHD: length of PO hospital duration, SDD: same day discharge, IO: Intraoperative, SSI: surgical site infection, PE: Pulmonary embolism, DVT: deep venous thrombosis, ED: emergency department, HB: Hemoglobin, HCT: Hematocrit, BT: blood transfusion, h: hours, d: days, Values were given as mean ± standard deviation or number (percent), P value<0.05 : significante.

Table 4: Influence of Prior Vaginal Birth (PVB) on the outcome of non-descent vaginal hysterectomy (NDVH), comparing unsuccessful conversion to TAH vs successful vaginal route procedures. Data are categorized by PVB: women with Absent - No Prior Vaginal Birth (APVB = NPVB = 0VB), including those with only cesarean sections (CSO) or nulliparous (NP), and those with One or More PVB (≥1PVB), including vaginal birth only (VBO) and mixed cesarean/vaginal birth history (MC/VB).

Presence / absent PVB	Total(n=1540)	Unsuc NDVH (n=19) (1.23%)	Suc NDVH (n=1521) (98.76%)	OR (95%CI)	P value
≥ 1PVB (nonexposed group)	846(55%)	8(0.94%)	838(99.05%)	Reference	
NPVB (exposed group)	694(45%)	11(1.58%)	683(98.41%)	1.68(0.67to4.21)	0.2633
CSO (sub exposed group)	364(23.63%)	5(1.37%)	359(98.62%)	1.32(0.43to4.07)	0.6227
NP (sub exposed group)	330(21.42%)	6(1.81%)	324(98.18%)	1.93(0.66 to5.63)	0.2232
CSO ≥ 1CSs	364(23.63%)	5(1.37%)	359(98.62%)	1.32(0.43to4.07)	0.6227
CSO ≥ 2 CSs	211(13.70%)	4(1.89%)	207(98.10%)	2.02(0.60to6.78)	0.2533
CSO ≥ 3CSs	98(6.36%)	4(4.08%)	94(95.91%)	4.45(1.31to15.08)	0.0163
CSO ≥ 4CSs	56(3.63%)	4(7.14%)	52(92.85%)	8.05(2.34to27.63)	0.0009
NP nulligravida ± LAS	134(8.70%)	2(1.49%)	132(98.5%)	1.58(0.33to7.55)	0.5618
NP e prior vaginal abortion ± LAS	168(10.90%)	1(0.59%)	167(99.41%)	0.62(0.077to5.04)	0.6611
NP e prior hysterotomy only	28(1.81%)	3(10.71%)	25(89.28%)	12.57(3.14to50.22)	0.0003
NP e LAS(H&M&O) other than CSs	48(3.11%)	5(10.41%)	43(89.58%)	12.18(3.82to38.80)	<0.0001
NP e VLA	282(18.31%)	1(0.35%)	281(99.64%)	0.37(0.046to2.99)	0.353
NPVB e uterus≥280 grams	110(7.14%)	6(5.45%)	104(94.54%)	6.04(2.05to17.75)	0.0011
NPVB e uterus<280 grams	584(37.92%)	5(0.85%)	579(99.14%)	0.90(0.29to2.77)	0.8610
NPVB e ≥ 40 BMI (kg/m2)	97(6.29%)	2(2.06%)	95(97.93%)	2.27(0.47to10.88)	0.3025
NPVB e ≥ 1 CSs	364(23.63%)	5(1.37%)	359(98.62%)	1.32(0.43to4.07)	0.6227
NPVB e ≥ 2 CSs	211(13.70%)	4(1.89%)	207(98.10%)	2.02(0.60to6.78)	0.2533
NPVB e ≥ 3 CSs	98(6.36%)	4(4.08%)	94(95.91%)	4.45(1.31to15.08)	0.0163
NPVB e ≥ 4 CSs	56(3.63%)	4(7.14%)	52(92.85%)	8.05(2.34to27.63)	0.0009
Prior Vaginal Birth					
0 (NPVB as an exposed group)	694(45%)	11(1.58%)	683(98.41%)	Reference	
1(nonexposed group e 1PVB)	846(55%)	8(0.94%)	838(99.06%)	0.59(0.23to1.48)	0.2633
2(nonexposed group e 2PVB)	556(36.10%)	6(1.07%)	550(98.93%)	0.67(024to1.84)	0.4456
3(nonexposed group e 3PVB)	384(24.93%)	6(1.56%)	378(98.43%)	0.98(0.36to2.68)	0.9773
≥4(nonexposed group e≥4PVB)	223(14.48%)	6(2.69%)	217(97.31%)	1.71(0.62to4.69)	0.2925
VBO (non-CSs nonexposed	350(22.27%)	2(0.57%)	348(99.42%)	0.35(0.78to1.61)	0.1817
group)	496(32.20%)	6(1.20%)	490(98.80%)	0.76(0.27to2.06)	0.5917
MC/VB (CSs nonexposed group)	170(11.03%)	5(2.94%)	165(97.06%)	1.88(0.64to5.48)	0.2472
≥1PVB e uterus≥280 grams	680(44.15%)	3(0.44%)	677(99.55%)	0.27(0.07to0.99)	0.0483
≥1PVB e uterus<280 grams	100(6.49%)	1(1%)	99(99%)	0.62(0.08to4.91)	06568
≥1PVB e ≥ 40 BMI (kg/m2)	496(32.20%)	6(1.20%)	490(98.80%)	0.76(0.27to2.06)	0.5917
≥1PVB e ≥ 1 CSs	221(14.35%)	6(2.71%)	215(97.28%)	1.73(0.63to4.74)	0.2844
≥1PVB e ≥ 2 CSs	118(7.66%)	6(5.08%)	112(94.91%)	3.32(1,20to9.17)	0.0202
≥1PVB e ≥ 3 CSs	78(5.06%)	6(7.69%)	71(91.02%)	5.24(1.88to14.61)	0.0015
≥1PVB e ≥ 4 CSs					

A-NPVB: Absent-No Prior Vaginal Birth,0VB: Zero vaginal birth, ≥1PVB: with at least one Prior Vaginal Birth, NDVH: Non-descent vaginal hysterectomy, CSO: Caesarean only birth, VBO: Vaginal only birth, MC/VB: Mixed Caesarean/ Vaginal birth, UnSuc NDVH: unsuccessful NDVH with conversion to TAH, Suc NDVH: successful completion of NDVH via vaginal route, CSs: cesarean sections, , LAS: lower abdominal surgeries, including hysterotomy & myomectomy & others(H&M&O), VLA: virgin lower abdomen, CI: confidence interval, OR: odds ratio, OR (95%CI): odds ratio with 95% confidence interval, IO: Intraoperative, TVS: trans vaginal ultrasonography. Values were given as mean±2standard deviations (range) or number (percent), P value< 0.05: significant.

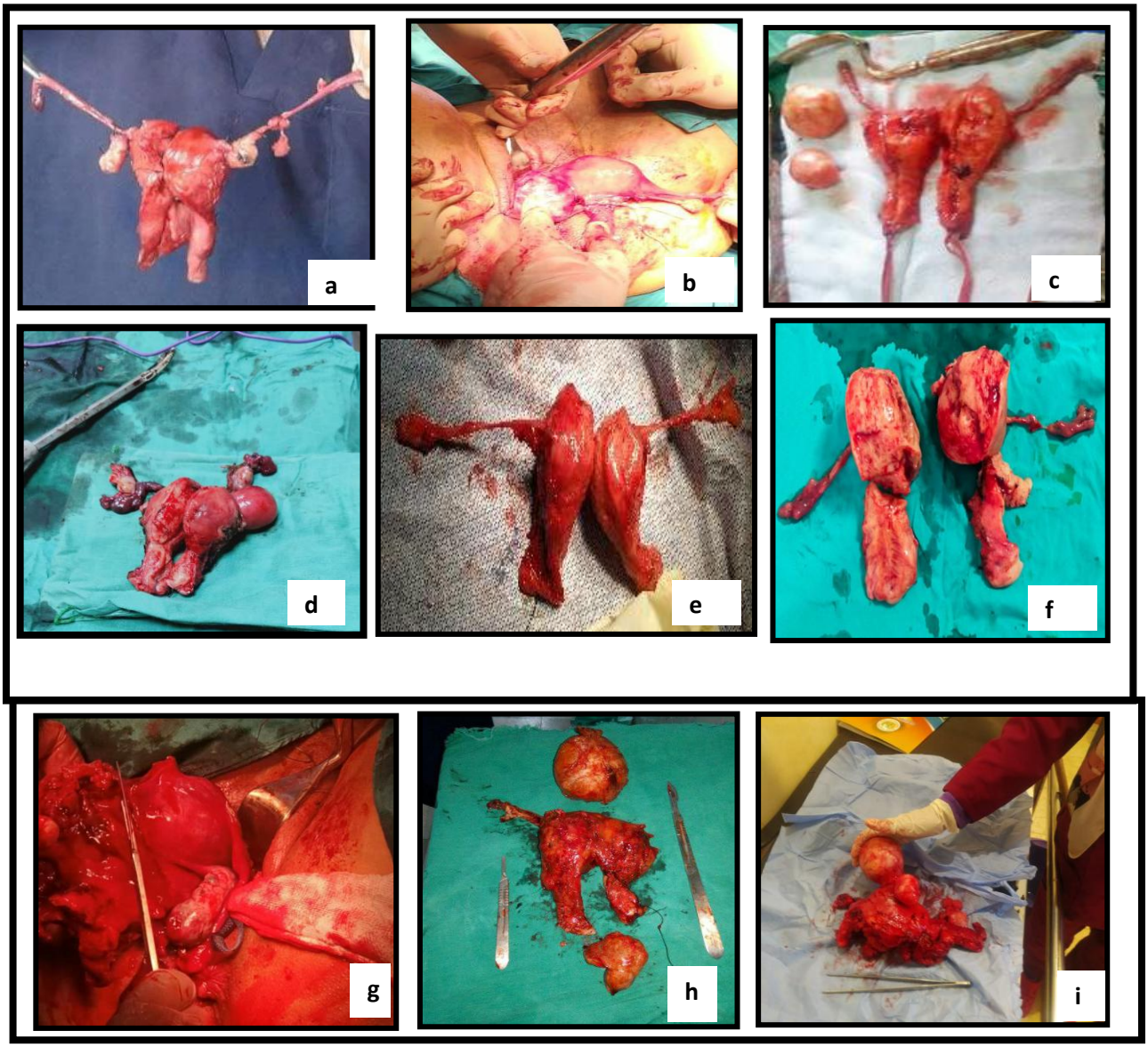

Figure 1: A: PostOperative(PO) Non-descent vaginal hysterectomy (NDVH) with bilatteral salpingo-oophorectomy (BSO) our intial NDVH in 2008 in multiparous(MP) with vaginal only bith(VOB); B: Intropperative(IO) NDVH with BSO, uterus was 10 weeks with right SO and left broad ligment fibroid while still connected on the left side, performed e conventionly clamp cut ligate ; C: PO NDVH with BOS executed conventionly showing bisection& myomectomy, D: NDVH with BOS uterus was 16 weeks preoperative(PO) and 750 grams postoperative (PO), showing bisection & cesarean sections(CSs) markes executed with Ligasure Impact in CSs only Birth(CSO); E: NDVH with BOS, uterus was 12 weeks PO showing bisection in VOB executed conventionally; F: PO NDVH&BOS with uterine bisection and cervical amputation in CSO women executed with Ligasure Impact; G: IO NDVH with BSO a huge uterus delived in operative fieled with the right sided adenexa still connected H: PO NDVH&Right SO in VOB women where uterus about 20 week size showing myomectomy of large fibroid and partial bisection executed conventionally; I : NDVH) with BSO, uterus was 24 weeks PO and 1500 grams PO in nullipara nulligravida privately executed complicated by necrotic vesico-vaginal fistula rectified solely by corresponding author

Discussion

The highest rates of VH for non-prolapsed uteri have been reported in HICs, particularly in technologically advanced hospitals such as the Mayo Clinic, where up to 40% of hysterectomies without pelvic organ prolapse (POP) were performed via the vaginal route [2,3,13-15,27,39], also lots of reports on NDVH came from MICS as India [4,19,23,24,45], while from Turkey[16] and Egypt[18,31,46,47] few reports on NDVH were existed. Our study results support the existing recommendations of ACOG as well as other societies [34-38], conclusions of peer-reviewed litterateurs [4,5,18-33] and systematic reviews & metanalyses' [1,39,40], that absent prior vaginal birth and presence of prior CSs shouldn't be considered as an absolute contraindication for NDVH.

Our data showed that 694 women (45%) had an absence of prior vaginal birth (APVB), classified into two subgroups: nulliparous (NP) women (n = 330; 47.56%) and cesarean-only (CSO) women (n = 364; 52.44%). In contrast, 846 women (55%) had one or more prior vaginal births (≥1PVB), including 350 with vaginal-only births (VBO; 41.66%) and 496 with mixed cesarean/vaginal births (MC/VB; 59.04%). While APVB was previously considered a limiting factor and ≥1PVB a facilitating factor, our findings demonstrate that these classifications did not significantly impact the key clinical outcomes of NDVH performed for benign indications. These outcomes include conversion to TAH, where the overall conversion rate was very low (18/1540 = 1.16%), with no significant difference between APVB and ≥1PVB groups [11/694 (1.58%) vs. 8/846 (0.94%); p = 0.25], unintended organ damage [10 (1.44%) vs. 15 (1.77%); p = 0.61], intraoperative need for blood transfusion [16 (2.30%) vs. 18 (2.12%); p = 0.87], major venous thromboembolism (VTE) events [2 (0.28%) vs. 4 (0.47%); p = 0.54], and total postoperative complications [156 (22.47%) vs. 215 (25.41%); p = 0.17]. NDVH was successfully completed in 98.18% of NP women (324/330), 98.62% of CSO women (359/364), and 98.41% of the total APVB group (683/694). Similarly, high success rates were observed in the ≥1PVB group: 99.42% in VBO (348/350), 98.80% in MC/VB (490/496), and 99.06% overall (838/846), with no statistically significant differences between the groups and subgroups (p > 0.05).

Our results indicate that the presence or absence of prior vaginal birth (PVB) alone was not a limiting factor for the successful execution of NDVH. Instead, the key determinant was the association with higher-order prior cesarean sections (CSs). Specifically, in women with cesarean-only births (CSO), the relative risk (RR) for conversion to TAH significantly increased with ≥3 CSs (RR = 4.45) and ≥4 CSs (RR = 8.05), corresponding to the NPVBe≥3CSs and NPVBe≥4CSs subgroups. Similarly, among women with mixed vaginal/cesarean birth history (MC/VB), the RR for TAH conversion was elevated with ≥3 CSs (RR = 3.32) and ≥4 CSs (RR = 4.24), labeled as ≥1PVBe≥3CSs and ≥1PVBe≥4CSs. Additionally, in the NP subgroup of the APVB group, the presence of a prior hysterotomy alone or in combination with previous lower abdominal surgeries was associated with significantly high RR of conversion to convert to TAH (RR = 12.57 and RR = 12.18, respectively). In contrast, among women in the ≥1PVB group with a uterine weight less than 280 grams, the likelihood of TAH conversion was significantly lower (RR = 0.27), suggesting a protective association with smaller uterine size. Nonetheless, certain secondary outcomes showed statistically significant differences between the groups; however, these differences may not necessarily indicate a causal relationship between prior vaginal birth status and these findings—such as longer operative time, greater estimated blood loss, and prolonged pre- and postoperative hospital stays.

Several international studies support our findings regarding the feasibility and high success rates of NDVH in women without

prior vaginal birth, including nulliparous (NP) and cesarean-only (CSO) patients. A French group reported successful NDVH completion in 96.2% (50/52) of nulliparous women compared to 99.7% (292/293) of parous women (P = 0.06; RR = 1.04, 95% CI: 0.98–1.09) [21]. Another French study achieved first-intention NDVH in 54.7% of 128 nulliparous women, with laparoscopic assistance needed in 14% [20]. A third French team completed NDVH in 92.1% (209/227) of women without prior vaginal birth, of whom 51.2% (116 cases) had purely vaginal procedures and 48.9% (111 cases) required laparoscopic support [17].In India, a talented gynecologic surgeon successfully performed 7,324 NDVH cases, including 750 in nulliparous women, with an 82% (640/750) success rate without laparoscopic aid [19] and managed NDVH in 311 of 312 women with two or more cesarean sections, with only one conversion to TAH due to bleeding and a cystotomy that was repaired vaginally [24]. Similarly, another Indian group in 64 NDVH cases involving women with varying numbers of prior cesareans (1 CS: 26 cases; 2 CSs: 33 cases; 3 CSs: 5 cases), all were successfully completed, even in four patients with prior pelvic surgery [23]. From the U.S., a group performed three hundred prospective NDVH cases, including 21 nulliparas (7%) and 219 women (73%) with a history of pelvic surgery—150 with previous cesareans—achieving a 99% (297/300) completion rate. Complications included three incidental cystotomies, one rectal injury, and three conversions, primarily related to adnexectomy. The authors concluded that vaginal hysterectomy remains safe and effective for benign uterine conditions, regardless of nulliparity, prior pelvic surgery, or uterine size—challenging the perceived necessity of laparoscopy or laparotomy [22]. Another American group, using a case-control design, found that prior cesarean section increases the risk of lower urinary tract injury during hysterectomy (OR = 2.04; 95% CI: 1.2–3.5). Stratified by approach, the odds ratio for incidental cystotomy was 1.26 for TAH, 3.00 for TVH, and 7.50 for LAVH—only the latter reaching statistical significance (P = .005; 95% CI: 1.8–31.4) [25].

This study is strengthened by its inclusion of a large cohort undergoing NDVH, one of the most skill-dependent gynecologic surgeries. The multicenter design and diverse patient population enhance the external validity and generalizability of the findings. The retrospective methodology allowed for the evaluation of real-world clinical practices in a cost-effective manner, and the sizable sample enabled more confident interpretation of the influence of PVB status on NDVH outcomes. A key strength lies in the study's critical examination of a traditionally accepted contraindication for NDVH—the APVD—by analyzing its impact both independently and in combination with prior cesarean sections. This research addresses a significant gap in the regional literature by exploring NDVH feasibility in underrepresented subgroups such as nulliparous and CSO women. It also contrasts outcomes with those in women with a history of VBO or MC/VB, the latter often assumed to present moderate surgical challenges. Additionally, the study introduces preoperative optimization strategies—namely intravenous iron and erythropoietin—as alternatives to blood transfusion for anemia management in resource-limited settings. It further evaluates NDVH applicability in patients with significant comorbidities (ASA III–IV), for whom abdominal surgery may pose higher risk, and highlights evolving practices in anesthesia and surgical timing (e.g., minimizing preoperative HbA1c correction and reducing delay to hysterectomy). The findings reinforce the role of NDVH as a safe and effective hysterectomy option in Egyptian clinical settings. However, certain limitations exist. The retrospective design carries inherent risks of selection, recall, and reporting biases. Additionally, variations in surgical

expertise among operators could function as confounders, potentially limiting the generalizability of the outcomes.

Conclusion

Our results backing the concept that the absence of prior vaginal birth, even when coupled with a history of cesarean deliveries, does not significantly impact the major clinical outcomes in women undergoing non-descent vaginal hysterectomy (NDVH), such as conversion to total abdominal hysterectomy (TAH) or vesical injury. However, it may be associated with variations in secondary outcomes like operative time and estimated blood loss. Based on these results, we advocate for the continued consideration of the vaginal route for hysterectomy—even in patients with no prior vaginal delivery and a history of cesarean sections—provided the procedure is performed by an experienced gynecologic surgeon, as this approach maintains both safety and clinical efficacy

Conflict of interest

None declared any conflict of interest

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