

COMPARATIVE STUDY ON INTRA-OPERATIVE AND POST-OPERATIVE OUTCOME INDICATORS BY VESSEL SEALERS VS TOTAL LAPAROSCOPIC HYSTERECTOMY

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ABSTRACT

Objective: Aim of the study is to compare the efficacy of vessel sealing for securing pedicles in vaginal hysterectomy as compared to total laparoscopic hysterectomy in terms of operating time, perioperative Hb differences, time taken for ambulation, postoperative pain, hospital stay and Intra and Post-op complications.

Method: This is a prospective randomized controlled clinical trial conducted at GMERS Medical College and Hospital, Sola, Ahmedabad over a period of about 3 years.

A total of 102 patients were divided into 2 groups randomly. One group is operated by Vessel Sealing Device via Vaginally and other group is operated by total laparoscopic hysterectomy.

Result: Significant reduction in operative time, post operative pain, pre and post-op Hb deficit, time taken for ambulation and hospital stay in Vaginal Hysterectomy with Vessel Sealer were found compared to Total laparoscopic hysterectomy. There was no significant difference in major intra-operative and post-operative complications.

Conclusion: Vaginal Hysterectomy with Vessel Sealer is an effective alternative to Total Laparoscopic Hysterectomy.

Key words: Vaginal Hysterectomy, Total Laparoscopic Hysterectomy, post operative pain,

INTRODUCTION

Annually, a substantial number of women undergo hysterectomy, with 70% of these procedures performed to address benign conditions such as leiomyoma, adenomyosis, severe dysmenorrhea, and uterine prolapse [1]. The choice of surgical approach significantly influences post-operative morbidity [1].

A novel advancement in hemostatic sealing of vessels involves the utilization of a vessel sealer device, which operates based on a feedback-programmed dosage of bipolar diathermy [2]. This device presents a safe and effective alternative for securing vascular pedicles during vaginal hysterectomy compared to conventional suture ligation [3]. The vessel sealer system integrates pressure and bipolar electrical energy to seal vessels of up to 7 mm in diameter [3].

Non-descent vaginal hysterectomy (NDVH) may emerge as the preferable technique over laparoscopic hysterectomy for treating benign uterine conditions, particularly when extensive pelvic dissection is unnecessary. NDVH demonstrates shorter operative durations and significantly reduced blood loss ($p=0.02$) in comparison to total laparoscopic hysterectomy (TLH) and laparoscopically assisted vaginal hysterectomy (LAVH) [5]. The majority of comparative investigations regarding hysterectomy techniques focus on two primary comparisons: vaginal versus laparoscopic, abdominal versus laparoscopic, and vaginal versus abdominal approaches. However, these studies, including systematic reviews, often lack sufficient statistical power to discern differences in major complications [6].

surgical practice, characterized by the complete execution of the procedure via laparoscopic means as opposed to the vaginal approach [7]. TLH offers enhanced visualization of anatomical structures, facilitates the concurrent performance of additional surgical procedures, and is particularly applicable for cases involving larger uteri or those with minimal descent, which may pose challenges for vaginal removal [8].

Since its inception by Reich in 1989, laparoscopic hysterectomy (LH) has undergone significant evolution, leading to the development and widespread adoption of various laparoscopic techniques and instrumentation. This evolution includes the introduction of laparoscopic-assisted vaginal hysterectomy (LAVH) and the current utilization of TLH [9].

Recent advancements in equipment, surgical methodologies, and training protocols have contributed to the refinement of total laparoscopic hysterectomy (TLH) as a well-tolerated and efficient surgical technique [4]. Conversely, vaginal hysterectomy (VH) is frequently employed in the management of uterine prolapse. However, despite its established safety and efficacy, VH is underutilized for addressing non-prolapse-related conditions [10].

MATERIALS AND METHODOLOGY

The present prospective randomized controlled clinical trial was conducted at GMERS Medical College and Hospital, Sola, Ahmedabad, following approval by the research protocol review committee and institutional ethical committee. Prior to enrollment, all participating women were provided with comprehensive information regarding the study objectives and procedures, and written informed consent was obtained from each participant.

Preoperative assessments, including bimanual examination, transvaginal ultrasonography, dilatation and curettage (D&C), and Papanicolaou (PAP) smear, were conducted to rule out cervical and uterine malignancies. Patients were admitted to the hospital two days before surgery for preoperative medical and anesthetic evaluations, during which detailed informed consent was reaffirmed.

Upon induction of anesthesia, a prophylactic dose of 1g intravenous (IV) ceftriaxone was administered. All vaginal hysterectomies (VH) utilizing the Vessel Sealer were performed using the ERBE VIO 300 D and ERBE BiClamp 210 devices, while total laparoscopic hysterectomies (TLH) were conducted by experienced specialists and trainees under their supervision. The surgical procedures for VH with Vessel Sealer and TLH were executed using identical techniques across all cases.

Vaginal Hysterectomy with Vessel Sealer:

- Position the patient so that the vaginal introitus aligns with the edge of the operating table, with legs placed in boot-type stirrups and labia majora laterally stay sutured for optimal exposure.
- Make a circumferential incision around the anterior cervix, extending postero-medially in a V-shaped fashion between the transverse cervical ligaments. Dissect the bladder off the anterior vaginal wall and open the pouch of Douglas posteriorly.
- Utilize the vessel sealer device technique to secure hysterectomy pedicles, consisting of a bipolar radio-frequency generator and reusable hand-piece electrodes. Position electrodes across the hysterectomy pedicles to ensure tissue interposition.
- Close the handle of the hand-piece until it latches in the tightest ratchet position, applying pressure on the coagulation foot pedal until a distinctive two-tone sound confirms complete tissue coagulation.
- Automatically cease the flow of current by the feedback-controlled response system upon achieving the appropriate energy level for tissue sealing, minimizing heat transfer to surrounding tissues. Release the foot pedal, excise coagulated tissue, and release the electrode by compressing the handle until disengaged.
- Secure hemostasis post-hysterectomy and close the vault using a non-locking continuous suture technique, including the peritoneum until reaching the uterosacral ligaments.

Total Laparoscopic Hysterectomy:

Laparoscopic hysterectomy represents a minimally invasive surgical procedure for the removal of the uterus, utilizing small ports and a laparoscope (a thin, illuminated tube). The procedural steps are summarized as follows:

- Anaesthesia induction: Patients received general anaesthesia for the procedure.
- Insufflation: Carbon dioxide gas was used to inflate the abdomen, creating a space for laparoscopic visualization and instrument manipulation at a pressure of 11 to 14 mmHg.
- Laparoscope insertion: A 10 mm 0-degree laparoscope was inserted through a small port in the abdominal wall, typically supra/infra-umbilically.
- Additional ports: Depending on the type of hysterectomy, 2-3 small ports (5 mm) were created in the abdominal wall for the insertion of surgical instruments.
- Uterine dissection: The uterus was dissected from surrounding organs, including the ovaries, fallopian tubes, broad ligaments, fascia, and blood vessels, utilizing conventional bipolar instruments and scissors.
- Uterus removal: Following disconnection, the uterus was removed vaginally after hysterectomy.
- Closure of vaginal vault: Closure of the vaginal vault was accomplished using Vicryl No. 1 suture in a continuous non-locking manner.
- Saline wash and hemostasis: Thorough saline irrigation was performed, and hemostasis was ensured.
- Port closure: Incisions were closed with sutures or surgical staples.
- Post-surgery care: Patients undergoing VH with Vessel Sealer and Total Laparoscopic Hysterectomy were transferred to the recovery room for awakening from anaesthesia and monitoring for any complications.

Post-operative management:

Scientifically, the post-operative care protocol included the following measures: (i) Intravenous fluids were administered for 24 hours to maintain hydration. (ii) A urinary catheter was retained for 24 hours in the majority of cases, except for a few patients who required prolonged catheterization due to repairs or bladder injuries. (iii) Parenteral antibiotics were administered for 2 days, followed by oral antibiotics for 5 days to prevent infection. (iv) Patients were encouraged to ambulate early and resume regular diet intake. (v) Adequate analgesia was provided to manage post-operative pain. (vi) Discharge of patients was determined based on their general condition.

On post-operative day 2, all patients underwent haemoglobin estimation, and any post-operative complications were documented. Patients were scheduled for follow-up appointments one week after discharge. Operating time was measured from the initiation of incision at the cervico-vaginal junction to vault closure in cases of Vaginal Hysterectomy with Vessel Sealer, and from the creation of the main port to closure of all port sites in Total Laparoscopic Hysterectomy. Blood loss estimation was performed by comparing pre-operative and post-operative haemoglobin levels on the second day after surgery. Post-operative pain was assessed using the Visual Analog Scale (VAS), and patients' mobility was evaluated by recording their ambulation in the ward on the second day after surgery. As the primary investigator, data collection was facilitated using a pre-tested proforma. Pre-

operative parameters such as haemoglobin levels, uterine size, and diagnosis were recorded. Intra-operative data included the duration of surgery and any complications encountered. Post-operative parameters included haemoglobin levels on the second day, VAS pain scores, time taken to initiate ambulation after surgery, and any post-operative complications.

STATISTICAL ANALYSIS

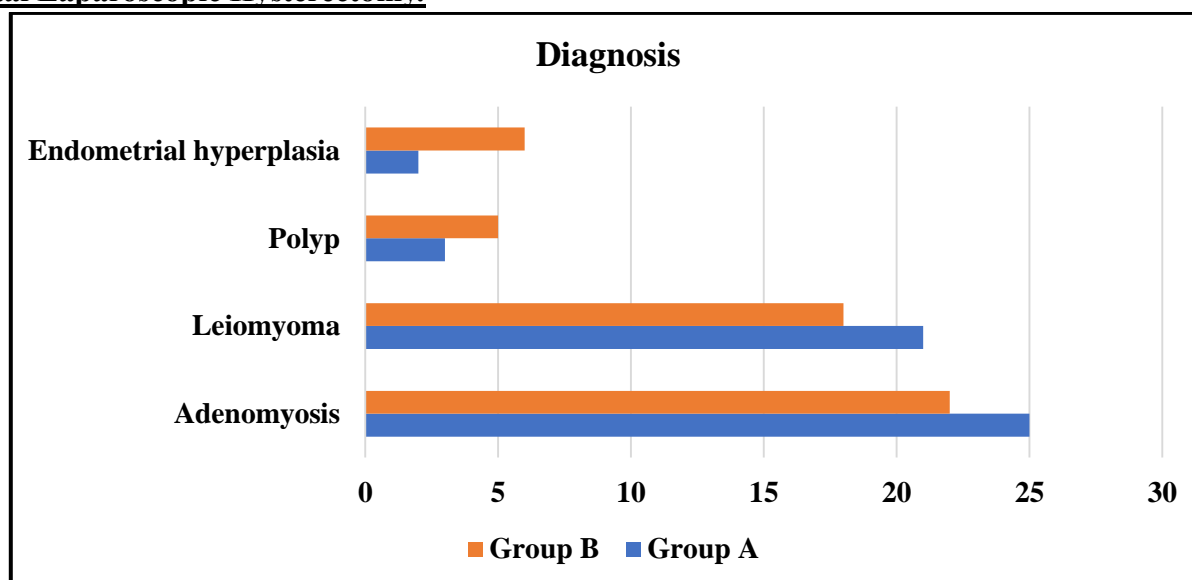
All variables were subjected to statistical analysis employing various methods including tabulation, calculation of proportions and percentages, and determination of means and standard deviations (SD). Relevant tests of significance, such as the t-test and Chi-square test when applicable, were employed. A p-value of <0.05 was deemed statistically significant at a 95% confidence interval. Statistical computations were executed using the SPSS software version 21 (IBN corp., Chicago, IL, USA).

RESULT

TABLE 1: Diagnosis of patients who underwent Vaginal Hysterectomy with Vessel Sealer and Total Laparoscopic Hysterectomy

Diagnosis	Group A	Group B	Total (%)
Adenomyosis	25(49.01%)	22(43.13%)	47(46.07%)
Leiomyoma	21(41.17%)	18(35.29%)	39(38.23%)
Polyp	3(5.88%)	5(9.80%)	8(7.84%)
Endometrial hyperplasia	2(3.92%)	6(11.76%)	8(7.84%)
Total	51(100%)	51(100%)	102(100%)

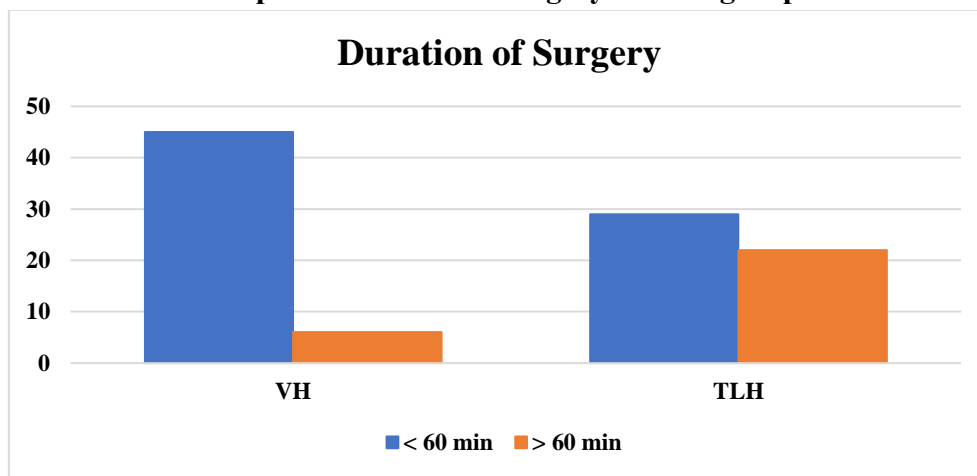
Graph 1: Diagnosis of patients who underwent Vaginal Hysterectomy with vessel sealer and Total Laparoscopic Hysterectomy.



The most common indication for hysterectomy in both the groups was Adenomyosis. Nearly 46.07% of patients have Adenomyosis in both the groups. Following 38.23% patients had Leiomyoma. And 7.84% patients had Polyp and Endometrial Hyperplasia.

TABLE 2: Duration of surgery in patients who underwent Vaginal Hysterectomy with Vessel Sealer and Total Laparoscopic Hysterectomy

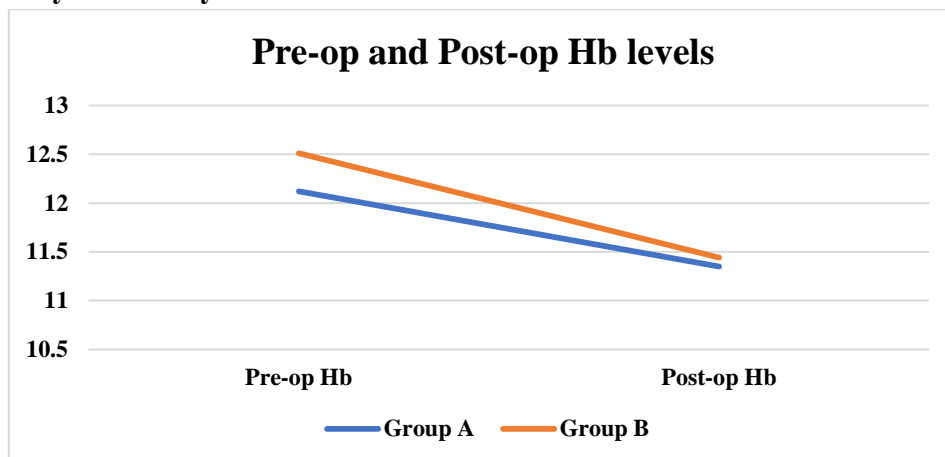
Duration	Group A (n=51)	Group B (n=51)	P Value
< 60 min	45	29	<0.0001
> 60 min	6	22	
Total	51	51	
Mean (SD)	49.21(12.22)	66.27(17.74)	

Graph 2: Duration of surgery in both group

The mean duration of surgery for Vaginal Hysterectomy with Vessel Sealer was 49.21 min and For Total Laparoscopic Hysterectomy was 66.27 min ($P < 0.0001$). The minimum time required to perform VH with Vessel Sealer was 30 min and TLH was 40 min. The maximum time taken for VH with Vessel Sealer was 90 min and TLH was 110 min.

TABLE 3: Pre and Post-operative Haemoglobin (in g/dl) status among patients who underwent Vaginal Hysterectomy with Vessel Sealer and Total Laparoscopic Hysterectomy

Mean \pm SD	Pre-op Hb	Post-op Hb	Deficit	P Value
Group A	12.12 \pm 1.29	11.35 \pm 1.23	0.77 \pm 0.36	<0.0001
Group B	12.51 \pm 2.02	11.44 \pm 1.98	1.07 \pm 0.35	

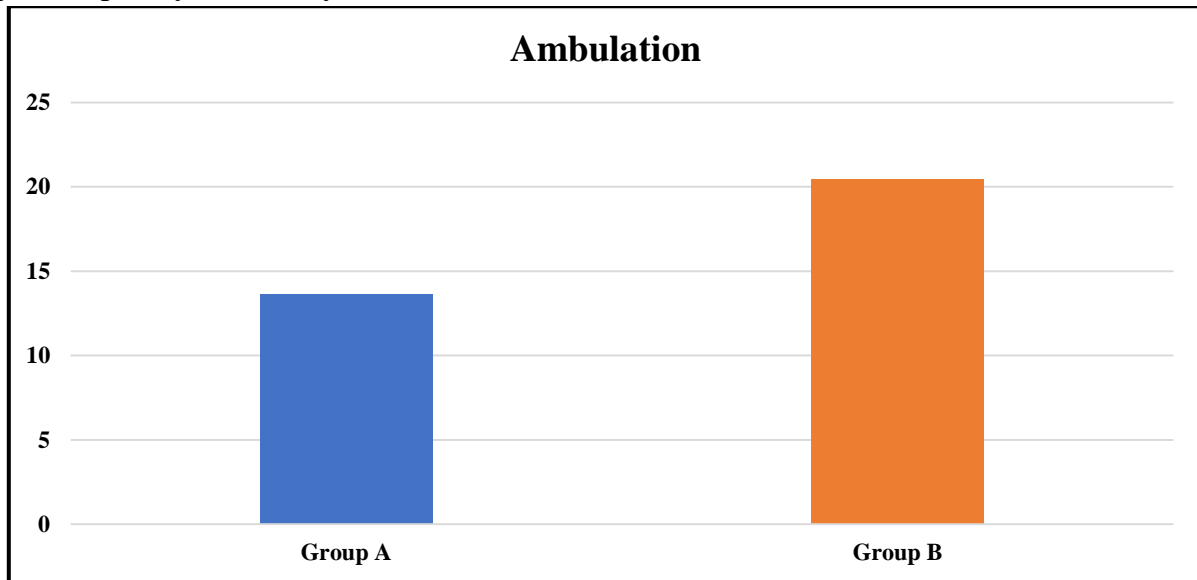
Graph 3: Pre-op and Post-op Hb levels in Vaginal Hysterectomy with Vessel Sealer and Total Laparoscopic Hysterectomy**Intraoperative blood loss:**

Intra-operative blood loss was calculated by noting the decline in pre-operative Haemoglobin and post-operative day 2 Haemoglobin. The mean pre-operative haemoglobin in Vaginal Hysterectomy with Vessel Sealer was 12.12 g/dl and in Total Laparoscopic Hysterectomy was 12.51 g/dl.

The decline in haemoglobin was found to be 0.77 g/dl in vaginal group and 1.07 g/dl in laparoscopic group. By applying paired t test on Pre- and Post-op Hb values in both the groups, p value was <0.0001 which suggests statistically significant difference.

TABLE 4: Number of hours for ambulation among patients who underwent Vaginal Hysterectomy with Vessel Sealer and Total Laparoscopic Hysterectomy

	Group A	Group B	P Value
Mean (SD)	13.62(1.777198)	20.43(2.100047)	<0.0001
Median	13	20	

Graph 4: Time taken for ambulation in Vaginal Hysterectomy with Vessel Sealer and Total Laparoscopic Hysterectomy

The mean time taken for ambulation in Vaginal Hysterectomy with Vessel Sealer was 13.62 hours and in Total Laparoscopic Hysterectomy was 20.43 hours. By comparing these 2 groups with two-tailed t-test, the difference is statistically significant. (p value <0.0001)

TABLE 5: Pain measured using pain scale among patients who underwent Vaginal Hysterectomy with Hysterectomy and Total Laparoscopic Hysterectomy

	Group A	Group B	P Value
Mean (SD)	2.88(1.16)	3.64(1.07)	0.0008
Median	2	3	

Post-operative pain was assessed on post-operative day 2 by. Accordingly, 0- No pain, 1 to 3- Mild pain, 4 to 6- Moderate pain, 7 to 10- Severe pain. The mean score in Vaginal Hysterectomy with Vessel Sealer was 2.88 and in Total Laparoscopic Hysterectomy was 3.64. By comparing these 2 groups the difference was statistically significant. (p value 0.0008)

Graph 5: Comparison of pain scale in Vaginal Hysterectomy with Hysterectomy and Total Laparoscopic Hysterectomy

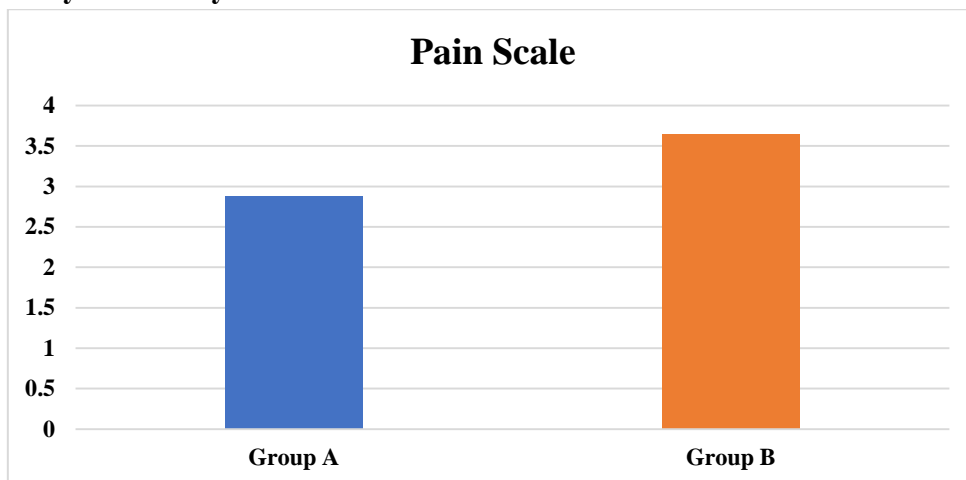


Table 6: Mean days of hospital stay in Vaginal Hysterectomy with Vessel Sealer and Total Laparoscopic Hysterectomy.

	Group A (n=51)	Group B (n=51)	P Value
Mean (SD)	5.39(0.56)	6.58(0.72)	<0.0001
Median	5	6	

Graph 6: Comparison of number of days of hospital stay in Vaginal Hysterectomy with Hysterectomy and Total Laparoscopic Hysterectomy

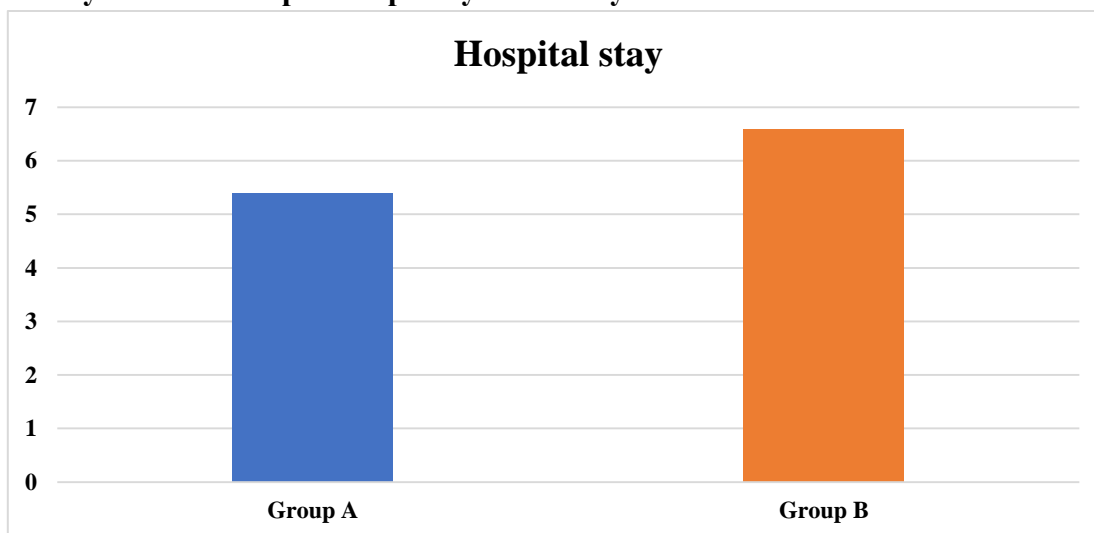


Table 6 shows that mean days of hospital stay was 5.39 in Vaginal Hysterectomy with Vessel Sealer while 6.58 days in Total Laparoscopic Hysterectomy. The two-tailed P value was less than 0.0001. This difference was considered to be extremely statistically significant.

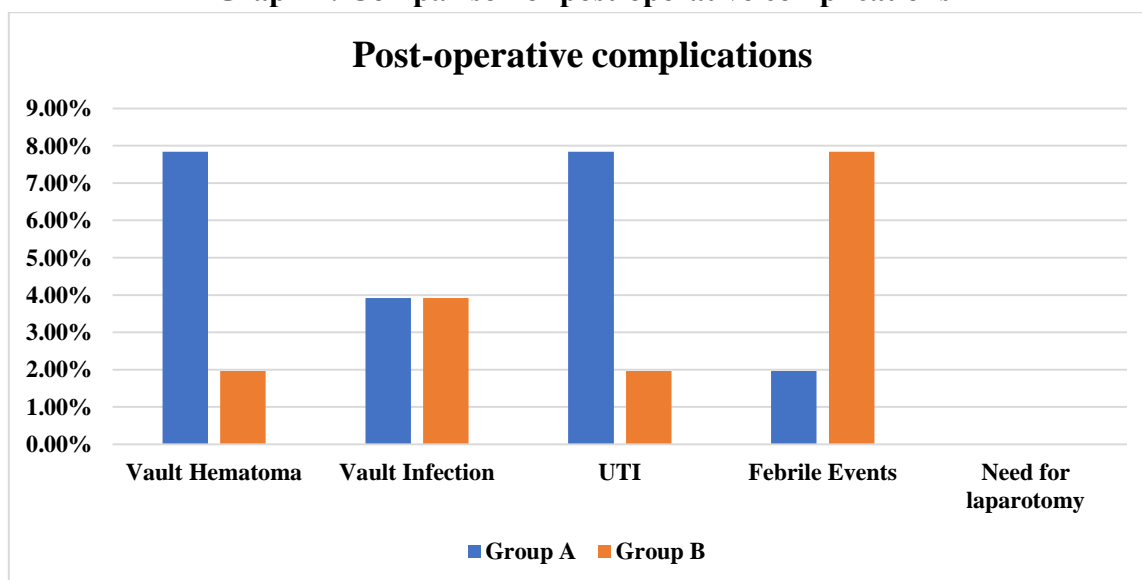
TABLE 7: Intra-operative complications

Complication	Group A (n=51)	Group B (n=51)	P Value
Bladder Injury	2(3.84%)	0(0%)	1
Ureteral Injury	0(0%)	0(0%)	0
Bowel Injury	0(0%)	0(0%)	0
Conversion to Laparotomy	0(0%)	1(1.96%)	1

There were only 2 patients in which Bladder was accidentally opened in Vaginal Hysterectomy with Vessel Sealer whereas, there were no injury to bladder occurs in Total Laparoscopic Hysterectomy. Only one patient developed complications that was conversion to laparotomy in Total Laparoscopic Hysterectomy. There were no complications noted like ureteral injury or bowel injury in both the groups.

TABLE 8: Post-operative Complications:

Complication	Group A (n=51)	Group B (n=51)	P Value
Vault Hematoma (%)	4(7.84%)	1(1.96%)	0.1689
Vault Infection (%)	2(3.92%)	2(3.92%)	1
UTI (%)	4(7.84%)	1(1.96%)	0.1689
Febrile Events (%)	1(1.96%)	4(7.84%)	0.1689
Need for laparotomy (%)	0(0.00%)	0(0.00%)	NA

Graph 7: Comparison of post-operative complications

This table shows that out of 51 patients only 4 and 1 developed vault hematoma post operatively in Vaginal Hysterectomy and Total Laparoscopic Hysterectomy respectively. Out of 51 there were only 2, 4 and 1 developed vault infection, UTI and Febrile events in Vaginal Hysterectomy with Vessel Sealer. Out of 51 there were 2, 1 and 4 patients developed vault infection, UTI and Febrile events

respectively in Total Laparoscopic Hysterectomy. The P values were >0.05 , which was statistically not significant.

DISCUSSION:

Table 9: COMPARISON OF MEAN OPERATIVE TIME IN BOTH THE GROUPS WITH PREVIOUS STUDY

Reference Study	Operative time (Min)		
	VH With Vessel Sealer	TLH	P Value
Kim MK et al [11] (2020)	-	82.5	NA
Levy B et al [12] (2003)	48	-	NA
Present Study	49.21	66.27	0.0001

In this investigation, the mean operative time for Vaginal Hysterectomy with Vessel Sealer was found to be 49.21 minutes, whereas Total Laparoscopic Hysterectomy required an average of 66.27 minutes. A statistically significant difference in operative time was observed between Total Laparoscopic Hysterectomy and Vaginal Hysterectomy with Vessel Sealer, with the former taking longer. This finding aligns with the results reported by Allam IS et al [13], who similarly noted an extended operative time with Total Laparoscopic Hysterectomy compared to Vaginal Hysterectomy with Vessel Sealer.

Across various studies, the total mean operative time for Total Laparoscopic Hysterectomy ranged from 82.5 to 107.6 minutes, as reported by Colin A. Walsh et al [14], Kim MK et al [11], Casarin J et al [15], Marwah V et al [16], and Oby Nagar et al [17], respectively. Conversely, studies focusing on Vaginal Hysterectomy with Vessel Sealer reported mean operative times ranging from 48 to 57.34 minutes, as documented by Levy B et al [12], Samulak D et al [18], and Agrawal VB et al [19].

Table 10: COMPARISON OF PAIN SCORE IN BOTH THE GROUPS WITH PREVIOUS STUDY

Reference Study	Pain score		
	VH With Vessel Sealer	TLH	P Value
Upadhyay N et al ^[20] (2017)	3.48	-	NA
Sapna B. Jain et al ^[21] (2018)	-	5.4	NA
Present Study	2.88	3.64	0.0008

In our study, the mean VAS score was 2.88 in Vaginal Hysterectomy with Vessel Sealer (VH) and 3.64 in Total Laparoscopic Hysterectomy (TLH), indicating higher pain levels in TLH, which was statistically significant. This finding contrasts with Allam IS et al [13], who reported less pain in the TLH group compared to the VH with Vessel Sealer group.

The pain scores on post-operative day 2 varied across different studies on Total Laparoscopic Hysterectomy, ranging from 1.80 to 5.4, as reported by Sapna B. Jain et al [21], Chattopadhyay S et al [22], and Ekanayake CD et al, respectively. Conversely, studies on Vaginal Hysterectomy with Vessel Sealer reported pain scores ranging from 3.4 to 3.80 on day 2 of surgery, as documented by Upadhyay N et al [20], Zubke W et al [23], and Agrawal VB et al [19].

In our study, patients in the VH with Vessel Sealer group experienced less pain compared to the TLH group. This difference may be attributed to factors such as the absence of abdominal incisions, minimal peritoneal opening, avoidance of bowel handling, lack of gaseous distension requirement, and absence of throat discomfort due to endotracheal intubation. Conversely, TLH was associated with more pain, likely due to multiple abdominal incisions, gaseous distension, bowel handling, and longer operating times.

Table 11: COMPARISON OF HOSPITAL STAY IN BOTH THE GROUPS WITH PREVIOUS STUDY.

Reference Study	Hospital stay		
	VH with Vessel Sealer	TLH	P Value
Sapna B. Jain et al ^[21] (2018)	-	5.73	NA
Upadhyay N et al ^[20] (2017)	5.3	-	NA
Present Study	5.39	6.58	<0.0001

In our study, the mean duration of hospital stay from admission was 5.39 days in the Vaginal Hysterectomy with Vessel Sealer (VH) group and 6.58 days in the Total Laparoscopic Hysterectomy (TLH) group, with a statistically significant difference observed between the two groups. This finding contrasts with Allam IS et al [13], who reported a shorter postoperative hospital stay in the TLH group compared to the VH with Vessel Sealer group.

Across various studies on Total Laparoscopic Hysterectomy, the mean durations of hospital stay ranged from 4.2 to 5.73 days, as reported by Kluivers KB et al [24], Sapna B Jain et al [21], and Ishrath Fatima Bemat et al [25], respectively. Conversely, studies on Vaginal Hysterectomy with Vessel Sealer reported mean hospital stays ranging from 3.7 to 5.3 days, as documented by Lakeman MM et al [26], Zubke W et al [23], and Upadhyay N et al [20], respectively.

In our study, being a tertiary care hospital and teaching institute, patients were admitted for 2 days prior to surgery for routine investigations, medical fitness assessments, and pre-anesthesia checkups. These additional hospitalization days contributed to the overall duration of hospital stay for our patients.

Table 12: COMPARISON OF MEAN HB DEFICIT IN BOTH THE GROUPS WITH PREVIOUS STUDIES

Reference Study	Mean Hb deficit			
	Year	VH with Vessel Sealer	TLH	P value
A B Fuzayel et al ^[27]	2017	-	1.05	NA
Zubke W et al ^[23]	2009	0.74	-	NA
Present Study		0.77	1.07	Significant

In our study, the mean hemoglobin (Hb) deficit between pre- and post-operative measurements was found to be statistically significant in both the Vaginal Hysterectomy with Vessel Sealer (VH) group and the Total Laparoscopic Hysterectomy (TLH) group. The mean Hb deficit was 0.77 in the VH with Vessel Sealer group and 1.07 in the TLH group, with the difference being statistically significant.

Across studies on Total Laparoscopic Hysterectomy, the mean Hb deficits ranged from 0.9 to 2.12, as reported by Chattopadhyay S et al [22], A B Fuzayel et al [27], and Isci Bostanci E et al [28], respectively. Conversely, in studies focusing on VH with Vessel Sealer, mean Hb deficits were found to be 0.74 and 1.2, as documented by Zubke W et al [23] and Samulak D et al [18], respectively.

Table 13: COMPARISON OF INTRA AND POST-OP COMPLICANTIONS IN BOTH THE GROUP WITH PREVIOUS STUDY

Intra and post-op complications	Allam IS et al ^[13] (2015)			Present Study		
	VH With Vessel Sealer	TLH	P Value	VH With Vessel Sealer	TLH	P Value
Conversion to laparotomy	3.30%	0%	1	0%	2%	1
Blood transfusion	20.00%	3.30%	0.171	0%	0%	NA
Bladder injury	0%	0%	NA	4%	0%	1
Bowel injury	0%	0%	NA	0%	0%	NA
Ureteric injury	3.30%	0%	1	0%	0%	NA
Vault hematoma	6.70%	0%	0.326	7.84%	1.96%	0.1689
Vault Infection	0.00%	0%	NA	3.92%	3.92%	1
UTI	0.00%	0%	NA	7.84%	1.96%	0.1689
Febrile Events	0.00%	0%	NA	1.96%	7.84%	0.1689

In the present study, the major intra-operative complication observed in Vaginal Hysterectomy with Vessel Sealer (VH) was bladder injury, occurring in 4% of cases, which was not encountered in Total Laparoscopic Hysterectomy (TLH). Conversely, Allam IS et al [13] reported no bladder injuries in

either group. The rate of conversion to laparotomy was 2% in TLH and 0% in VH with Vessel Sealer, whereas Allam IS et al [13] noted a 3.30% conversion rate in VH with Vessel Sealer compared to none in TLH. No other complications such as bowel or ureteric injury were observed in the present study.

Intra-operative blood transfusion was not required in either group of our study, whereas 20% of patients in the VH with Vessel Sealer group required blood transfusion in the study by Allam IS et al [13]. Vault hematoma developed in approximately 8% and 2% of patients in the VH with Vessel Sealer and TLH groups, respectively, in our study. Allam IS et al [13] reported a 7% occurrence of vault hematoma in the VH with Vessel Sealer group and none in the TLH group.

Around 8% and 2% of patients developed urinary tract infections (UTI) in the VH with Vessel Sealer group and TLH group, respectively, in our study. Post-operatively, 2% and 8% of patients in the VH with Vessel Sealer group and TLH group, respectively, developed fever. Therefore, rates of UTIs were higher in the VH with Vessel Sealer group compared to the TLH group, while rates of febrile events were higher in the TLH group compared to the VH with Vessel Sealer group. However, these differences in intra and post-operative complications were not statistically significant in our study, similar to the findings of Allam IS et al [13].

The resurgence of the vaginal route for various indications other than prolapsed uteri is driven by the emphasis on minimally invasive surgery, stitchless procedures, rapid recovery, and cost-effective healthcare. The choice of route and procedure in both groups depends on various factors. However, VH with Vessel Sealer offers advantages such as shorter operative time, lesser hemoglobin deficit, shorter hospital stay, and faster mobilization time, while providing a similar pain experience compared to Total Laparoscopic Hysterectomy.

Inadequate training is recognized as one of the factors hindering broader adoption of Total Laparoscopic Hysterectomy. Additionally, the ability to complete many hysterectomies vaginally, thereby avoiding the need for laparotomy in TLH, has likely contributed to the slower uptake of Total Laparoscopic Hysterectomy among gynecologists.

CONCLUSION

Vaginal Hysterectomy with Vessel Sealer represents an alternative approach to Total Laparoscopic Hysterectomy. Our study revealed a significant reduction in operative time, post-operative pain, pre and post-operative haemoglobin deficit, time required for ambulation, and duration of hospital stay in the Vaginal Hysterectomy with Vessel Sealer group compared to Total Laparoscopic Hysterectomy. Notably, there were no significant differences observed in major intra-operative and post-operative complications between the two approaches. Vaginal Hysterectomy emerges as a safe and effective alternative for hysterectomy in cases of non-descent uterus. Moreover, its technique is relatively easy to learn and implement compared to Total Laparoscopic Hysterectomy.

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