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Comparative Study between Laparoscopic Assisted Vaginal Hysterectomy (LAVH) Vs Total Laparoscopic Hysterectomy (TLH)

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Abstract

Introduction: Hysterectomy is the second most common major surgical procedure performed on women after caesarean section. The incidence of hysterectomy is 4-6% out of which 90% are performed for benign indications. The various possible approaches to hysterectomy for benign disease are: Abdominal Hysterectomy(AH),Vaginal Hysterectomy(VH) and Laparoscopic Hysterectomy(LH). Laparoscopic approach may be Laparoscopy Assisted Vaginal Hysterectomy (LAVH) or Total Laparoscopic Hysterectomy (TLH).

Objectives: The aim of this study was to compare intra-operative and immediate post-operative morbidity associated with two types of laparoscopic hysterectomy. Laparoscopic-Assisted Vaginal Hysterectomy (LAVH) and Total Laparoscopic Hysterectomy (TLH).

Materials and methods: A total of 60 women who underwent hysterectomy for benign disease were subdivided into 2 groups; 30 women for LAVH and 30 women for TLH. Intra- and post-operative evaluations include demographic data, operative time, uterine weight, difference between hemoglobin levels pre-op & post-op, frequency of intra-op complication and analgesics and hospital stay**.**

Inclusion criteria: All women >40years of age with a benign conditions and uterine size <16weeks and who gave consent.

Exclusion criteria

- Patients with suspected or confirmed malignancies.
- Any contraindications for laparoscopy/procidentia /III° UV prolapse.
- Patients with uterine size >16weeks.

Observation: LAVH is indicated more in multiparous with previous vaginal deliveries and no prior abdominal surgeries. The most common indication in both groups is endometrial hyperplasia followed by fibroid uterus. LAVH delivered heavier uterus, although, it took a little longer operating time. Post-op hemoglobin deficit of >1g% is slightly higher in TLH .With respect to blood transfusion, 2 case underwent blood transfusion in LAVH group and 3 case in TLH group.3 cases of TLH were converted into open. Other complications include:2 cases had bladder injury in TLH which were cases of 3 previous LSCS.2 cases had ureteric injury in LAVH. NSAIDs are routinely used for both procedures, while use of Pethidine and hospital stay was greater in TLH.

Conclusion: LAVH showed lower complication but delivered heavier/bigger/bulky uterus, although, it took a little longer operating time than total laparoscopic hysterectomy group; also (LAVH) showed shorter hospital stay and need fewer analgesics so we considered this method the best when the patient accepted total removal of the uterus. While total laparoscopic hysterectomy showed slightly higher blood loss and complication intraoperatively and postoperatively, these complications are less significant.

Keywords: Hysterectomy, laparoscopic assisted vaginal hysterectomy (LAVH), total laparoscopic hysterectomy (TLH).

Introduction

Hysterectomy is the second most common major surgical procedure performed on women after caesarean section. The incidence of hysterectomy is 4-6% out of which 90% are performed for benign indications [1]. Incidence of hysterectomies is highest in the United States. The various possible approaches to hysterectomy for benign disease are: Abdominal Hysterectomy (AH), Vaginal Hysterectomy (VH) and Laparoscopic Hysterectomy (LH). Laparoscopic approach may be Laparoscopy Assisted Vaginal Hysterectomy (LAVH) or Total Laparoscopic Hysterectomy (TLH).

Traditionally, abdominal hysterectomy was used for gynecological malignancy with other pelvic disease is present, such as endometriosis, pelvic inflammatory disease or adhesion, history of multiple abdominal surgeries or if the uterus is enlarged as it remains the last optionif the uterus cannot be removed by another approach [2].

Vaginal hysterectomy was originally used only for prolapse, but nowadays non descent vaginal hysterectomy (NDVH)is also done in benign pathological conditions where the uterus is of normal size. Vaginal hysterectomy is regarded as less invasive than abdominal hysterectomy [3].

With the advent of laparoscopic techniques, TLH and LAVH has gained popularity, although, requires greater surgical experience than abdominal and vaginal methods, the proportion of hysterectomies performed laparoscopically are widely in use in the recentdecades [4].

The aim of this study was to compare intra-operative and immediate post-operative morbidity associated with two types of laparoscopic hysterectomy. Laparoscopic-Assisted Vaginal Hysterectomy (LAVH) and Total Laparoscopic Hysterectomy (TLH).

Materials and Methods

This is a retrospective study conducted at Sree Mookambika Institute of Medical Sciences for a period of 1 year i.e. from February 2023 to January 2024. A total of 60 women who underwent hysterectomy for benign disease were subdivided into 2 groups: 30 women for LAVH group and 30 women for TLH group. Intra- and post-operative evaluations include demographic data, operative time, uterine weight, difference between hemoglobin levels pre-op & post-op, frequency of intra-op complication and analgesics and hospital stay**.**

Inclusion criteria

All women >40years of age with a benign conditions and uterine size <16weeks and who gave consent.

Exclusion criteria

- Patients with suspected or confirmed malignancies.
- Any contraindications for laparoscopy/procidentia /III° UV prolapse.
- Patients with uterine size >16weeks.

All patients were subjected to:

- Full history taking.
- Complete examination
- Ultrasonographic evaluation.
- Laboratory investigation.

Results

A total of 60 cases between 40-65years age group were considered for the study out of which 30 cases belong to LAVH group and 30 cases belong to TLH group.

Table 1: Pre-op demographic data

	LAVH(n=30)[%]	TLH(n=30)[%]
(A) PARITY		
<2	12[40]	16[53.33]
>2	18[60]	14[46.66]
(B) BMI		
20-25kg/m^2	16[53.33]	10[33.33]
>25kg/m^2	14[46.66]	20[66.66]
(C) AGE		
40-50years	10[33.33]	18[40]
>50years	20[66.66]	12[60]
(D) MODE OF DELIVERY		
Vaginal delivery	22[73.33]	16[53.33]
Cesarean section	8[26.66]	14[46.66]

Based on Table 1, vaginal delivery patients mostly underwent LAVH.

Table 2: Incidence of prior abdominal surgeries

No. of prior abdominal surgeries	LAVH(n=30)[%]	TLH(n=30)[%]
0	22[73.33]	20[66.66]
1	5[16.66]	6[20]
2	3[10]	4[13.33]

Based on Table 2, TLH is indicated more in patients with previous abdominal surgeries.

Table 3: Indication for hysterectomy

Indication for hysterectomy	LAVH(n=30)[%]	TLH(n=30)[%]
Fibroid uterus	12[40]	10[33.33]
Endometrial hyperplasia	10[33.33]	12[40]
Abnormal uterine bleeding	2[6.66]	4[13.33]
Adenomyosis	6[20]	4[13.33]

Based on Table 3,Fibroid uterus& endometrial hyperplasia are the most common indications for LAVH/TLH.

Table 4: Operative findings

(A) Operative Time In Minutes For LAVH(n=30)[%]	
100minutes-140minutes	>140 minutes
25[83.33]	5[16.66]
(B) Operative Time In Minutes For TLH(N=30)[%]	
90minutes-120minutes	>120minutes
26[86.66]	4[13.33]
(C) Uterine Weight(In Grams) For LAVH(n=30)[%]	
200-500grams	>500grams
28[93.33]	2[6.66]
(D) Uterine Weight(In Grams) For TLH(n=30)[%]	
150-400grams	>400grams
26[86.66]	4[13.33]

(E) Pre-Op & Post-Op Hemoglobin Deficiet In Gram %

	LAVH(n=30)[%]	TLH(n=30)[%]
<1gram%	20[66.66]	16[53.33]
>1gram%	10[33.33]	14[46.66]

Based on Table 4, Pre-op and post-op hemoglobin deficit is slightly higher in TLH while LAVH operative time is slightly longer but is used to deliver a heavier/bigger/bulky uterus.

Table 5: Intra-op and post-op data

	LAVH(n=30)[%]	TLH(n=30)[%]
Blood transfusion	2[6.66]	3[10]
Conversion to open	0	3[10]
Bladder injury	0	2[6.66]
Ureteric injury	2[6.66]	0

Based on Table 5, bladder injury and conversion to open is seen in TLH, while LAVH has slightly higher chance of Ureteric injury.

Table 6: Need of analgesics and hospital stay.

	LAVH(n=30)[%]	TLH(n=30)[%]
Use of NSAIDs	30[100]	30[100]
Use of Pethidine	22[73.33]	30[100]
Hospital stay <3 days	22[73.33]	12[40]
Hospital stay 3-5 days	6[20]	15[50]
Hospital stay >5 days	2[6.66	3[10]

Based on Table 6, TLH has a slightly longer hospital stay and higher use of Pethidine.

Discussion

Based on our study**,** LAVH is indicated more in multiparous with previous vaginal deliveries and no prior abdominal surgeries. The most common indication in both groups is endometrial hyperplasia and fibroid uterus. LAVH delivered heavier/bigger/bulky uterus, although, it took a little longer operating time. Post-op hemoglobin deficit of >1g% is slightly higher in TLH .With respect to blood transfusion, 2 case underwent blood transfusion in LAVH group and 3 case in TLH group. 3 cases of TLH were converted into open. Other immediate post-op complications include: 2 cases had bladder injury in TLH which were cases of 3 previous LSCS.2 cases had ureteric injury in LAVH. NSAIDs are routinely used for both procedures, while use of Pethidine and hospital stay was greater in TLH.

In a study done by Bendary et al[5] in 2022 at Egypt says LAVH took the longest operating time. As regard hemoglobin deficit that occurred after 24 hours of surgery, showed that TLH had largest Hb deficit (1.6 gm/dl) but still the Hb deficit not significantly different. As regard transfusion of blood, one case took blood in

group LAVH and one case in group TLH. As regard other complications, the bladder was injured during blunt dissection of the bladder flap in group TLH and this case was having history of one cesarean section 10 years ago. Thus, laparoscopic assisted vaginal hysterectomy showed lower complication but longer operative time than total laparoscopic hysterectomy group; also (LAVH) showed shorter hospital stay and need fewer analgesics so they considered LAVH the best when the patient accepted total removal of the uterus. While total laparoscopic hysterectomy showed the more blood loss and complication intraoperatively and postoperatively, but this complication is non-significant in cases of removal of the whole uterus.

In the study done by Shin et al[6] in 2008 at Korea says there were no differences between the 2 groups(LAVH AND TLH) with respect to age, parity, history of abdominal delivery, body mass index, and indication for hysterectomy. The operative time was similar between the 2 groups (P>0.99). The uterine weight was greater in the LAVH group compared to the TLH group (P<0.01). Ten patients were converted from TLH to LAVH, because of a large uterus and/or a lower segmental mass on the uterus, making it difficult to expose the Koh cup rim contour. Thus, they concluded as TLH and LAVH are safe, feasible methods by which to perform a hysterectomy. LAVH is preferred in patients with a mass involving the lower segment/relatively large uterus.

Based on the study done by Nahar et al[7]in 2005 at Bangladesh says there was no significant difference in mean operative time (TLH 110 ± 15 min vs. LAVH 112 ± 23 min) and estimated blood loss. No major intraoperative complication was reported in either group except inadequate coagulation of uterine vessels leading more blood loss in three cases in TLH group, one case had developed uretero-vault fistula and one case had incomplete cutting of bladder wall. In LAVH vault stump bleeding was significantly higher. Vault granuloma and pelvic hematoma were more in LAVH group (7.1% and 14.2% respectively). The TLH group had significant shorter hospital stay than LA VH group (32 ± 5 hours vs. 48 ± 6.2 hours respectively P <0.05). LAVH procedure cost was slightly higher than TLH. Mean specimen weight was similar. Thus, TLH has more chance of thermal injury of ureter and bladder, but postoperative complications are less than LAVH.

According to the study done by Cheng Yu Long et al[8] in 2001 compared the surgical results of 60 women who underwent laparoscopically assisted vaginal hysterectomy (LAVH) and 41 having total laparoscopic hysterectomy (TLH) under the indications of uterine fibroids or adenomyosis. With similar specimen weight, TLH required longer surgery duration (140.4 vs. 115.1 min; $p < 0.05$) than LAVH. Among women with uteri weighing ≤200 g, TLH resulted in relatively smaller blood loss with comparable operating time (115.6 vs. 116.0 min for LAVH; $p > 0.05$) although the TLH group had a significantly higher rate of previous abdominal surgery (57.7 vs. 20%; $p < 0.05$). There were no significant differences between the two groups with respect to the mean cost, length of hospital stays and rate of various complications ($p > 0.05$). As for sexual symptoms, dyspareunia decreased significantly post-operatively in the LAVH group ($p < 0.05$), but not in the TLH group. A significant reduction in the frequency of orgasms after surgery was detected in both groups ($p < 0.05$). They concluded, TLH has advantages over LAVH with reduced operating time. Although it is a technical challenge, TLH can be effectively performed within reasonable time limits in selected cases. The effects on

sexual function, following either LAVH or TLH, are found to be similar.

Conclusion

LAVH showed lower complication but delivered heavier/bigger/bulky uterus, although, it took a little longer operating time than total laparoscopic hysterectomy group; also (LAVH) showed shorter hospital stay and need fewer analgesics so we considered this method the best when the patient accepted total removal of the uterus. While total laparoscopic hysterectomy showed slightly higher blood loss and complication intraoperatively and postoperatively, these complications are less significant.

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