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# A Comparative Study of Total Laparoscopic Hysterectomy Versus Non-descent Vaginal Hysterectomy among the Patients attending O&G OPD of tertiary care hospital

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**Abstract- Background-** Hysterectomy is one of the most frequently performed surgery by obstetrician-gynaecologists next only to caesarean section. Several routes of hysterectomy have been explored and debated in search for the optimum one which would aid in the ease of operation with minimum complications and best cosmetic results. Hysterectomies are performed vaginally, laparoscopically (total laparoscopic hysterectomy) .**Objectives - 1)** To compare non descent vaginal hysterectomy (NDVH) with total laparoscopic hysterectomy(TLH) in terms of duration of surgery and requirement of Oophercetomy .**2)** To find out the association between various intra-operative and post-operative complications, post operative pain ,biochemical parameters changes and duration of hospital stay following Non-descent vaginal and total laparoscopic hysterectomy. **Methodology**- It was a prospective observational study conducted for a period of 2 years(October 2015-September 2017) among the patients admitted to the Dept, of O & G ,VIMSAR Burla for whom hysterectomy was chosen as a mode of treatment. Total sample size was 100. **Results -** Most common indications for hysterectomy was AUB/DUB in both NDVH (50%) and TLH(52%) groups. Comparison of 2 groups (NDVH/TLH) for duration of surgery with unpaired t test it was revealed that there was a significant difference between groups with p value < 0.0001 which indicates that NDVH could be performed in less time compared to TLH . The accidental detection of any adnexal pathology if found then, oophorectomy could be performed easily while doing TLH as compared to NDVH. Ureteric injury was more common while performing TLH as compared to NDVH. There was no statistical significant association between the types of surgery with intra operative & post-operative complication with P value >0.05. Patients who underwent TLH experienced less pain post operatively as compared to patients of NDVH group. Mean duration of hospital stay with the types of surgery was not found to be significant. **Conclusion**- The route of hysterectomy must be decided by the surgeon in such a way that the patients will get maximize benefits and there will be minimum complications.

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**Keywords-** AUB, Hysterectomy, NDVH,TLH,

**Introduction –** Most frequently performed gynaecological procedures among the age group of 44-54 years is hysterectomy. The most common indication for the surgery is for benign gynaecological diseases, dysfunctional uterine bleeding, prolapse and uterine fibroids. (1)

Hysterectomy traditionally was performed using either an abdominal or vaginal approach but recently, laparoscopic techniques have been used more rampantly.[2]

The selection of the route of hysterectomy for benign causes can be influenced by many factors such as the size and shape of the uterus; accessibility to the uterus; extent of extra-uterine disease; the need for concurrent procedures; surgeon's training and experience; whether the case is emergent or scheduled; and the preference of a well-informed patient.[3]

With the technological advances in anaesthesia, blood transfusion, antibiotics, and surgical technique led to hysterectomy becoming the second most common operation in women.[4]

United States estimates suggest that one in nine women will undergo hysterectomy during their lifetime and that approximately 6,00,000 procedures are performed each year in the United States. (5)

A multivariate study performed in 2019 states that in India, the prevalence of hysterectomy operation was 3.2%, the highest in Andhra Pradesh (8.9%), and the lowest in Assam (0.9%).(6)

The global trends in respect of the preferred route of hysterectomy had shown that there is a declining trend in respect of vaginal hysterectomy and a rising trend in respect of total laproscopic hysterectomy This trend is likely to continue in near future. (7)

But NDVH offers advantages of a shorter duration of hospital stay with faster recovery to normal activity as compared with the TLH. It reduces postoperative febrile morbidity or unexpected infections. It does not have any significant benefit as compared with laparoscopy in terms of recovery, pain scoring, intraoperative, or postoperative complications. However, the NDVH approach has a shorter operative time and lower cost than the TLH approach of hysterectomy.(1)

Keeping this in mind we have conducted this study with an objectives of : **1)** To compare non descent vaginal hysterectomy (NDVH) with total laparoscopic hysterectomy (TLH) in terms of duration of surgery and requirement of Oophorectomy .**2)** To find out the association between various intra- operative and post-operative complications, post operative pain ,biochemical parameters changes and duration of hospital stay following vaginal and total laparoscopic hysterectomy.

**Methodology-**

It was a Prospective Observational study conducted for a period of 2 years(October 2015-September 2017) among the patients admitted to the Dept, of O & G ,VIMSAR Burla for whom hysterectomy was chosen as a mode of treatment.

**Sample size-** Total 100 patients (50 patients in each groups). 50 patients undergoing vaginal hysterectomy (NDVH). & 50 Patients undergoing total laparoscopic hysterectomy (TLH) were included.

**Sampling method-** Purposive sampling was done.

**Inclusion criteria :** All the patients in whom hysterectomy was chosen as a treatment for a non descent uterus with no adnexal pathology .

**Exclusion criteria:** A. Uterus size more than 16 wks, B. Any suspected genital malignancy, C. Any adnexal pathology and D. Patients with 1$^{st}$ and 2$^{nd}$ degree descent

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**Data collection method** –

The ethical approval from the institute was taken & written informed consent was taken from each patient for pre-operative evaluation, surgical procedure, post operative evaluation and willingness to participate in study.

After obtaining the consent, cases were subjected to Complete history, clinical & pelvic examination**,** routine blood investigations like (haemoglobin, PCV, total leucocyte count, differential count, serum urea, creatinine, HBSAg, HIV **,**PAP smear **,** pre-operative USG of abdomen and pelvis**,** pre anaesthetic evaluation for fitness **,**Cardiology and pulmonary clearance.

After a proper preoperative evaluation with clinical and laboratory investigations, patients were selected for the study and divided into study group A(NDVH) and study group B(TLH). The steps of surgery, pre and post operative care were as per Institution's standard protocols.

**Study instrument**- Pre-tested, Pre-designed Questionnaire were used for collecting demographic data, clinical data, preoperative evaluation, intra-operative observations, post-op complications,ultra- sonographic findings.

**Data analysis:** All data of patients were entered, analysed using IBM SPSS 20 software. The frequency of the variables were analysed using percentage, numbers ,mean and standard deviation**.** **Chi-square test** was used for finding differences for categorical data. **Independent t test and paired t-test** were used to compare means of continue variables. The group difference were said to be statistically significant if P-Value is <0.05.

**Results** : Total of 100 study participants were enrolled for the study. In NDVH group Mean± 2 SD age was 44±6.21yrs with maximum age being 62 years and minimum being 35 years whereas mean ± 2 SD age in TLH group was 43.9±5.45yrs with maximum age being 55 years and minimum being 32 years. Most of the patients belonged to age group of 45-49 yrs in both the groups. Mean parity in NDVH group was 2.98 ± 0.93 and in TLH group was 2.89±1.01 .

Most common indications for hysterectomy was AUB/DUB which was 50% in NDVH group and 52% in TLH group. Other common indications were Fibroids uterus (26% and 24% in both groups respectively), Adenomyosis, Cervical in-situ neoplasia, Endometrial hyperplasia, Endometriosis.

90% of NDVH was done under Spinal anaesthesia, only 6% under GA and 4% under epidural anaesthesia where as 92% of TLH was done under GA, 2% under spinal and 4% under epidural anaesthesia.

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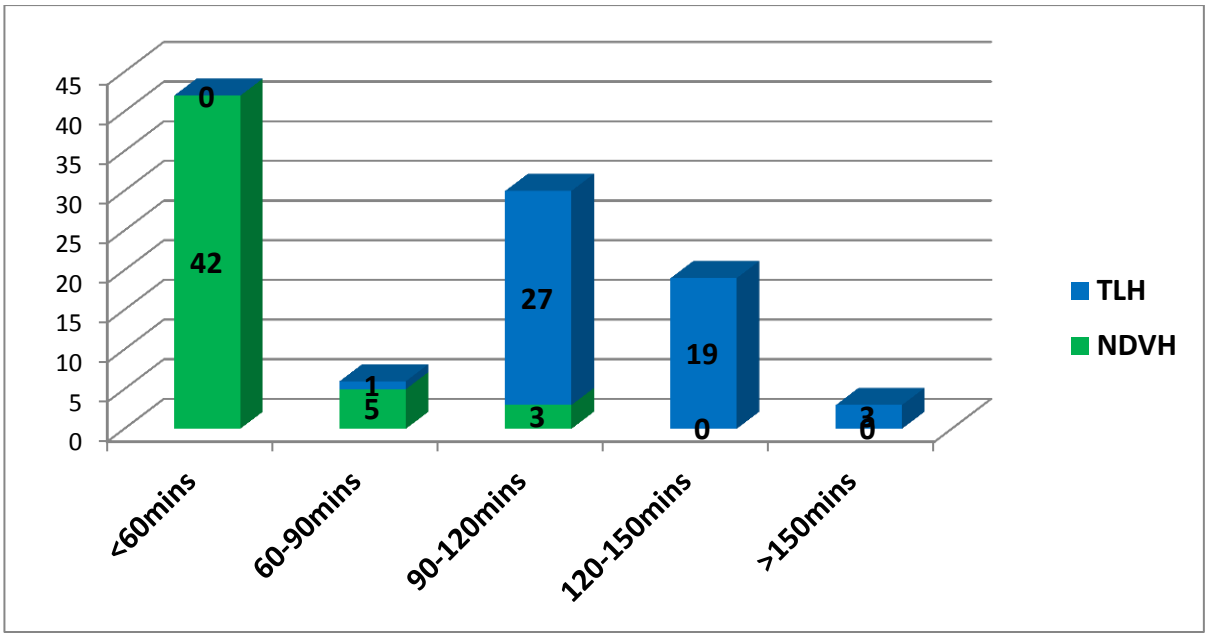


**Figure 1 : DURATION OF SURGERY (n=100)**

In figure 1 we had observed that most of the NDVH cases surgery i.e 42(84%) got completed within the time duration of <60mins whereas in case of TLH maximum duration of surgery took around 90-120mins(27,54%). The mean duration of surgery in TLH group was 125 ± 2.373 minutes (mean ± 2 SD), and in case of NDVH group was 54.70 ± 2.862 minutes. On Comparison of 2 groups for duration of surgery with unpaired t test it was found out that there was a significant difference between groups with p value < 0.0001 which indicates that NDVH could be performed in less time compared to TLH .

**TABLE 1 : Association of types of surgery with the requirement of OOPHORECTOMY (n=100)**

| Oophorectomy | NDVH (n=50) | TLH (n=50) | TOTAL | Chi-Square ($X^2$) | P value |
|---|---|---|---|---|---|
| Yes | 7 (30.4%) | 16 (69.6%) | 23 | | |
| No | 43 (55.8%) | 34 (44.2%) | 77 | 4.574 | 0.032* |
| Total | 50(100) | 50(100) | 100 | | |

(* signifies P<0.05)

Table 1 we had observed that out of total 100 patients , oophorectomy was done in 23 patients . Out of that 23, (69.6%) i.e 16 patients belonged to TLH group & in VH group 7 patients (30.4%) under went oophorectomy. While comparing both the groups using pearson's chi – square test, it was found out that there is a significant difference with $X^2$ =4.574 and p value = 0.032 .This indicates that if accidental detection of any adnexal pathology was found then, oophorectomy can be performed easily while doing TLH as compared to NDVH its probably due to better visualisation of adnexal pathology being detected while performing total laparoscopic hysterectomy.

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**TABLE 2 : Association of intraoperative complications with the types of surgery (n=100)**

| Intra op complications | NDVH (n=50) | TLH (n=50) | Total | Chi-Square ($X^2$) | P value |
|---|---|---|---|---|---|
| No | 49 (98%) | 46(92%) | 95 | | |
| Bladder Injury | 1 ( 2%) | 1 (2%) | 2 | | |
| Bowel Injury | 0(0) | 1(2%) | 1 | 3.095 | 0.377 |
| Ureteric Injury | 0(0) | 2(4%) | 2 | | |
| Total | 50(100) | 50(100) | 100 | | |

In our study we had found out in table 2 that 4 cases (8%) of intraoperative injuries were seen in TLH group which includes one bladder injury(2%), one suspected bowel injury (2%) and 2 cases of ureteric injuries(4%) whereas during NDVH only 1 case of bladder injury was reported . Ureteric injury is more common while performing TLH as compared to NDVH. There was no statistical significant association between the types of surgery with intra operative complication with P value=0.377.

**TABLE 3 : Mean pain score association with the surgery types (n=100)**

| PAIN SCORE | MEAN PAIN SCORE | | t-test | p VALUE |
|---|---|---|---|---|
| | NDVH (Mean± 2 SD) | TLH (Mean± 2 SD) | | |
| AT 12 hrs | 5.62±0.1103 | 3.9± 0.187 | 56.01908 | <0.0001* |
| AT 24 hrs | 4.26±0.1334 | 2.16 ±0.1522 | 73.3706 | <0.0001* |

(* signifies P<0.05)

Table 3 suggested that the mean post operative pain score (both at 12hrs and 24hrs) was more among the patients of NDVH group as compared to TLH group. On comparing both the groups using unpaired t test , the association between the types of surgery and the mean pain score was found to be highly significant with p value <0.0001 both at 12hrs and 24hrs.This shows patients who underwent TLH experienced less pain post operatively as compared to patients of NDVH group.

**TABLE 4: Pre-Post operative drop of HB AND PCV for NDVH and TLH (n=100)**

| Types of surgery | NDVH | | TLH | |
|---|---|---|---|---|
| Parameters | Hemoglobin | PCV | Hemoglobin | PCV |
| Pre-OP (mean±2SD) | 11.2±0.19 | 32.8±0.49 | 11.2±0.18 | 32.6±0.58 |

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| | | | | |
|---|---|---|---|---|
| Post-OP (mean±2SD ) | 10.7±0.18 | 31.5±0.44 | 10.7±0.10 | 31.2±0.60 |
| **t-test** | 13.5086 | 13.9583 | 17.1701 | 11.8627 |
| **P VALUE** | 0.03* | 0.614 | 0.002* | 0.002* |

(* signifies P<0.05)

On comparing the pre and post operative Haemoglobin and PCV in NDVH and TLH group using paired t test we had observed in table 4 that in case of NDVH there was statistically significant drop in HB but not PCV after surgery with mean drop of HB by 0.5 gm/ dl and PCV by 1.3% from pre-operative levels with (p value 0.03 and 0.614 respectively) and in case of TLH there was very statistically significant drop in HB (p=0.002)and significant drop of PCV(p=0.002) after surgery. But a drop of 0.5gm% Hb from pre op to post op level is clinically not an alarming sign for physician.

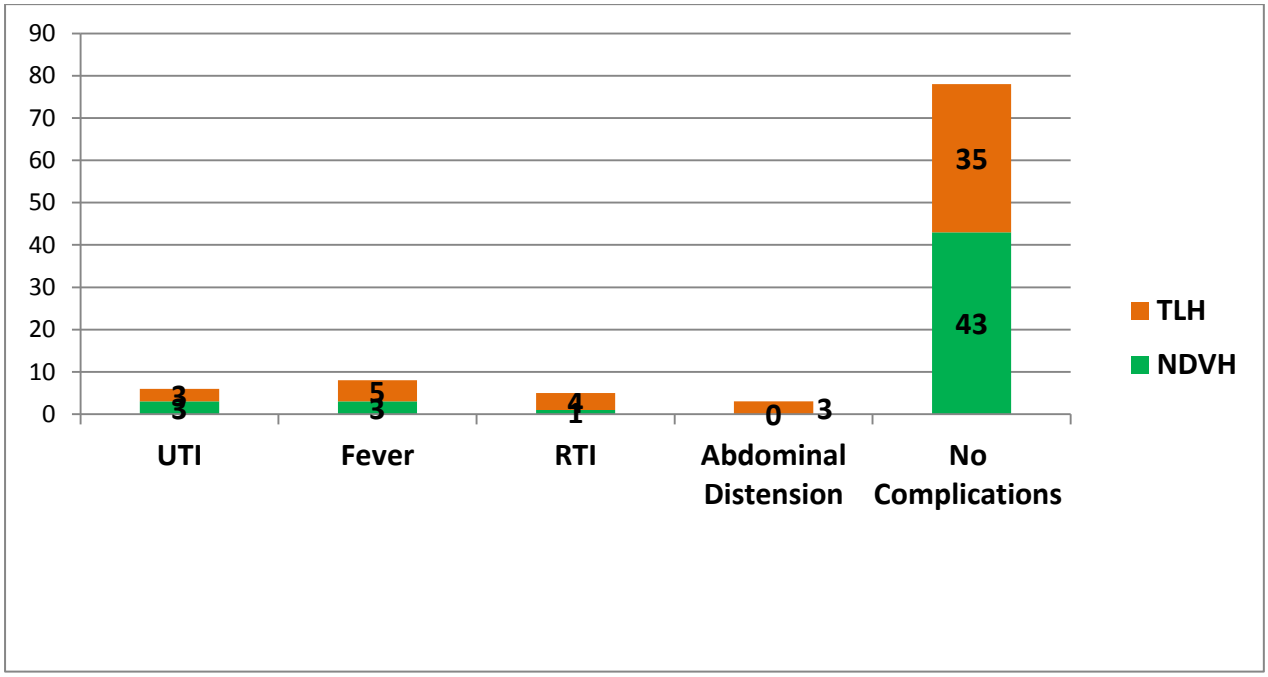


**Figure 2 : Post op complications association with the types of surgery (n=100)**

In Figure 2 we had observed that 43 out of 50 patients in NDVH and 35 out of 50 patients in TLH group did not develop any complications postoperatively. 3 (6%) patients in both groups had UTI. Whereas post operatively fever was more in TLH group i.e 5 patients. Other complications like Reproductive tract infection, abdominal distension etc were also seen more in patients who had undergone total laparoscopic hysterectomy, i.e 4 and 3 patients respectively. There was no statistical significant difference between the types of surgery with post operative complication with $X^2$=6.121 and P>0.05.

Mean duration of hospital stay in NDVH group was 3.66 ± 0.129 days (MEAN±2SD) and in TLH group was 3.54±0.210 days (MEAN ± SD). There was no significant

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difference between the types of surgery with the duration of stay in hospital T=3.5042 & P=0.628.

**Discussion** – Hysterectomy is the 2nd most rampant surgery being conducted by the surgeon. Our study showed that most common indication for hysterectomy was DUB/AUB i.e 50% and 52% respectively in NDVH and TLH group followed by Fibroid uterus and Adenomyosis, which corresponds to the study by Patel R et al. (8)

Where as a study conducted by Murali S M et al had found out that the most common indication in both the groups(NDVH and TLH) was fibroid uterus followed by dysfunctional uterine bleeding. (9) Another study conducted by Kansara et al had observed that the most common indication for both the groups was adenomyosis i.e (TLH-42.2% and NDVH-48.8%) respectively.(10)

We had seen in our study that General Anaesthesia(GA) was preferred in cases of TLH as it is a difficult procedure requiring more time. More over abdominal inflation with $CO_2$ gas is done in cases of TLH, so it is easy to monitor those cases if performed under general anaesthesia. Also there is more chance of hypotension if a procedure is done under Spinal Anaesthesia(S.A) for long duration. Also it is easy to intervene in case of any complications developed during surgery if it is done under GA.

Mean operating time from our study was less for NDVH (54.7 mins) than for TLH(125mins). This was also proved in study done by Murali S M et al that within 40 min 85% of NDVH surgeries were completed while only 13% took time duration maximum upto 80mins. Whereas in case of TLH 50% of surgeries were completed within 10mins and 37% took upto 240 mins. Time duration of surgery was less in case of NDVH in comparison to TLH. (9) And also another study conducted by Roy KK et al also observed the similar finding with our study.(11)

In our study, one patient from NDVH and one from TLH group had bladder injury, one from TLH group was having bowel injury and 2 patients of the TLH group suffered from ureteric injury.

A study conducted by Patel R et al showed that bladder injury was found in 1 case of NDVH and 2 cases of LH group, bowel injury in 1 case of LH which was managed by expert laparotomy. 2 patients of LH and 4 of LH which were managed by expert laparotomy. 2 patients of LH and 4 of NDVH group had vaginal bleeding but it was minimal and did not require any surgical management. (8) Where as in another study conducted by Murali S et al had observed that there were 2 bladder injury and 1 case of ureteric injury seen in groups of TLH whereas there was no intra operative complication in NDVH. (9)

The mean post operative pain score (both at 12hrs and 24hrs) was more among the patients of NDVH group as compared to TLH group. On comparing both the groups using unpaired t test , the association between the types of surgery and the mean pain score was found to be highly significant with p value <0.0001 both at 12hrs and 24hrs.This shows patients who underwent TLH experienced less pain post operatively as compared to patients of NDVH group which was similar with the study being conducted by Rajan G et al who had found out that total pain score mean was 12.2 and 14.5 in case of TLH and NDVH respectively which was found to be statistically significant with p value <0.001. (12)

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The greater incidence of post operative pain in NDVH group may be attributed to more stretching of ligaments during surgery. Patients undergoing TLH experienced less pain hence required less analgesia as compared to NDVH group.

The difference in pre-operative and post-operative Haemoglobin in the present study was 0.5 g/dl in both vaginal and laparoscopic group. Our study finding was near about same with the study being conducted by Ranjan G et al, where fall in Haemoglobin was 0.7 g/dl and 0.6gm/dl NDVH and TLH respectively.(12)

We had found out that 43 out of 50 patients in NDVH and 35 out of 50 patients in TLH group did not develop any complications postoperatively. 3 (6%) patients in both groups had UTI. Whereas post operatively fever was more in TLH group i.e 5 patients. Other complications like Reproductive tract infection, abdominal distension etc were also seen more in patients who had undergone total laparoscopic hysterectomy, i.e 4 and 3 patients respectively but there was no significant difference between both the groups but the study being conducted by Ranjan G et al had found out that 19.6% of NDVH cases had post-operative complications compared to 14.3% of TLH cases. Among TLH group 12.5% had suffered from post operative fever whereas among NDVH group 9% had urinary retention. (12)

Mean duration of hospital stay in NDVH group was 3.6 days and in TLH group was 3.5days which was almost same so there was no significant difference between the groups. Whereas in the study conducted by Bhatt S et al it was found out that in NDVH the duration of stay was 6.13 days whereas in TLH it was 5.60 which was found to be significant. The post operative complications were also more in case of NDVH than TLH cases. (13)

**Conclusion** - From the present study, we had found out that both NDVH and TLH are associated with less blood loss during surgery. Length of hospital stay was almost same in NDVH as compared to TLH and chances of various intraoperative complications like injury to bowel, bladder and ureter were more in TLH group when compared with NDVH. Post operative pain was less in case of TLH as compared to NDVH.

**Recommendations**- There are significant differences in the medical and economic outcomes of laparoscopic and vaginal hysterectomy. The standard of appropriate care should be applied to choose the best surgical route in individual patients. The indication, severity of the pathologic condition, benefits and risks to the individual health must be the primary criterion for selecting the route of surgery.

**Conflicts of interest**-None

**Funding** -None

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