

Comparison of total laparoscopic Hysterectomy versus vaginal hysterectomy for benign non prolapsed uterus

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Abstract

Background: Vaginal hysterectomy is a well established and time tested procedure which is being done since the last 150 years and thus has been refined to a great degree, but it has been less successful due to lack of experience and enthusiasm among Gynaecologists, due to a misconception that the abdominal route is safer and easier.

Objective: The present study was undertaken to compare outcomes of conventional vaginal hysterectomy and total laparoscopic hysterectomy in women with benign non prolapsed uterus.

Methods: Total 50 cases of non prolapsed uterus requiring hysterectomy were systematically allocated into two groups of 25 patients in each group, (Vaginal and total laparoscopic hysterectomy group). All patients underwent pelvic ultrasound (USG). Surgical techniques, operating time, estimated blood loss and/or episodes of accidental bleeding requiring intervention intra-or post-operatively were compared. Other factors such as post operative pain, post-operative complications, conversion to laparotomy, and length of hospital stay were also recorded for each case.

Results: We found that blood loss in vaginal hysterectomy was more than in total laparoscopic hysterectomy. Post-operative pain and post complications were also more in the vaginal hysterectomy group. Operation time was however more in the total laparoscopic hysterectomy group but recovery time was less.

Conclusion: In the present study, we found advantages of laparoscopic hysterectomy over vaginal hysterectomy in terms of lesser blood loss, postoperative pain and postoperative complications, a larger study with emphasis on long term effects may be essential to establish superiority of total laparoscopic hysterectomy over vaginal hysterectomy.

Keywords: Total laparoscopic hysterectomy, Vaginal hysterectomy, Non prolapsed uterus, Hospital stay.

1. Introduction

Hysterectomy is the most frequently performed major gynaecological procedure in developed countries [1,2]. About 70% of hysterectomies are performed for benign conditions such as fibroid uterus, uterine prolapse, adenomyosis, dysfunctional uterine bleeding etc. Since Reich *et al* description of the first laparoscopic hysterectomy in 1989, three major hysterectomy approaches are considered: vaginal, abdominal and laparoscopic [3]. Several studies have discussed the advantages, disadvantages and complication rate related with each type of hysterectomy [4-6]. However the factors that may influence the route of hysterectomy include the

indication for surgery, size of the uterus, presence or absence of associated pelvic pathology, surgeon's training and preference and patient's choice [7].

Vaginal hysterectomy (VH) was considered as first-line approach, whenever possible, given its documented advantages (shorter surgical procedure duration and stay, less postoperative pain, early return to professional activity) and low complication rate. Traditional VH is commonly preferred in patients with uterine size equivalent to or less than 12 weeks gestation, no history of previous surgery, normal adnexa and absence of associated pelvic pathologies. Old studies indicate that, when feasible,

vaginal hysterectomy is the safest and cost - effective way to remove the uterus [7]. Therefore, laparoscopic hysterectomy was only to be performed when the vaginal approach was not feasible, in order to avoid the abdominal hysterectomy [4,8]. As experience with total laparoscopic hysterectomy is increasing, gynaecologists have begun to debate the role of laparoscopic hysterectomy in women otherwise suitable for vaginal hysterectomy. The superiority of vaginal hysterectomy over laparoscopic hysterectomy, particularly, total laparoscopic hysterectomy, has begun to be challenged [9].

When compared with vaginal hysterectomy, total laparoscopic hysterectomy facilitates better anatomical views, allows performance of concomitant surgery, and is suitable for larger uteri and those with non – descent uterus, which may prove difficult to remove vaginally [9]. Hence, the present study was undertaken to compare conventional vaginal hysterectomy and newer surgical method of total laparoscopic Hysterectomy in order to know which of these gives a better patient outcome in term of 1) operative morbidity i.e. blood loss, duration of surgery, intraoperative complications, 2) post-operative morbidity i.e. hospital stay, post-operative pain and complications.

2. Material and Methods

In the present study, total 50 consecutive women with non prolapsed uteri requiring hysterectomy for benign uterine conditions, without suspected adnexal disease were selected prospectively. All patients underwent pelvic ultrasound (USG) to rule out adnexal pathology and for assessment of uterine size and the site of fibroids (if any). All patients had Hb>10gm% and uterine size was limited to 12 weeks or less. Previous cesarean section was not considered a contraindication for any type of surgery. Patients who had adnexal pathology, patients with medical conditions precluding laparoscopy, also with malignant conditions of the reproductive and genital systems, patients with uterine prolapsed were excluded from the study. All the cases were systematically allocated into two groups, 25 patients underwent vaginal hysterectomy and in the remaining 25 total laparoscopic hysterectomy was performed.

For each patient we recorded the baseline characteristics, including age; parity; previous caesarean section; other previous pelvic surgery; body mass index (BMI) and the indication for hysterectomy. Intra-operative parameters including conversion to laparotomy, time of surgery, complications – injury to bowel, bladder, ureter and pelvic haematoma were noted. Postoperative parameters including hospital stay, infections including urinary tract, vaginal cuff and pelvic abscess, febrile morbidity, diarrhea, secondary haemorrhage, vaginal discharge lasting for more than one month were recorded. Then both the groups were compared with respect to

surgical techniques, operating time, estimated blood loss and/or episodes of accidental bleeding requiring intervention intra-or post-operatively and the complications included those during the surgery, during hospital stay and those that happened after discharge.

2.1 Statistical Analysis

All data were collected, tabulated and analyzed using MS Excel software. Students‘t’ test was used for continuous variables and chi square was used for categorical (discrete) variables. A ‘p’ value of <0.05 was considered as significant.

3. Observations and Results

A total of 50 patients were included in the study, having age ranged from 32-56 years and were divided into four age groups as shown in table 1, (P>0.05). Depending upon the size of uterus they were also divided into four groups and this distribution was found to be statistically insignificant, (Table 1). The study was carried out in included patients with indications as shown in table 2 and which was not found statistically significant (P>0.05).

Table 1: Distribution of patients as per the age group and size of uterus

Age (Years)	Vaginal hysterectomy (VH)	Total laparoscopic hysterectomy (TLH)
<35	01	-
35-40	10	08
40-45	13	15
>45	01	2
Size of uterus (wks)	vaginal hysterectomy (VH)	Total laparoscopic hysterectomy (TLH)
Up to 6	5	4
7-8	8	8
9-10	8	7
11-12	4	6

Table 2: Indications for Hysterectomy

Indications	Vaginal hysterectomy (VH)	Total laparoscopic hysterectomy (TLH)
Dysfunctional uterine bleeding	8 (32%)	10 (40%)
Adenomyosis	3 (12%)	1 (4%)
Fibroid uterus	10 (40%)	10 (40%)
Cervicitis/dysplasia	2 (8%)	2 (8%)
Endometrial hyperplasia	2 (8%)	2 (8%)

The average intra-operative blood loss in TLH group was 109.68±30.24 ml, which was significantly less as compared to that of blood loss in VH group (251.2±131), (P<0.001). The average time required for VH was 73.56±21.10 minutes while in patients who underwent TLH the average time required was 113.28±28.22 minutes which was significantly more as compared to that of VH. The mean hospital stay in both the groups was not found to be

statistically significant. It was 5 ± 3.13 days in the VH group and 4.52 ± 2.52 days in the TLH group.

Patients who underwent TLH had less intense postoperative pain on the day of surgery, on day 1, day 2 and day 3 of surgery as compared to patients who underwent vaginal hysterectomy, (Table 3).

Table 3: Comparison of postoperative pain assessed by VAS for vaginal and laparoscopic hysterectomy

VAS Score	vaginal hysterectomy (VH)	Total laparoscopic hysterectomy (TLH)	P value
Day 0	7.49±0.91	5.35±0.77	0.001
Day 1	7.04±0.97	4.50±0.62	0.001
Day 2	4.19±0.92	2.66±0.83	0.001
Day 3	2.06±0.82	1.57±0.76	0.05

The complications in both the groups were shown in table 4. The overall lower rate of complications observed for the patients in TLH group is due to the fact that the rate of minor complications is significantly lower in group operated by endoscopy. Urinary tract injuries and peri-operative bleeding were the major complications seen during hysterectomy.

Table 4: Complications associated with vaginal and laparoscopic hysterectomy

Postoperative injuries/complications	Vaginal hysterectomy (VH)	Total laparoscopic hysterectomy (TLH)
Injury to bladder	1 (4%)	1 (4%)
Injury to uterus	1 (4%)	-
Injury to bowels	-	-
Slipping of pedicle	1 (4%)	1 (4%)
Febrile morbidity	2 (8%)	1 (4%)
Pelvic haematoma	-	-
Pelvic abscess	-	-
Secondary hemorrhage	1 (4%)	-
Urinary tract infection	2 (8%)	1 (4%)
Diarrhea	2 (8%)	-
Vaginal discharge >1 month	6 (24%)	1 (4%)

4. Discussion

The potential benefits and risks of laparoscopic hysterectomies have been discussed widely since the first paper on the subject was published [3] with a number of authors even doubting the benefits of the procedure [10]. Laparoscopic hysterectomy was pioneered by Reich in the United States in 1989 [3]. Like all new techniques in medical practice, it has its share of ardent supporters and cynical detractors. As far as a comparison with total abdominal hysterectomy in concerned the supporters quote advantages for the patient lower postoperative analgesia requirements, shorter hospital stay, and more rapid return to work and normal activities. The detractors do not dispute this, but are mainly concerned with complications of laparoscopic hysterectomy and the cost of procedure

[11,12]. The advantages of laparoscopic hysterectomy vis-à-vis vaginal hysterectomy have however not yet been as clearly established despite a number of studies having been carried out [13]. Therefore the present study was a comparison of vaginal hysterectomy with total laparoscopic hysterectomy. The strength of the present study lies in its prospective approach.

In a total of 50 patients 25 underwent vaginal hysterectomy and 25 underwent total laparoscopic hysterectomy alternately by systematic allocation. The indications for hysterectomy were dysfunctional uterine bleeding, adenomyosis, fibroid uterus, cervicitis/dysplasia and endometrial hyperplasia. Statistical analysis revealed that the two groups were comparable with respect to indications. These patients were further sub-grouped depending on their uterine size which was decided upon by a prior pelvic examination. The patients were also sub-grouped depending upon their ages which were comparable as they were statistically insignificant.

During the present study, it was observed that the average intra operative blood loss was significantly lower in the laparoscopic group (109.68 ± 30.24 ml) ($p<0.05$) as compared to the vaginal hysterectomy group (251.2 ± 131 ml). This was in accordance with the findings of a study carried out by Perino *et al* [14] and Makinen *et al* [15]. In our study there was one case each in both groups wherein the blood loss was excessive (>500 ml). Due to slippage of ligature during vaginal hysterectomy and inability to adequately control haemostasis vaginally the procedure was converted to a laparotomy. This patient was postoperatively transfused with 2 units of blood. In the TLH group there was excessive blood loss in one case due to inadequate coagulation of the uterine pedicle. The bleeding was controlled laparoscopically precluding the need for laparotomy. It is relevant that this patient did not need a blood transfusion.

The operative time was 73.56 ± 21.10 minutes for vaginal hysterectomy and in case of laparoscopic hysterectomy it was significantly less i.e. 113.28 ± 28.22 minutes ($p<0.05$). It was observed that the operating time in laparoscopic group decreased over the period of study thus confirming the importance of learning curve. It is important to take into account this well established phenomenon of learning curves in laparoscopic surgery as well as the technical ability and competence in new surgical procedures should be acquired and procedures standardized before performing comparative trials as mentioned by Garry *et al* [16]. It is therefore difficult to estimate the true rate of complications and operating time which is probably a limitation of our study. However despite the substantial reduction in operating time due learning curve it has been established that the operating time for vaginal hysterectomy remains lower than for laparoscopic hysterectomy. The risk of complication is inversely proportional to the operator

experience in laparoscopic surgery [17] and the hospital structures must be capable to adapting to efficient practice of laparoscopic surgery for this also helps to keep the risk of complications to a minimum and reduces the costs [18].

The intensity of post operative pain was assessed by VAS method. In this, the patients were told to mark the intensity of pain on the scale at the end of day. Post operative pain on day 0, 1, 2 and 3 was significantly lesser in the laparoscopic group in comparison to values in vaginal group. The reason for higher values in the latter group may be attributed to excessive pull on the cervix which stretches of the ligaments. It was observed that backache was a predominant feature of vaginal hysterectomy.

The overall rate of complications observed for patients operated by laparoscopic surgery was found to be lower than in the vaginal hysterectomy group. This corresponds to the findings of several prospective multi centre studies [17, 19,20]. This observation may be due to the fact that all minor and major complications have been considered together in the analysis. However the number of major complications was almost the same in both groups whereas the number of minor complications was higher in the vaginal hysterectomy group. This was also observed by Chapron *et al* [17]. These minor complications were infectious problems such as urinary tract infections, unexplained fevers and vaginal discharge lasting for more than a month. Urinary tract infections were more probably due to handling of the urinary bladder and use of catheters. This was also seen in a study by Makinen *et al* [15]. In the same study febrile morbidity was found to be almost the same i.e. 3.4% and 3.2% in the vaginal and laparoscopic hysterectomy group respectively, which was correlated with our findings. The incidence of vaginal discharge lasting more than 1 month was found to be significantly higher in the patients who underwent vaginal hysterectomy as compared to those who underwent laparoscopic hysterectomy. Three patients who underwent vaginal hysterectomy had post operative diarrhea lasting for one week. This was probably attributable to pelvic collection in the pouch of Douglas.

Amongst the severe complications urinary tract injuries such as bladder injuries were seen in both the groups. Ureteric injury was seen however in one case in the vaginal hysterectomy group which may have been due some distortion in the anatomy due to previous adhesions which could not be visualized during this procedure. We had no case of ureteric injury in the laparoscopic group which is probably one of the advantages in laparoscopic hysterectomy where all is under direct visualization. There were no bowel injuries in our study. Our study correlated with previous studies regarding complications [15,19]. Hospital stay was found to be identical in both the groups and this was in concordance with world literature [15].

5. Conclusion

In the present study, we found advantages of laparoscopic hysterectomy over vaginal hysterectomy in terms of lesser blood loss, postoperative pain and postoperative complications, a larger study with emphasis on long term effects may be essential to establish superiority of total laparoscopic hysterectomy over vaginal hysterectomy.

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