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Original Research Article

## Analyzing the short term and long-term complication of hysterectomy: a prospective study

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### ABSTRACT

**Background:** Hysterectomy is the most common surgical procedure done worldwide in women. Although many studies were done regarding short term complications, long term complications are not very well followed up. The objective of the study is to analyze short term and also long-term complications for the different mode of hysterectomy.

**Methods:** It was a time-bound hospital-based prospective study which includes all the women who underwent hysterectomy for benign conditions in the hospital except women with prior psychiatric, bowel, bladder and sexual dysfunctions. All the patients were followed up for one year using a set of questionnaires to study short term and long-term complications.

**Results:** No significant difference in short term post-operative complications concerning the mode of hysterectomy except for UTI was more common in vaginal hysterectomy group and haemorrhage in TAH route. Sexual dysfunction was noted even after 1 year of surgery in all modes of hysterectomy. Mild urinary dysfunction found statistically significant even at 1 year follow up in vaginal hysterectomy mode however there was no bothersome urinary dysfunction persistent after one year.

**Conclusions:** Sexual dysfunction is the most common persistent long-term morbidity following hysterectomy found in the present study.

**Keywords:** Bowel and bladder dysfunction, Complications of hysterectomy, Psychological dysfunction, Sexual dysfunction

### INTRODUCTION

Hysterectomy is the most common surgical procedure done worldwide in women. The majority of hysterectomies are found to be done for benign indications. The highest rate of hysterectomy is between 40 years and 49 years of age, the average age is 46.1 years.<sup>1</sup> The rate of perioperative complications is reported to be 20% higher but also related to the mode of hysterectomy.<sup>2</sup> Long term complications concerning the mode of hysterectomy are not well investigated. The purpose of the study was to analyze long term complication following a hysterectomy. The Value study found that abdominal route as a choice for hysterectomy is preferred by 67% of surgeons, especially if pelvic

pathology is there or to carry out oophorectomy.<sup>3</sup> Reich et al in the year 1989 first reported, Laparoscopic Assisted Vaginal Hysterectomy (LAVH) which has gained widespread acceptance.<sup>4</sup>

Recently the evaluate study showed that LAVH was associated with a significantly higher rate of major complications than total abdominal hysterectomy. Operating duration of LAVH was longer however, post-operative pain was less with faster recovery and better short-term quality of life measures. The trial arm involving vaginal hysterectomy (VH) was underpowered and inconclusive.<sup>5</sup> In contrast, to evaluate study done by Lumsden et al, there was no difference in recovery or satisfaction with the outcome of the surgery four weeks

postoperatively between Total Abdominal Hysterectomy (TAH) and LAVH.<sup>6</sup> The objectives of the study were to identify the incidence of complications with different modes of hysterectomy also to know variations in long complication rate over one year.

## METHODS

It was a time-bound hospital-based prospective study. The research protocol was approved by the Kasturba Medical College, Mangalore, Institutional Review Board or Ethics Committee before the study began. This study included all the women who underwent hysterectomy for benign conditions in the hospital and exclusion criteria were women with prior psychiatric disorders, with prior bowel, bladder and sexual dysfunctions. Women who underwent three different modes of hysterectomy were recruited for the study; after application of exclusion criteria. The total number of women included in this study were 184 i.e. TAH 153 cases, LAVH 20 cases and VH 11 cases. Verbal as well as written informed consent was taken from the participants before enrolling into the study. Intraoperative complications and short-term complication of different modes were compared during hospital stay only. Later all patients were followed up in the outpatient department or through telephone calls at 6 weeks, 6-month, 1-year duration using the standard questionnaire.

At 6 weeks, history of post-menopausal symptoms hot flushes, mood disturbances and urge to urinate was compared with different modes of hysterectomy. Also, a comparison between hysterectomy with or without bilateral salphingo oophorectomy was done. At 6 months and 1 year follow up, outcomes studied were (1) Urinary dysfunction, the questionnaire used was urogenital inventory UDI. (2) Bowel dysfunction, the questionnaire used was defecation distress inventory DDI. (3) Psychological dysfunction, a questionnaire was PHQ-9 questionnaire. (4) Sexual dysfunction, a questionnaire was Female sexual index domain scores.

### Statistical analysis

Data was analyzed by frequency and percentages and findings were represented in the diagrammatic form. To identify the significance between the variables, chi-square test and Fisher exact test was used keeping the p-value less than 0.05 as significant and p-value less than 0.01 considered as highly significant. Entire data was analyzed using SPSS 17 software.

## RESULTS

The total number of hysterectomy cases enrolled in this study were 184. Among those cases 153 cases were TAH, 20 were LAVH and 11 cases were VH; 83.1%, 11% and 6% respectively. The most common route of hysterectomy in this study was an abdominal hysterectomy. Since most patients had bladder and bowel dysfunction along with UV prolapse, we recruited very

few cases of vaginal hysterectomy, as we aimed to study bowel and bladder dysfunction postoperatively. It was found that the maximum number of women aged above 45 years had undergone a hysterectomy procedure (Table 1).

**Table 1: Age distribution.**

Age distribution	Total abdominal hysterectomy (153)	Laparoscopy assisted hysterectomy (20)	Vaginal hysterectomy (11)
<40years	11 (7.1%)	0	0
40-45years	56 (36.6%)	5 (25%)	1 (9.09%)
>45 years	86 (56.2%)	15 (75%)	10 (90.9%)

Significant haemorrhage and organ injury were noted only in the TAH group, no such complications were observed in the LAVH and VH group (Table 2).

**Table 2: Intraoperative complications.**

Modes of hysterectomy (Total number of cases 184) complications	TAH (153)	Laparoscopic assisted hysterectomy (20)	Vaginal hysterectomy (11)
Significant Hemorrhage	8 (5.2%)	0	0
Organ injury	2 (1.3%)	0	0

In the present study, no DVT cases were reported, all modes required blood transfusion equally, no wound infections noted among women with VH and LAVH. The wound infection rate was 7.1% among the TAH group. Urinary tract infection was common among women who underwent VH, no statistical significance noted for other complications concerning the mode of hysterectomy (Table 3). At 6 weeks, hot flushes, urge to urinate and psychological dysfunctions were noted more commonly among women who had TAH which was statistically significant (Table 4).

In the present study, there was no significant difference in complaints like hot flushes and urinary urgency among women who underwent hysterectomy with or without BSO. Mild psychological dysfunction was found to be more in women with BSO (18.6%) as compared to women without BSO (9.7%) which was statistically significant at 6 weeks follow up (Table 5). Sexual dysfunction and bowel dysfunction were more common among women who underwent VH at 6 months follow up study. Since the sample size in the vaginal group is less, it is difficult to comment on statistical significance (Table 6). No significant difference at 6 months noted in the women who underwent hysterectomy with or without BSO (Table 7).

**Table 3: Post-operative complications-short term complication.**

Complications	TAH (153) Frequency (Percent)	LAVH (20) Frequency (Percent)	VH with PFR (11) Frequency (Percent)	Chi-square test p value
DVT	0	0	0	
Fever	18 (11.7%)	0	0	
Blood transfusion	38 (24.8%)	2 (12.5%)	2 (18.1%)	0.143
Skin wound infection	11 (2DM) (7.1%)	0	0	
Vaginal cuff infection	2 (1.3%)	0	1 (9%)	0.011
UTI	11 (7.1%)	1 (5%)	3 (27.7%)	0.000
Enteritis	3 (1.9%)	0	0	
Urinary retention	1 (0.6%)	0	0	0.500
Constipation	1 (0.6%)	0	2 (18.1%)	0.500
Non-surgical	1 (0.6%)	0	0	
Secondary suture	2 (1.3%)	0	0	

**Table 4: At 6 weeks follow up.**

Complications	TAH (153)	LAVH (20)	VH (11)	Chi-square test p value
Hot flushes	28 (18.3%)	2 (10%)	0	0.000
Urge to urinate	19 (12.4%)	1 (5%)	0	0.000
Psychological dysfunction	Mild 20 (13%)	0	1 (9%)	0.000
	Major 9 (5.8%)	0	1 (9%)	0.000

**Table 5: At 6 weeks follow between BSO and without BSO group.**

Complication	Total hysterectomy with BSO (102)	Total hysterectomy without BSO (82)	Chi square test p value
Hot flushes	11 (10.78%)	18 (22%)	0.265
Urge to urinate	7 (6.7%)	13 (15.8%)	0.180
Mild psychologic dysfunction	19 (18.6%)	8 (9.7%)	0.034
Major psychologic dysfunction	7 (6.8%)	5 (6%)	0.77

**Table 6: At 6 months follow up.**

Complication	TAH (153)	LAVH (20)	VH with PFR (11)	Binominal test p value
Psychological dysfunction	Mild 14 (9.1%)	0 (0)	1 (9%)	0.001
	Major 6 (3.9%)	0 (0)	0 (0)	0.031
Sexual dysfunction	42 (27.4%)	3 (15%)	10 (90%)	0.000
Urinary dysfunction	Mild 18 (11.7%)	0 (0)	2 (18%)	0.000
	Bothersome 10 (6.5%)	0 (0)	1 (9%)	0.007
Bowel dysfunction	0	0 (0)	2 (18%)	0.500

At 1 year follow up, 90% of women with VH, 23.5% with TAH, 15% with LAVH presented with sexual dysfunction which was statistically significant. But there was an improvement in psychological wellbeing at one year follow up than 6 months follow up between LAVH and TAH and vaginal hysterectomy group. There was a highly significant difference in mild urinary dysfunction concerning the mode of hysterectomy, more prevalent in

the VH group. But there was an improvement in bothersome symptoms (Table 8).

Major psychological dysfunction was more common (12.1%) in women who underwent hysterectomy without BSO as compared to women with BSO (2.9%). There was no significant difference in other complications in women who underwent hysterectomy with or without BSO (Table 9).

**Table 7: At 6 months follow up between BSO and without BSO group.**

Complication	Total hysterectomy with BSO (102)	Total hysterectomy without BSO (82)	Binomial test p value
<b>Psychological dysfunction</b>	Mild 1 (9.8%)	7	8.5%
	Major 0 (0%)	5	6%
<b>Sexual dysfunction</b>	30 (29.4%)	20	24.3%
<b>Urinary dysfunction</b>	Mild 7 (6.8%)	12	14.6%
	Bothersome 3 (2.9%)	7	8.5%
<b>Bowel dysfunction</b>	0	0	0

**Table 8: At 1 year follow up.**

Complication	TAH (153)	LAVH (20)	VH with PFR (11)	Binomial test p value
<b>Psychological dysfunction</b>	Mild 4 (2.6%)	0	1 (9%)	0.329
	Major 4 (2.6%)	0	0	1.00
<b>Sexual dysfunction</b>	36 (23.5%)	3 (15%)	10 (90%)	0.000
<b>Urinary dysfunction</b>	Mild 13 (8.4%)	0	2 (18.1%)	0.000
	Bothersome 2 (1.3%)	0	0	0.500
<b>Bowel dysfunction</b>	0	0	2 (18%)	0.500

**Table 9: At 1 year follow up between BSO and without BSO group.**

Complication	Total hysterectomy with BSO (102)	Total hysterectomy without BSO (82)	Binomial test p value
<b>Psychological dysfunction</b>	Mild	14 (13.7%)	9 (10.9%)
	Major	3 (2.9%)	10 (12.1%)
<b>Sexual dysfunction</b>		27 (26.4%)	18 (21.95%)
<b>Urinary dysfunction</b>	MSU	7 (6.8%)	8 (9.7%)
	BSU	0 (0%)	2 (2.4%)
<b>Bowel dysfunction</b>		0 (0%)	0 (0%)

## DISCUSSION

TAH was the most common mode of hysterectomy in the present study. Fibroid uterus was the most common indication for hysterectomy. G McCracken et al. found that TAH was the most common route of hysterectomy, the incidence of LAVH and VH were the same.<sup>7</sup> Reddy et al found that the incidence of LAVH was highest followed by vaginal hysterectomy and the least was TAH.<sup>8</sup>

### *Intraoperative complications*

Significant haemorrhage was found in 5.2% of women with TAH, more than 500ml blood loss was taken as significant haemorrhage in the present study. In a study done by G McCracken et al. incidence of haemorrhage in TAH, LAVH and VH were found the same.<sup>7</sup> However, in Reddy et al. study incidences of haemorrhage in LAVH was least compared to other modes (Table 2).<sup>8</sup>

In the present study incidence of organ, the injury was 1.3% in women with TAH, no organ injury found in women with LAVH or VH. In G McCracken, 2005 et al study incidence of organ injury was found equally in TAH, LAVH, no organ injury in VH.<sup>7</sup>

In Reddy et al 2016 study incidence of organ injury in TAH, LAVH, VH were 10.5%, 2.1%, 4.3% respectively (Table 2).<sup>8</sup>

### **Postoperative complications**

G McCracken, 2005 et al found no DVT cases in any mode of hysterectomy.<sup>5</sup> According to Ray Garry 2004 et al incidences of DVT in LAVH is 2 %, no DVT reported with the other two modes. In the present study, no DVT cases reported in any mode of hysterectomy (Table 3).<sup>9</sup>

Postoperative fever was found in 11.7% of women with TAH, no fever episodes noted in LAVH or VH in the present study. G McCracken 2005 et al found that the incidence of fever in LAVH and VH were 2.1% and

2.35% respectively, no fever reported in TAH mode.<sup>7</sup> In Reddy 2016 et al study incidence of fever was more in women with TAH (Table 3).<sup>8</sup> Blood transfusion required in all modes of hysterectomy was also similar in other studies.<sup>7,8</sup> In present study need for blood transfusion in TAH, LAVH, VH was 24.8%, 12.5%, 18.1% respectively, statistically not found to be significant concerning the mode of hysterectomy (Table 3).

G McCracken et al. found the incidence of wound infection in TAH and LAVH were same, no wound infection noted in women with VH.<sup>7</sup> Reddy et al. found the incidence of wound infection in TAH mode was significant. According to the present study incidence of wound infection in TAH was 7.1%.<sup>8</sup> No wound infections noted in women with VH and LAVH (Table 3).

According to Reddy et al. results, incidences of vaginal cuff infection in VH is 5.7%, no vaginal cuff infections noted in other modes. In the current study incidence of vaginal cuff infection in TAH and VH were 1.3% and 9% respectively.<sup>8</sup> No cuff infection noted in patients who underwent LAVH. Statistically, no significant difference with vaginal cuff infection concerning the mode of hysterectomy noted (Table 3).

In G McCracken et al. study incidence of UTI in TAH, LAVH, VH were the same. According to M V Naveen Reddy et al 2016, et al incidences of UTI in TAH mode was more.<sup>6,7</sup> As per the present study incidence of UTI in TAH LAVH, VH were 7.1%, 5%, 27.7% respectively. Risk of UTI was more in women with VH which was statistically significant (Table 3). There was one case with urinary retention in Postoperative day 2 following TAH. One patient had constipation following TAH, two patients had constipation following VH. One patient had postoperative hypertension with arrhythmia on an immediate day following TAH.

None of these complications found to be statistically significant for the mode of hysterectomy (Table 3).

#### **At 6 weeks follow up**

The present study found that at 6 weeks, hot flushes, urge to urinate and psychological dysfunctions were found to be more common in TAH group which was statistically significant (Table 4). No significant difference in hot flushes and urge incontinence noted between with BSO or without BSO group (Table 5). Mild psychological dysfunction was significantly higher in women with the BSO group as compared to women without BSO (Table 5).

#### **Psychological and sexual dysfunction**

Ellstrom et al found no differences in the psychological and sexual function in one year follow after surgery between women who underwent LAVH and TAH. In contrast to this the present study found sexual

dysfunction even after 1 year of surgery in all modes of hysterectomy, but statistically significant (more) in vaginal hysterectomy mode. Also, in our study, mild psychological dysfunction was found at 6 months, which was significantly high in TAH and vaginal hysterectomy group, however, no moderate or severe psychological dysfunction noted with respect to hysterectomy. The same group was followed up after one year, there was an improvement in psychological wellbeing at one year follow up compared to 6 months follow up in all the modes of hysterectomy, so after one year, there was no difference in psychological well being with respect to modes of hysterectomy. (Table 6, 8).

#### **Urinary dysfunction**

Brown et al. found that any mode of hysterectomy significantly increases the prevalence of later urinary incontinence.<sup>10</sup>

Lakeman et al found that increased prevalence especially bothersome urge incontinence (BSU) in both vaginal and abdominal route.<sup>10,11</sup> Neumann et al in 2003 found that supracervical hysterectomy was associated with urinary incontinence more as compared to the vaginal route of hysterectomy.<sup>12</sup> Mild urinary dysfunction found statistically significant even at 1 year follow up with respect to modes of hysterectomy, that is urinary dysfunction was found more prevalent following vaginal hysterectomy, but since the sample size of the VH group was very less, we cannot conclude exactly. There was no bothersome urinary dysfunction persistent at 1 year follow up (Table 6, 8).

#### **Bowel dysfunction**

Birsen et al. found that any mode of hysterectomy does not affect any anorectal function, but constipation can be the constant complaint following vaginal hysterectomy.<sup>5</sup> Whereas, Roovers et al. found that increased prevalence of incomplete emptying of the rectum in patients who underwent vaginal hysterectomy than TAH.<sup>6</sup>

In the present study, we found no significant bowel dysfunction concerning any mode of hysterectomy at 6 months or 1 year follow up, whereas constipation being the most common bowel complaint in women who underwent VH, but statistically not significant (Table 6 and 8).

This is the first prospective study on long term complications of hysterectomy on Indian women All cases were followed for one year. The present study included all modes of hysterectomy for analyzing short- and long-term complication following a hysterectomy. The present study helped us to counsel women with sexual dysfunction following surgery in a better way. Since women with a history of the bowel, bladder and psychological dysfunction were excluded, vaginal hysterectomy group subjects were very less, so the

comparison between other modes of hysterectomy and statistical correlation may not be reliable.

## CONCLUSION

Sexual dysfunction is the most common persistent long-term morbidity following hysterectomy found in the present study. A most common complaint was fear of dyspareunia rather than actual dyspareunia, so proper counselling has to be done regarding sexual function following a hysterectomy in a sexually active lady. As hysterectomy rate is increasing it is mandatory to have hospital protocol to follow up all the patients for long term complications. All the hospitals should have protocol based follow up following hysterectomy. Long term follows up studies with a large sample size are recommended for analyzing the morbidities following a hysterectomy.

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