Original Research Article

Comparison of total abdominal, vaginal and total laparoscopic hysterectomy

M. V. Naveen Reddy^{1*}, M. Rupa Reddy²

¹Department of Surgery, Shadan Institute of Medical Sciences and Research Institution, Hyderabad, Telangana, India

²Department of Obstetrics and Gynaecology, Shadan Institute of Medical Sciences and Research Institution, Hyderabad, Telangana, India

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***Correspondence:**

Dr. M.V. Naveen Reddy,

E-mail: mvnavin@yahoo.com

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ABSTRACT

Background: Open abdominal hysterectomies was one of the most common and traditional surgical procedure for the removal of uterus in women for the treatment of benign gynecological disease. Vaginal hysterectomy, on the other hand is one of the minimally invasive surgeries which provides less post operative pain and more rapid recovery with lesser number of days of hospital stay. Laparoscopic hysterectomy results in less blood loss than either vaginal or abdominal surgeries and is also more achievable in nulliparous and obese women.

Methods: 198 women who had total abdominal, vaginal or laparoscopic hysterectomy were included into the study. The route of hysterectomy is guided by the surgical indication for hysterectomy, patient anatomy, data that support the selected procedure, informed patient preference, and the surgeon's expertise. All the surgeries were done under general anaesthesia and cefotaxim was given as the prophylactic antibiotic prior to the surgery.

Results: Most of the women who had come to the hospital for hysterectomy were above the age of 40 years. Most of the women had come for hysterectomy due to dysfunctional uterine bleeding (DUB), followed by Endometriosis and pelvic pain. Most of the patients who underwent laparoscopic surgery were in the hospital for less than 5 days while the maximum duration of hospital stay was in the patients who had abdominal surgery. The number of patients who received blood transfusion among all the cases was minimal, though the least requirement was seen among the patients who underwent laparoscopic surgery. 2 patients who had abdominal surgery had to be readmitted due to complications.

Conclusions: Laparoscopic surgeries result in a faster recovery time and lesser hospital stay and minimal pain and complications compared to abdominal and even vaginal hysterectomy. However, this type of a surgery requires surgeon's experience and expertise.

Keywords: Total laparoscopic hysterectomy, Total abdominal hysterectomy, Vaginal hysterectomy

INTRODUCTION

One of the most commonly performed surgeries for women is hysterectomy. In USA alone, around 600,000 hysterectomies are performed per year and 20% of women in UK undergo hysterectomy before the age of 60 years.^{1,2} Many times, it is second to Caesarean delivery as

the most frequently performed major surgical procedure for women of the reproductive age. In the early days, hysterectomy, or the removal of uterus was done either by the vaginal or the abdominal route. Vaginal route was more preferred as it involved less pain and less contraindications, lower morbidity and quicker recovery.³ Open abdominal hysterectomies (AH) was one of the

most common and traditional surgical procedure for the removal of uterus in women for the treatment of benign gynecological disease. However, since it is more invasive, it has a few limitations such as abdominal trauma, intraoperative and post-operative complications and slow operative recovery.⁴ Vaginal hysterectomy, on the other hand is one of the minimally invasive surgeries which provides less post-operative pain and more rapid recovery with lesser number of days of hospital stay. Especially in patients with small uterus and advanced age, vaginal hysterectomy is a preferred choice for hysterectomy.^{5,6}

Laparoscopic surgeries have evolved over the past 20 years ever since 1984, when Kurt Semm introduced laparoscopic assistance to complicated vaginal hysterectomy.⁷ The total laparoscopic hysterectomy has been described as potentially quicker, more efficient, and associated with less blood loss than either vaginal or abdominal surgeries and is also more achievable in nulliparous and obese women.^{8,9}

This study was conducted to compare the outcomes of total abdominal, vaginal and total laparoscopic hysterectomies performed at our hospital.

METHODS

This observational study was performed by the department of Surgery and Gynaecology at Shadhan Institute of Medical Sciences and Research Institute, during the period two years. 198 women who had total abdominal, vaginal or laparoscopic hysterectomy were included into the study.

All the patients who were included into the study had come with complaints of and were diagnosed with uterine benign diseases, including uterine fibroids, adenomyosis, endometrial atypical hyperplasia, cervical intraepithelial neoplasia or dysplasia. All of them were diagnosed based on the medical and clinical signs and symptoms apart from the ultrasound examinations. Biopsy was done for all the patients to confirm the diagnosis. Patients with metastatic disease were not included in the study.

The route of hysterectomy is guided by the surgical indication for hysterectomy, patient anatomy, data that support the selected procedure, informed patient preference, and the surgeon's expertise.

Demographic details, indication for the surgery, other intraoperative details, histopathological details, were noted for all the patients. Results of the blood tests such as hemoglobin levels, blood glucose levels and weight of the patients were also taken into consideration to calculate the BMI of the patient.

All the surgeries were done under general anaesthesia and cefotaxim was given as the prophylactic antibiotic prior to the surgery.

For abdominal hysterectomy, a transverse incision was made across the lower abdomen, and the uterus was pulled to expose the round ligament and adnexa. The fold of the uterine visceral peritoneum was cut, and the bladder was gently moved to the level of cervical external aperture. The uterine blood vessels were then clamped and ligated at the cervical internal aperture. The ends of the vessels were doubly ligated. At the level of cervical internal aperture, the cervix was circularly cut 3-4 mm under the cervical fascia, and the uterus was removed, after the cervical fascia and its attached bladder were stripped off. A 1/0 micro-bridge suture line was used to close the ends of vagina. The peritoneum on the bilateral round ligament and the adnexal ends were sutured.

In case of the total laparoscopic hysterectomy, four incisions were made using transumbilical approach, using 10mm umbilical trocar, two lateral trocars and one 5mm suprapubic trocar. The optical trocar was inserted through the umbilicus under direct vision. The lower quadrant trocars were placed under direct vision lateral to the rectus abdominal muscles and medial to the anterior superior iliac spine. A 5 mm trocar was placed above and parallel to the left trocar site. The left round ligament was clamped, followed by the dissection of the broad ligament anterior leaf up to the peritoneal vesicouterine fold. The posterior leaf of the broad ligament was then divided and the utero-ovarian ligament was clamped. The same procedure was done on the right hand side. Finally, the vesicouterine space was dissected and the bladder was pushed down while clamping the uterine arteries, cardinal and utero-sacral ligaments. After the circular colpotomy, the uterus was removed through the vaginal route and the vaginal cuff was closed laparoscopically with bilateral utero-sacral ligament vaginal vault suspension.

In the vaginal hysterectomy, the mucous membranes were then circumcised to the cervical fascia at the junction of the cervix and vagina. The edge of vaginal mucosa was lifted by tissue forceps. The bladder was then gently dissected from the vagina anteriorly, and the pouch of Douglas was opened posteriorly close to the cervical fascia. The uterus, bilateral uterosacral, cardinal ligaments, and uterine vessels were sealed. At the bend of peritoneum, the uterine anterior and posterior leaves of the visceral peritoneum were opened to reveal the uterine anterior and posterior leaves of the visceral peritoneum. The inherent ovarian ligament, round ligament and fallopian tube were then hooked and pulled down, followed by dissecting these ligaments and the fallopian tube. The uterus was then removed entirely if it was small or cut into smaller pieces for easy removal if it was large. The basin peritoneum and vaginal stump, the pelvic peritoneum and the vaginal anterior and posterior walls of stump were sutured with absorbable sutures.

The patients were treated appropriately with antibiotics postoperatively and observed for 24 hours. All of them were followed up for 6 months to check for any further complications.

RESULTS

Most of the women who had come to the hospital for hysterectomy were above the age of 40 years and many

had already attained menopause. There were only 13 (6.6%) women who were in the premenopausal age group. 35 (17.7%) of these women had had a previous surgery and most of them were casesarian (Table 1).

Table 1: General details of the patients.

Baseline features	Abdominal hysterectomy (n=38)	Total laparoscopic hysterectomy (n=91)	Vaginal hysterectomy (n=69)	Total
Age in years	46.2±4.1	41.5±3.1	50.8±2.9	
Parity:				
0	0	2 (2.2%)	0	2 (1%)
1	4 (10.5%)	7 (7.7%)	3 (4.3%)	14 (7.1%)
23	21 (55.3%)	49 (53.8%)	35 (50.7%)	105 (53%)
4	6 (15.8%)	24 (26.4%)	22 (31.9%)	52 (26.3%)
>4	6 (15.8%)	6 (6.6%)	8 (11.6%)	20 (10.1%)
	1 (2.6%)	3 (3.3%)	1 (1.4%)	5 (2.5%)
Body Mass Index	25.7±3.2	24.3±2.2	25.3±4.9	
Premenopausal	2 (5.3%)	18 (19.8%)	3 (4.3%)	13 (6.6%)
Postmenopausal	36 (94.7%)	73 (80.2%)	66 (95.7%)	185 (93.4%)
Previous surgeries	4 (10.5%)	18 (19.8%)	13 (18.8%)	35 (17.7%)

Table 2: Indications of surgery.

Indications for surgery	Abdominal hysterectomy (n=38)	Total laparoscopic hysterectomy (n=91)	Vaginal hysterectomy (n=69)	Total (n=198)
DUB	20 (52.6%)	41 (45.1%)	55 (79.7%)	116 (58.9%)
PMB	5 (13.2%)	10 (11%)	4 (5.8%)	19 (9.6%)
Endometriosis	7 (18.4%)	16 (17.6%)	6 (8.7%)	29 (14.6%)
Pelvic pain	2 (5.3%)	17 (18.7%)	2 (2.9%)	21 (10.6%)
Prolapse	0	3 (3.3%)	0	3 (1.5%)
Fibroids	4 (10.5%)	4 (4.4%)	2 (2.9%)	10 (5.1%)

Table 3: Surgery and hospital stay details.

	Abdominal hysterectomy (n=38)	Total laparoscopic hysterectomy (n=91)	Vaginal hysterectomy (n=69)
Length of anaesthetic time (in mins)	81.5±4.1	98.1±2.7	82.3±3.8
Length of hospital stay (in days)	5.1±3.9	2.1±2.1	3.3±2.6
Additional surgeries required	5	2	7
Blood transfusions	3	1	3
Readmissions	2	1	1

116 (58.9%) of the women had come for hysterectomy due to dysfunctional uterine bleeding (DUB) out of which 55 had undergone vaginal hysterectomy, 41 of them underwent total laparoscopic hysterectomy and 20 of them had total open abdominal hysterectomy. Endometriosis was another common complaint of the women who had been advised hysterectomy accounting for almost 15% of the cases. Other common complaints were post-menopausal bleeding (9.6%), pelvic pain (10.6%) and fibroids (5.1%) (Table 2).

Most of the patients who underwent laparoscopic surgery were in the hospital for less than 5 days while the maximum duration of hospital stay was in the patients who had abdominal surgery. The number of patients who received blood transfusion among all the cases was minimal, though the least requirement was seen among the patients who underwent laparoscopic surgery. 2 patients who had abdominal surgery had to be readmitted due to complications (Table 3).

Of the complications observed, wound erythema was the most common one with 17 patients being affected, out of

which 10 of them had undergone abdominal surgery. 22 patients have post surgery pyrexia out of which 9 were abdominal surgery patients and 5 had laparoscopic surgery (Figure 1).

Figure 1: Complications in patients after total abdominal, vaginal and total laparoscopic hysterectomy.

DISCUSSION

Hysterectomy, the most common major surgical procedure for gynaecological conditions, is used for both malignant diseases and benign conditions such as fibroids, endometrial hyperplasia, adenomyosis, endometriosis, uterine prolapse, dysfunctional uterine bleeding, and cervical intraepithelial neoplasia.¹⁰

Since its advent, laparoscopic surgeries have been criticized as it was a difficult procedure which could be performed only by experienced surgeons. The duration of the surgery also was prolonged compared the other types, but the duration of the hospital stay was far less and the post-operative pain also was comparatively lesser.¹¹⁻¹⁵ Although the cost of the procedure was higher, it was preferred by many patients due to the less pain and faster recovery.¹⁶⁻¹⁹

Majority of the patients were above the 40 years age group with most of them having attained menopause earlier. This was in concordance with another study by Mc Cracken et al wherein also the commonest age group was in the 40s. The age group who underwent laparoscopic surgery was slightly lesser than those patients who underwent either abdominal or vaginal hysterectomy.¹⁹ In a study by Hallen O et al, it was reported that age was not a risk factor for the patients who underwent hysterectomy.^{20,21}

Dysfunctional uterine bleeding was the main indication for hysterectomy followed by endometriosis, PMB.

Fibroids were also one of the indications, but we had only 10 (5.2%) in our study. In a study by Broder et al, the most common indications for hysterectomy were leiomyomata (60% of hysterectomies), pelvic relaxation (11%), pain (9%), and bleeding (8%).²² The main surgical indications in another study by Silva et al were myomatous uterus (53.4%, symptom-related, namely with dysfunctional uterine bleeding (refractory to medical management), endometrial polyps (10.7%), adnexal pathology (10.3%), endometriosis (9.9%), endometrial hyperplasia (5.3%) and urogenital prolapse (4.2%; uterine prolapse related with myomatous uterus or simultaneous adnexal mass).²³

The mean hospital stay in our study was around 5 days for abdominal hysterectomy, while it was around 3 days for vaginal and 2 days for laparoscopic hysterectomies. This was slightly more than that of the study by Warren et al, where, the length of the stay was 4 days for abdominal, 1.6 days for laparoscopic and 2.2 days for vaginal hysterectomy.²⁴ In a study by Malzoni et al, the mean hospital stay for laparoscopic surgeries was around 2.5 days.²⁵

Major complications were observed in 8.1% of the cases over all and in 3.3% of the laparoscopic cases. Minor complications were observed in 28.8% of the cases and in 7.7% of the laparoscopic cases. Silva et al reported a major complication rate of 1.5% and a minor complications rate of 11.5%, which was similar to a study by Karamen et al where the rate for major complications was 1%.^{17,23}

The limitation of the study was that the number of subjects in our study was small to get a proper comparison between the 3 types of hysterectomies. Moreover, we had no control group in our study.

CONCLUSION

Study shows that TLH is minimally invasive and is related to a low intra and postoperative complication rate, even in high BMI-patients and when there is a history of abdomino-pelvic surgery. Laparoscopic surgeries result in a faster recovery time and lesser hospital stay and minimal pain and complications compared to abdominal and even vaginal hysterectomy. However, this type of a surgery requires surgeon's experience and expertise.

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