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Dr. Harini R

Assistant Professor, Department of
OBG, Akash Institute of Medical
Sciences and Research Centre,
Bangalore, Karnataka, India

Dr. Sushma S

Senior Resident, Department of
OBG, Akash Institute of Medical
Sciences and Research Centre,
Bangalore, Karnataka, India

Peri-operative morbidity between total laparoscopic hysterectomy and abdominal hysterectomy for benign gynecological disease: A prospective comparative study

Dr. Harini R and Dr. Sushma S

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Abstract

Compared to laparoscopic hysterectomy, there is a slightly higher risk of complications with that of abdominal hysterectomy. The procedural costs of laparoscopic hysterectomy are greater than abdominal hysterectomy. Most studies show less post-operative pain, shorter hospital stay and faster postoperative recovery with laparoscopic hysterectomy than with abdominal hysterectomy. All the patients attending Gynecology outpatient department with symptoms were assessed with history and clinical examination by the Consultant Gynecologist and investigated. Those requiring hysterectomy were analyzed by the Consultants for the approach depending on the indication for the surgery, nature of the disease and patient characteristics. Pain score of 3 was found in 36% of patients of TAH group whereas 2% in TLH group. At 12- 24hours, pain score of 0 was found in 4% of patients of TAH group whereas 2% in TLH group. Pain score of 1 was found in 76% of patients of TAH group whereas 16% in TLH group. Pain score of 2 was found in 20% of patients of TAH group whereas 82% in TLH group. At POD 1, pain score of 0 was found in 84% of patients of TAH group whereas 94% in TLH group.

Keywords: total laparoscopic hysterectomy, abdominal hysterectomy, benign gynecological disease

Introduction

Hysterectomy, which is one of the most common surgical procedures performed on women, is mainly associated with noncancerous conditions. Although a number of alternatives to hysterectomy that are now available are increasingly being employed, it remains one of the most frequently performed gynecological operations^[1].

Vaginal hysterectomy dates back to the ancient times. There is reference that vaginal hysterectomy was performed by Themison of Athens in 50 BC. It is known that the procedure was performed by Soranus in Greece, 120 years AD, by removing an inverted uterus that had become gangrenous. In the writings of the 11th century, the Arabic physician Alsharavius stated that if the uterus had prolapsed externally and could not be reinserted, it should be surgically excised. These hysterectomies were carried out sporadically and only for the reason of uterine prolapse or uterine inversion. However, the bladder and the ureter were often torn and the patients rarely survived^[2]. The first authenticated vaginal hysterectomy was performed by the Italian anatomist Berengario da Carpi of Bologna in 1507. The operation was also performed by Andreas da Crusce, in 1560, and Valkaner of Nuremburg, in 1675, with questionable outcome.

One of the first successful vaginal hysterectomies was self-performed in the early 17th century. A 46-year-old peasant named Faith Haworth was carrying a heavy load when her uterus prolapsed completely. Frustrated by this frequent occurrence, she grabbed her uterus, pulled as hard as possible, and cut the whole lot of it with a short knife. The bleeding soon stopped and she lived on for many years, with a persistent vesico-vaginal fistula. This case was well documented and reported in 1670 by a male midwife Percival Willoughby^[3].

Since the time Laparoscopic hysterectomy first reported in 1989, the number of hysterectomies by this route is on the rising trend. Total laparoscopic hysterectomy facilitates better anatomical views, allows performance of concomitant surgery, and is suitable for larger uteri and those with little or no descent, which may prove difficult to be removed vaginally^[4].

Compared to laparoscopic hysterectomy, there is a slightly higher risk of complications with that of abdominal hysterectomy.

Corresponding Author:

Dr. Sushma S

Senior Resident, Department of
OBG, Akash Institute of Medical
Sciences and Research Centre,
Bangalore, Karnataka, India

The procedural costs of laparoscopic hysterectomy are greater than Most studies show less post-operative pain, shorter hospital stay and faster postoperative recovery with laparoscopic hysterectomy than with abdominal hysterectomy. There is evidence that pain scores and physical functioning was significantly better for women who underwent laparoscopic versus abdominal hysterectomy [5].

The visual analogue scale (VAS) is a psychometric response scale that can be used in questionnaires. It is a measurement instrument for subjective characteristics or attitudes that cannot be measured directly. When responding to a VAS item, respondents specify their level of agreement with a statement by indicating a position along a continuous line between two end-points. This continuous (or analogue) aspect of the scale differentiates it from discrete scales. There is evidence showing that visual analogue scales have metric characteristics that are superior to those of discrete scales; thus, a wider range of statistical methods can be applied to the measurements. The patient satisfaction score (PSS) is a similar scoring system that calculates the satisfaction of the patient in a similar manner as VAS [6].

Methodology

The Questionnaire was presented in the Department for critical review, following which necessary changes were made in the Questionnaire.

All the patients attending Gynecology outpatient department with symptoms were assessed with history and clinical examination by the Consultant Gynecologist and investigated. Those requiring hysterectomy were analyzed by the Consultants for the approach depending on the indication for the surgery, nature of the disease and patient characteristics.

Sample size was based on level of precision; precision consists of significance level of 5% and allowable error of 20%.

With two tailed distribution, proportion of subjects having complication intraoperatively in Total Laparoscopic Hysterectomy group (5) 43.33%, proportion of subjects having complications intraoperatively in Total Abdominal Hysterectomy group 16.67%, Level of significance at 5%, Power of 80% and allocation ratio of 1:1, the required sample size in each arm would be 50 cases. Sample size is calculated using the software G* power 3.1.9.2.

Hence total sample size was 50 cases in each group.

Inclusion criteria

- Women with benign gynecological disease opting for hysterectomy
- Perimenopausal age group between 40-49 years
- Uterus size \leq 16 weeks of pregnant size
- Written & informed consent and willing to take part in the study

Exclusion criteria

- Inability to undergo an operation due to high surgical or anesthetic risk
- Precancerous lesions or malignancy
- Uterine prolapse
- Uterus $>$ 16 weeks of pregnant size
- Conversion to Laparotomy

After Pre-anesthetic clearance, cases were operated. Total Laparoscopic Hysterectomy done under general anesthesia and Total Abdominal Hysterectomy under regional or general

anesthesia.

Intra operative and post operative complications up to 48 hrs of surgery, duration of surgery, post operative pain scores by visual analogue scale and amount of blood loss.

Results

Table 1: Distribution of study subjects based on operative time

Operative time	Surgery		Total
	TAH	TLH	
30 - 60 mins	31 (62%)	0	31
60 – 90 mins	18 (36%)	25 (50%)	43
90 – 120 mins	1 (02%)	17 (34%)	18
120 – 150 mins	0	7 (14%)	07
150 – 180 mins	0	1 (02%)	01
Total	50 (100%)	50 (100%)	100

Chi square value-54.3 df-4 p value-0.001

- The requirement of operative time was more in TLH group compared to TAH group and this difference was found to be statistically significant
- The range in TAH group was, 30 – 120 mins, whereas in TLH group was 60 – 180 mins

Table 2: Distribution of study subjects based on blood loss

Blood loss range	Surgery		Total
	TAH	TLH	
50 – 100 ml	27 (54%)	22 (44%)	49
100 – 150 ml	17 (34%)	22 (44%)	39
150 – 200 ml	5 (10%)	5 (10%)	10
200 – 250 ml	1 (02%)	1 (02%)	02
Total	50 (100%)	50 (100%)	100

Chi square value-1.15 df- 3 p value-0.76

- There was no much difference in blood loss between two groups

Table 3: Distribution of study subjects based on DVT prophylaxis

DVT Prophylaxis	Surgery		Total
	TAH	TLH	
Yes	7 (14%)	50 (100%)	57
No	43 (86%)	0	43
Total	50 (100%)	50 (100%)	100

Chi square value- 75.4 df- 1 p value-0.001

- DVT prophylaxis was given to all TLH patients whereas in TAH group, only 14% received

Table 4: Distribution of study subjects based on complications

Intra-operative complications	Surgery		Total
	TAH	TLH	
Yes (bleeding)	1 (02%)	1 (02%)	2
No	49 (98%)	49 (98%)	98
Total	50 (100%)	50 (100%)	100

Chi square value-0 df-1 p value-1.00

- Complication of bleeding was found in 2% of patients in each group

Table 5: Distribution of study subjects based on pain score

Pain score	Surgery		P value
	TAH	TLH	
At 0 – 12 hours			0.001
▪ 2	32 (64%)	49 (98%)	
▪ 3	18 (36%)	1 (02%)	
At 12 – 24 hours			0.001
▪ 0	2 (04%)	1 (02%)	
▪ 1	38 (76%)	8 (16%)	
▪ 2	10 (20%)	41 (82%)	
At POD 1			0.11
▪ 0	42 (84%)	47 (94%)	
▪ 1	8 (16%)	3 (06%)	
At POD 2			0.04
▪ 0	46 (92%)	50 (100%)	
▪ 1	4 (08%)	0	

- At 0- 12hours, pain score of 2 was found in 64% of patients of TAH group whereas 98% in TLH group
- Pain score of 3 was found in 36% of patients of TAH group whereas 2% in TLH group
- At 12- 24hours, pain score of 0 was found in 4% of patients of TAH group whereas 2% in TLH group
- Pain score of 1 was found in 76% of patients of TAH group whereas 16% in TLH group
- Pain score of 2 was found in 20% of patients of TAH group whereas 82% in TLH group
- At POD 1, pain score of 0 was found in 84% of patients of TAH group whereas 94% in TLH group
- Pain score of 1 was found in 16% of patients of TAH group whereas 6% in TLH group
- At POD 2, pain score of 0 was found in 92% of patients of TAH group whereas 100% in TLH group
- Pain score of 1 was found in 8% of patients of TAH group whereas NIL in TLH group
- At 0 -12 hours, pain score was comparatively high in TAH group and this difference was statistically significant
- At 12 -24 hours, pain score was comparatively high in TLH group and this difference was statistically significant
- At POD1 and 2, pain score was comparatively high in TAH group

Discussion

Previous studies have shown that laparoscopic hysterectomy is a comparable method to abdominal hysterectomy and results in less blood loss, shorter hospital stay, fewer wound infections, less pain, quicker recovery, and better short-term quality of life results. In those studies, mean operation time was longer in the laparoscopy groups. Another study that compared laparoscopic and abdominal hysterectomies found that the operation time was significantly longer in the laparoscopy group, estimated perioperative bleeding was greater in the abdominal hysterectomy group, and there was no difference in length of postoperative hospital stay between the two groups. This difference might be due to the surgeons' experience with laparoscopic procedures in our study center. Although no major perioperative complications were observed in our study population, lower complication rates have been reported with laparoscopic procedures in the literature^[7].

There are two novel reports comparing laparoscopic hysterectomy with mini laparotomy abdominal hysterectomy. In a retrospective analysis, Kumar *et al.* found that mini laparotomy had a shorter intraoperative time and less blood loss,

but a higher rate of major wound complications^[8]. Sirisabya *et al.* Found similar postoperative pain and patient satisfaction results in the two groups, but a much higher postoperative complication rate in the laparoscopy group^[9]. These reports are not consistent with our findings. Although the differences might be related to the experience of the surgeons and the center or to the mini laparotomic incision in the abdominal approach, further studies are needed.

A study comparing laparoscopic and abdominal hysterectomies in terms of quality of life in a small study group found a significant treatment effect favoring laparoscopic hysterectomy in the RAND-36 scale for vitality^[10].

Postoperative pain and the appearance of the operation scar are two valuable parameters for hysterectomy patients. In our study, postoperative pain and need for analgesic use were lower in the laparoscopy group, which is similar to results found in the literature. We also asked the patients what they thought of their operation scar, and the satisfaction rate was significantly higher in the laparoscopic group. We believe this is an important parameter when choosing the operative technique.

Since the introduction of explorative laparoscopy, operative laparoscopic techniques have been applied to a variety of benign adnexal and uterine conditions^[11]. These successes have prompted the development of laparoscopic techniques for the exploration, staging, and resection of pelvic malignancies. Techniques range from full laparoscopic procedures to laparoscopic-assisted procedures in which a portion of the procedure is performed vaginally. Laparoscopic hysterectomy has been utilized in the management of gynecologic cancers including endometrial, cervical, early ovarian, fallopian tube, and vaginal cancers. Laparoscopy has been reported to provide the exact staging and treatment of patients with endometrial cancer with a shorter hospitalization, and earlier recovery, and improved quality of life^[12]. Nonetheless, the number of patients included in such a series has been low, and additional data are required concerning long-term survival in patients treated using the laparoscopic approach. A randomized clinical trial to compare the effectiveness of laparoscopic surgery with standard surgery in treating patients with endometrial cancer is being conducted by the Gynecologic Oncology Group (GOG-LAP2). Meanwhile, no evidence supports prohibiting laparoscopic surgery in patients with endometrial cancer.

Until recently, laparoscopic radical hysterectomy had not been widely accepted in the United States. The first case of a laparoscopic radical hysterectomy and paraaortic and pelvic lymphadenectomy to treat a stage IA2 carcinoma of the cervix

was reported by Nezhat *et al.* [13] in 1992. Subsequently, several reports from authorities worldwide have described various methods and techniques to streamline the operation while achieving the maximum efficacy in terms of oncologic outcome and minimization of perioperative complications. To date, no randomized trials have compared laparoscopic versus open radical hysterectomy; such a randomized trial for malignancies would require an unattainable number of patients. However, many nonrandomized reports suggest that the advantages of laparoscopy in oncology are similar to those proven for benign diseases, including faster recovery, fewer complications, and less blood loss [14].

To the best of our knowledge, this is the first report comparing laparoscopic surgery morbidity in benign gynecologic patients in a single institution. We believe this study is consistent with previous retrospective studies showing the feasibility and safety of laparoscopic hysterectomy for gynecologic oncologic indications.

The aim of this study was to evaluate the perioperative morbidity between TLH and TAH. Recently, there were several studies in which intraoperative blood loss, operating times and the rate of complications compared between these operations.

Conclusion

- Total laparoscopic hysterectomy is a remarkable alternative operation to abdominal hysterectomy in the management of benign gynecologic conditions when the operation team is experienced with laparoscopic surgery. Minimally invasive techniques could improve patient satisfaction and compliance with the operation
- Though operating time in TLH is longer, it is more beneficial than the traditional TAH for decreasing the length of postoperative hospital stays and intraoperative blood loss with no difference in operative complications.

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