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Mini Laparotomy Hysterectomy as an Alternative to Conventional Hysterectomy: A Comparative Study

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Abstract

Objective: To compare the post-operative short-term outcome of mini laparotomy hysterectomy to conventional hysterectomy.

Methodology: This randomized controlled trial was conducted in Khyber Teaching Hospital Peshawar from January 2022 to December 2022 involving 80 female patients with various uterine pathologies (divided equally between both groups Group A being lower midline group and group B having mini laparotomy patients) selected through non probability consecutive sampling taking proper inclusion criteria into perspective. Informed consent was taken, proformas were filled, data was entered into Microsoft excel sheet and analyzed through SPSS version 23.0 software. Results were depicted in the form of tables and charts.

Results: The mean age of the patients in group A was 41.5 ± 7.6 and in group B was 43.6 ± 6.3 . Age had no correlation with the post operative outcome (p-value = 0.152) in any of the group of patients. The most common pathology in both groups was dysfunctional uterine bleeding (n=22, 55%). As expected, patients who underwent mini-laparotomy hysterectomy (group B) had relatively better 1st post-operative day (p-value = <0.01), 3rd post operative day (p-value = 0.01) VRS scores along with quicker mobility (p-value = <0.01) and fewer days spent in the hospital (p-value = <0.01) as compared to those patients who underwent complete midline laparotomies.

Conclusion: In terms of post-operative outcome and recovery mini laparotomy hysterectomy has better results but it depends on the type of uterine pathology.

Keywords: Midline Incision, Mini Laparotomy Incision, Hysterectomy, Postoperative Pain

Introduction

The uterus is a hollow muscular organ located in the female pelvis between the bladder and rectum, having a pear-shape and about 7.6 cm (3.0 in) long, 4.5 cm (1.8 in) broad (side to side), and 3.0 cm (1.2 in) thick [1]. The ovaries produce the eggs that travel through the fallopian tubes. Once the egg has left the ovary it can be fertilized and implant itself in the lining of the uterus, Functions of the uterus include nurturing the fertilized ovum that develops into the fetus and holding it till the baby is mature enough for birth. The fertilized ovum gets implanted into the endometrium and derives nourishment from blood vessels which develop exclusively for this purpose [2].

Conditions of the uterus can begin in the uterus itself or may be caused by factors outside the uterus, such as hormones [3] Most of these conditions can be managed with medication, but some may necessitate surgical treatment, which might involve a hysterectomy, which is surgical removal of the uterus [4]. Some of the pathologies that make general surgeons prefer the surgical option rather than the medical option include severe Menorrhagia which is prolonged and painful menstrual bleeding [5], dysfunctional uterine bleeding, atrophic uterus, uterine fibroids and endometrial cancer. The most common gynecological indication for emergency peri-partum hysterectomy includes uterine atony [6] followed by placenta accrete [7].

Currently there are different options for the surgical treatment of benign uterine diseases [8]. For the total hysterectomy operation, one of the most common procedures in gynecological practice, the laparoscopic procedure has been widely accepted as a better alternative to Pfannenstiel laparotomy. However, the mini laparotomy procedure is another possible option [9-11].

Even when facility is available, there is always a chance that laparoscopic surgery may be converted to open one. There is a need to devise a technique that can be almost as good as the outcomes of minimal approach technique. The mini laparotomy

hysterectomy is already being practiced. In order to minimize the short-term complications in form of pain, immobilization and length of hospital stay, mini laparotomy technique is applied. Thus, this study will help us provide the evidence needed to know whether mini laparotomy hysterectomy has any positive aspects compared to conventional approach.

Materials and Methods

Study Setting: Department of Surgery, Khyber Teaching Hospital, Peshawar.

Study Duration: Minimum of 6 months after approval of synopsis.

Sample Size: The sample size will be 45 in each group, calculated by taking proportion of availability in mini laparotomy hysterectomy as 86% [12] and conventional hysterectomy as 64% [12], keeping the alpha value at 0.05, beta value at 0.2 and power at 0.8 by using Open Epi sample size calculator.

Study Design: Randomized controlled trial.

Sampling Technique: Non-probability consecutive sampling.

Sample Selection

Inclusion Criteria:

- All patients with symptomatic benign conditions of uterus requiring total/subtotal hysterectomy +- bilateral salpingo-oophorectomy.
- 20-60 years old females

Exclusion Criteria:

- Patients with a history of chronic diseases (e.g., iron deficiency anemia)
- Patient with diabetes mellitus and comorbidities will be excluded by known clinical record and clinical examination as pain evaluation will be judged unreliable because of neuropathies
- Patients who are HBs-Ag or Anti-HCV antibodies positive.
- Pregnant patients.
- Patients in whom intraperitoneal drain is placed due to any reason which may cause additional pain.

Data Collection Procedure

The study was conducted after attaining approval from hospital's ethical and research committee and written informed consent was taken from the patients.

All patients were worked up with detailed history and clinical examination followed by routine baseline pre-operative investigations.

The patients were allocated into two groups by lottery method.

All patients were induced and maintained with standard anesthetic technique. The hysterectomy was performed through mini laparotomy incision ranging from 3-5cm in group B while group A patients were subjected to conventional lower midline incision from umbilicus to the mons pubis.

Post operatively, all patients were interviewed and kept under observations for 3 days for pain, mobility and days taken to be discharged. Postoperative pain scoring was

assessed using Verbal rating scale as 0=no pain, 1=mild pain, 2=moderate pain 3=severe pain measured at several times for the 1st three post-operative days. Mobility was measured 8 hours post-operative as predetermined distance (50 meters) walked by patient from his/her resting bed and declared completely mobile once the patient travels this distance. All the above-mentioned information including name, age, and gender will be recorded in a pre-designed proforma. Strictly exclusion criteria will be followed to control confounders and bias in the study results.

Data Analysis

Data was analyzed by using a statistical software SPSS version 23.0. Mean \pm Standard deviation was calculated for quantitative variables like age and outcome variables (pain score, hospital stay). Qualitative variables like mobility were presented in the form of frequencies and percentages. Chi square test was applied to compare the mobility between group A and group B while independent T-test was applied to compare the hospital stay and post-op pain. P-value of \leq 0.05 will be considered significant. All the results were presented in the form and tables.

Results

There were a total of 80 patients equally divided into groups of two (midline laparotomy group A and mini laparotomy group B). The mean age of the patients in group A was 41.5 ± 7.6 and in group B was 43.6 ± 6.3 . Age had no correlation with the post operative outcome (p-value = 0.152) in any of the group of patients. In group A most patients were in the age category of 31 to 40 (n=18, 45%) and in group B they were in the range of 41 to 50 (n=24, 60%). The most common pathology in both groups was dysfunctional uterine bleeding (n=22, 55%) followed by uterine fibroids: 9 patients (22.5%) in group A and 16 patients (40%) in group B. The rest of the pathologies along with their percentage distributions are given in table 1 below. In Group A, only 4 patients (10%) were available to attain early mobility in the post operative period compared to 18 (45%) in group B. There was significant association between the VRS scores seen on post operative day one and day three as patients who underwent mini laparotomy fared better comparatively (p-value= 0.01). The maximum number of days spent in the hospital by most patients in group A was four days (n=19, 47.5%) and in group B was 3 days (n= 20, 50%) and the relationship was statistically significant (p-value = 0.01).

Table 1: Disease distribution

Group A	Frequency	Percent	Valid Percent
	CA ovary	3	7.5
	DUB	22	55.0
	DUB + Fibroids	4	10.0
	Fibroids	9	22.5
	Uterine perforation	2	5.0
	Total	40	100.0
Group B	Frequency	Percent	Valid Percent
	DUB	22	55.0
	Endometriosis	1	2.5
	Fibroids	16	40.0
	uterine leiomyosarcoma	1	2.5
	Total	40	100.0

Table 2: Mobility (post op)

Group A	Frequency	Percent	Valid Percent	P-value
Valid	Early	4	10.0	<0.01
	late	36	90.0	
	Total	40	100.0	
Group B	Frequency	Percent	Valid Percent	
Valid	early	18	45.0	45.0
	late	22	55.0	55.0
	Total	40	100.0	100.0

Table 3: POP day 1(VRS score)

Group A	Frequency	Percent	Valid Percent	P-value
Valid	2	21	52.5	<0.01
	3	9	22.5	
	4	10	25.0	
	Total	40	100.0	
Group B	Frequency	Percent	Valid Percent	
Valid	1	12	30.0	30.0
	2	22	55.0	55.0
	3	6	15.0	15.0
	Total	40	100.0	100.0

Table 4: POP day 3 (VRS score)

Group A	Frequency	Percent	Valid Percent	P-value
Valid	0	5	12.5	0.01
	1	24	60.0	
	2	11	27.5	
	Total	40	100.0	
Group B	Frequency	Percent	Valid Percent	
Valid	0	15	37.5	37.5
	1	24	60.0	60.0
	2	1	2.5	2.5
	Total	40	100.0	100.0

Table 5: No. of days spent in the Hospital

Group A	Frequency	Percent	Valid Percent	P value	
Valid	2	2	5.0	<0.01	
	3	10	25.0		
	4	19	47.5		
	5	9	22.5		
	Total	40	100.0		
		Frequency	Percent	Valid Percent	
Valid	2	13	32.5	32.5	
	3	20	50.0	50.0	
	4	5	12.5	12.5	
	5	2	5.0	5.0	
	Total	40	100.0	100.0	

Discussion

During the 1970s, vaginal hysterectomy became popular as the favored method to treat multiple gynecological diseases as part of surgical residency programs. Later on, less invasive techniques were introduced and this allowed surgeons becoming comfortable with smaller incisions. However, this trend and the fact that population control programs manipulated women to have fewer children led to vaginal hysterectomy being performed less often and mini laparotomy hysterectomy being performed more usual than before. Data from past two decades in the United States has shown that out of 6 lack hysterectomies, about 70% were performed through the abdominal approach and the remaining through the vaginal approach [12]. In northern California, stats illustrate about 68% abdominal approach, 21% vaginal, and 11% laparoscopic technique being used. [13]

Other than vaginal, abdominal and laparoscopic, a new field of robotic surgery involving gynecological procedures, mostly hysterectomies, has recently been introduced. One analysis state that “Robotic surgery is anticipated to outclass the field of minimally invasive surgery especially in terms of data collection, processing, supervision, admonition [14] and intelligence [15]”. However, there are a few drawbacks involving robotic surgery related to expenditure and minimal changes in patient outcomes in the post operative period compared to vaginal hysterectomy as mentioned by the president of Obstetrics and Gynecology Society of United States in March 2013. So still, in a number of cases and situations, vaginal hysterectomy and mini laprotomy abdominal hysterectomies are preferred [16].

The results of our study illustrate a relatively better outcome in terms of post operative pain, mobility for recovery and the average number of days spent in the hospital in patients who underwent mini laparotomy for various uterine diseases as compared to patients who had full midline laparotomies. The findings are in accordance with other studies on the related topic such as done by Mark H Glasser [17] who states that mini laparotomy is technically less demanding in terms of operating skills compared to laparoscopic surgery and the smaller incision leads to a reduction in incisional pain which allows the patient to achieve early mobility and gain of bowel function. Benedetti-Panici P *et al* [18] in their study appreciated and proposed the minimal supra pubic incision technique as a feasible and safe approach but only for benign gynecological and pelvic pathologies. Similar results were noticed in a cohort analytical study by Panici PB *et al*. [19] and Mahendru R *et al*. [20] conducted on 148 patients and 69 patients respectively with benign gynecological diseases. However, it should be put in mind that this technique is preferable in only selected group of patients [21] and should not be considered an alternative to vaginal hysterectomy, laparoscopic hysterectomy, or robotic hysterectomy especially in a large uterus weighing more than 5kg [22].

Conclusion

This study concludes that mini laparotomy hysterectomy is definitely safe, feasible, appropriate and cost effective in benign gynecological, pelvic and uterine pathologies however it is not possible to perform in all such cases and consent for conversion to full mid line laparotomy should be pre-requisite before surgery in suspected large uterus and malignant type diseases.

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Conflict of Interest

The authors hold no conflict of interest.

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