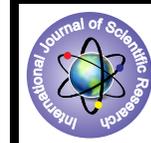


A Comparative Analysis of Surgical Parameters and Outcome in Surgeries Performed by Minilaparotomy, Laparoscopy and Conventional Techniques for Benign Gynecological Diseases



Medical Science

KEYWORDS : minilaparotomy, benign gynecologic diseases, laparoscopy, conventional laparotomy

Ganesh Shinde

Professor and Head, Obstetrics & Gynecology, HBT Medical College & RN Cooper Hospital, Mumbai, India

Hemlata Kuhite

Assistant Professor, Obstetrics & Gynecology, HBT Medical College & RN Cooper Hospital, Mumbai, India

Nihita Pandey

Senior Resident, Obstetrics & Gynecology, HBT Medical College & RN Cooper Hospital, Mumbai, India

ABSTRACT

Laparoscopy surgeries are now considered to be the gold standard surgical approach. Although it has many advantages, its high cost is a limiting factor for countries like India. Minilap approach on the other hand serves to minimize the ill effects of conventional surgeries while serving to reduce the cost factor. In this study we propose to compare the surgical outcomes and parameters for various surgeries performed by minilap, laparoscopic and conventional techniques in an attempt to highlight the feasibility and safety of minilap surgeries. Data was collected for all patients undergoing operations for benign gynecologic pathologies using all three surgical techniques for over 2 years. A total of 50 hysterectomies were performed. The volume of tumor removed, hospital stay and pain scores were comparable in minilap and laparoscopic approaches. The incision size and blood loss were least in the laparoscopic approach. Overall complications were least in the minilap group. It was concluded that minilaparotomy approach was feasible, safe and had an easier learning curve for performing surgeries for benign gynecologic diseases.

Introduction:

Surgeries for benign gynecologic pathologies have traditionally been performed through the laparotomy approach. This was later improvised with the advent of laparoscopy, which has become the gold standard technique in current times. Operative laparoscopy serves many advantages such as minimal blood loss, less post operative pain and morbidity, shorter hospital stay and an improved life quality^{1,2}. But there are several drawbacks such as expensive instruments and set up, steep learning curve and the risk of complications to the patient secondary to pneumoperitoneum^{3,4}.

In view of the afore mentioned disadvantages, there is a need for a procedure that is technically simpler than laparoscopy and at the same time less invasive than conventional laparotomy. Mini-laparotomy approach is a well documented and established approach of surgery and is routinely used for tubal ligations. But its role in the management of benign gynecological diseases remains sketchy. In this study we propose to compare the outcomes of various procedures using the three main surgical techniques i.e conventional, laparoscopic and minilap, and establish the feasibility and safety of the minilap approach for treatment of benign gynecologic pathologies.

Benedetti Panici et al established in their study that the minilaparotomy approach could be used for treatment of benign gynecologic surgeries^{5,6}. Hoffman et al in their study defined the minilaparotomy incision to be ≤ 6 cm in length⁷. Hoffman et al reported in their study that the minilap procedure was safe and effective in terms of complications, operative time, cost and hospital stay⁷. Chalkoo et al in their study concluded that minilap hysterectomy was a safe procedure with lower costs as simpler instruments could be used⁸. Nomura et al studied the mini-lap procedure for treatment of endometriosis and found that it was effective in treatment while reducing post operative pain and maintaining cosmesis⁹. Keeping this research as our background we studied various minilap procedures done for different gynecologic conditions and compared the outcome with those of conventional and laparoscopic surgeries.

Aims & Objectives:

To review and compare the results obtained using the conventional, minilaparotomy and laparoscopic approach for pelvic surgeries in relation to benign pelvic pathologies.

Method/Approach:

This study is a prospective cohort study conducted at a tertiary care hospital over a period of two years from 1 May 2012 to 1 May 2014. Universal sampling was done. All patients undergoing hysterectomy with or without salpingo oophorectomy in this period were included in the study. The type of surgical procedure to be performed, i.e whether mini-lap, conventional or laparoscopy, depended on the expertise and the preference of the consultant. Patients were included irrespective of their medical high risk factors or Body mass index. All patients who were suspected or confirmed cases of malignancy were excluded from the study.

In this study the mini-lap incision was defined to be equal to or less than 6 cm. Slender instruments were used for the procedure.

The hysterectomies performed were classified under three sub groups- Mini-lap, conventional and laparoscopy. Various intra-operative and post-operative parameters were studied such as: length of the incision, tumour volume, duration of procedure, blood loss intra-operative, complications during the procedure (such as : bowel/ bladder injury, need for extension of incision), return of bowel sounds post op, pain score post op and duration of hospital stay. All these parameters were then compared between the three groups. The visual analog scale was used to assess post operative pain after the effect of anesthesia had worn out post operatively (4 hrs post op).

Results and Discussion:

A total of 50 hysterectomies were performed over the two years in this study. Out of these 20 were performed using mini-laparotomy, 20 by conventional methods and 10 by laparoscopic means. Benign pelvis pathologies such as adenomyosis, fibroid uterus, abnormal uterine bleeding

not responding to medical management and adnexal pathologies such as benign ovarian cyst constituted the main indications for the operative procedures. Table 1 below describes the distribution of the cases as per their indication

Indications	Mini-lap (20)	Conventional (20)	Laparoscopy (10)
Fibroid Uterus	8	8	4
Adeno-myosis	5	5	2
Abnormal Uterine Bleeding	4	4	2
Adnexal masses	3	3	2

Table 1: Distribution of Indication for different surgical techniques

Intra operative parameters studied and compared were incision length, volume of tumor removed, complications such as hemorrhage, visceral injury, and extension of incision and operative time. The results are tabulated in Table 2 below:

Parameters	Mini-lap (20)	Conventional (20)	Laparoscopy (10)
Mean Incision Length (cm)	5.22	12.84	0.78
Mean Tumor Volume (cm ³)	632.4	994.75	315
Mean Blood loss (ml)	121.5	102	19.5
Visceral injuries (Bladder/Bowel)	0/0	2/0	3/1
Need to extend the incision	1	0	0
Mean operative time (min)	54	66	123

Table 2: Intra op parameters

The incision length of minilap was significantly smaller than that of conventional incision ($p < 0.00001$), whereas the incision length of the laparoscopy procedure was significantly smaller than the minilap incision ($p < 0.00001$). The mean tumor volume that could be removed through conventional laparotomy was significantly higher than both minilap and laparoscopy techniques ($p < 0.05$). The blood loss in case of minilap surgeries was significantly higher than the laparoscopy procedure ($p < 0.01$). The blood loss is skill dependent and can be minimized with better expertise and equipments.

There were 4 instances of visceral injuries in laparoscopic procedure and 2 instances in conventional surgeries while there were no such complications in the mini-lap group. This may be attributed to the smaller exposure of viscera in case of mini-lap approach. There was only one case that required extension of incision by 2 cm in the minilap procedure which was because of restricted access in a case of a large tumor.

The mean operative time for the minilap procedure was significantly lower than the laparoscopy procedure ($p < 0.01$). This can be attributed to the fact that minilap procedures are like conventional surgeries with which most surgeons are well acquainted as compared to the steep learning curve of laparoscopy surgery. Also the degree of movement is more restricted in case of laparoscopy.

The post operative parameters studied are tabulated in Table 3:

Parameters	Mini-lap (20)	Conventional (20)	Laparoscopy (10)
Return of bowel sounds (hrs)	6	12	4
Mean Hospital Stay (days)	3	5	2

Table 3: Post operative parameters

The return of bowel sounds and hospital stay is significantly less in the minilap group ($p < 0.05$) as compared to the conventional group. On studying the post operative pain score in the different groups, it was found that 45% of patients operated by minilap technique and 50% of patients operated by the laparoscopic technique had a score of 2 (i.e. hurts a little more as per the visual analog scale), whereas 50% of patients operated by the conventional technique had a pain score of 4 (i.e. hurts a lot more as per visual analog scale). This serves to highlight the fact that minilap technique serves to minimize the drawbacks of conventional surgery such as increased post op stay, increased post op pain and increased time for return of bowel function while reducing the operative time and cost of the procedure.

Conclusion:

Minilap technique is a safe and feasible technique which can be employed in the surgical management of benign gynecological tumors. It allows the use of conventional instruments through a minimal incision thereby cutting the cost factor of the surgery and also mitigating the need for increased expertise, thereby making it economically sounder as compared to laparoscopy for developing nations. In view of the small incision, the traditional drawbacks associated with conventional surgery such as increased pain and post op stay are also circumvented. Minilap procedure thereby serves as blend of laparoscopy and conventional surgery where the cosmesis of laparoscopy surgery is added to the cost effectiveness and easy learning curve of conventional surgery.

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