Hysterectomy through minilaparotomy for benign gynaecological conditions: a valid option

Benign jinekolojik hastalıklarda minilaprotomi ile yapılan histerektomi: geçerli bir seçenek

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Abstract

Objective: Efforts are continuously being made for surgery to be less invasive with a minimal access approach. This article reports our experience with minilaparotomy hysterectomy in patients with benign gynecological disease or preinvasive pathology.

Material and Methods: A prospective study to analyse the outcome and per-operative and post-operative complications was conducted in 69 patients undergoing hysterectomy by the minilaparotomy approach through 4-5cm Pfannenstiel incision.

Results: The mean operating time and postoperative hospital stay were 41.3 min and 3.1 days, respectively. Composite morbidity was encountered in 12 women (17.4%) with no major complications or mortality. None of the patients had an estimated blood loss over 500ml.

Conclusion: Minilaparotomy hysterectomy in benign gynecological disease provides an appealing, effective, expeditious, minimal access and cost-effective option/alternative to the traditional abdominal hysterectomy. It obviates the need for any additional expensive equipment and above all improves upon the per-operative and post-operative outcomes without compromising, whatsoever, the quality of surgery.

(J Turkish-German Gynecol Assoc 2009; 10: 208-12)

Key words: Hysterectomy, minilaparotomy, Pfannenstiel incision

Received: 26 August, 2009 **Accepted:** 27 October, 2009

Özet

Amaç: Cerrahinin daha az invaziv olması için çabalar devam etmektedir. Bu makalede benign jinekolojik hastalıklar ve preinvaziv patolojiler için uyguladığımız minilaparotomi ile histerektomi deneyimimizi sunuyoruz.

Gereç ve Yöntemler: Histerektomisi 4-5 cm'lik Pfannenstiel insizyondan yapılan 69 hastadaki ileriye dönük çalışmamızda operasyon sonuçlarımızı, operasyon sırasında ve postoperatif dönemdeki komplikasyonlarımızı analiz ettik.

Bulgular: Ortalama operasyon süresi 41.3 dakika ortalama hastanede kalış süresi ise 3.1 gün idi. Oniki (%17.4) kadında morbidite oluştu ancak hiçbir hastada majör komplikasyon veya mortalite gelişmedi.

Sonuç: Benign jinekolojik durumlar için minilaparotomi ile uygulanan histerektomi, geleneksel abdominal histerektominin etkili, minimal invaziv ve maliyet/etkin bir alternatifidir. Tüm bunlara ek olarak, cerrahinin kalitesinden ödün vermeden ve pahalı araçlara ihtiyaç duymadan operasyon sırasındaki ve postoperatif dönemdeki sonuçları iyileştirmektedir.

(J Turkish-German Gynecol Assoc 2009; 10: 208-12)

Anahtar kelimeler: Histerektomi, minilaparotomi, Pfannestiel insizyon

Geliş Tarihi: 26 Ağustos 2009 **Kabul Tarihi:** 27 Ekim 2009

Introduction

According to Farquhar CM and Steiner CA (1), of the 600,000 hysterectomies carried out in the United States each year (a number which has remained constant for the past 20 years), 65-75 percent are performed through large abdominal incisions.Although research indicates that vaginal hysterectomy is safer and cheaper than total abdominal hysterectomy, the latter still accounts for 60-80% of all hysterectomies in the UK and the USA (2).

LAVH and Laparoscopic hysterectomies have recently become popular due to the shorter hospital stay and minimum post-operative morbidity but have their own drawbacks such as expensive equipment, extensive training, steep learning curve and longer duration in the operation suite (3-6).

Minilaparotomy is an established technique (7) for sterilization operations for decades and is also being used for many benign gynecological conditions, recanalisation (reversal of sterilisation) and ovarian cysts with encouraging results (8-10).

In the present study, the same concept is extended to abdominal hysterectomy for benign conditions in selected patients in an effort to establish minilaparotomy hysterectomy as a safe, minimally invasive and cost-effective technique.

Material and Methods

A prospective study was conducted in 69 patients over a period of 25 months from Feb. 2007 to Mar. 2009.

Inclusion criteria were mobile uterus with a size up to 12 weeks.

Exclusion criteria adopted were patients with previous laparotomy, suspected malignancy, large adnexal masses (>5 cm) and diagnosed cases of genital tuberculosis(suspected cases were to be subjected to certain special investigations

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like ELISA, Polymerase Chain Reaction, endometrial Biopsy, diagnostic laparoscopy with fluid aspiration from the pouch of Douglas, if required, as well as the routine ones).

Written informed consent was obtained from all the patients and the Departmental Ethical Committee approved the study.

All the operations were performed by at least one of the consultants included as authors in this study.

Catheterisation of the bladder was done with disposable uretheral catheter kept for the intra-operative duration only and thereafter removed in the operating suite itself.

Anesthesia used was either regional-spinal/epidural or general. The operation was conducted with the patient in the supine position.

The incision employed to open the abdomen in all the cases was the suprapubic Pfannenstiel, with a size of= <5 cm (Minilaparotomy), (Figure 1).

Subcutaneous fat was cleared to expose the Rectus fascia in the tranverse axis for approximately 5 cm and then incised along the entire length corresponding to the skin incision.

Rectus muscles were retracted from the midline, exposing the underlying peritoneum, which was entered digitally above the level of the bladder dome, incising vertically until the entrance extended the full length of the fascial incision.

The uterus, adnexa and pelvis were then carefully assessed to determine the extent of any unexpected pelvic pathology or adhesions which were lysed, if necessary. Gentle packing was done to gain additional exposure.

The uterus was exteriorized by introducing the index and middle fingers and also the thumb of the left hand, followed by applying long curved Kocher's clamps lateral to the corpus on either side to achieve uterine elevation. Retraction was done with Deever's manually held abdominal retractor.

The remainder of the abdominal hysterectomy (extrafascial) proceded in the traditional manner (11), (Figure 2).

The pelvic and parietal peritoneum were not closed but the Rectus sheath was apposed with continuous suture. Once the surgery was completed, skin incision was closed by applying sub-cuticular sutures, (Figure 3) in all the cases. The possibility of postoperative wound hematoma or seroma formation was eliminated by applying a transverse pressure dressing over the incision for 48 hours.

Intra-operative blood loss was estimated by noting the number of sponge packs soaked during surgery and by measuring the amount of blood in the suction bottles. Blood transfusion was given only if blood loss was estimated to be more than 500 ml.

Patients were encouraged to become ambulatory as early as was convenient for them after the operation.

Injectable antibiotics were given for 36 hours post-operatively and then replaced by oral ones.

Injectable Diclofenac was given on demand for post-operative pain relief (3 doses in 24 hours at the most) and Injection Pentazocine was to be used as a reserve if pain relief was not adequate.

Oral fluids were started the next morning on hearing the bowel sounds, followed by semi-solids after another 12 hours.

The patients were allowed to go home when ambulatory, passing urine normally, moved their bowels and had no complications.

Figure 1. Minilaparotomy incision

Figure 2. Removed uterus through minilaparotomy incision

Figure 3. Subcuticular suturing of the minilaparotomy incision

All the observations were given consideration together with intra- and post-operative complications.
The statistical data was collected as mean (range) and as percentage.

Results

Patient profiles as regards age, parity and body weight and the indications for hysterectomy were as depicted in Table 1. Symptomatic fibroids constituted the commonest indication accounting for 52.2 percent of the hysterectomies in our cases, followed by dysfunctional uterine bleeding (26.1 percent), chronic pelvic pain (7.2 percent), adenomyosis and post-menopausal bleeding (5.8 percent each) and Cervical Intraepithelial Neoplasia (2.9 percent).
Operative details are enumerated in Table 2. Through 4-5 cm Pfannenstiel's incision, the surgery performed was total abdominal hysterectomy with unilateral or bilateral salpingo-oophrectomy (due to the indication or the presence of grossly unhealthy looking ovary/ies in our younger patients also).
No difficulty was encountered even in large uteri (up to 12 weeks size), enlarged either uniformally or irregularly by single or studded with multiple myomas. Regardless of the uterine size, the origins of the round and adnexal ligaments was always lateral to and within easy reach of a transverse minilaparotomy incision and, moreover, it was also noticed that these elongated ligaments were quite lax. In 16 cases (23 percent) adhesiolysis was required. No need was felt for vaginal packing or indwelling bladder cathetrisation in any of the cases. Mean operating time was 41.3 min with a range of 30-60 minutes. Estimated blood loss was relatively low (being <500 ml) and none of the patients required blood transfusion even though venous thrombosis prophylaxis was not used in our patients. It is obvious that post-operative ambulation, and duration of hospital stay were appreciably less, with mean (ranges) of 28 (22-32) hours and 3.1 (2.5-4) days, respectively.
Moreover, the number and frequency of injectable analgesic (Diclofenac in our study) requirement were as low as 1-3 doses with a mean of 1.5 injections. Table 3 illustates the post-operative complications. Not only were no major complications seen in any of the patients; but also, the composite morbidity was seen only in 12 women (17.4 percent).

Discussion

Hysterectomy, the commonest major gynecological operation, is the only definitive cure for many benign gynecological conditions, and rates highest in satisfaction scores compared with other treatments (2). It is a common operation which can be done via the abdominal or vaginal route. In spite of being an eminent procedure in the repertoire of gynecological practice, there is no consensus on the best way of performing hysterectomy in any particular clinical situation (12).
Conservative alternatives, including endometrial ablative techniques, the levonorgesterol-releasing intrauterine system and uterine artery embolization for fibroids, have not yet greatly reduced hysterectomy rates, which vary widely between regions and within the same geographical area (2).

Table 1. Patient Profile and Indications For Hysterectomy

AGE mean (range)	39.57 (37-66) years	
PARITY mean (range)	2.93 (0-5)	
WEIGHT mean (range)	58.41 (43-81) kg	
Indications for hysterectomy		
Symptomatic Fibroids	36	52.2 %
Intramural	27	
Submucus	3	
Subserous	2	
Cervical fibroid	2	
Myomatous polyp	2	
Dysfunctional Ut. Bleeding	18	26.1 %
Chronic Pelvic Pain	5	7.2 %
Adenomyosis	4	5.8 %
Post-menopausal Bleeding	4	5.8 %
Cervical Intraepithelial neoplasia	2	2.9 %

Table 2. Operative data

Anaesthesia-General	6	8.7%
Epidural	9	13.0%
Spinal	54	78.3%
Uterine Size- normal	17	24.6%
6-8 weeks	14	20.3%
8-10 weeks	17	24.6%
10-12 weeks	21	30.5%
Operative Procedure	Total Abd. Hysterectomy (TAH) with unilateral/bilateral salpingooophrectomy	
Adhesiolysis	16	23.2%
Operating Time-mean (range)	41.3 (30-60) min	
Between 20-40 min.	46	66.7%
Between 40-60 min.	23	33.3%
Estimated Blood Loss-mean	240 ml	
<300ml	62	89.8%
300-500ml	7	10.2%
Patients requiring blood transfusion	-	
Hospital stay-mean (range)	3.1 (2.5-4)days	
Post-op. ambulation-mean (range)	28 (22-32)h	
Onset of oral diet-mean (range)	22 (20.5-28)h	
Injectable Diclofenac-mean (range)	1.5 (1-3)doses	
Additional analgesic (Pentazocine)	-	

Table 3. Complications*

Blood loss >300 ml	7	10.20 %
Paralytic Ileus	1	1.45 %
Fever	2	2.85 %
Urinary tract infection	1	1.45 %
Urinary retention	-	
Wound infection	1	1.45 %
Resuturing	-	
Repeat laparotomy	-	
TOTAL	12	17.40 %
*-No Major Complications or Mortality Were Encountered		

Although laparoscopic hysterectomy offers a minimally invasive alternative to laparotomy, with a shorter hospital stay and quicker return to normal activities, it has the drawbacks not only of expensive equipment, long learning curve and prolonged operating time but also higher complication rates than abdominal hysterectomy (13).

In his comparison of hysterectomy techniques, Garry (14) found laparoscopic assisted vaginal hysterectomy to be associated with longer operating time but less post-operative pain and a shorter convalescent period. Learman LA (15), in 2004, pointed out that more major complications were experienced with laparoscopic as compared with abdominal hysterectomy (11.1% versus 6.2%) but that there was no significant difference between hysterectomies conducted by laparoscopy and through the vaginal route .

In 1995, Bronitsky C and Stuckey SJ (16) studied complication rates in 62 patients undergoing LAVH and found that a sizeable number of 6 patients (i.e. 9.7%) had had major problems requiring further surgery as is also mentioned in the later studies of 2002 and 2006 with conversion to laparotomy rates being 5 (17) and 25 percent (18), respectively. The recently concluded Cochraine study in 2009 (19), mentioned its benefits such as speedier return to normal activities, but at the cost of more urinary tract (bladder or ureter) injuries and longer operation time.

Efforts have long been made for an alternative to open surgery that is minimally invasive and comparable to laparoscopic hysterectomy in post-operative pain, cosmetic results and early return to normal activities but is not as expensive and has minimal untoward effects.

Use of traditional minilaparotomy for hysterectomy has been reported only rarely. Hoffman and Lynch (20) found the procedure safe and effective in non-obese women in whom a vaginal approach was precluded. Benedetti Panicci et al. (21) also have used minilaparotomy successfully in benign gynecological diseases and hysterectomy.

As a substitute for laparoscopy and laparotomy, In 2003 Pelosi and Pelosi (22), then tried a minilaparotomy Kustner's incision (cruciate incision 3 cm-5 cm, originally reported in1896) as the sole means of surgical access, assessment and treatment for benign pelvic conditions along with certain innovative instruments.

Alcalde et al. (23) conducted minilaparotomy hysterectomies in 150 patients using a self-retaining elastic abdominal retractor and regarded this approach to be a safe, minimally invasive alternative to laparoscopic hysterectomy for institutions that do not have the required expensive equipment or for gynecologists who do not have laparoscopic experience.

In 2005, Panici et al. (24) employed the minilaparotomic approach in 116 patients and inferred that it should be considered a valid alternative to the classic abdominal hysterectomy because of the excellent outcome achieved.

Our procedure-minilaparotomy through 4-5 cm Pfannenstiel incision-relies on traditional but small open technique, with only routine standard hysterectomy instrumentation, thus making it significantly faster than conventional or laparoscopic hysterectomy and easy to perform.

To summarise: conventional but significantly smaller open techniques and traditional instrumentation were employed, thus removing the need for frequent use of traumatic metal retractors, extensive bowel packing and extended incision exposure. Moreover, small incision might lead to lesser tissue trauma, nerve damage, bruising and post-operative pain.

In the present study: mean operating time, day of mobility and of starting oral diet and maximum injectable analgesic requirement were relatively low. Blood loss was less and there was no perioperative blood transfusion requirement.

No major complications were noticed in any of the patients, and the overall 17.4 percent complication rate was also appreciably low. Results of our study are comparable with those of Panici et al. (24) in whose study of 116 minilaparotomic hysterectomies, a mean operating time of 50 min (range 34-88 min), median post-operative stay of 3 days (range 2-5) and no intraoperative complications or perioperative blood transfusion were reported, while minor postoperative complications occurred in 14% of cases.

It is obvious from the present study that minilaparotomy hysterectomy is associated with minimum intra-& post-operative complications.

Hence, minilaparotomy hysterectomy procedure through a 4-5 cm Pfannenstiel incision would seem to have great potential for use in the third world countries as it can be learnt easily without the use of any extra expensive instruments.

Conclusion

This new modality-useful for normal, large and fibroid-ridden uteri-combines the technical benefits of standard laparotomy with the convalescent advantages of laparoscopic surgery.

Minilaparotomy through a 4-5 cm Pfannenstiel incision is a minimally invasive procedure ideal for gynecologists who are less skilled in vaginal or laparoscopic surgery and who are more comfortable with the standard abdominal approach. The procedure is far easier to teach than laparoscopic procedures because of the high degree of technical skill required for the latter and produces excellent results.

Nevertheless, minilaparotomy has its limitations in cases where severe adhesions might exist (e.g. endometriosis, previous myomectomy, previous pelvic inflammatory disease, bowel disease or malignancy). In those cases, open laparoscopy is

strongly recommended to assess the severity of the condition and to determine whether minilaparotomy is feasible.

This approach is substantially more cost-effective than prolonged laparoscopic or laparoscopically assisted vaginal hysterectomy. Since it uses conventional open techniques and traditional instrumentation, this method can be learnt and mastered quickly.

Acknowledgements

M.M. Educational Trust

Author Disclosure statement: The authors declare that there is no conflict of interest.

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