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Laparoscopic hysterectomy in patients weighing 100 kg or more: a 7-year experience

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Abstract Obesity is an increasingly prevalent condition in our society. The majority of hysterectomies are still being undertaken abdominally. Obese patients have a high rate of complications from abdominal surgery. Laparo-vaginal hysterectomy has a faster recovery than abdominal hysterectomy. If the uterine vessels are ligated laparoscopically at laparo-vaginal hysterectomy, there is a low conversion rate to abdominal hysterectomy. The aim of this study was to establish whether laparoscopic hysterectomy is a feasible alternative in obese patients. A 7-year audit of patients requiring a hysterectomy identified 27 women weighing 100 kg or more. All patients gave informed consent to an initial laparoscopic procedure, having been assessed as suitable for such, and then had a laparoscopic hysterectomy performed. Data regarding their operation was prospectively collected and retrospectively reviewed. All patients had successful laparoscopic hysterectomies with none requiring conversion to open operation, reoperation or readmission. There were no major complications. The postoperative stay was short (mean 2.4 days), but operation times were long (mean 175 min). Laparoscopic hysterectomy is a feasible alternative to abdominal hysterectomy in obese patients weighing 100 kg or more with low morbidity and fast recovery with short hospital stay.

Keywords Obesity · Morbid hysterectomy laparoscopy

Introduction

The prevalence of obesity in Australia has more than doubled in the past 20 years [1]. Abdominal hysterectomy

on obese patients is associated with increased peri-operative morbidity with slower recovery and wound complications [2]. A major factor in abdominal wound dehiscence is obesity [3]. A recent review of hysterectomy in the United States between 1990 and 1997 found that the majority were performed were abdominally [4]. Patients who have a laparo-vaginal hysterectomy recover more quickly than patients having an abdominal hysterectomy [5]. With laparoscopic hysterectomy, where the uterine vessels are secured laparoscopically [6], the rate for conversion to an abdominal procedure can be as low as 2% [7].

Materials and methods

Methods

From 1997 to 2003, of 399 patients requiring a hysterectomy, 27 (6.75%) weighed 100 kg or more. All were appropriate candidates for laparoscopic hysterectomy. Inclusion criteria were patient informed consent and fitness for general anaesthesia for laparoscopic surgery. The operative technique didn't vary from that in non-obese patients [8]. Pneumatic calf compressors were used, but anticoagulants were not. Cephtriaxone 1 g was given intravenously at the beginning of the operation and repeated after 24 h. As this review conforms to the standards established by the NHMRC for ethical quality review [9], ethics approval was not sought.

Operative procedure

The initial approach is transvaginal with the patient in the lithotomy position; the cervico-vaginal reflection of the vaginal skin is incised to open the utero-vaginal space to permit mobilization of the bladder off the uterus. The vagina is then sutured closed, and a Saigres uterine elevator (Richard Wolf) inserted into the uterine cavity is clamped onto the cervix.

Having established a pneumoperitoneum with a Veress cannula inserted through the umbilicus, a four-port laparoscopy is performed. A 5–12-mm port is inserted through the umbilicus and a 5-mm port is inserted suprapubically. Two lateral 5–12 mm ports are inserted midway between the first two ports and lateral to the inferior epigastric vessels visualised laparoscopically.

The anatomy is identified and any adhesions are divided. In particular, the ovaries are fully mobilized and the ureters, in their course along the pelvic sidewall, are identified.

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The Endo GIA device [United States Surgical Corporation (USSC), a division of the Tyco Healthcare Group LP] was used on the vascular pedicles. This disposable and reloadable instrument delivers two triple rows of staples and simultaneously divides the tissues between the two sets of rows. The ovarian and uterine vessels were divided using the device. To secure the uterine vessels, the device is inserted through the umbilical port with the laparoscope moved to the ipsilateral port as previously described [8]. One uterus required debulking with the S.E.M.M. Moto-Drive 15-mm mechanical morcellator (WISAP), through the left hand port as previously described [7]. The debulked uterus is cut off the vagina and then delivered through the vagina. The vagina is then sutured laparoscopically under direct vision using the Endo Stitch (USSC). Any port site bleeding was controlled by sutures placed with the Endo Close (disposable suture carrier, USSC) [10].

Results

In addition to the problem of their obesity, these were complex patients. Nine (33.3%) had surgical specimens weighing at least 250 g and two (7.4%) weighed 450 g and 780 g (Table 1); the latter case required trans-abdominal morcellation to remove the mass. There was one case of endometrial cancer (low grade with minimal myometrial invasion: stage I). One patient had undergone six previous lower abdominal laparotomies. One patient required a laparoscopic enterocele repair and a bladder neck suspension with suprapubic catheterisation for 12 days as an in-patient.

No patient required laparotomy, reoperation or readmission. Patients weighed up to a maximum 175 kg (mean weight 116.7 kg). The mean operating time was 175 min (range: 105–360), the longest being on the largest patient who was only the second in the series. The mean postoperative stay was 2.4 days, with one patient with an inadvertent cystotomy (4 days) and the other requiring a suprapubic catheter (12 days). Excessive bleeding from lateral port sites occurred in five (22%) patients, for which the Endo Close (USSC) was utilized to successfully obtain haemostasis. Four of these five cases were amongst the first seven patients in the series (Table 1). Three patients (11%) required blood transfusions, again with two being in the first seven of the series. There was one inadvertent bladder perforation during the vaginal aspect of the operation that was attributable to fibrotic endometriosis. The perforation was diagnosed and repaired laparoscopically. Two patients developed vaginal vault infections postoperatively, one with *Pseudomonas*; both were treated as outpatients with oral antibiotic therapy.

Discussion

Kadar and Pelosi published the first series of laparoscopic hysterectomies on obese patients [11]. They operated successfully, without major operative complications, on 24 patients weighing 200 lb (91 kg) or more, but only half

Table 1 Patient and operation details (op.time: operation time, postop.: postoperative, *Endo close (United States Surgical Corporation, division of Tyco Healthcare Group LP) utilized to obtain port site hemostasis

No.	Op. time (min)	Postop. stay (days)	Weight (kg)	Specimen >250 g	Complications and difficulties
1	210	3	120		Endo close*
2	360	2	175		Endo close*, transfusion
3	105	1	104		
4	135	1	127		7-cm cervix
5	155	2	120		
6	165	4	130	275 g	Endo close*, bladder perforation
7	230	2	130		Transfusion (×6 previous laparotomies)
8	140	3	103		
9	135	1	106		
10	150	2	100		
11	105	3	111		
12	135	1	117	255 g	Endometriosis obliterating Pouch of Douglas
13	150	1	140	295 g	
14	155	3	106	265 g	
15	240	12	105		Laparovaginal repair with SPC for 12 days
16	125	2	130		
17	220	2	105	450 g	Cervical fibroid (postop. Hb 82)
18	225	2	127	255 g	
19	260	2	107	780 g	Morcellation of uterus
20	160	2	102		Endometrial cancer
21	135	1	102		
22	140	2	100		
23	135	2	115		Endo close*
24	255	3	125	275 g	Transfusion; vault <i>Pseudomonas</i> infection
25	195	2	120		
26	160	3	100	255 g	Vault infection
27	135	1	124		

their patients weighed 100 kg or more. One patient had a blood transfusion and two developed infections. Ostrzenski performed successful laparoscopic hysterectomies on 11 women weighing from 119 to 140 kg without complications [12]. Eltabbakh et al. in a controlled study compared laparoscopic and abdominal hysterectomy in obese patients (BMI >28) with early stage endometrial cancer. Of these, the 40 patients who had laparoscopic hysterectomies had longer operating times, but had less blood loss, needed less analgesia and had a shorter hospital stay compared with the patients who had abdominal hysterectomies [13]. Holub et al. performed laparoscopically assisted vaginal hysterectomies (where the uterine vessels are secured vaginally [5]) on 54 obese patients (BMI >30); of these only, ten weighed 100 kg or more, and the largest was 121 kg [14]. In their series, there were two inadvertent cystotomies and one lateral port-site bleed. None were converted to laparotomy.

Two larger series of laparoscopic hysterectomies on obese patients have recently been published [15, 16]. Both define obese as a BMI of 30 kg/m². In the series of O'Hanlan et al. [15], 23.6% (n=78) of their patients were obese. The mean weight of their obese patients was less than 100 kg (214.6 lb). In the series of Heinberg et al. [16], 39.3% (n=106) were obese, whereas this series reports on the outcomes of the largest 6.75% of a hysterectomy population.

O'Hanlan et al. [15] had one cystotomy and one adhesive bowel obstruction. Heinberg et al. [16] had exclusion criteria, but these and the numbers involved were not detailed. Compared to their non-obese patients, the obese patients had longer operating times, higher rates of conversion to an open procedure and more blood loss. There were two cystotomies, one small bowel injury, two intraoperative haemorrhages and four other major intraoperative complications (not detailed) in the obese group. They had three readmissions, three reoperations and one thromboembolic event. The mean postoperative stay was 1.1 days.

Lateral port-site bleeding was more common in this series of obese patients. The impression is that the bleeding comes from vessels in the muscle layer that are supplying the thicker-than-normal fat layer and are thus dilated and more prone to injury. The Endo Close (USSC) is primarily a laparoscopic wound closure device used to prevent wound hernias, but has not been described previously as a haemostatic device.

Complications in this series were minor and consistent with those reviewed above [11, 12, 13, 14, 15, 16] and similar to those reported for laparoscopic hysterectomy generally [17]. Laparoscopic hysterectomy in experienced hands appears a reasonable alternative to abdominal hysterectomy for obese patients with few complications and fast recovery. Operating times remain long, but with no apparent adverse effect on patient well-being.

To establish any advantage for obese patients from laparoscopic hysterectomy over abdominal (or vaginal) hysterectomy, a prospective randomised trial would be necessary. From the data reported and discussed here, such a trial now would be indicated.

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