Laparoscopically Assisted Vaginal Hysterectomy Following Previous Kidney Transplantation

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SUMMARY

Objective: With improvements in immunosuppression and surgical techniques, more women are undergoing kidney transplantation (KT) for management of end-stage renal disease. Location of the transplanted pelvic kidney and transplanted ureter must be taken into consideration when performing pelvic surgery. We demonstrate that laparoscopically assisted vaginal hysterectomy (LAVH) can be successfully performed in patients who had previously undergone KT.

Materials and Methods: We prospectively enrolled four patients requiring operation for symptomatic adenomyosis after KT. LAVH was performed in these cases after initial uterine artery ligation during laparoscopy.

Results: The median age of the patients was 44 years (range, 40–46 years) and the extirpated uterine weight was 195 g (range, 160–380 g). Intraoperatively, the median operation time was 147.5 minutes (range, 105–175 minutes) and the blood loss was 50 mL (range, 50–100 mL). There was mild pelvic adhesion in two cases. The postoperative recovery was good in all patients with oral intake, flatus passage, and ambulation within 1 day after operation. The median intramuscular meperidine requirements were 25 mg (range, 0–100 mg) and the hospital stay was 4 days (range, 3–8 days). There were no major complications in these cases except one with mild postoperative fever.

Conclusion: LAVH may be a safe and effective treatment for treating patients with adenomyosis after KT. [*Taiwan J Obstet Gynecol* 2009;48(3):249–253]

Key Words: adenomyosis, kidney transplantation, laparoscopically assisted vaginal hysterectomy, uterine artery ligation

Introduction

The incidence and prevalence of end-stage renal disease (ESRD) continue to grow worldwide. According to data collected from 120 countries with dialysis programs, about 1.9 million people were receiving renal replacement therapy at the end of 2005. Among these individuals, 445,000 (23%) underwent kidney transplantation (KT) [1]. With improved surgical techniques and immunosuppression, KT is becoming increasingly prevalent and is the most effective renal replacement therapy for ESRD. In particular, the number of women undergoing KT during the childbearing period is increasing [2,3]. These women had various menstrual problems after they were diagnosed with ESRD and underwent KT [2,3]. Laparoscopically assisted vaginal hysterectomy (LAVH) for the treatment of adenomyosis with menorrhagia or dysmenorrhea after KT has many advantages for patients who are immunosuppressed, such as reduced

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postoperative pain, less need for analgesia and shorter hospitalization. It, therefore, decreases the risk of nosocomial infections, and allows for a rapid return to oral intake and, hence, continuation of immunosuppressive therapy [4–8]. However, because of the altered location of the transplanted kidney and ureter, LAVH is complicated and risky in patients who have undergone KT.

The aims of this study were to evaluate the feasibility and clinical outcomes of LAVH in patients with prior KT. For reducing the blood loss during operation, we first ligated the bilateral uterine arteries during laparoscopy [9]. The possible impact of KT on laparoscopic surgery was also illustrated.

Materials and Methods

We prospectively enrolled four patients requiring surgery for symptomatic adenomyosis after KT. LAVH was performed in these cases after initially ligating the uterine arteries during laparoscopy [9]. The insufflation technique of LAVH in these KT patients is crucial and risky. Before operation, we screened these patients for detection of possible visceroparietal adhesions and selection of the site for trocar insertion in laparoscopic surgery by real-time anterior abdominal ultrasound imaging [10].

In brief, patients were positioned for laparoscopy in the dorsal lithotomy position. A uterine manipulator was placed with continuous drainage of the bladder. One 10-mm trocar was inserted through the umbilicus to hold the optic camera. One 5-mm trocar along with another 10-mm trocar was inserted in the lower abdomen; their locations were adjusted according to uterine size and the side of the transplanted kidney. Patients with a large uterus required a more cephalad insertion position [11]. A more central insertion position was taken at the side of the transplanted kidney. LAVH began with electrocoagulation and transection of the bilateral round ligaments. In patients who desired to preserve the adnexa, the fallopian tube and ovarian ligament were transected; whereas in those who preferred salpingo-oophorectomy, the infundibulopelvic ligaments were isolated, ligated, and transected. The bilateral uterine arteries were identified and ligated by extracorporeal ties through retrograde umbilical ligament tracking [9], and the vesicouterine peritoneum was opened with scissors. The vaginal procedures began with anterior and posterior colpotomy. The vesicocervical, cardinal and uterosacral ligaments were transected. Because the uterine vessels had been secured laparoscopically, volume reduction techniques such as bisection, coring, myoma enucleation or morcellation could be done discretionally without much bleeding of larger uteri. The duration of LAVH was calculated from insertion of the Veress needle to the last suture of skin closure. Blood loss was estimated by calculating the difference between the volume of fluid aspirated and the weight difference of the gauzes used before and after surgery. A minimum of 50 mL was recorded for cases with little estimated blood loss. At the end of surgery, the removed uteri were weighed before fixation in formalin for histologic evaluation. Complications were defined as those events requiring active treatment and a prolonged hospital stay.

Results

The baseline characteristics of the four patients are listed in Table 1. All patients complained of hypermenorrhea or dysmenorrhea after KT. The median age of patients was 44 years (range, 40–46 years). All were diagnosed with adenomyosis, two combined with leiomyoma. Their median parity was 2.5. Three patients had previous vaginal delivery and two had previous cesarean section. Case 3 had a larger body mass index (BMI), 30.33 kg/m^2, than the other three patients. All patients had previous KT and Case 4 had simultaneous pancreas–kidney transplantation (SPK). She received SPK in 1994, but a second pancreatic transplantation in 1995 and a second KT in 1998 because of dysfunction of previous transplants. The Figure shows the images of Case 4 under laparoscopy and the uterus extirpated by LAVH. Three patients had severe anemia and received transfusion of packed red blood cells before surgery. There was one right ovarian endometrioma in Case 2, and LAVH plus cystectomy was performed.

Table 2 lists the clinical outcomes and complications. The median extirpated uterine weight was 195 g (range, 160–380 g). Intraoperatively, the median operative time was 147.5 minutes (range, 105–175 minutes) and the average blood loss was 50 mL (range, 50–100 mL). The time to flatus passage, oral intake and ambulation was all within 1 day after operation. Mild pelvic adhesion was found in Cases 2 and 4. Little postoperative analgesia was required in these four patients. Although severe anemia before operation was noted in three patients, there was no need for more blood transfusion during or after operation, and the hemoglobin level was still satisfactory 2 months after LAVH. The median hospital stay was 4 days. There was no complication except one postoperative fever. In Case 3, fever with body temperature up to 38°C and leukocytosis with a white blood count up to 16,630/μL were noted on postoperative day 1. The body temperature subsided

Table 1. Baseline characteristics of four patients with adenomyosis after kidney transplantation (KT) receiving laparoscopically assisted vaginal hysterectomy with bilateral uterine artery ligation through retrograde umbilical ligament tracking

	Case 1	Case 2	Case 3	Case 4
Age (yr)	44	40	44	46
Diagnosis	Adenomyosis Leiomyoma	Adenomyosis Right ovarian endometrioma	Adenomyosis Leiomyoma	Adenomyosis
Chief complaint	Hypermenorrhea	Hypermenorrhea Dysmenorrhea	Dysmenorrhea	Hypermenorrhea
Anemia	+	+	–	+
Preoperative PRBC transfusion (mL)	2,500	500	Nil	1,500
BMI (kg/m^2)	19.68	19.37	30.33	21.82
Gravidity	3	3	3	3
Parity	3	1	3	2
Previous vaginal delivery, *n*	3	0	3	1
Previous cesarean section, *n*	0	1	0	1
Previous pelvic surgery	KT	KT	KT	SPK PT KT
Additional operation	Nil	Right ovarian cystectomy	Nil	Nil
Adhesion	–	+	–	+

+ = present; – = absent; PRBC = packed red blood cells; BMI = body mass index; PT = pancreas transplantation; SPK = simultaneous pancreas–kidney transplantation.

to 37.8°C in the following 2 days and to normal on postoperative day 4 after treatment with intravenous cefazolin (1 g every 6 hours). These four patients were followed up at 6 weeks and 12 weeks after operation without morbidity.

Discussion

With improvements in immunosuppression and surgical techniques, more women are undergoing KT for management of ESRD. The location of the transplanted pelvic kidney and transplanted ureter must be taken into consideration when performing pelvic surgery. In this study, all patients had KT and one had SPK. Previous abdominal surgery or peritonitis may result in adhesions between the viscera and abdominal wall, and this can lead to reduction or loss of visceral slide. A reduction in slide was considered a positive sign of underlying adhesions [12]. Before operation, we screened these patients for detection of possible visceroparietal adhesions and selection of the site for trocar insertion in laparoscopic surgery by real-time anterior abdominal ultrasound imaging [10]. The site of choice for the Veress needle was the umbilical skin fold, because visceral slide was not reduced in the periumbilical area. Laparoscopy confirmed no adhesion of viscera to the undersurface of the umbilicus. An adhesion was found in the pelvis as a result of endometriosis in Case 2 and a mild bowel adhesion to the uterus in Case 4 (Figure), which was not related to trocar insertion at the abdominal wall. Previous studies [13] reported a complication rate of 5–7% with urinary tract injury (renal pelvis, ureter, and bladder) by laparoscopic fenestration for the surgical treatment of posttransplantation lymphocele. Bailey et al [14] reported that laparoscopy should be considered the first-line therapy. We inserted a ureteral stent into the transplanted ureter to prevent ureteral injury in the first case (Case 1), but it was not necessary as there was no obvious adhesion after KT in these cases.

Intraoperatively, Cases 2 and 3 needed more operative time than the other two cases, possibly as a result of a high uterine weight in Case 2 [15] and a high BMI in Case 3 [16]. Although O'Hanlan et al [17] reported similar mean operative times and blood loss among groups stratified according to BMI in total laparoscopic hysterectomy, Heinberg et al [16] reported that procedure completion for obese patients was more likely to require at least 2 hours (61%) compared with non-obese patients (38%). Obesity conveyed a threefold increased 'risk of operative blood loss exceeding 500 mL when compared with non-obese patients [16]. Blood sparing has an important place in hysterectomy in patients with

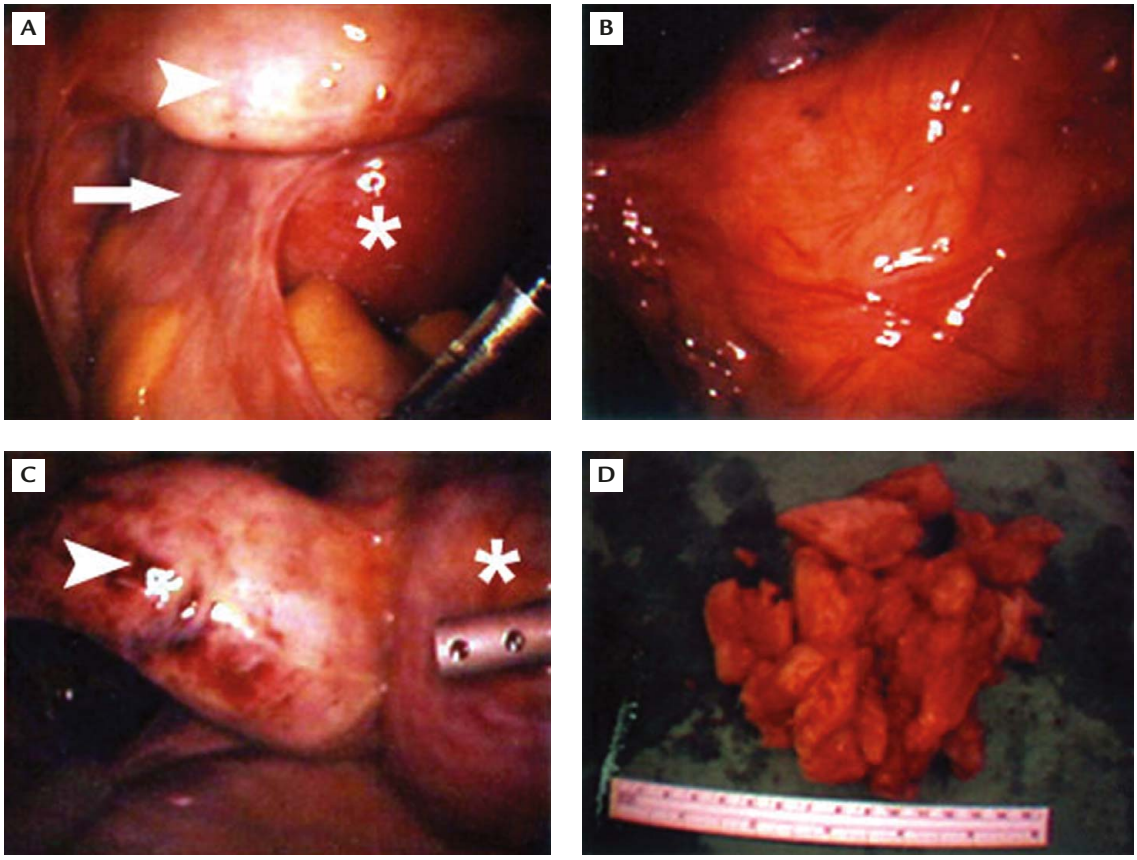

Figure. Case 4 under laparoscopically assisted vaginal hysterectomy (LAVH). (A) Enlarged uterus (asterisk) and the first dislocated transplanted kidney (arrowhead) were seen after pneumoperitoneum. Notice the bowel adhesion to the posterior uterine surface (arrow). (B) The second transplanted pancreas was covered by fat. (C) Notice the location of the first dislocated (arrowhead) and the second transplanted kidney (asterisk) after LAVH. (D) Extirpated uterus, weight 210 g, by LAVH with morcellation via the vaginal approach.

Table 2. Clinical outcomes and complications in patients with adenomyosis after kidney transplantation receiving laparoscopically assisted vaginal hysterectomy with bilateral uterine artery ligation through retrograde umbilical ligament tracking

	Case 1	Case 2	Case 3	Case 4	Mean ± SD
Uterine weight (g)	160	380	180	210	233 ± 100
Operative time (min)	130	175	165	105	144 ± 32
Blood loss (mL)	50	100	50	50	63 ± 25
Flatus passage (hr)	18	24	24	24	23 ± 3
Oral intake (hr)	18	24	18	24	21 ± 4
Ambulation (hr)	18	24	16	14	18 ± 4
Dose of meperidine (50 mg/ampule)	0	1	2	0	0.3 ± 0.6
Hospital stay (d)	3	3	8	5	4.8 ± 2.4
Hemoglobin (g/dL)					
Before hypermenorrhea	10.0		NA	11.7	
Before blood transfusion	4.4	8.7	NA	5.9	
Pre-operation	12.9	10.9	12.7	10.5	
2 months post-operation	10.6	11.8	11.3	10.3	
Postoperative fever	–	–	+	–	–

SD = standard deviation; NA = not available; – = absent; + = present.

a large fibroid uterus or preoperative anemia. In our cases, the blood loss was minimal (range, 50–100 mL) in all of the four patients, including Case 3 with a larger BMI (30.33 kg/m^2) and Case 2 with a heavier uterus (380 g). The decreased blood loss might result from uterine artery ligation in our operation procedure [18]. LAVH resulted in rapid recovery with oral intake, flatus passage and ambulation within 1 day after operation (Table 2). In addition, it benefited from a small wound and little analgesic requirement (Table 2). These are important, because patients after KT may take oral immunosuppressant drugs which increase wound complications [19].

In conclusion, LAVH may be a safe and effective treatment for adenomyosis after KT. However, the findings in this study should be considered preliminary because of the small number of patients; further large-sized studies are necessary.

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