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One hundred cases of laparoscopic subtotal hysterectomy using the PK and Lap Loop systems

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Laparoscopy;
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Plasma Kinetic;
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Abstract

STUDY OBJECTIVE: To evaluate the safety and short-term outcomes of laparoscopic subtotal hysterectomy using the PK and Lap Loop systems.

DESIGN: Prospective observational study (Canadian Task Force classification II-2).

SETTING: Princess Royal University and Chelsfield Park Hospitals, Kent, UK.

PATIENTS: One hundred women who underwent laparoscopic subtotal hysterectomy for menorrhagia from February 2003 through July 2004.

INTERVENTION: The procedure was performed using the Plasma Kinetic (PK) system to seal the vascular pedicles and the Lap Loop system to separate the uterus at the level of the internal os. The uterus was removed from the abdominal cavity mainly by morcellation or posterior colpotomy.

MEASUREMENTS AND MAIN RESULTS: Of 100 patients, 59 were operated on as outpatients. Mean patient age was 44.6 years, median parity was 2, mean body mass index was 26.8, and mean duration of symptoms was 4 years. Clinically, the uterus was enlarged in 70 patients, and preoperative ultrasound scanning suggested the presence of uterine myomas in 42 patients. In addition to hysterectomy, 47 patients had concomitant pelvic surgery. The mean total operating time was 45.5 minutes, and mean estimated blood loss was 114 mL. The overall major complication rate was 2%; two patients required blood transfusion after surgery. There were no bowel or urinary tract injuries, unintended laparotomy, return to operating room, or anesthetic complications. At follow-up, all patients were satisfied with surgery.

CONCLUSION: Laparoscopic subtotal hysterectomy using the PK and Lap Loop systems for treatment of therapy-resistant menorrhagia is safe, can be performed as an outpatient procedure, and is associated with reduced operating time and high patient satisfaction.

In spite of the availability of a wide range of endometrial ablation techniques, hysterectomy remains the most common major gynecologic operation performed in the UK.[1] There is evidence that hysterectomy, regardless of the technique used, is associated with higher rates of patient satisfaction than any other treatment for menorrhagia.[2,3]

Nevertheless, the search for the optimum approach and technique to perform hysterectomy continues. A recent randomized study comparing laparoscopic with abdominal and vaginal hysterectomy in women with nonmalignant conditions (the eVALuate study) concluded that although laparoscopic hysterectomy was associated with less postopera-

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Figure 1 The PK generator.

tive pain, quicker recovery, and better short-term quality of life, it involved longer operating time compared with both abdominal and vaginal hysterectomy and a higher rate of major complications than abdominal hysterectomy.[4] Particularly, the rate of complications related to major hemorrhage and urinary tract injuries (4.6% and 3%, respectively) was significantly higher in the laparoscopic arm of the trial than in the abdominal hysterectomy arm. These complications are known to be incurred mostly in ligation and transection of the uterine vessels and removal of the cervix during total hysterectomy[5] and represent the most frequent cause of litigation after hysterectomy.[6]

We conducted a prospective study to evaluate the technical aspects, complication rate, and short-term outcomes of a new technique to perform laparoscopic subtotal hysterectomy using the Plasma Kinetic (PK) (Gyrus International Ltd., Berkshire, UK) and Lap Loop (Roberts Surgical Healthcare Ltd., Kidderminster, UK) systems.

Materials and methods

Women who agreed to have laparoscopic subtotal hysterectomy for therapy-resistant menorrhagia from February 2003 through July 2004 were recruited into the study. Patients were included if they were suffering from menorrhagia resistant to medical therapy and did not wish further childbearing. Menorrhagia was diagnosed on the basis of history including the frequent change of pads or tampons and the presence of flooding and blood clotting. All patients had endometrial sampling before surgery, and only those with normal histologic findings were included.

Exclusion criteria were uncertainty about future wish for childbearing, suspected cancer, uterine size larger than 14 weeks, abnormal cervical smears, uterine prolapse, cervical pathology (such as cervical myomas), and patient request for removal of the cervix. Uterine size up 14 weeks, presence of uterine myomas, and previous pelvic surgery including caesarean section were not considered as contraindications. All women were given information about the procedure as well as alternative therapies and gave written informed consent before surgery.

Procedure

All procedures were performed under general anesthesia with the patient in the Lloyd-Davies semi-lithotomy position. Patient preparation included catheterization of the bladder and placement of a uterine manipulator. The surgical approach was through four laparoscopic ports: a 10-mm umbilical port for the camera, two 5-mm lateral ports, and one 12-mm suprapubic port for laparoscopic instruments. Following routine abdominal and pelvic inspection, devascularization and transection of the round ligament and adnexa were conducted using the PK system (Figure 1). This system is composed of a PK generator, which delivers intermittent pulses of bipolar energy and automatically monitors tissue impedance to the current to adjust power levels; a 5-mm disposable PK laparoscopic bipolar cutting forceps (45 cm) designed with serrated jaws to grasp, coagulate, and cut vascular pedicles; and a reusable PK-compatible connector cable.

The broad ligament and uterovesical peritoneal fold were then dissected, the upper part of the bladder displaced downward to a level about 2 cm below the uterine isthmus, and the uterine vessels exposed. The vessels were then coagulated, but not transected, using the PK forceps. Once the uterine vessels were coagulated, the uterine manipulator was removed, and the Lap Loop wire electrode was introduced through the 12-mm suprapubic port (Figure 2). This electrode consists of an 18-cm long disposable stainless steel wire that is screwed on one end of the introducer and has a small metal ball attached to the other end to facilitate handling. The wire is electrically isolated except at the middle segment for cutting.

After careful placement of the Lap Loop wire around the cervix at the level of the isthmus (just above the level of the coagulated uterine vessels) and checking proximity of adjacent structures, a monopolar current set on coagulation mode at a power level of 100 W (Pfizer ValleyLab, Pfizer Hospital Products Group, London, UK) was applied to the wire while the loop was pulled backward, resulting in separation of the corpus uteri from the cervix. Any residual bleeding from the cervical stump was treated with bipolar coagulation using the PK forceps, and the epithelial lining of the upper part of the cervical canal was desiccated to

Figure 2 The Lap Loop wire and introducer.