

Laparoscopic ultrasonic operative technique in surgery of women with endometrial cancer: 2 case reports

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Summary

The aim of this study was to introduce a new laparoscopic ultrasonic technique in the laparoscopy-assisted surgical staging of endometrial cancer. The entire laparoscopic phase of the laparoscopic hysterectomy and pelvic lymph node dissection was performed using a 5 mm ultrasonic scalpel and shears. Ultrasonic activated technology was easy to use and allowed the surgeon to perform laparoscopic hysterectomy and lymphadenectomy close to important pelvic structures safer than in other operative techniques. This is only a case report and a larger study to confirm the advantages of the laparoscopic operative technique in surgery of women with uterine malignancy is needed.

Key words: Laparoscopic surgery; Harmonic scalpel; Endometrial cancer.

Introduction

Traditionally, laparoscopic surgical treatment of endometrial cancer has been performed electrosurgically.

Recently, the harmonic scalpel was introduced into laparoscopic surgery. The harmonic scalpel (Hsc) is another term for ultrasonically activated instrumentation. Ultrasonic surgery is based on a mechanical vibration of a metal surgical tip. The vibrating tip selectively brakes down and removes tissue with high water content and spares tissue with high collagen content such as blood vessels, nerves and ductal structures. The harmonic scalpel and laparoscopic coagulating shears (LCS) have been used for laparoscopic hysterectomy in a few cases of benign female conditions only [1-3]. Based on the reasons mentioned above and our own experience with the harmonic scalpel in laparoscopic hysterectomy, we decided to use this technique in the laparoscopic surgically assisted staging of endometrial cancer.

Case Reports

The first patient was a 52-year-old woman with a diagnosis of endometrial cancer. In March 1999, she underwent endometrial biopsy through hysteroscopy for perimenopausal bleeding. The endometrial biopsy was sent for histological evaluation. An endometrial adenocarcinoma of middle differentiation (Grade 2) was reported. The patient with clinical stage Ib (myoinvasion less than 50%) carcinoma of the endometrium underwent a thorough history, ultrasound and computed tomography preoperatively.

The second patient was a 71-year-old woman with stage Ic (deep myoinvasion over 50% and a low differentiation - Grade 3) endometrial cancer. The diagnosis was based on a biopsy, ultrasound and computer tomography.

In both cases, laparoscopic hysterectomy, bilateral salpingo-oophorectomy and pelvic lymph node dissection were performed

using only the harmonic scalpel and LCS K 5 – five mm instruments (Ultracision, Ethicon Endo-Surgery, Johnson & Johnson, Cincinnati, Ohio, USA).

Operative technique

Laparoscopy was performed in the lithotomy position using video-monitoring equipment. The telescope was inserted in the subumbilical position and one 10 mm port of entry was placed suprapubically and medially. Finally, two 5 mm ports were each placed in the lower quadrant beside the lateral edge of the direct abdominal muscle. Five mm ultrasonic shears were used to perform the dissection of the peritoneum, which lies over the right common iliac artery; the incision extended caudally to the lateral pelvic peritoneum. The infundibulopelvic, broad and round ligaments were dissected and then the retroperitoneal space was entered. The ureter and the obliterated umbilical artery were identified close to the bladder and retracted medially. The space between the umbilical ligament and the external iliac vessels was opened and allowed identification of the obturator fossa structure. The nodal and other tissues along the obturator nerve and the obturator vessels were dissected by blunt and sharp dissection using the tip of the ultrasonic shears. Aberrant or penetrant veins in this area were carefully coagulated and the lymph nodes from the obturator fossa and common, external and internal bilateral iliac fields were excised. Following the lymph node dissection, laparoscopic hysterectomy was performed. All steps were performed laparoscopically using the ultrasonic shears. The vaginal dissection was performed by ultrasonic hook after the cup of Koh was placed over the cervix. The cup is a part of a new system described by Koh in 1998 [4]. Other instruments included a suction-irrigator probe and grasping forceps. Only the separation of the uterine vessels and closure of the vaginal cuff were completed vaginally.

Results

The outcome of the surgery and recovery are shown in Table 1 in both cases. No complications were observed.

Both patients had an uneventful postoperative course, and they have been doing well since release from the hospital.

Table 1. — *Outcomes of surgery and recovery.*

| Clinical data | Case 1 | Case 2 |
|-----------------------------|--------|--------|
| Duration of procedure (min) | 180 | 160 |
| Hospital stay (days) | 3 | 4 |
| Blood loss (ml) | 170 | 200 |
| Weight (kg) | 83 | 71 |
| Number of lymph nodes | 10 | 18 |

Discussion

The ultrasonically activated scalpel was originally developed to carry out a surgical incision with a concomitant hemostasis [5-7]. The system of the harmonic scalpel consists of a generator, reusable handpiece and a blade. The original hook-configuration blades can coagulate vessels up to 1-2 mm in diameter. The laparoscopic coagulating shears (LCS) may offer a much wider application since they occlude, coagulate and divide larger arterial vessels [5, 6]. The first total laparoscopic hysterectomy with a harmonic scalpel was reported by Schwartz in 1994 [1]. The report of laparoscopic hysterectomy using the harmonic scalpel also included Endo GIA staples and a bipolar coagulation. The uterine vessels were coagulated by bipolar coagulation. The specimen weighed 126 g and the Pathology Department reported a benign leiomyoma. Robbins and Ferland [2] used the LCS to perform hemostasis and cutting for an entire laparoscopic portion of laparoscopy-assisted vaginal hysterectomy in three women.

Their patients were women with benign gynaecological conditions. The authors conclude that the LCS provides effective coagulation and cutting. Advantages include less charring and pluming, better visualization and fewer injuries. One initially apparent disadvantage of the harmonic scalpel is that it seems to be slower than both stapling and bipolar coagulation [2]. In a recent literature review (Medline), we found reference only to an application of the harmonic scalpel in laparoscopic surgery of benign female conditions, but to the best of our knowledge, this is the first case report of laparoscopy-assisted surgical staging of endometrial cancer performed by 5 mm ultrasonic instruments. It appears that the bipolar coagulation as well as the harmonic scalpel and ultrasonic shears avoid many disadvantages associated with the stapler such as urethral injuries and increased cost. The laparoscopic ultrasonic operative technique provides both hemostasis and cutting with decreased charring of tissue and less thermal damage, allowing better healing because there is less need to evacuate a plume from the abdominal cavity. There is a lowered risk of injury from inadvertent contact of the nonactivated blade with tissue [2]. Using the LCS, we performed a dissection of lymph

nodes with minimum bleeding which were very close to the major pelvic vessels and the urether. The safe removal of the lymphatic tissue from the obturator fossa was made possible by coagulation and dissection of aberrant and penetrating veins between the v. ilica externa and communis. To provide hemostasis in the women having surgery only the ultrasonic surgical technique was used, including the coagulation and cutting of the uterine artery in the area of the offgoing part from the hypogastric artery. We appreciated the possibility of using the LCS tip for the separation of particular layers of the tissue and for the removal of released lymph nodes. The disadvantage of a slower coagulation compared to the electrosurgery was balanced by no need to change the instrument during the operation. The evidence for this is that an average duration of the procedure is 170 min., which is comparable to the duration of laparoscopic lymphadenectomies performed by electrosurgical techniques [7].

In cases, when the use of electrocoagulation is not applicable in women with cardiostimulators, the ultrasonic operative technique is safe and represents another possible application in the field of laparoscopic surgery.

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