

Laparoscopic radical trachelectomy (LRT) with round ligament and ascending branches of uterine artery preservation: case report

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Summary

Fertility sparing surgery might be a benefit for young patients with early-stage cervical cancer. The authors herein describe a case of adenocarcinoma of cervix Stage IA2 treated with laparoscopic radical trachelectomy (LRT) with round ligament and uterine artery preservation.

Key words: Cervical cancer; Radical trachelectomy; Laparoscopy; Fertility.

Introduction

Although cervical cancer screening programs have resulted in a decline of cervical cancer incidence, there has been an increase in young patients with early-stage disease. It is estimated that 15% of all cervical and 45% of Stage IB cervical cancer were diagnosed in patients younger than 40 years of age [1].

To preserve fertility, radical trachelectomy is to remove the cervix, upper two cm of the vagina, and the parametrium in a similar manner to type III radical hysterectomy, except by sparing the uterine body.

The original technique is radical vaginal trachelectomy, initiated by professor Daniel Dargent in 1987 [2]. The tumor size suitable for radical vaginal trachelectomy is two cm or smaller. Radical abdominal trachelectomy, another technique, may result in wider parametrial specimen than in radical vaginal trachelectomy [3]. According to this advantage, the patient with tumor size two to four cm could be in the eligible criteria for radical abdominal trachelectomy [4].

The more recent technique, laparoscopic radical trachelectomy (LRT), was first described by Pomel *et al.* in 2002 [5]. Theoretically the radicality of parametrial resection is comparable between the radical abdominal trachelectomy and LRT. However the advantages of laparoscopy are better cosmetic wound, less pain, faster recovery, less blood loss, and less intra-peritoneal adhesion compared to the open technique. In addition the laparoscopic technique, by magnification, can offer the chance to preserve ascending branches of uterine arteries.

The aim of the present case report is to describe the

authors' experience in LRT for conservative treatment of early-stage cervical cancer.

Materials and Methods

A 33-year-old nulliparous woman came to the hospital with Pap test showing atypical glandular cells, favoring neoplasia (endocervical cell type). She underwent colposcopy, cervical biopsy, and endocervical curettage. Histopathology showed only chronic cervicitis. Loop electrosurgical excision procedure (LEEP) was performed and the histopathology showed adenocarcinoma, endocervical cell type, measuring 0.35 cm. in depth and 0.7 cm. in length. The endocervical and stromal resected margins were not free from adenocarcinoma. The magnetic resonance imaging at six weeks after LEEP showed a 4.9 x 3.2 mm. ill-defined lesion at mid anterior lip of endocervix about five mm above endocervical os. After counseling for all options of treatment, she decided to undergo LRT with bilateral pelvic node dissection.

The operative time was 340 minutes, including time for frozen section. Estimated blood loss was 700 ml with no other serious intraoperative complication. The specimen consisted of cervix measuring three cm. in length and two by two cm. in diameter, anterior and posterior vaginal cuff measuring one and 1.5 cm. with the right and left parametrium measuring three x 2.5 cm. Sections showed reactive changes without residual tumor. Fifteen right pelvic lymph nodes and six left pelvic lymph nodes were negative for metastatic tumor.

Postoperatively, the patient had urinary retention which lasted five weeks. Otherwise, the recovery was uneventfully. She had her period on the ninth day after surgery and had regular menstruation every month during follow up time. The new cervix healed satisfactorily. She had sexual intercourse at fifth month after surgery. However since she did not wish to become pregnant during this period, hence condom was used for contraception. During the 22-month follow-up period, history taking, physical examination, pelvic examination, and cervical Pap test revealed normal findings.

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After general anesthetic method, the patient was in lithotomy position. The uterine elevator was applied to the cervix to help traction of the uterus. The ten-mm trocar was inserted at umbilicus and air insufflation was performed. After steep Trendelenburg position the two five-mm trocars were inserted to both sides of lower abdomen in the line between anterior superior iliac spine and umbilicus and two-finger breadths above the anterior superior iliac spines under direct visualization. The ten-mm trocar was inserted at the suprapubic area. The five-mm trocar was inserted at the left paramedian line about two-finger breadths below the umbilicus.

Right round ligament was elevated by grasper forceps and anterior leaf of broad ligament was opened and widened. Systematic bilateral pelvic lymphadenectomy, including deep inguinal, external iliac, internal iliac, and obturator nodes was performed. All pelvic nodes were sent for frozen section. LRT was initiated after the frozen section result of the pelvic nodes was negative for tumor. The right and left paravesical, pararectal, and vesico-uterine space were formed. The right ureter was identified and mobilized from the peritoneum down to where it crossed under the right uterine artery. By dissecting the right ureteric tunnel and the loose tissue between the right ureter and the right uterine artery, the right ureter was separated from the right uterine artery. The right uterine artery was preserved. The urinary bladder was extended caudally until the adequate margin of the upper vagina and laterally to identify the bladder pillar. The right ureteric tunnel was further unroofed up to the level where the ureter entered the urinary bladder. The left ureter was manipulated as the same manner. Then the peritoneum just above the rectum was incised by scissors to create the recto-vaginal space. Then the peritoneum was incised laterally along both sacro-uterine ligaments and the rectum was separated from posterior vagina and bilateral sacro-uterine ligament. There was some adhesion at recto-vaginal septum due to endometriosis. After separating both ureters laterally, both sacro-uterine ligaments were divided close to the sacrum. Subsequently, bilateral parametria and paracolpiums were divided at two cm below to the tip of cervix. The descending branches of both uterine arteries were coagulated by bipolar forceps at the level of isthmus and the ascending branches were preserved. The uterine elevator was taken off and then replaced by vaginal tube to prevent CO₂ leakage. Subsequently, the vagina was incised by monopolar hook about two cm below the fornix and then circumferential incision was performed. All of the procedure was performed laparoscopically except for the transaction of the uterine cervix and the reconstruction of the cervix. The cervix was incised at the isthmus by a knife transvaginally and the ascending branches of uterine arteries were preserved (Figure 1). The specimen was opened along the endocervical canal and examined intraoperatively. The resected margin of endocervix was sampled for frozen section which showed no tumor. The cervical-isthmic cerclage was performed using 1-0 polypropylene suture. Cervico-vaginal reanastomosis was performed using 1-0 polyglactin 910. Pediatric naso-gastric tube number eight was placed in the endocervical canal to prevent cervical stenosis for seven days.

Discussion

LRT is basically identical to laparoscopic radical hysterectomy except it preserves the body of uterus, bilateral round ligament, and bilateral ascending branches of uterine arteries. For this reason, LRT should theoretically yield adequate parametrium and vaginal cuff-like radical abdom-

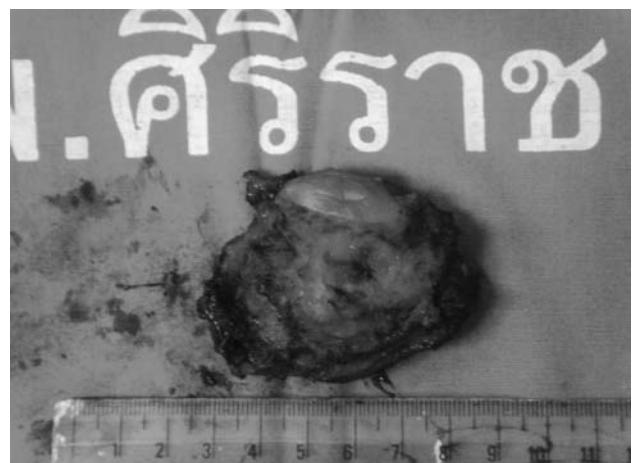


Figure 1. — Cervical specimen.

inal trachelectomy. Although one of the advantages of laparoscopic surgery is the magnification of the laparoscope providing the chance to preserve the uterine artery, there were three reports of LRT that of all of these patients' uterine arteries were severed [6-8]. However, there were other reports demonstrating LRT with uterine artery preservation [5, 9-10]. The authors use the advantage of magnification of laparoscope to save bilateral ascending branches of uterine arteries and normal menstrual pattern returned immediately. Although after bilateral uterine artery ligation, there are collateral circulations from ovarian vessels, most of the patients in the literature indicated normal menstrual pattern after radical trachelectomy. However, endometrial microcirculation and fertility capacity might be impaired after this procedure [11]. Ungar *et al.* reported that menstruation pattern did not return normal in six percent of the patients who underwent radical abdominal trachelectomy with coagulation of uterine vessels [12]. This would indirectly indicate that preservation of the uterine arteries may be beneficial for pregnancy outcome.

In the presented case the authors preserved round ligaments which are the one of the uterine supports. While some authors sacrificed the round ligament [10, 13, 14], Kim *et al.* preserved it [5].

The other advantages of laparoscopy are less pain, better cosmetic results, less blood loss, faster recovery [5], and less intraperitoneal adhesion [15] compared to open surgery. Less intraperitoneal adhesion should translate to the better fertility outcome that is the aim to preserve body of uterus.

To the authors' knowledge, this is the first case report of laparoscopic radical trachelectomy with round ligament and ascending branches of uterine artery preservation in South East Asia. This case adds data to accumulating series demonstrating that preservation of round ligaments and ascending branches of uterine arteries is feasible in such treatment.

Conclusion

Combining with the results in the literatures the authors believe LRT is feasible and safe for selected cervical cancer patients.

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