

Case Report

Preserving Fertility in Invasive Cervical Adenocarcinoma by Abdominal Radical Trachelectomy and Pelvic Lymphadenectomy

Mehrangiz Hatami MD^{* **}, Giuseppe Del Priore MD^{**}, Scott G. Chudnoff MD^{**}, Gary L. Goldberg MD^{**}

A 32-year-old female was diagnosed by loop electrosurgical excision procedure with adenocarcinoma *in situ* and a focus suspicious for positive lympho-vascular invasion. An abdominal radical trachelectomy was performed to preserve her uterus and fertility. The patient recovered without complications. The patient has had one year of follow-up without any evidences of recurrence. At present, the patient is not actively trying to become pregnant.

We concluded that abdominal radical trachelectomy may be a surgical option for early stage cervical cancer treatment in young women who wish to preserve fertility.

Archives of Iranian Medicine, Volume 9, Number 4, 2006: 413 – 416.

Keywords: Abdominal radical trachelectomy • cervical adenocarcinoma • fertility preservation

Introduction

Cervical cancer, after endometrial and ovarian carcinomas in the United States, is the third most common genital tract malignancy of women.^{1,2} Since the introduction of the Wertheim operation, i.e., abdominal radical hysterectomy (ARH), in 1889, this procedure has been performed for stage I-IIA cervical cancer as the treatment of choice in young women for whom the surgical option was chosen.³ In 1893, this technique was followed by another method—Schauta's vaginal radical hysterectomy (VRH).

In 1987, Dargent performed laparoscopic pelvic node dissection followed by the Schauta's operation. He combined the laparoscopic and transvaginal radical approaches⁴ into the laparoscopic vaginal radical trachelectomy (LVRT). In 1994, he presented this procedure for

the first time.⁵ This procedure was later modified and presented as the abdominal radical trachelectomy (ART).^{6,7} Herein, we present a case of adenocarcinoma of the cervix with vascular space invasion who was operated by ART.

Case Report

A 32-year-old Hispanic, nullipara female was referred by her general obstetrician to our tertiary health care facilities—an academic center for evaluation and treatment of cervical cancer. The patient had a Pap smear showing a high-grade squamous intraepithelial lesion. A loop electrosurgical excision procedure (LEEP) was performed which showed adenocarcinoma of the endocervix involving the endocervical margin, and a high-grade squamous cervical intraepithelial neoplasia, grade 3 (CIN III) including glandular involvement. Although, there was stromal invasion by the adenocarcinoma and tumor cells were seen in the vascular space.

A computerized tomography (CT) of the pelvis, performed preoperatively, demonstrated a mild prominence of the cervix without a focal cervical mass and no evidence of parametrial invasion, lymph node enlargement, nor hydronephrosis or hydroureter. There were no other significant findings on physical and laboratory examinations.

Authors' affiliations: *Department of Obstetrics and Gynecology, Taleghani Hospital, Shaheed Beheshti University of Medical Sciences, Tehran, Iran, **Department of Obstetrics and Gynecology and Women's Health, Division of Gynecology-Oncology, Albert Einstein College of Medicine and Montefiore Medical Center, New York, USA.

•Corresponding author and reprints: Mehrangiz Hatami MD, 1235, 1st Ave., Apt. 6, 10021, New York, NY, USA.

Tel: +1-917-498-7880,

E-mail: Mehrangizhatami@yahoo.com,

Mehrangiz.hatami@med.nyu.edu.

Accepted for publication: 2 November 2005

The planned surgical route was ART with pelvic/para-aortic lymphadenectomy (PL). To start, lymphadenectomy was performed and frozen sections were taken and sent for pathologic study which was negative for malignancy. Thereafter, attention was paid to the parametrial and paracervical tissues, which were dissected out. Ureterolysis and dissection of the bladder was then performed, and the uterine arteries were ligated at their origin on the pelvic sidewall. Subsequently, the cervix was removed with two cm of vaginal cuff (Figure 1). Frozen sections of the endocervical resection margin proved negative for neoplasm.

After removal of the cervix, a pediatric Foley catheter was inserted through vagina into the endometrial cavity and the balloon was inflated (Figure 2). A permanent, transabdominal, prophylactic cerclage was placed with a large non-absorbable suture (Prolene No. 1) at the level of internal os. Then, the vagina was sutured to the circumference of the cervical stump to form a neo-exocervix with Vicryl No. 0 interrupted sutures. Antibiotic and anticoagulant prophylaxes were administered. A suprapubic catheter was inserted in the bladder and was removed three weeks later when the postvoid residual volume became <100 mL. Tissue specimens, consisting of cervix, bilateral parametria measuring $5.0 \times 3.0 \times 3.5$ cm, appendix, and 25 lymph nodes, were sent for pathologic study, which revealed no evidence of residual tumor. The patient was discharged without any significant complications on the 4th post-operative day with instructions to return every three months as prescribed for follow-up.

Discussion

As the methods for detection of early cervical

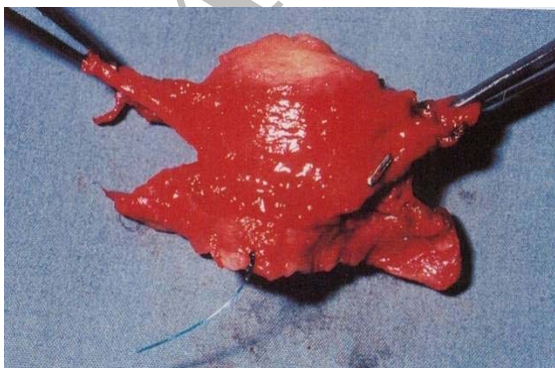


Figure 1. Specimen including cervix, parametrium, and upper vagina.

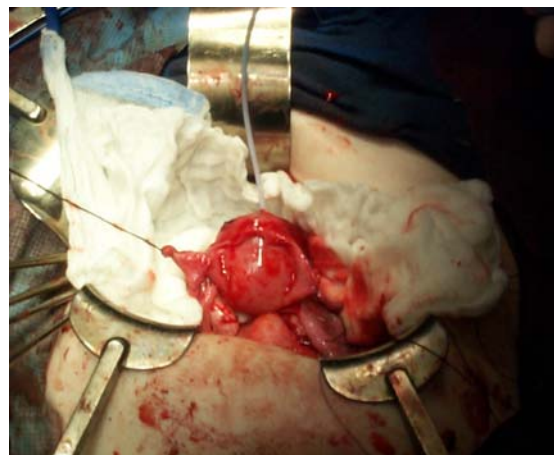


Figure 2. Residual uterus, tubes, and ovaries with catheter in the endometrial cavity prior to suturing to vaginal cuff.

cancer have improved over the past decade, the number of young women diagnosed with cervical neoplasms are increasing proportionately. This creates a difficult dilemma for the management of this group as many of these women are at the beginning of their reproductive lives, and the traditional method of treatment for invasive cervical cancer, Wertheim's hysterectomy, is in direct conflict with their reproductive goals. Simple conization in patients with International Federation of Gynecology and Obstetrics FIGO stage IA1 cervical cancer as a conservative method for fertility preservation is inadequate as it may be followed by recurrence.^{3, 8, 9} Furthermore, biopsy alone is not acceptable for more advanced lesions.

ART with PL is a radical local procedure that preserves the corpus uterine and potential for fertility in stage IA1-IIA cervical cancers.^{5, 10, 11} Patients with FIGO stage IA2 or stage IA1 carcinoma with extensive lympho-vascular space invasion may also benefit from this procedure.¹² When we screen patients for ART, the desire to preserve fertility should be one of our important objectives. Although evidence of infertility is cited as a contraindication for ART, Covens et al¹¹ reported on three of five patients who had ART with a prior history of infertility who went on to have a spontaneous pregnancy. They emphasized that a history of infertility should not necessarily exclude patients from this procedure.¹¹

Other indications for performing this procedure include no evidence of pelvic nodal metastasis, the lesion should be <2.0 cm in size, and be confined to the endocervix at colposcopic evaluation with stage IA1 or stage IIA carcinoma.^{5, 8, 13} The

extension of the tumor to the uterus should be evaluated by magnetic resonance imaging (MRI). Given the positive predictive value of 83% for MRI in detecting tumor extension, it is an important diagnostic tool.^{3, 10, 11}

During trachelectomy, as described by Dargent, the uterus is divided below the isthmus, which is sutured to the vagina at the end of the operation.⁷ It may be easier to resect the parametrium and upper vagina via an abdominal route compared with a vaginal route. Rodriguez et al¹⁰ suggested that intraoperative and postoperative complications are likely to be lower with an abdominal vs. a vaginal approach. They also were unable to demonstrate any difference in their cases whether the uterine arteries were ligated or not. They emphasized that the uterine arteries can be electively ligated if bleeding is excessive. Nevertheless, Smith et al⁶ during an ART in 1997, reported successfully reanastomosing the uterine arteries. Disruption of uterine arteries appears to have no effect on uterine viability and fertility, which is likely due to collateral circulation of the ovarian arteries to the uterus. In 47 patients, Dargent reported 2% intraoperative and 17% postoperative complication rates; Plante and Roy reported 11% and 17%, respectively. The rate of blood transfusion was 6% in both series.³

Over the past 16 years, there have been significant changes described in pathologic variables of stage IA2-IB1 cervical cancer. As reported by Covens et al,¹³ there has been a significant shift in the proportion of patients with adenocarcinoma vs. those with squamous cell carcinoma, and in the proportion of patients with grade III tumors relative to grade I tumors. They reported that the rate of adenocarcinoma has increased from 15% to 34% between the years 1984 – 1988 and 1994 – 1999. They also commented that there has been a 28% increase in the proportion of adenocarcinoma and a 28% decrease in the proportion of grade III tumors ($P < 0.001$). It is interesting to note that 83% of Dargent's cases had squamous carcinoma and 17% had adenocarcinoma. In comparison, Plante and Roy³ reported a rate of 65% and 35%, respectively. Plante and Roy also reported that 85% of their patients had tumors less than two cm in size while Dargent⁷ reported that only 15% had tumors less than two cm. In a retrospective study of the first 30 patients treated with PL and vaginal radical trachelectomy (VRT) from October 1991 through

April 1998 by Roy and Plante,⁸ four patients had vascular space invasion; three had grade III disease; 12 had adenocarcinoma; and 18 had squamous cell carcinoma. Of 32 patients treated with VRT by Covens et al in 1999, 59% had squamous cell carcinoma and 41% had adenocarcinoma; 44% had vascular space involvement and 10% had grade III disease.¹¹

In patients with cervical cancer with stage IB2 or lower treated by Dargent between 1987 and 2002, recurrence developed in four out of 95 patients. In all recurrences, the tumors were more than two cm in diameter; three of those four patients had lympho-vascular space involvement.¹⁴ Roy and Plante confirmed that patients who had vascular space invasion in pathologic examinations are at higher risk of recurrence. Patients with adenocarcinoma should also be very carefully assessed colposcopically to determine the extent of the disease in the cervical canal in order not to miss the skip lesions.⁸

Based on standard clinical care, the recommended follow-up after ART should be every three months for the first two years, then every six months for the following three years, and yearly, thereafter. Each follow-up visit entails a full physical examination and pelvic examination including Pap smear and colposcopy.¹¹ Pregnancy could theoretically be allowed after menses resumes; however, some authors recommend varied waiting periods of up to one year.⁸ Due to the necessity of maintaining the abdominal cerclage throughout pregnancy, pregnant patients will require cesarean section for delivery. Covens et al reported a 37% conception rate in their patients within the first one year.¹¹ The outcome of pregnancy may be variable with reports in the literature of term cesarean section, premature labor, premature rupture of membranes, or miscarriage.^{5, 8, 11, 15, 16} A Saling procedure (closure of the cervical os vaginally) at 14 weeks of pregnancy may further decrease the rate of second trimester miscarriage. The mechanism is postulated to be a reduction in subclinical chorioamnionitis from an inadequate mucus plug.^{3, 17} Dargent et al in 2000, reported that between 1987 and 1996, 47 patients who underwent the Saling procedure had 13 normal births and a miscarriage rate of 25%. The rate of tumor recurrence was 4% in their patients.⁵

In conclusion, as the rate of cervical cancer diagnosis in young women is increasing, ART is

becoming a more suitable approach for treatment of these patients who wish to preserve fertility.

Acknowledgment

We thank Dr. Mark Einstein for his assistance in the preparation of the figures for this case report.

References

- 1 Wright TC, Cox JT, Massad LS, Twiggs LB, Wilkinson EJ. 2001 consensus guidelines for the management of women with cervical cytological abnormalities. *JAMA*. 2002; **287**: 2120 – 2129
- 2 Plante M. Fertility preservation in the management of gynecologic cancers. *Curr Opin Oncol*. 2000; **12**: 497 – 507.
- 3 Plante M, Roy M. New approaches in the surgical management of early-stage cervical cancer. *Curr Opin Obstet Gynecol*. 2001; **13**: 41 – 46.
- 4 Dargent D, Mathevet P. Schauta's vaginal hysterectomy combined with laparoscopic lymphadenectomy. *Baillieres Clin Obstet Gynaecol*. 1995; **9**: 691 – 705.
- 5 Dargent D, Martin X, Sacchetoni A, Mathevet P. Laparoscopic vaginal radical trachelectomy: a treatment to preserve the fertility of cervical carcinoma patients. *Cancer*. 2000; **88**: 1877 – 1882.
- 6 Smith JR, Boyle DC, Corless DJ, Ungar L, Lawson AD, Del Priore G, et al. Abdominal radical trachelectomy: a new surgical technique for the conservative management of cervical carcinoma. *Br J Obstet Gynaecol*. 1997; **104**: 1196 – 1200.
- 7 Dargent D. Radical trachelectomy: an operation that preserves the fertility of young women with invasive cervical cancer [in French]. *Bull Acad Natl Med*. 2001; **185**: 1295 – 1306.
- 8 Roy M, Plante M. Pregnancies after radical vaginal trachelectomy for early-stage cervical cancer. *Am J Obstet Gynecol*. 1998; **179**: 1491 – 1496.
- 9 Schlaerth JB, Spirtos NM, Schlaerth AC. Radical trachelectomy and pelvic lymphadenectomy with uterine reservation in the treatment of cervical cancer. *Am J Gynecol*. 2003; **188**: 29 – 34.
- 10 Rodriguez M, Guimares O, Rose PG. Radical abdominal trachelectomy and pelvic lymphadenectomy with uterine conservation and subsequent pregnancy in the treatment of early invasive cervical cancer. *Am J Obstet Gynecol*. 2001; **185**: 370 – 374.
- 11 Covens A, Shaw P, Murphy J, DePetrillo AD, Lickrish G, Laframboise S, et al. Is radical trachelectomy a safe alternative to radical hysterectomy for patients with stage IA-B carcinoma of the cervix? *Cancer*. 1999; **86**: 2273 – 2279.
- 12 Mota F. Microinvasive squamous carcinoma of the cervix: treatment modalities. *Acta Obstet Gynaecol Scand*. 2003; **82**: 505 – 509.
- 13 Covens A, Rosen B, Murphy J, Laframboise S, DePetrillo AD, Lickrish G, et al. Changes in the demographics and perioperative care of stage IA 2/IB1 cervical cancer over the past 16 years. *Gynecol Oncol*. 2001; **81**: 133 – 137.
- 14 Dargent D. Fertility preservation in early cervical cancer. [in French]. *Gynecol Obstet Fertil*. 2003; **31**: 706 – 712.
- 15 Martin XJ, Golfier F, Romestaing P, Raudrant D. First case of pregnancy after radical trachelectomy and pelvic irradiation. *Gynecol Oncol*. 1999; **74**: 286 – 287.
- 16 Del Priore G, Ungar L, Boyle DM, Smith JR. Abdominal radical trachelectomy for fertility preservation in cervical cancer patients. *Obstet Gynecol*. 2003; **101**: 2 – 3.
- 17 Burnett AF, Roman LD, O'Meara AT, Morrow CP. Radical vaginal trachelectomy and pelvic lymphadenectomy for preservation of fertility in early cervical carcinoma. *Gynecol Oncol*. 2003; **88**: 419 – 423.