

Radical abdominal trachelectomy is a safe and fertility preserving option for women with early stage cervical cancer

A. Karateke, C. Kabaca

Department of Gynecologic Oncology, Zeynep Kamil Women and Children Diseases Education and Research Hospital, Istanbul (Turkey)

Summary

Purpose of investigation: To present the surgical, oncological and obstetrical outcomes gained from patients who underwent radical abdominal trachelectomy (RAT) in Zeynep Kamil Women and Children Diseases Education and Research Hospital and radical Yeditepe University Hospital. **Methods:** A total of eight RATs were performed between 2003-2010. Data were obtained from medical and pathological records of the patients. **Results:** The mean age of the patients was 27.37 ± 6.39 years. The mean follow-up time of the patients was 33.62 ± 27.47 months. Three (37.5%) patients had a tumor size smaller than 2 cm, and five (62.5%) patients had a tumor size larger than 2 cm. Seven (87.5%) patients had Stage IB1 and one (12.5%) patient had Stage IIA tumor. Three (37.5%) patients had late postoperative complications: uterotubal abscess, severe lymphedema and lymphocyst. There were no recurrences. Three patients became pregnant which resulted in two live births and one abortus. The spontaneous pregnancy rate was 50%. **Conclusion:** We think that RAT is a reliable surgical option for a patient with early stage cervical cancer who wants to preserve fertility.

Key words: Radical abdominal trachelectomy; Early stage cervical cancer; Pregnancy; Fertility.

Introduction

Cervical cancer is the third most common cancer in women, with an estimated 530,000 new cases in 2008. Cervical cancer is the ninth most common cancer among women in Turkey and ranks 12th among cancer-related deaths [1]. Historically, the recommended surgical treatment for women with Stage IA2 -IB1 cervical cancer is radical hysterectomy and bilateral pelvic lymphadenectomy. More than 40% of the diagnosed early invasive cervical cancer is found in women younger than 45 years of age and many women within this age group have not completed their childbearing [2, 3]. According to the literature, radical trachelectomy, which aims at the preservation of the body of the uterus, is claimed to be an acceptable approach for young women with cervical cancer who wish to preserve their fertility [4-6]. Dargent *et al.* [4] popularized the procedure known as radical vaginal trachelectomy. In 1997, Smith *et al.* [7] introduced radical abdominal trachelectomy (RAT). In the literature, many authors have reported that RAT is safe and applicable with results similar to those seen with radical vaginal trachelectomy [8-11].

The aim of the present study was to present the surgical, oncological and obstetrical outcomes gained from the patients who had undergone RAT in the Gynecologic Oncology Clinics of Zeynep Kamil Women and Children Diseases Education and Research Hospital and Yeditepe University Hospital.

Materials and Methods

The medical records of all patients who had undergone RAT were reviewed. All surgical interventions were carried out by the same operator in the two institutes between July 2003 and

November 2010. Institutional review board approval was obtained. Data were obtained from medical and pathological records of the patients and included age, stage, histopathologic subtype, tumor size, evidence of lymphovascular space invasion, number and malignant invasion of the lymph nodes removed, disease status of the surgical specimen, duration of hospitalization, intraoperative and postoperative complications, number of perioperative blood transfusions, oncologic follow-up and fertility outcomes.

Patients with a confirmed diagnosis of cervical cancer were considered eligible for RAT if they met the criteria for radical abdominal hysterectomy in addition to a strong desire for future fertility preservation. The parametrium should be intact by bimanual rectovaginal examination under general anesthesia. There should be no evidence of the disease in the parametrium according to preoperative pelvic magnetic resonance imaging (MRI) examination. MRI was employed preoperatively to decide whether there was any tumor near the isthmus to accomplish the surgical intervention with a safe tumorless margin of approximately 0.5-1 cm at the upper cervical border. Positron emission tomography-computed tomography (PET-CT) was used to determine whether there were any lymph nodes and distant metastasis. All patients were advised that the standard treatment for women with early cervical cancer still remained as radical hysterectomy rather than trachelectomy and patient approvals were obtained.

Surgical technique

Entry into the abdominopelvic cavity is performed through either a Maylard or median incision. The round ligaments are divided. The paravesical and pararectal spaces are exposed and the bladder is dissected caudally to the mid-vagina. The infundibulopelvic ligaments with the ovarian vessels are kept intact and maximum attention must be established during the operation. The uterine vessels are then ligated and divided at their origins from the hypogastric vessels. The ureters are then dissected bilaterally to their insertion into the bladder with lateral mobilization. The uterosacral ligaments are identified and transected. Then, the parametrium and paracolpos are divided. The

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Table 1. — Data of the patients.

Patients	Age, years	Follow-up time, months	Operation time minutes	Number of units of blood transfusion	Hospital stay, days	Post-operative complication	Recurrence	Pregnancy
1	19	92	210	0	12	Late uterotubal abscess	No	Hysterectomized
2	28	55	210	0	10	No	No	No
3	25	28	150	0	5	No	No	Yes, delivered term baby
4	28	25	150	0	5	Left leg lymphedema	No	No
5	35	26	160	0	5	No	No	Yes, delivered a baby at 31 weeks of gestation
6	33	21	180	2	7	Lymphocyst	No	Yes, abortus at 21 weeks
7	18	17	120	0	12	No	No	No
8	33	5	130	0	10	No	No	No

Table 2. — Pathological results.

Patients	Histologic subtype	Tumor size, cm	Disease free upper surgical margin, mm	Vaginal invasion	LVSI	Number of lymph nodes removed	Lymph node positivity	Stage
1	Clear cell	1.2 × 1.8 × 1.1	12	0.1 mm	Yes	19	No	II a
2	Squamous cell	2.9 × 2 × 1.7	7	No	Yes	36	No	Ib1
3	Squamous cell	3 × 2.2 × 0.7	28	No	No	15	No	Ib1
4	Squamous cell	0.6 × 0.8 × 1	6	No	Yes	35	No	Ib1
5	Squamous cell	1.2 × 1 × 1	11	No	No	25	No	Ib1
6	Adenocarcinoma, villoglandular	2.2 × 1.2 × 0.3	13	No	No	42	No	Ib1
7	Adenocarcinoma	3 × 4, exophytic*	40 mm, no residual tumor in material	No	No	48	No	Ib1
8	Adenocarcinoma	2.1 × 1 × 0.5*	30 mm, no residual tumor in material	No	No	37	No	Ib1

* Tumor sizes within the conization specimen. Disease-free upper margin was deemed as the longitudinal length of the cervix in 2 patients in whom no residual tumor was present. LVSI: lymphovascular space invasion.

cervix is amputated from the vagina. Cervical tissue is divided from the uterine corpus close to the isthmus according to size of the tumor. The specimen is sent for frozen section evaluation to assure that at least a 5 mm margin is free of tumor. Bilateral complete pelvic and paraaortic lymphadenectomies are performed from the level of the inferior mesenteric vessel to the circumflex iliac vein. If the frozen section evaluation is benign, it means at least a 5 mm clear margin obtained at the endocervical edge is provided; the uterine body is reconstructed to the vagina with 4-6 interrupted # 0 Vicryl sutures. In the present series a cerclage suture was not placed except for the first case of the series. The abdominal wall is then closed. A standard antibiotic prophylaxis with routine postoperative care is performed.

Routine oncological follow-up includes a pelvic examination, pelvic ultrasonography, and Pap smear every two months for the first year, then every four months for the second year, and every six months for the subsequent years. Dilatation with hysteroscope to prevent granulation and synechia is performed two times a month for the first three months after the surgical intervention. Dilatation with a hysteroscope is discontinued if the patient has regular menstrual bleeding and no dysmenorrhea.

Results

A total of eight RATs were performed. Six patients were operated on in Zeynep Kamil Women and Children Diseases Education and Research Hospital and the remaining two patients were operated on in Yeditepe Medical Faculty Hospital. The data of the patients and the pathological results are summarized in Tables 1 and 2, respectively.

The mean age of the patients was 27.37 ± 6.39 years (range: 18-35). Four (50%) patients had squamous cell carcinoma, three (37.5%) patients had adenocarcinoma, and one (12.5%) patient had clear cell carcinoma. The case with a diagnosis of a clear cell carcinoma is the first case in the literature with this histological subtype and a follow-up time of 92 months has still revealed no recurrence. The mean follow-up time of the patients was 33.62 ± 27.47 months. Three (37.5%) patients had a tumor size smaller than 2 cm, and five (62.5%) patients had a tumor size larger than 2 cm. Seven (87.5%) patients had Stage IB1 and one (12.5%) patient had Stage IIA tumor. Three patients (37.5%) had lymphovascular space invasion. The median surgical intervention time was 163.75 ± 33.77 minutes (range: 120-210 min). The median length of hospitalization was 8.25 ± 3.10 days (range: 5-12 days). No intraoperative complications occurred. Menses resumed within the first six weeks after the operation. There were no recurrences during the follow-up period.

Three (37.5%) patients had late postoperative complications. One of them was reoperated after the third year following the first surgical intervention due to suspicion of metastasis. An abdominal MRI revealed a right adnexal mass of 10×15 cm. Re-laparotomy revealed an abscess formation within the uterus and tuba. The uterine wall was thinned due to the ongoing abscess. Her second operation was right-side salpingo-oophorectomy with a uterine corpus resection. Because the first patient presented with a late abscess formation within the uterine

cavity due to obstruction, a cerclage suture was not placed for the subsequent patients. The second patient with a late complication presented with a severe lymphedema of her left leg after two months following her operation and lymphedema was reduced with regular lymph massage. The third patient with late complications had a lymphocyst in the pelvis.

Three patients became pregnant during their follow-up periods. The first of them experienced fetal loss in the 21st week of pregnancy, whereas the second patient delivered a healthy baby with a cesarean section in the 31st week of gestation and the third patient delivered a term baby in the 38th week of gestation with a cesarean section. Proluton depot, 250 mg, was injected every week intramuscularly to both cases with continuing pregnancies until delivery.

Discussion

The results of this study showed that RAT can be performed safely in well selected patients with early-stage cervical cancer who wish to preserve their fertility. In the literature review, patients with tumor size smaller than 2 cm were selected for radical vaginal trachelectomy whereas patient selection can potentially be extended to patients with a larger lesion size up to 4 cm for RAT [11-13]. In one of the latest reviews, approximately 116 RATs were described in the literature [13]. Five patients in our series were unusual due to a tumor size of larger than 2 cm. The mean follow-up was 33.62 ± 27.47 months and no recurrences were noted. Our results regarding the duration of the operation, hospitalization time, intra- and postoperative complications resemble other similar reports [8, 12]. The oncologic safety of trachelectomy has been demonstrated with extensive retrospective data [14]. Lower recurrence rates were reported when RAT had been performed compared to a vaginal approach since extended parametrial resection was carried out by the abdominal route [8, 15].

According to our experience and literature review, RAT operations have some potential advantages including extended parametrial resection and ability to more accurately determine the site of cervical amputation from the uterine isthmus. Disease-free upper surgical margin ranged between 6 and 40 mm in our series. We also think that the disease-free margin should be at least 5 mm as also recommended by the related literature [13]. Moreover, there is neither a necessity to be trained in laparoscopic surgery or to be trained specifically in radical vaginal surgery since RAT is identical to radical hysterectomy with the exception that the uterine corpus is not removed. The potential disadvantages of RAT include poor cosmesis, longer hospitalization, delayed return of bowel function and delayed return to daily activities [10].

Normal menstruation was resumed within six months in all our patients. In our series, when the patient with uterine corpus resection and the last and newest case with insufficient follow-up time (5 months) were not taken into account, the spontaneous pregnancy rate was 50%.

While one patient had a second trimester abortus, the second one had a preterm delivery, whereas the third patient had a term pregnancy. We think that bilateral ligation of the uterine arteries of a nonpregnant uterus does not influence spontaneous pregnancy rates and obstetrical outcomes.

In the literature, the procedure of isthmic cerclage is controversial because of the complications, like abscess or cerclage expulsion. Although there are reports that recommend performing isthmic cerclage routinely [11, 12], because of the late complication that occurred in the first case of our series, we did not perform any cerclage in the subsequent cases. Some similar experiences about complications as well as complete cerclage expulsion have been reported in the literature [6, 10]. We could not decide whether cerclage should really be added to the procedure since abortus occurred in one of our patients in the 21st week of pregnancy.

We performed consecutive dilatation with a hysteroscoper routinely for three months to keep the isthmic patency and to prevent hematocolpos and pyometra formation caused by synechia. Dilatation with bougie has also been reported by other authors [8].

As the published cases are increased in the literature, RAT would be a safe alternative surgery to Type III hysterectomy for women with early-stage cervical carcinoma who wish to preserve fertility or the uterus. The successful results could increase the popularity of trachelectomy. RAT has been carried out by the same technique as Type III hysterectomy except for the preservation of the utero-ovarian ligament and uterine corpus. We think that our report could be one of the encouraging studies to enhance and universalize the RAT procedure because of successful obstetrical and oncological outcomes gained from unusual cases. The oncological outcomes of the RAT and Type III hysterectomy are similar in cases with intact parametrium since cervical cancer progresses to the parametrial tissues rather than in the caudocranial direction.

Conclusion

We think that RAT is a reliable surgical option for a patient who desires fertility preservation and in whom postoperative chemoradiotherapy could be predicted as unnecessary in the postoperative period.

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Address reprint requests to:
C. KABACA, M.D.
Semsettin Gunaltay Cad. No: 197
Medine apt. D. 23
34738, Kadikoy, Istanbul (Turkey)
e-mail: canankabaca@yahoo.com