Radical abdominal trachelectomy in managing early cervical invasion

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Summary

The purpose of the study was to determine if radical abdominal trachelectomy with pelvic lymphadenectomy could be a method for treatment of early cervical cancer to preserve fertility. We examined 12 patients who were surgically treated from 2002 to 2006. The diagnostic method to determine cervical cancer was histologic examination by cone or biopsy. The histologic condition was well differented planocellular carcinoma. Two of the patients had Stage Ia1, seven had Ia2, and three had Ib1. We performed radical abdominal trachelectomy with pelvic lymphadenectomy. Resection edges were pathohistologically analyzed extemporaneously, as well as selective lymph nodes. According to the extempore analysis we determined if radical trachelectomy should be done. In one patient resection edges were positive, so she underwent radical hysterectomy. Postoperatively we found a positive lymph node in one patient, so radiation therapy was continued. In the two-year follow-up period we did not find any signs of residual cancer. We concluded that radical trachelectomy with pelvic lymphadenectomy could be an appropriate method for treatment of early-stage cervical cancer.

Key words: Radical trachelectomy; Cervical cancer; Fertility.

Introduction

Cervical cancer is one of the most frequent malignancies in the female population. Lately this disease has shown an increased incidence in young women (< 35 years). It future pregnancy is desired there is the task to treat the cancer while possibly preserving fertility [1].

Surgical treatment is the standard method in the treatment of invasive cervical cancer [2]. In certain cases there is a possibility for patients to undergo less radical surgical treatment rather than classic or radical hysterectomy with bilateral salpingo-oophorectomy, and to preserve fertility and attain a better quality of life. This concept is strongly selective, and includes only patients with early stages of cervical cancer. There are several methods of surgical treatment for cervical cancer to preserve fertility [2].

Besides cone and pelvic lymphadenectomy, chemotherapy could also be performed. However in most cases abdominal radical trachelectomy with pelvic lymphadenectomy is performed. Also vaginal radical trachelectomy with pelvic lymphadenectomy could be performed [2].

Abdominal radical trachelectomy with pelvic lymphadenectomy

This technique includes preparation of the uterine arteries and sections of both cervical branches, preparation of the ureters, removal of the parametria, cervix, distal vaginectomy, preserving the utero-ovarian ligation, and section of the uterosacral ligaments. It was shown that the uterine arteries have no effect on uterine viability and fertility due to the colateral circulation from the ovarian arteries [3]. Afterwards reanastomosis of the uterine corpus with vaginal mycosis and cerclage with nonesorptive rope at the level of the uteral isthmus are performed. During the operation, pelvic lymphadenectomy is performed, and then an extempore biopsy is done to determine the radicality of the operation. Pelvic lymphadenectomy includes a deliberate dissection of the parametrial lymph nodes of the common iliac artery, and external iliac veins. Lateral chains of external iliac lymph nodes are distal to the circumflex iliac veins. Then dissection of the medial chain of the external iliac lymph nodes and obturator and ischiorectal lymph nodes is performed, followed by the paraaortal lymph nodes [4].

Vaginal radical trachelectomy with pelvic lymphadenectomy

This operation is a modification of the Schauta-Stoeckel procedure (vaginal radical hysterectomy). The difference is that in radical vaginal trachelectomy the apical part of the endocervix and uterine corpus are preserved. The technique includes laparoscopic pelvic lymphadenectomy with laparoscopic parametrectomy [5].

The aim of the study was to determine if radical trachelectomy with pelvic lymphadenectomy could be a method of treatment for early-stage cervical cancer to preserve fertility.

Material and Methods

We analyzed 12 patients with early-stage cervical cancer hospitalized at the Institute of Gynecology and Obstetrics, Clinical Center of Serbia in the period from 2002 to 2006. Patients were surgically treated and postoperatively followed during a two-year period. All patients were in the reproductive period.

The diagnostic method for diagnosing cervical cancer was histologic examination by cone or biopsy. Stage and lesion size were preoperative determinants for participation in the study (FIGO Stage Ia1, Ia2 and Ib1). The histologic diagnosis was well differentiated planocellular carcinoma. Adenocarcinoma cases were not included in the study.

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The operative technique was radical abdominal trachelectomy with pelvic lymphadenectomy. Resection edges were pathohistologically analyzed extemporaneously (freeze section analysis), as well as lymph nodes, selectively. According to the extempore analysis we determined if radical trachelectomy should be done, or if radical hysterectomy should be performed.

We followed our patients during a two-year postoperative period (clinical examination, cytology, and ultrasound abdominal and pelvic examinations).

Results

In the target group, histopathological examination showed that two of the patients had FIGO Stage Ia1, seven had Ia2, and three had Ib1. The preoperative diagnostic method for cervical cancer was histologic examination - cone in five patients and biopsy in seven patients.

All the patients were in the reproductive period: the average age was 30.55 ± 5.52 (range, 22-40 years). No patient gave a history that suggested problems with fertility.

Histological tumor grade (according to the modified Browder system for planocellular carcinoma) was well differented type G1-G2 in all patients.

In all patients, rapid frozen section of the endocervical margins and lymph nodes was performed selectively. In all but one case they were clear. In one patient resectional edges were positive for neoplasia so she was submitted to radical hysterectomy.

Postoperatively we found a positive lymph node in one patient, so radiation therapy was continued. In the other ten patients we did not find any signs of residual cancer in the two-year follow-up period (Table 1).

Table 1. — *Disease parameters, treatments and sequelae for patients who underwent radical trachelectomy and pelvic lymphadenectomy.*

Patient	Age	Histologic condition	Stage	Residual disease in radical trachelectomy specimens	Complications
1	28	Ia1	cone	–	–
2	32	Ia1	cone	–	–
3	30	Ia2	biopsy	–	–
4	35	Ib1	biopsy	–	hematometra
5	40	Ib1	cone	+	–
6	38	Ia2	biopsy	–	–
7	29	Ia2	biopsy	–	–
8	22	Ia2	biopsy	–	–
9	24	Ia2	cone	–	–
10	27	Ia2	cone	–	–
11	31	Ia2	cone	–	–

Discussion

There are several methods of fertility preserving surgical treatments for cervical cancer. Besides cone and pelvic lymphadenectomy, chemotherapy could also be performed (taxol, cisplatinum, epiburicin) [2]. Landoni *et al.* performed a study in 12 patients with invasive cervical carcinoma. After chemotherapy followed by cone biopsy with pelvic lymphadenectomy, in eight patients there was no recidual malignancy. However, the safety of this method has not been seriously examined in clinical practice [6].

D'Argent *et al.* in 1994 described an operation called radical vaginal trachelectomy. Their initial experience has been expanded and repeated by others [6].

Roy and Plante [5] and D'Argent *et al.* [6] have suggested criteria for performing a radical trachelectomy:

1. a desire to preserve fertility;
2. no clinical evidence of impared fertility;
3. FIGO Stage Ia2, or Ib;
4. lesion size < 2 cm;
5. absence of adenocarcinoma;
6. absence of capillary space involvement;
7. limited endocervical involvement on colposcopic examination, and
8. no evidence of pelvic lymph node metastasis [6].

All the patients were in child-bearing age. No patient had a history that suggested problems with fertility. Some of the patients were older than 35 years, which is the age of a lower fertility rate. The operation itself can decrease fertility rates because of pelvic adhesions.

Although infertility has been suggested as a contraindication for trachelectomy, Covens *et al.* described three of five infertile patients who became pregnant after trachelectomy [7].

The diagnostic method for cervical cancer was histologic examination, cone or biopsy, as well as endocervical curettage. We examined the length and width of invasion and involvement of the lymphovascular space to determine if radical trachelectomy should be performed. To evaluate the disease we used clinical examination, exfoliative cytodiagnostics – Papanicolaou smear, pelvic and abdominal ultrasound scans, lung scan and laboratory analyses. FIGO stage and the lesion size are the most important preoperative determinants to perform radical trachelectomy [7].

Surgical treatment is the standard method for treatment of invasive cervical cancer [2]. For Stage Ia1 (stromal invasion less than 3 mm, largest diameter of the lesion less than 7 mm), without lymphovascular invasion, the best choice of treatment is cone, considering that the incidence of lymphatic invasion is less than 1%. Moreover, possible therapy is radical trachelectomy [7], as it was in two of our patients who had a positive resectional edge after therapeutical cone (microinvasive carcinoma).

For Stage Ia2 (stromal invasion 3-5 mm, largest diameter of the lesion less than 7 mm) and Ibl (stromal invasion more than 5 mm, largest diameter of the lesion less than 4 cm), the risk of lymphatic invasion is higher, so not only should the primary tumor be removed, but also the lymph node. In addition to radical trachelectomy, pelvic and paraaortical lymphadenectomy have to be performed. Some authors consider that Stage Ia2 could be equally treated by circular cone with clear resectional edges, as well as trachelectomy or hysterectomy [7]. They consider that in this stage, changes are more lymphatic, and less local. Nonetheless, pelvic lymphadenectomy is still necessary [7, 8].

In our study there were two patients with Stage Ib1 cervical carcinoma, with a lesion diameter less than 2 cm, that underwent radical trachelectomy. Few authors consider that there is a possibility to combine radical cervical lesion excision with pelvic lymphadenectomy for Stage Ib1 [8].

Some authors also consider that a lesion diameter less than 2 cm is important in ulcerative and infiltrative lesions, but exophytic lesions that emanate from the portio of the cervix with narrow bases may be reasonable exception to the criteria size. Recidual disease more often occurs in lesion diameters more than 2 cm [8].

During surgery, the cervix with part of the vagina is removed, as well as the lymph node. Resectional edges and selective lymph nodes are analyzed extempore. If the edges are clean and metastases are not found in the lymph nodes, trachelectomy should be continued. If the edges are positive and/or metastases are found, the planned radical trachelectomy is abandoned and the operation is continued as a radical hysterectomy, as occurred in one of our patients [9, 10].

Pelvic lymphadenectomy that was performed in this series included a deliberate dissection of the parametrial lymph nodes because they are the first order lymph nodes for drainage from the cervix. Their removal is deemed a vital part of radical trachelectomy and pelvic lymphadenectomy for cervical cancer. Afterwards all lymph nodes up to the common iliac, paracervical, and hypogastric (obturator) vessels, common internal and external aortic and presacral and lateral sacral were removed [10].

Some authors do not consider adenocarcinoma as a contraindication for radical trachelectomy. Our study did not include patients with adenocarcinoma, as most other studies. Moreover, histological grade NG III was considered as a contraindication for this method because of the worse prognosis [11].

Abdominal radical trachelectomy is considered as technically less difficult than vaginal, but then there are more often complications like bleeding and infection [12, 13]. One of the complications is cervical stenosis, leading to hematometra and amenorhea. After infection pyometra occurs. Consequently some authors suggest insertion of a Foley catheter through the endocervix before cervical amputation. It remains in place for a few days to avoid pyometra or stenosis and hematometra. If such complication occurs, it is necessary to drain and evacuate the contents [12, 13].

These patients should be controlled once every three months the first year after treatment, then twice a year with cytological analysis the next four years, and then once a year. Once a year patients should undergo pelvic and abdominal ultrasound scan, and lung scan if necessary [14].

The recidual and mortality rate after radical trachelectomy are similar as after radical hysterectomy or radiotherapy [3, 7, 11, 13, 15-18].

Our report adds to the accumulating data on radical trachelectomy and pelvic lymphadenectomy for early-stage cancer of the cervix in women with an intact uterus who wish to preserve fertility. Our experience and short-term results support radical trachelectomy and pelvic lymphadenectomy as reasonable forms of treatment. The average pregnancy rate after surgery is 70% [18]. Term delivery occurs in 50% of these patients; 20% deliver before term and the other 30% have spontaneous miscarriages in the I or II trimester of pregnancy [15, 16, 20]. Fertility issues remain the largest unanswered problem. The literature shows that miscarriages occur more often in early trimesters because of cervical incompetence, or rupture of fetal membranes. All pregnancies after radical trachelectomy are high-risk pregnancies [14].

Currently, our approach to the fertility issue is as follows: pregnancy is avoided until one year of follow-up has been completed. Once a woman becomes pregnant, early involvement with a perinatologist who is familiar with the second trimester loss rate seems very important if insight into causes, possible prophylactic measures, and possible treatment meaures are to be gained [13].

According to our results, we concluded that radical trachelectomy with pelvic lymphadenectomy could be an appropriate method for treatment of early-stage cervical cancer preserving a woman's fertility.

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