Surgical approaches towards fertility preservation in young patients with early invasive cervical carcinoma

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Summary

Cervical cancer still remains one of the major problems in developing countries. The last decade of 20th century has seen a trend towards more conservative surgical approaches in the treatment of early-stage disease in young patients.

The trend of delaying childbearing, nowadays, increases preservation of fertility, and reproductive function is a major concern when counseling these young women with regard to the effects of treatment for cervical cancer.

Radical trachelectomy, either with abdominal or vaginal surgical approach, showed promise as treatment option in young patients with early cervical cancer. The basic principle of such a surgical approach is an operation aiming at preserving the uterine body and removing the cervix, parametrium, with bilateral pelvic lymphadenectomy, and creating a utero-vaginal anastomosis, either laparoscopically or by laparotomy.

Both surgical approaches are evaluated after a search of the relevant literature in Pub Med or Medline.

Key words: cervical cancer, fertility preservation, trachelectomy

Introduction

Cervical carcinoma still represents one of the major problems in developing countries where cervical screening programs have not been developed yet [1]. However, in developed countries, this approach enables the detection of cervical cancer in its early phase, making surgical treatment of early invasive cervical carcinoma possible. Usage of different therapeutic modalities in the group of patients with early-stage disease has produced different results. In most cases, the primary therapy consists of radical operation that includes radical hysterectomy with bilateral pelvic lymphadenectomy [2-6]. Standard surgical therapy has given excellent results in terms of 5-year overall survival (OS), which is 85-91% [7-9]. However, a great number of young women lose their fertility permanently.

Diagnosing cervical carcinoma at its early stages in younger patients makes it possible to manipulate them with surgical approaches that could possibly preserve fertility. Approximately 45% of surgically treated stage IB cancers occur in women under the age of 40 years [10].

Radical trachelectomy is a surgical method which, together with pelvic lymphadenectomy, represents a method of treating invasive forms of early-stage cervical carcinoma in women who are in their fertile age and who want to keep their reproductive function [11].

There are two approaches to radical trachelectomy: radical vaginal trachelectomy (RVT) and radical abdominal trachelectomy (RAT).

Radical trachelectomy

The concept of cervical tumor removal in order to treat bleeding from the cervix in a simplified manner was first presented by Hippocrates in 400 B.C. Although the foundations of contemporary radical technical procedures in the surgical treatment of cervical carcinoma were laid in the end of the 19th century, the idea of preserving the body of the uterus in case of early-stage in-
Invasive cancer was simultaneously maturing [12-15]. An idea about preserving the uterine body in early cervical cancer in young patients continued to live throughout the 20th century too. Burghard and Holzer also suggested in 1977 the unimportant removal of the uterus in cases of early-stage invasive cervical carcinoma [12].

**Abdominal radical trachelectomy with uterus conservation**

This is one of the two approaches to trachelectomy. The basic principle of such surgical approach is a radical operation aiming at retaining the body of the uterus and removing of the cervix, the parametria with bilateral pelvic lymphadenectomy, similarly to the technique applied for modified Wertheim-Meigs radical hysterectomy, by preserving the body of the uterus and creating an utero-vaginal anastomosis. The operative technique and later the principles of this approach were described by several authors [14,16-19]. This approach enables a wider resection of the parametria, an adequate upper vaginal resection and fewer possibilities of complications. The only limiting factor can be infiltration into the lower segment of the uterus beyond the isthmus (Figures 1-4).

The approach and the technique of this type of radical operation demands the surgeon’s previous training regarding classical radical hysterectomy because the basic principles in this type of radical operations do not change.

**Laparoscopic radical vaginal trachelectomy**

The development of technology and operative procedures, as well as the proved significance of laparoscopy in gynecologic oncology have produced new guidelines in the application of this technique in such cases. Dargent [13,19-23] is considered as pioneer of this technique. In 1987, he performed laparoscopic lymphadenectomy with radical vaginal trachelectomy. With laparoscopy, the intra-abdominal area, the uter-
What currently appears to be true is that the indications for radical trachelectomy are as follows [17, 21,22]:
1. FIGO stage IA2-IB up to 2 cm with superficial invasion and without lymph and/or vascular invasion.
2. Negative pelvic lymph nodes.
3. Upper and lower as well as parametrial surgical margins must be clear on frozen section.
4. Desire to preserve fertility.
Adenocarcinoma of the cervix and histological grade III disease represent a relative contraindication because they are considered as adverse prognostic factors.

Pregnancies after radical trachelectomy

Koliopoulos at al., in their review, presented 210 female patients that had undergone radical trachelectomy with 55 verified pregnancies. In total, 35 pregnancies were successfully completed with childbirth along with 30-50% abortions before the 20th week of gestation. Apparently, despite this small number of births, the authors are emphasising the importance of this technique, all the more because infertility is 100% with standard procedures [29]. Hertel et al. reported that the percentage of pregnancies in women after radical trachelectomy was 70% [30]. In the Shepherd’s review 406 patients had undergone radical vaginal trachelectomy in 7 centers [15]. Of them there were 171 verified pregnancies in 118 women. Only 17 pregnancies ended with births before the 32nd gestation week.

Plante analysed the outcomes of 603 patients with radical vaginal trachelectomy and found 4.5% recurrences (Table 1) [31]. In the Plante’s review pregnancy was verified in 44% of patients after radical vaginal trachelectomy and found 4.5% recurrences (Table 1) [31].

In the Plante’s review pregnancy was verified in 44% of patients after radical vaginal trachelectomy. Among them 35% had a term birth, 18% preterm delivery and 27% had abortion in the 1st and 2nd trimester [31]. There was no data in the Hertel’s study with 100 vaginal radical trachelectomies [30]. Five percent of the patients had therapeutic abortion and extrauterine pregnancies (Table 2) [31].

In more recent studies, 50% had a term birth, 20% preterm delivery, and the remaining 30% aborted in the 1st or 2nd trimester of pregnancy [32,33].

The end of pregnancy is with caesarean section and it is necessary to explore the abdomen.

Follow up

Proper selection of patients for radical trachelecto-
3. After 6-12 months from the operation, a colposcopy may be done.
4. MRI may be done 6 and 12 months after the operation and then after 2 years.
5. If there is no relapse 6 months after the operation, the patient may become pregnant.
6. After 2 years, clinical examination with PAP and vaginal smear are done every 6 months for the next 3 years, and then once a year during the following 5 years if there is no relapse.

**Conclusion**

Radical trachelectomy seems to be a valid alternative surgical treatment for early-stage cervical carcinoma in patients of reproductive age who want to preserve their fertility.

The recurrence rate is not increased by performing this less aggressive procedure compared with standard radical approach.

Combined with an expected term delivery rate of more than 50% it seems to be the procedure of choice.
for women with small early-stage cervical cancers wishing to preserve their fertility.

According to published papers vaginal radical trachelectomy seems to be the most acceptable procedure compared with abdominal radical trachelectomy but requires much longer training.

Due to a lack of long-term follow-up data, patients should be preoperatively informed about the risks of infertility, early-pregnancy spontaneous abortions, preterm delivery, and neonatal complications.

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