LAPAROSCOPIC PELVIC LYMPHADENECTOMY WITH VAGINAL RADICAL TRACHELECTOMY IN A NULLIPAROUS PATIENT WITH EARLY STAGE CERVICAL CANCER – CASE REPORT

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Abstract

Radical trachelectomy is considered standard of care in patients with early-stage cervical cancer interested in future fertility. Fertility-sparing radical trachelectomy appears to have similar surgical and oncologic outcomes to more extensive radical procedures in selected patients with early stage cervical cancer. Tumors of 2 cm or less are considered to have a lower risk of parametrial involvement, a more favorable 5-year overall survival rate and a better fertility outcome. Nevertheless, pregnancies after trachelectomy should be considered as high risk. The procedure requires advanced vaginal surgical skills when performed in nulliparous women. We present a case of laparoscopic pelvic lymphadenectomy with vaginal radical trachelectomy performed in our clinic on a nulliparous patient diagnosed with FIGO stage IA1 cervical cancer, who desired to preserve her fertility. Sentinel node mapping using methylene blue and cerclage placement at the end of the procedure were also performed.

Rezumat

Trachelectomia radicală este considerată tratamentul standard pentru pacientele cu cancer de col uterin în fază incipientă care doresc să îi pâstreze fertilitatea. Conservarea fertilității prin această procedură chirurgicală nu pare să pericliteze rezultatele oncologice în cazuri selectate cu cancer cervical incipient. Tumorele de 2 cm sau mai puțin sunt considerate a avea un risc scăzut de invazie parametrială, o supraviețuire globală la 5 ani mai favorabilă, și rezultate mai bune din punct de vedere al fertilității. Cu toate acestea, sarcinile obinute după trachelectomie radicală trebuie considerate ca fiind cu risc crescut. Tracheectomia radicală vaginală necesită abilități chirurgicale vaginale avansate atunci când este efectuată la nulipare. Prezentăm un caz de limfadenectomie pelvină cu trachelectomie radicală efectuat în clinica noastră la o paciență nulipară diagnosticată cu cancer de col uterin stadiul FIGO IA1, care dorea conservarea fertilității. În timpul intervenției chirurgicale s-au efectuat de asemenea identificarea ganglionului santinelă folosind albastru de metilen și aplicarea unui cerclaj la finalul procedurii.

Cuvinte cheie: trachelectomie radicală, chirurgie, cancer de col uterin, limfadenectomie, laparoscopie, cerclaj, nulipară.

Introduction

Early stage cervical cancer diagnosed in young women who desire to preserve their fertility remains an issue, given that radical hysterectomy involves by definition the loss of the uterus. This has led to a questioning of the rationale for extensive surgery in all cases of early stage cervical cancer. In 1987 Dargent described for the first time the vaginal radical trachelectomy with lymphadenectomy as a
fertility sparing treatment of early-stage cervical carcinoma [1, 2].

Radical trachelectomy is recommended for early stage cervical cancer (stages IA1-IB1) with lesions <2cm. Nevertheless, advanced vaginal surgical skills are required in order to perform a radical vaginal trachelectomy in nulliparous patients.

The procedure can be performed vaginally or abdominally, using an open or laparoscopic technique. The evaluation of the pelvic lymph nodes status remains a subject of debate. While the sentinel lymph node detection method is tempting and can aid in intraoperative decision making (if the sentinel lymph nodes are negative the trachelectomy can be performed, whilst if they are positive a radical hysterectomy followed by chemo-radiotherapy is recommended), the high rate of false negative results causes it not to become the “gold standard”. Pelvic lymphadenectomy can be performed by laparoscopy (the original technique described by Dargent involves radical vaginal trachelectomy with laparoscopic pelvic lymphadenectomy) [2], or by laparotomy. At the end of the procedure, a cerclage is usually placed. It is important to note that cerclage placement is also recommended in the second trimester of pregnancy if not prior performed [5].

Case report

We present the case of a 40 year old nulliparous patient diagnosed with FIGO stage IA1 cervical cancer who underwent laparoscopic pelvic lymphadenectomy with vaginal radical trachelectomy in our clinic.

Upon clinical examination, a 5 mm ulcerative lesion located on the posterior cervical lip was identified. A colposcopic guided biopsy revealed an invasive epidermoid carcinoma. Preoperative MRI evaluation revealed radiologically normal pelvic lymph nodes. The patient was informed regarding treatment options and, given her desire of fertility preservation, the chosen treatment was laparoscopic pelvic lymphadenectomy followed by vaginal radical trachelectomy.

Step by step description of the surgical technique:

Sentinel lymph node mapping was performed by injecting methylene blue in the cervix prior to beginning the surgical procedure (Figure 1).

Four laparoscopic trocars were placed. The primary 12-mm trocar was placed in the umbilical region, whereas the other 3 accessory trocars were placed as follows: 10 mm in the right iliac fossa, 5

Figure 1 Sentinel node mapping using methylene blue
mm in the left iliac fossa, and 5 mm in the suprapubic region. The patient was placed in the Trendelenburg lithotomy position, with compression stockings worn during surgery to prevent thromboembolic events. In addition, antithrombotic prophylaxis with low-molecular weight heparin was used. The uterus was mobilized by placement of a manipulator.

Pneumoperitoneum was established and maintained with a pressure of 12 mmHg.

The peritoneum was sectioned in front and behind both round ligaments, parallel to the ovarian vessels. The retroperitoneum was exposed up to the junction of the ureter with the iliac artery. A bilateral pelvic lymphadenectomy was performed from the circumflex vein to the junction of the ureter with the external iliac artery. The external iliac, hypogastric, and obturator lymph nodes were completely removed. The pelvic lymph nodes were intraoperatively evaluated.

With the patient placed in gynecological position we performed a circular incision of the vaginal mucosa resulting a „vaginal cuff” (Figure 2A). The next step was the opening of the retroperitoneum which allowed us to perform the bilateral dissection of the pararectal fossae (Figure 2B). The opening of the cervical-vesical plan (Figure 2C) permitted the bilateral dissection of the paravesical fossae (Figure 2D) followed by the bilateral dissection and resection of the bladder pillars (Figure 3A).

Before performing the bilateral resection of the paracervix (Figure 3B - right paracervix, Figure 3C - left paracervix) we had to realize the bilateral
dissection and resection of the uterosacral ligaments. The final step was the cervix removal followed by the uterine isthmus’ suture to the vagina. At the end, a prophylactic cerclage was placed (Figure 3D).

**Discussions**

*Case selection*

Radical trachelectomy is recommended for stage IA2, for stage IB1 and for stage IA1 with lymph vascular space involvement [1] in patients interested to maintain their reproductive capacity [1, 6]. Tumors of 2 cm or less are considered to have a lower risk of parametrial involvement and a more favorable 5-year overall survival rate. [6-10].

While other authors consider that patients with 2-4 cm tumors can undergo trachelectomy safely [11], others believe that a lesion with the size >2 cm is associated with a higher risk of recurrence and a higher risk of abandoning the planned radical vaginal trachelectomy [3, 5, 12-14].

**Less or more invasive surgery?**

Radical trachelectomy is considered standard of care in patients with early-stage cervical cancer interested in future fertility. Described as a safe and effective treatment even during pregnancy [15], fertility-sparing radical trachelectomy appears to have similar surgical and oncologic outcomes to more extensive radical procedures in selected patients with early stage cervical cancer [11, 16, 17].

Tseng et al performed a retrospective study on 2571 patients under 45 years old who underwent less radical surgery (LRS - conisation, trachelectomy,
standard hysterectomy) or more radical surgery (MRS - modified radical, radical hysterectomy) for FIGO stage IB cervical cancer, all with lymph node assessment (807 underwent LRS and 1764 underwent MRS) with a 10 years follow-up period. They concluded that in a select group of young women with stage IB1 cervical cancer, LRS compared to MRS does not appear to compromise disease specific survival [14].

Marchiole et al compared the results in terms of fertility, complications and recurrence of early stage cervical cancer (I-IIA) of 257 patient who underwent laparoscopic assisted radical vaginal trachelectomy (LARVT) (118 patients) or laparoscopic assisted radical vaginal hysterectomy (LARVH) (139 patients). They concluded that early cervical cancer (less than 2 cm diameter) can be treated successfully with LARVT with similar efficacy and recurrence rates to LARVH. Therefore, radical trachelectomy can be considered a safe treatment for young women affected by early cervical cancer who want to conserve their fertility [7].

Open or minimally invasive?
Open abdominal radical trachelectomy offers better resection of the margins but is associated with longer hospital stays, more blood loss and wound complications in comparison with radical vaginal trachelectomy which includes reduced length of hospital stay, less blood loss, lower analgesic requirements during the postoperative period, a decrease in the rate of blood transfusions, a decrease in the rate of complications, an early recovery of physiological functions, and better esthetic outcomes [4, 18].

Viera et al evaluated 100 patients with early-stage cervical cancer who underwent open (58 patients) vs. minimally invasive radical trachelectomy (42 patients) and compared operative, oncologic, and fertility outcomes. Their results suggest that minimally invasive radical trachelectomy results in less blood loss and a shorter hospital stay. Fertility rates appeared to be higher in patients with open radical trachelectomy, but the mean follow up period being longer for the open radical trachelectomy group, the results are not conclusive in this matter [19].

Sentinel node mapping
Sentinel lymph node biopsy is apparently a good predictor of node metastases and allows the performance of lymphadenectomy only in sentinel lymph node positive cases. [6] Despite it being very useful in clinical practice, until lower false-negative rates are achieved total lymphadenectomy remains the gold standard [20].

Fertility after the procedure
There can be no guarantee of future fertility after a radical trachelectomy and, according to several authors, the standard treatment for early-stage cervical carcinoma remains radical hysterectomy. Therefore, full disclosure to the patient and a detailed informed consent are essential prior to the surgical procedure [21-24].

Infertility has been reported in 25–30% of patients after trachelectomy and possible causes include subclinical salpingitis or cervical stenosis. When such complications occured, they resulted in menstrual disorders, fertility problems or decreased cervical mucus. Surgical dilatation resolved this problem in most cases but had to be repeated [25-26].

Favorable pregnancy and live birth rates have been reported after the procedure. Shephard et al found a 5-year cumulative pregnancy rate of 52.8% among women trying to conceive [21], while Willows et al reported 469 pregnancies with a 67 % live birth rate among 1238 patients who underwent fertility-sparing surgery for early cervical cancer [27].

Regarding the obstetrical outcome, the main problem is the prematurity. Second trimester miscarriage and premature rupture of membranes (with 10% of babies being significantly premature) following premature labor are complications related to trachelectomy because of the shortened cervix with absence of mucus. This facilitates the ascending infections and can result in chorioamnionitis. Therefore, pregnancies after trachelectomy should be considered as high risk [21, 26]. Cerclage placement after trachelectomy seeks to decrease the risk of second trimester miscarriage due to the shortened cervix [4].
Patients with tumors of 2 cm appear to have a higher pregnancy rate than patients with tumors 2-4 cm [11]. Cesarean section is recommended after 37 weeks. A vaginal delivery could be dangerous because of the possibility of a lateral cervical tear extending to the uterine arteries [1, 16].

Morbidity and Complications

Radical trachelectomy has certain risks such as potential intraoperative complications of the bladder, ureter or rectum. Specific problems are associated with radical trachelectomy such as amenorrhea or irregular bleeding, dysmenorrhea, excessive vaginal discharge, problems with the cerclage suture, isthmic stenosis, sexual inactivity and dysplastic smears [1].

Conclusions

Radical trachelectomy can be considered a safe treatment for young women affected by early cervical cancer who want to conserve their fertility. The procedure is particularly difficult to perform in nulliparous women and requires advanced vaginal surgical skills, such as in our case.

Tumors of 2 cm or less are considered to have a lower risk of parametrial involvement, a more favorable 5-year overall survival rate and a better fertility outcome.

Albeit favorable pregnancy and live birth rates have been reported after the procedure, pregnancies after trachelectomy should be considered as high risk.

Cesarean section is recommended after 37 weeks in order to prevent cervical tears (especially lateral tears that can affect the uterine arteries).

References