

Delia NICOLAICIUC

Cuza Voda Clinic Hospital of Obstetrics and Gynaecology, Iasi, Romania
University of Medicine and Pharmacy Gr. T. Popa Iasi, Romania, Department of
Obstetrics and Gynaecology

Gabriela SIMIONESCU

Origyn Fertility Center, Iasi, Romania

Cuza Voda Clinic Hospital of Obstetrics and Gynaecology, Iasi, Romania

Sorana Caterina ANTON

University of Medicine and Pharmacy Gr. T. Popa Iasi, Romania, Department of
Obstetrics and Gynaecology

Maria BOLOTA, Emil ANTON

Cuza Voda Clinic Hospital of Obstetrics and Gynaecology, Iasi, Romania

Iulia DIACONU

Recuperare Clinic Hospital, Iasi, Romania

Dumitru FILIPEANU

Technical University Gh. Asachi, Iasi, Romania

OBSTETRIC AND REPRODUCTIVE CHALLENGES AFTER TRACHELECTOMY IN PATIENTS DIAGNOSED WITH EARLY STAGE CANCER

Case
Study

Keywords

*Trachelectomy,
Cervical cancer,
Fertility preservation,
Pelvic lymphadenectomy,
Obstetric outcomes after trachelectomy*

Abstract

Radical trachelectomy is an established method of fertility sparing in female patients with early stage cervical cancer. This paper aims to review the series of obstetric and reproductive challenges that may arise following trachelectomy. Additionally, the article emphasized the pregnancy rates achieved after radical abdominal trachelectomy, as presented in studies conducted worldwide, since patients who undergo trachelectomy usually need

assisted reproductive technologies to conceive and the pregnancy have a higher risk of preterm birth therefore, the patients should be monitored carefully by a multidisciplinary team composed of obstetricians, neonatologists and oncologists.

Cervical cancer is the second most common type of cancer affecting women of reproductive age.

In women of reproductive age, cervical cancer is the second most common type of cancer diagnosed, however nowadays, women diagnosed in early stage who want to conceive children have the opportunity to do so due to the minimum invasive, fertility-sparing procedure such as trachelectomy.

INTRODUCTION

Cervical cancer is the second most common type of cancer affecting women of reproductive age. Conventional treatment for cervical cancer, which include radical surgery- hysterectomy with pelvic lymphadenectomy, associated or not with chemoradiation therapy may disrupt the reproductive system function, thus the fertility of the patients is endangered.

Furthermore, proper programs for cervical cancer screening enable the diagnosis of this disease in an early stage, thereby radical trachelectomy has become a widely practiced surgical approach for patients who desire to preserve their fertility.

MATERIAL AND METHODS

Data was searched via MEDLINE; MEDSCAPE; PUBMED and ISI WEB of KNOWLEDGE using the following key words: cervical cancer, cervix neoplasm, early stage cancer, abdominal radical trachelectomy, fertility preservation, pregnancy. Accordingly, the search took into consideration review articles, original articles as well as case reports.

EARLY STAGE CERVICAL CANCER

Over time, the role of the uterine cervix in contending the product of conception, its implication in labor and parturition were considered key elements for the successful completion of a pregnancy. In the last decade, the number of young women of reproductive age who have been diagnosed with early-stage cervical cancer has increased, as well as the average age for first birth. Moreover, there are studies that have shown that approximately 40% of patients diagnosed with cervical neoplasm are under the age of 44 (Speiser et al., 2013).

The staging of cervical cancer proposed by the International Federation of Gynecology and Obstetricians (FIGO) is based on tumor size, vaginal or parametric impairment, bladder/ rectal extension, and remote metastasis, thereby requires paraclinical imaging investigations such as CT/MRI (Shepherd, 2008). Stage I encompasses narrow cervical carcinoma of the uterus and is subdivided into Stages IA and IB. Stage IA is invasive carcinoma microscopically diagnosed, the cervical lesion not being clinically visible, and the stromal invasion has a maximum depth of 5.0 mm measured from the base of the epithelium and a horizontal dissemination ≤ 7.00 mm. Stage IB includes cases where the lesion is clinically visible but is limited to the uterus. Depending on the stage, primary treatment consists of surgery, radiotherapy or an association between radiotherapy and chemotherapy (Einstein et al, 2009). In younger patients diagnosed with cervical cancer in stage IA1 / IB1, treatment may be conservative, with fertility preservation, conisation or radical trachelectomy, whether or not accompanied by chemoradiotherapy (Barros et al., 2015).

When fertility preservation is not desired, radical treatment with total hysterectomy and bilateral adnexectomy is performed. On the other hand, if the lymphovascular space is affected, a total hysterectomy is associated with pelvic lymphadenectomy (Kokka et al, 2014). The 5-year survival rate of patients diagnosed with cervical cancer depends on the FIGO stage at the time of diagnosis.

RADICAL TRACHELECTOMY

Radical trachelectomy was first described by Dr. Daniel Dargent in 1987, and is the technique of extirpating the cervix, a third of the vagina and the parametrial tissue, the incision being about 1 cm from the cervix. Trachelectomy can be performed either vaginally or abdominally - by classical or laparoscopic surgery, whether or not accompanied

by pelvic lymphadenectomy. Prophylactically, the circle of the beaded neck may be sutured with non-resorbable thread.

The abdominal radical trachelectomy (ART) procedure is identical to that of a traditional type-III Wertheim hysterectomy. The ovarian vessels are not ligated and, following lymphadenectomy and skeletonization of the uterine arteries, the cervix, parametrium, and vaginal cuff are excised. The residuum of the cervix is then sutured to the vagina and the uterine arteries re-anastomosed (Saadi et al, 2015).

Complication rates for radical abdominal trachelectomy appear to be similar to those of radical hysterectomy. The most common intraoperative complication is the ureteric injury. Other intraoperative complications include cystotomy, enterotomy, and pelvic haematoma. The postoperative complications are deep venous thrombosis, pulmonary embolism, fistula formation and urinary/bowel/sexual dysfunction (Yoo et al, 2016). Radical vaginal trachelectomy offers the advantage of a shorter hospital stay and shorter post-operative recovery.

REPRODUCTIVE OUTCOME AFTER RADICAL TRACHELECTOMY

There have been reports of cases in which trachelectomy patients have spontaneously obtained pregnancies naturally. However, some patients with trachelectomy require assisted human reproductive procedures to get a pregnancy.

Additionally, recent studies have shown that some chemotherapeutic agents have gonadotoxicity. Thus, with the consent of the oncologist, patients who desire to preserve their fertility may opt for controlled ovarian stimulation, with oocytes or even blastocyst cryopreservation, and postoperative embryo transfer prior the radical intervention. The anti-Mullerian hormone (AMH) is a sensitive indicator of ovarian reserve, and studies have shown a significant decrease in AMH after initial chemotherapy. Also, ovarian tissue lamellae after chemotherapy revealed atrophy and a significant decrease in the number of primordial ovarian follicles (Peigné, 2014).

Notwithstanding, it should be underlined that under hormonal treatment for controlled ovarian stimulation, the cervical tumor may increase in size. Thus, both patients and doctors have to take into account the benefits versus the risks involved in preoperative controlled ovarian stimulation. In the case of patients with contraindication of preoperative ovarian stimulation, the procedure will be carried out postoperative.

The pregnancies of patients with trachelectomy are at risk and require the careful care of a multidisciplinary team composed of obstetricians,

neonatologists and of course oncologists. The pregnancy rates following abdominal radical trachelectomy are encouraging, although the resulting obstetric complications such as miscarriage, preterm labor, chorioamnionitis, preterm birth, premature rupture of membranes and severe neonatal prematurity are not neglected (Wei et al, 2016). In a retrospective study conducted by Nishio et al, 2013, on a number of 114 patients who underwent RAT, the reproductive and obstetric outcomes were analyzed, the authors concluding that 72% of the patients that achieved pregnancy suffered from infertility problems. Additionally, from the 31 pregnancies, 5 were miscarried and 4 patients delivered prematurely in the second trimester.

The main role of the uterine cervix is the constraint of the ovule sac. Along with premature birth, spontaneous abortion in late pregnancy is the most common complication. Prophylactically, intraoperatively, some physicians practice the bead of the cervical neck with unresorbable thread (Park et al, 2014). However, adhesions may appear or even stenosis, associated with infertility or even hematometry (Pareja et al, 2013). Some clinicians prefer to introduce intraoperatively a cannula to the endocervix in order to prevent stenosis, which will be suppressed 2-3 days postoperatively. Due to stenosis, embryo transfer can be difficult to perform, therefore, a transmyometrial approach will be preferred (Nishio et al, 2013). The length of the post trachelectomy is about 15 mm.

During pregnancy, the length of the cervix is systematically measured by endovaginal echography. Thus, when the prophylactic cerclage is not performed before pregnancy, if the length of the cervix is decreasing, the cerclage is recommended at the beginning of the second trimester.

Patients with trachelectomy and cervical stenosis have indications for birth by cesarean (Lim et al, 2016). The rest of the cervical neck is rigid, sometimes stenotic. Without the consistency of a normal collar, its dilation during labor is inappropriate, and there are risks of cervical rupture that may extend to the inferior segment, causing uncontrolled bleeding. Premature birth can occur due to the lack of mechanical support of the gestational sac from the residual cervix or the spontaneous rupture of the membranes following a chorioamnionitis (Plant, 2013). Normally, the cervical mucosa is designed to prevent the pathogen from the vagina from ascending to the uterine cavity.

Following trachelectomy, the absence of the cervix favors the upsurge of germs that frequently cause chorioamnionitis. Symptoms such as fever may be missing, the only sign being the premature rupture of the membranes. Some studies recommend daily vaginal care with solutions such as povidone-

iodine, intravaginal ova with antifungal action and systematically performing urocultures and cultures from vaginal discharge.

In order to prevent premature birth, it is advisable to avoid prolonged physical effort. Preventive, between weeks 26-30 pregnancy, 4 doses of dexamethasone are given for fetal pulmonary maturation. The second post-trachelectomy pregnancy appears to be at a higher risk for preterm delivery than the first pregnancy.

In conclusion, in women of reproductive age, cervical cancer is the most common type of cancer diagnosed after breast cancer, but nowadays women diagnosed properly in early stage who want to conceive children have the opportunity to do so due to the minimum invasive, fertility-sparing procedure such as trachelectomy. Therefore, the existence of effective screening programs for cervical cancer is extremely important and awareness campaigns should be conducted in such a way that patients are properly informed about the treatment opportunities that exist at the moment and the necessary investigations that they should do annually.

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