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Case Report / Приказ болесника

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A case report of successful pregnancy after radical trachelectomy

Трудноћа након радикалне трахелектомије – приказ болесника

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SUMMARY

Introduction Cervical cancer, as a global health problem, is most commonly associated with HPV infection. The incidence is rising among women of reproductive age. The challenge is that standard treatment is radical hysterectomy that remains a serious problem for women who still wish to conceive. Fertility sparing surgery is possible in strictly controlled cases, but pregnancy afterwards is still an issue.

Case outline A 32-year-old, nulliparous patient with a diagnosis of early stage squamous-cell invasive cervical cancer is presented. After evaluation and only after selection criteria were met, radical abdominal trachelectomy with pelvic lymph node dissection was performed. Final histological diagnosis revealed that cancer infiltrated entire depth of the specimen and with malignant cells present on lateral resection border and radical hysterectomy was indicated, but the patient refused. After a year, the patient spontaneously conceived followed by successful pregnancy.

Conclusion The fertility-sparing treatment for early-stage cervical cancer is oncological safe option in carefully selected patients. The pregnancy afterwards remains high risk and needs close follow-up to optimize both maternal and fetal outcomes.

Keywords: cervical cancer; fertility sparing treatment; pregnancy

САЖЕТАК

Увод Карцином грлића материце, као глобални здравствени проблем, је најчешће повезан са *HPV* инфекцијом. С обзиром да учесталост расте међу женама репродуктивног доба, проблем представља стандардни вид лечења који подразумева радикалну хистеректомију. Ово остаје озбиљан проблем за жене које и даље желе да остваре трудноћу. Поштедно хируршко лечење је могуће у строго контролисаним условима, али трудноћа након тога је и даље изазов.

Приказ болесника Представљен је случај пацијенткиње која је стара 32 године, која до тада није рађала, са дијагнозом инвазивног сквамозелуларног карцинома грлића материце. Након пажљиве евалуације испуњени су критеријуми за поштедни третман те је урађена радикална абдоминална трахелектомија са пелвичном лимфодектомијом. Коначна хистолошка дијагноза је показала да је карцином инфилтрирао целу дебљину грлића и да су малигне ћелије присутне на латералној ивици ресекције, те је индикована радикална хистеректомија, коју је пацијенткиња одбила. Након годину дана, пацијенткиња је спонтано затруднела, након чега је уследила успешна трудноћа.

Закључак Лечење које штеди плодност за карцином грлића материце у раном стадијуму је онколошки безбедна опција код пажљиво одабраних пацијенткиња. Трудноћа након тога остаје високог ризика и захтева пажљиво праћење како би се оптимизовали исходи и за мајку и за фетус.

Кључне речи: рак грлића материце; лечење које штеди плодност; трудноћа

INTRODUCTION

Cervical cancer is a global health problem, and although the incidence varies across the world, it is the most common cause of death in this part of Europe [1]. It is primary associated with HPV infection and global burden arises from differences in prevalence of oncogenic subtypes and inequalities in screening and treatment [2]. Standard treatment for early-stage disease is radical hysterectomy that remains a serious problem for women of reproductive age who still wish to conceive. Facing the issues of rising incidence of cervical cancer among younger women, delayed childbearing and declining quality of life after radical surgery, in the last years a few fertility-sparing guidelines, by relevant gynecological and oncological societies, have been published [3, 4, 5]. Fertility sparing treatments for gynecological malignancies are possible in selected cases enabling women to keep reproductive organs and their function with no reduction in survival rate comparing to standard radical treatment [3]. Depending on

clinical and radiological staging, possible conservative options for cervical cancer treatment are cold-knife conisation, simple and radical trachelectomy.

However, pregnancy afterwards is still an issue. The rate of successful pregnancies after fertility sparing treatment is lower than in general population [6]. Studies show promising rates of spontaneous conception, but due to complications of surgical treatment, as well as patient's characteristics, assisted reproductive treatments may be indicated [7]. Even after successful conception, common adverse events after fertility sparing treatment for cervical cancer are first and second trimester miscarriage, preterm labour and prematurity [8].

Dealing with malignancy, patient's future reproductive desire and possible pregnancy after cancer treatment requires meticulous approach to these patients and multidisciplinary in order to bring full oncological, obstetrical, neonatal and psychological care.

CASE REPORT

A 32-year-old, nulliparous patient was initially presented to the Clinic's Cancer Board with a diagnosis of squamous-cell invasive cervical cancer (G2, NG2, without lymphovascular invasion) after a cold knife conisation with positive apical margin. Further standard evaluation for staging included abdominal and pelvic MRI and chest X-ray. Also, expert histological revision was done and previous histological diagnosis confirmed. Based on radiological imaging and histological report the disease was staged IB1. Taking into consideration young age of the patient, previous reproductive history, desire to conceive, and only after selection criteria were met, the final decision of the Board was to perform radical abdominal trachelectomy with pelvic lymph node dissection. During the operation so called *ex tempore* biopsies of apical portion of cervix, slice biopsy of isthmus portion as well as pelvic lymph nodes need to be done and negative for malignancy in order to proceed with operation. In this case, *ex tempore* analysis reported free margins so radical trachelectomy with pelvic lymphadenectomy was done. However, final histological diagnosis revealed moderately differentiated (G2) squamous-cell cervical cancer with 10 mm of stromal infiltration and positive lymphovascular invasion. The final report stated that squamous-cell cervical cancer was present on lateral resection border of the cervix. There was no infiltration of the parametria and pelvic lymph nodes were negative. Considering negative prognostic parameters (depth of infiltration, lymphovascular invasion and positive resection margins) The Board suggested simple hysterectomy, which the patient refused. First pelvic MRI at six months after surgery did not show any signs of disease progression. The patient spontaneously achieved pregnancy a year after the surgery. Except of gestational diabetes, it was otherwise uncomplicated pregnancy. The patient delivered by Caesarean section a healthy term baby weighed 3200 grams with Apgar score 9/10. One month and six months after delivery, no progression of disease was noted.

Ethics: According to the journal's position on issues involving ethical publication, the written consent for publication of this article has been obtained from the patient.

DISCUSSION

Fertility-sparing surgery is nowadays an important strategy in cancer treatment since the increasing number of women under the age of 45 surviving the malignancy [9]. Even one fifth of diagnosed cases is among young adults under 39 years [10]. With this case of nulliparous women aged 32 the attention is drawn to rising incidence of cervical cancer among young women who have not completed childbearing. Hence, regular Papanicolaou screening gives the opportunity to diagnose the disease in early stages when fertility sparing treatment is possible. According to guidelines preserving fertility is recommended in young patients up to 45 years of age and up to the FIGO stage IB1 [5]. Certain selection criteria are to be fulfilled for fertility sparing management including tumor size, depth of invasion, distance between cranial edge of tumor and internal cervical orifice, as well as local spread and lymph node enrolment [3].

Only stage IA1 is treated with less invasive surgery – conisation of the cervix. Radical trachelectomy, which includes removal of the cervix with surrounding parametrium and upper vagina, as well as pelvic lymphadenectomy, is reserved for FIGO stages IA2-IB1 [3]. Fertility-sparing treatment could be considered in stage IB2 in selected cases [4]. The reason why trachelectomy is acceptable in young women under strict conditions is because it is oncologically safe, meaning that the oncological outcome is similar to the standard, radical treatment where the entire uterus is removed [3, 4]. Results from Siegler et al. study that analysed 36 patients after simple trachelectomy showed no recurrence of disease after mean follow-up of 7.5 years [11]. The systematic review by Morice et al. [12] showed the recurrence rate after abdominal radical trachelectomy is 2.4%. Another systematic review including 29 studies on cervical cancer involved 2432 patients showed that 28 (3.6%) patients had recurrent disease and 6 (0.8%) died of disease during a median follow-up of 53 months [9]. More recurrences occurred in patients with FIGO stage IB1 (3.1%) and IB2 (5.6%) disease than in patients with FIGO stage IA1 (0.2%) and IA2 (0.7%) disease [9]. In stage IB2 disease, the lower rate of recurrence is observed after radical trachelectomy by abdominal approach and the highest recurrence rate is observed after neo-adjuvant chemotherapy and conservative surgery [12]. This promising results in terms of disease-free survival rates are shifting the perspective from oncologic treatment towards quality of life and pregnancy [9, 13]. Short follow-up period represents a limitation of this case, as longer surveillance is required for definitive evaluation of oncological outcome.

Oncological outcomes are well reported and fertility sparing surgery is clearly recommended in selected patients but the data about pregnancy outcomes is limited and inconsistently reported [9]. Hence the importance of a single case reporting term pregnancy after trachelectomy.

As mentioned, the reason why trachelectomy is performed in the first place is to preserve uterus and reproductive function in order to carry out uncomplicated term pregnancy [14]. Unfortunately, the rate of pregnancy is lower than in general population. The reason could be medical due to the procedure itself which leaves scarred isthmic part of the uterus disabling semen fluid to enter uterine cavity. Also,

malignancy affects mental health of the women, her fertility and desire for offspring. Moreover, adjuvant chemotherapy and radiotherapy affect ovarian reserve. Majority of studies show fewer patients tried to conceive [15].

Additional reason for lower rate of pregnancy could be the age of these patients. The fertility rate declines with age, especially after the age of 35. One systematic review showed that 45.4% required infertility treatment after surgery emphasising the importance of IVF procedures [15]. The reported pregnancy rates after ART ranged from 36% to 42% [15]. According to Okugawa et al. 49% (112/230) of the patients attempted to conceive after trachelectomy, with a pregnancy rate of 41% [16]. Twenty percent of those patients conceived spontaneously [16]. In the study analysing oncological and reproductive outcomes in 471 patients with radical vaginal trachelectomy, the fertility rate was higher - 73% [17]. Luckily, in our case the patient who was 32 years old succeeded to conceive spontaneously only after a year after operation.

After successful conception, these pregnancies are at risk of miscarriage and second trimester pregnancy loss [18]. According to data, the incidence of first trimester miscarriage which is 16% is no different than in general population. On the other side, second trimester pregnancy loss is almost twice higher than in general population, 7% vs. 4%, due to incompetence of the lower uterine segment, infection and premature prelabour rupture of membranes (PPROM). The difference between trimester's risks could be explained by the fact that second trimester loss is more influenced by cervical factor and infection than first trimester.

Premature labour and intensive care unit stay is also more frequent among pregnant women with previous trachelectomy [19]. Even when the pregnancy rate is high such was the study from Kohler et al, 43% of pregnancies were pre-term [17]. On the other hand, some studies show exceptional term pregnancy ratio, such as results from two oncological centres where 16/36 (44,5%) patients achieved pregnancy and all of them were term [11]. Prematurity is a major problem mainly because of sequels leading to lifelong disability. There is no strict recommendation in terms of prevention of infection and preterm delivery. In this case, the patient delivered healthy term baby.

According to Serbian national guideline for normal pregnancy urine analysis is routinely checked in each trimester and urine culture is done at the first visit as screening for asymptomatic bacteriuria [20]. Vaginal swab is taken at the first visit in first trimester and in second trimester and cervical swab is recommended in the third trimester with GBS screening [20]. Since permanent cervical cerclage placed during trachelectomy could be a source of infection, pregnancies after fertility sparing treatment are high-risk and those patients need closer follow up and infection screening to avoid complications.

This case demonstrates an example of successful term pregnancy after radical trachelectomy with favorable outcome. The fertility-sparing treatment for early-stage cervical cancer is oncological safe option in carefully selected patients. The pregnancy afterwards remains high risk and managing in

specialized tertiary centres with close follow-up is crucial. Multidisciplinary approach optimizes both maternal and fetal outcomes.

Conflict of interest: None to declare.

Paper accepted

REFERENCES

1. Dyba T, Randi G, Bray F, Martos C, Giusti F, Nicholson N, et al. The European cancer burden in 2020: incidence and mortality estimates for 40 countries and 25 major cancers. *Eur J Cancer*. 2021, 157:308–47. [DOI: 10.1016/j.ejca.2021.07.039] [PMID: 34560371]
2. Arbyn M, Weiderpass E, Bruni L, de Sanjosé S, Saraiya M, Ferlay J, et al. Estimates of incidence and mortality of cervical cancer in 2018: a worldwide analysis. *Lancet Glob Health*. 2020, 8(2):203. [DOI: 10.1016/S2214-109X(19)30482-6] [PMID: 31812369]
3. Cibula D, Raspollini MR, Planchamp F, Centeno C, Chargari C, Felix A, et al. ESGO/ESTRO/ESP guidelines for the management of patients with cervical cancer – update 2023. *Int J Gynecol Cancer*. 2023, 33(5):649–66. [DOI: 10.1136/ijgc-2023-004429] [PMID: 37127326]
4. Das M. WHO launches strategy to accelerate elimination of cervical cancer. *Lancet Oncol*. 2021;22(1):20–1. [DOI: 10.1016/S1470-2045(20)30729-4] [PMID: 33248466]
5. Morice P, Scambia G, Abu-Rustum NR, Acien M, Arena A, Brucker S, et al. Fertility-sparing treatment and follow-up in patients with cervical cancer, ovarian cancer, and borderline ovarian tumours: guidelines from ESGO, ESHRE, and ESGE. *Lancet Oncol*. 2024, 25(11):10. [DOI: 10.1016/S1470-2045(24)00262-6] [PMID: 39216500]
6. Soltanizadeh S, Rosendahl M, Frøding LP, Bjørn SF, Mosgaard BJ, Høgdaal C. After radical trachelectomy: reproductive and obstetrical outcomes of fertility-sparing surgery for cervical cancer. *Semin Reprod Med*. 2025, 43(1):11–5. [DOI: 10.1055/s-0045-1808092] [PMID: 40245928]
7. Ekdahl L, Paraghamian S, Eoh KJ, Thumulu KM, Butler-Manuel SA, Kim YT, et al. Long term oncologic and reproductive outcomes after robot-assisted radical trachelectomy for early-stage cervical cancer. An international multicenter study. *Gynecol Oncol*. 2022, 164(3):529–34. [DOI: 10.1016/j.ygyno.2021.12.029] [PMID: 34980514]
8. Kasuga Y, Ikenoue S, Tanaka M, Ochiai D. Management of pregnancy after radical trachelectomy. *Gynecol Oncol*. 2021, 162(1):220–5. [DOI: 10.1016/j.ygyno.2021.04.023] [PMID: 33902946]
9. Tirlapur A, Willmott F, Lloyd P, Brockbank E, Jeyarajah A, Rao K. The management of pregnancy after trachelectomy for early cervical cancer. *Obstet Gynaecol*. 2017, 19(4):299–305. [DOI: 10.1111/tog.12415]
10. Schuurman T, Zilver S, Samuels S, Schats W, Amant F, van Trommel N, et al. Fertility-sparing surgery in gynecologic cancer: a systematic review. *Cancers (Basel)*. 2021, 13(5):1008. [DOI: 10.3390/cancers13051008] [PMID: 33670929]
11. Siegler K, Plaikner A, Hertel H, Hasenbein K, Petzel A, Schubert M, et al. Oncologic and fertility outcomes after simple trachelectomy in women with early cervical cancer. *J Minim Invasive Gynecol*. 2024, 31(2):110–4. [DOI: 10.1016/j.jmig.2023.11.006] [PMID: 37951567]
12. Morice P, Maulard A, Scherier S, Sanson C, Zarokian J, Zaccarini F, et al. Oncologic results of fertility sparing surgery of cervical cancer: an updated systematic review. *Gynecol Oncol*. 2022, 165(1):169–83. [DOI: 10.1016/j.ygyno.2022.01.023] [PMID: 35241291]
13. Moser EC, Meunier F. Cancer survivorship: a positive side-effect of more successful cancer treatment. *EJC Suppl*. 2014, 12(1):1–4. [DOI: 10.1016/j.ejcsup.2014.03.001] [PMID: 26217161]
14. Segarra-Vidal B, Persson J, Falconer H. Radical trachelectomy. *Int J Gynecol Cancer*. 2021, 31(7):1068–74. [DOI: 10.1136/ijgc-2020-001782] [PMID: 33707207]
15. Nezhat C, Roman RA, Rambhatla A, Nezhat F. Reproductive and oncologic outcomes after fertility-sparing surgery for early stage cervical cancer: a systematic review. *Fertil Steril*. 2020, 113(4):685–703. [DOI: 10.1016/j.fertnstert.2020.02.003] [PMID: 32228873]
16. Okugawa K, Yahata H, Ohgami T, Yasunaga M, Asanoma K, Kobayashi H, et al. An update of oncologic and obstetric outcomes after abdominal trachelectomy using the FIGO2018 staging system for cervical cancer: a single-institution retrospective analysis. *J Gynecol Oncol*. 2023, 34(3). [DOI: 10.3802/jgo.2023.34.e41] [PMID: 36807744]
17. Chen T, Li J, Zhu Y, Lu AW, Zhou L, Wang JS, et al. The oncological and obstetric results of radical trachelectomy as a fertility-sparing therapy in early-stage cervical cancer patients. *BMC Womens Health*. 2022, 22(1):424. [DOI: 10.1186/s12905-022-01990-w] [PMID: 36289488]

18. Kohler C, Plaikner A, Siegler K, Hertel H, Hasenbein K, Petzel A, et al. Radical vaginal trachelectomy: long-term oncologic and fertility outcomes in patients with early cervical cancer. *Int J Gynecol Cancer*. 2024, 34(6):799–805. [DOI: 10.1136/ijgc-2024-005274] [PMID: 38599782]
19. Lim YK, Lek SM, Yeo SH. Obstetric care after radical abdominal trachelectomy in a patient with stage IB1 cervical cancer: a case report and a review of medical literature. *Gynecol Oncol Rep*. 2016, 17:86–8. [DOI: 10.1016/j.gore.2016.07.005] [PMID: 27536720]
20. Radna grupa za izradu vodiča za lekare u primarnoj zdravstvenoj zaštiti „Zaštita zdravlja žena u toku trudnoće“. Nacionalni vodič za lekare u primarnoj zdravstvenoj zaštiti: zdravstvena zaštita žena u toku trudnoće [Internet]. Beograd: Ministarstvo zdravlja Republike Srbije; 2025 [cited 2026]. Available from: <https://sldrstvo.org.rs/wp-content/uploads/2025/05/PREDLOG-NACIONALNOG-VODICA-ZDRAVSTVENA-ZASTITA-ZENA-U-TRUDNOCI.pdf>