

Abdominal Radical Trachelectomy Performed During Pregnancy – Case Series

Mihai Emil Căpîlna¹, Simona Cristina Rusu¹, János Bécsi¹, Mihai Morariu²

¹ First Obstetrics and Gynaecology Clinic, University of Medicine and Pharmacy, Tîrgu Mureş, Romania

² First Anaesthesiology and Intensive Care Clinic, University of Medicine and Pharmacy, Tîrgu Mureş, Romania

CORRESPONDENCE

Mihai Emil Căpîlna

Str. Gheorghe Marinescu nr. 50
540136 Tîrgu Mureş, Romania
Tel: +40 744 271 539
E-mail: mcapilna@gmail.com

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ABSTRACT

Introduction: Abdominal radical trachelectomy (ART) for tumors of the uterine cervix can be performed while the pregnancy is ongoing, but the success rates so far are reduced. **Case series presentation:** ART was performed in three patients with cervical cancer diagnosed during pregnancy, with a triple aim to offer a radical surgery for cervical cancer, but also to preserve the ongoing pregnancy and fertility. The ART was successful in one patient, and she delivered a healthy baby at term, by cesarean section. The other 2 patients experienced obstetrical complications and lost their pregnancies after ART, but in one of the cases, fertility was preserved. **Conclusions:** Radical trachelectomy could be performed as alternative therapy for pregnant women with invasive malignancies of the cervix. This procedure may prevent female patients to lose a much-desired pregnancy, their fertility, as well as their maternity.

Keywords: cervical cancer, pregnancy, abdominal radical trachelectomy

CASE REPORT

The detection of malignant tumors during pregnancy is becoming more frequent in developed countries. Approximately 0.05% to 0.1% of pregnancies are affected by malignancies, and between 2,500–5,000 patients are newly diagnosed while being pregnant each year in Europe.

The presence of neoplasia during pregnancy complicates the therapeutic options in every phase, including the diagnosis, therapy, delivery, as well as the postpartum and neonatal periods.¹

The therapeutic approach of tumors involving the female reproductive system is complicated and requires an interdisciplinary expert opinion. The primary aim in the therapy of malignant tumors occurring during pregnancy is to reach a comparable prognosis and outcome as that of a non-pregnant patient.² Malignant tumors of the cervix have one of the highest rates of diagnosis during pregnancy, and the approximate incidence is 1:1,200–1:10,000.³ Also, 1–3% of patients with cervical cancer are diagnosed during pregnancy or during the postpartum period.⁴

The therapeutic management of cervical tumors during pregnancy is guided by the gestational age, the stage of the tumor, and the wish of the patient to

Simona Cristina Rusu • Str. Gheorghe Marinescu nr. 50, 540139 Tîrgu Mureş, Romania. Tel: +40 265 212 111

János Bécsi • Aleea Cornișa nr. 4/15, 540143 Tîrgu Mureş, Romania. Tel: +40 722 377 874

Mihai Morariu • Str. Gheorghe Marinescu nr. 38, 540139 Tîrgu Mureş, Romania. Tel: +40 265 215 551

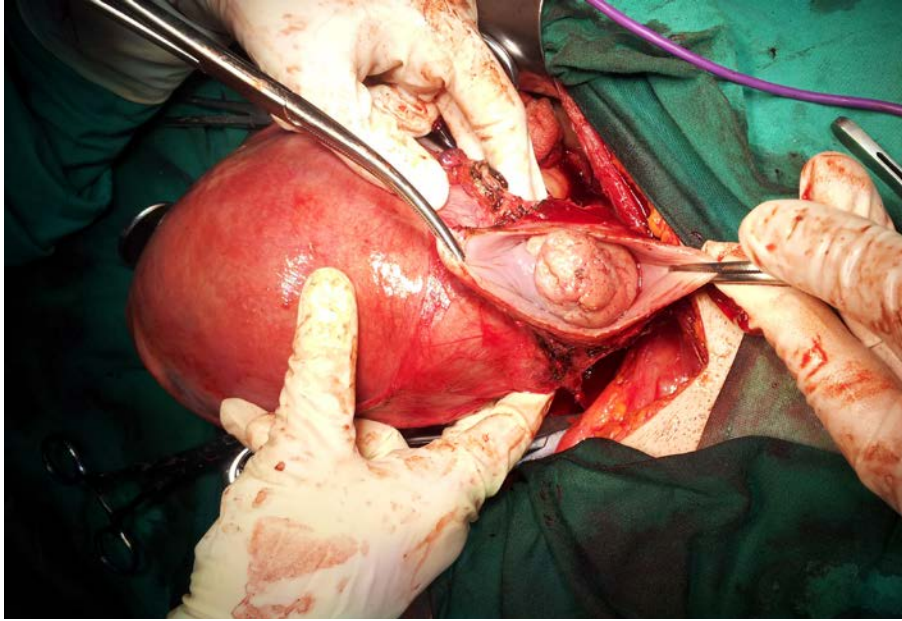


FIGURE 1. Case 1. Abdominal Radical Trachelectomy (ART) for IB1 cervical cancer performed at 16–17 weeks of gestation.

preserve the pregnancy.^{2,5,6} One of the treatment options is radical trachelectomy.²

The abdominal radical trachelectomy (ART) procedure was imagined and defined for the first time in 1956 by the Romanian gynecologist E. Aburel.⁶ In association with vaginal radical trachelectomy and laparoscopic pelvic lymphadenectomy described in 1994 by D. Dargent, it represents a therapeutic alternative for patients with cervical cancer in stages IA2 to IB2 (IIA?), who choose to preserve their fertility. Both techniques can be performed during pregnancy, but reports on the success of the procedure are, so far, limited.⁷

We present a series of 3 cases with cervical tumors diagnosed while pregnant and operated with the goal to preserve the ongoing pregnancy as well as the patients' fertility. The patients agreed to the publication of their data, and the institution where the patients had been admitted approved the publication of the cases.

CASE REPORTS

Case 1

A 26-year-old primigravida, nullipara was referred to our clinic with the diagnosis of cervical cancer stage IB1 (invasive squamous carcinoma), and a 16 gestational weeks pregnancy. On clinical examination, a bleeding exophytic cervical mass of 3 × 3 cm and a 16 gestational weeks pregnant uterus were discovered; parametria and rectum ap-

peared to be normal. Obstetrical ultrasound showed a normal 16–17 weeks pregnancy. Transrectal ultrasound showed a cervical tumor of 32 × 38 × 21 mm, which invaded less than half of the cervix in depth, and without invasion into the parametria, bladder or rectum. Abdominal magnetic resonance imaging (MRI) described the same cervical lesion and pregnant uterus, with no extraperitoneal enlarged lymph nodes and a normal peritoneal cavity. Routine blood test investigations were normal, except of anemia with a hemoglobin level of 9.4 g/dL.

After acquiring informed consent, pre-anaesthetic evaluation and preoperative preparations, an abdominal radical trachelectomy (ART) was performed under general anesthesia, with oro-tracheal intubation and the placement of an epidural catheter — for both intraoperative anesthesia and postoperative analgesia (Figure 1). During the procedure, a pelvic lymphadenectomy was performed, with ligation of the left uterine artery and preservation of the right one, which was thicker, without any intraoperative complications. A cerclage was performed before the completion of the anastomosis between the uterine isthmus and vagina. Intraoperatively, the frozen section of the upper part of the removed cervix showed no tumor at that level. The whole procedure lasted 295 minutes, and the estimated blood loss was 500 ml. The postoperative recovery was complicated by a symptomatic right iliac lymphocele that was drained with ultrasound guidance on the 12th postoperative day, and an abdominal wound infection occurred, which required re-suturing on the 18th day. The

patient was discharged on the 22nd postoperative day. The final pathology report revealed a third-degree squamous carcinoma, invading 8 mm of the 24 mm cervix wall; there were no metastases into the parametria nor in the 23 right and 20 left lymph nodes that had been removed.

The pregnancy evolved normally with monthly clinical, abdominal and transvaginal ultrasound examinations, and Pap smear test was sampled every 3 months. At 28 gestational weeks, the patient was admitted to the hospital for a suspicion of premature labor, which was later infirmed. The pregnancy follow-up was closer during the last 2 months, with clinical examination, ultrasound and Doppler velocimetry being performed every 2 weeks. At 38–39 gestational weeks, she delivered a male newborn of 2950 grams, with an Apgar score of 9 at 1 minute, by elective cesarean section. The procedure was complicated by a very intense hemorrhage arising from the presacral area, after uterine mobilization. She received blood and plasma transfusion, both intra- and postoperatively. The recovery was uneventful for both the mother and the newborn, who were both discharged from the hospital on the 6th postoperative day.

At this moment, 2 years after the ART procedure, the patient is pregnant again, with natural conception. The ongoing pregnancy was uneventful until now and it has already reached 29 weeks, with a normal biometry fetus. The oncology follow-up, the clinical examinations and the Pap smears that had been performed every 3 months, plus the yearly CT scan that was performed before the ongoing pregnancy, were normal.

Case 2

A 29-year-old primigravida was referred with the diagnosis of cervical cancer stage IB2 (invasive squamous carcinoma), while being 15 weeks pregnant. On clinical examination, an exophytic cervical mass of 5 × 4 cm, occupying the whole lumen of the superior vagina, and a 15 gestational weeks pregnant uterus were discovered; parametria and the rectum seemed normal. Obstetrical ultrasound showed a normal 15 weeks pregnancy. Transrectal ultrasound showed a cervical tumor of 44 × 49 × 29mm, with invasion of more than 3/4 of the cervical length and a 9 mm zone of apparently healthy cervical tissue between the tumor and the amniotic membranes, but without invasion into the parametria, bladder or rectum. Abdominal MRI described the absence of extraperitoneal enlarged lymph nodes and a normal peritoneal cavity. Routine blood test investigations were normal, except for anemia (hemoglobin level of 8.6 g/dL).

An ART with pelvic lymphadenectomy was performed, with preservation of both uterine arteries, without any intraoperative complications. A cerclage was performed before the completion of the anastomosis between the uterine isthmus and vagina, but the remaining uterine isthmus was very thin, with the amniotic membrane bulging from the uterine cavity. Intraoperatively, the frozen section of the upper part of the removed cervix showed no tumor at that level. The whole procedure lasted 330 minutes and the estimated blood loss was 800 ml. The postoperative recovery was complicated by the rupture of the amniotic membranes on the 7th postoperative day, and, consequently, a spontaneous abortion 2 days later, necessitating uterine curettage. On the 11th postoperative day, the patient had developed a general peritonitis, confirmed by fever, high leucocyte count, abdominal tenderness and a huge amount of fluid in the abdominal cavity, discovered by ultrasound. She was re-operated the same day; the surgery consisted of adhesiolysis, peritoneal washing, multiple drainage, but with preservation of the uterus and adnexae. This time, the post-operative recovery was uneventful, under intensive care treatment. The patient was discharged on the 20th postoperative day.

The final pathology report listed a cervix of 60 × 75 × 40 mm with vagina; second degree squamous carcinoma, invading the cervical wall; no metastases into the parametria, nor in the 41 removed lymph nodes from both sides.

At this moment, the patient is free of disease, with normal menstrual flow, and tries again to conceive. The clinical and ultrasound examination and the Pap smear performed during the 4 months of follow-up, tested normal.

Case 3

A 33-year-old three-gravida, secundipara, was in the 14–15th week of gestation when she was diagnosed with cervical cancer stage IB2 (invasive squamous carcinoma). On clinical examination, an exophytic cervical mass of 4 × 3 cm, and a 14 gestational weeks pregnant uterus were discovered; parametria and the rectum were in normal relations. Obstetrical ultrasound confirmed the normal 14–15 weeks pregnancy. Transrectal ultrasound showed a cervical tumor of 43 × 32 × 33 mm, without invasion into the parametria, bladder or rectum, but with enlarged lymph nodes into the right parametrium and on the right pelvic side wall. For technical reasons, it was impossible to perform a MRI before surgery. Routine blood test investigations were normal.

An ART with pelvic lymphadenectomy was performed, with preservation of both uterine arteries, without any in-

traoperative complications. Enlarged lymph nodes were found in the right obturator fossa that were excised and sent to extemporaneous histopathological examination, which confirmed malignancy. Because the patient had refused the hysterectomy preoperatively, the ART was completed in classical steps. The frozen section of the upper part of the removed cervix showed no tumor at that level. The whole procedure lasted 350 minutes and the estimated blood loss was 500 ml. Postoperative recovery was complicated by the rupture of the amniotic membranes during the 8th postoperative day. The patient refused the hysterectomy once more, and on the 12th postoperative day, an abdominal hysterotomy with extraction of the fetus and placenta was performed. The postoperative recovery was uneventful, and the patient was discharged on the 18th postoperative day.

The final pathology report revealed a third-degree squamous carcinoma that was invading 32 mm of the 33 mm cervix wall; metastases in 1 out of 9 right parametrial lymph nodes and in 5 out of 20 right pelvic lymph nodes; no metastases were found in the 11 left pelvic and the 2 paracaval lymph nodes that had been removed.

Finally, the patient accepted concomitant radio-chemotherapy and, at this moment, she has completed the treatment and is free of disease.

DISCUSSIONS AND CONCLUSIONS

We have conducted a literature review of published manuscripts related to cervical malignancies during pregnancy, with the use of the Medline database; the main search terms were cervical cancer, pregnancy and trachelectomy. Up to this moment, 24 women with cervical tumors, including the three patients presented in this article (4 stage IA2, 17 stage IB1 and 3 stage IB2) who underwent radical trachelectomy while being pregnant, have been reported. From the 24 patients, 11 underwent the procedure through a vaginal route and 13 were ARTs.^{9–19}

ART during pregnancy was accompanied by significant bleeding and prolonged surgical intervention in all cases.^{14–19} Nevertheless, this type of surgery is addressed to young patients. Also, pregnancy-induced hypervolemia allows a better compensation in case of a more significant intraoperative hemorrhage. Similarly, as it is known from radical abdominal hysterectomy performed during early pregnancy or at the time of cesarean section for an invasive cervical cancer, pregnancy-induced changes in the pelvis allow an easy dissection and mobilization of pelvic anatomical structures.

The rate of fetal loss after ART was high (6 fetal losses occurred 0–16 days after surgery, including the 2 patients

presented in this manuscript). It appears that it is safer and with better obstetrical results, to postpone the ART for the second trimester of pregnancy. Seven out of 9 patients, including ours, who underwent surgery between 15 weeks and 19 weeks of gestation, gave birth to healthy live babies. To ensure a better blood supply to the pregnant uterus, both uterine arteries, or at least one, must be preserved, if possible, when performing the ART during pregnancy.

We believe that it is important to offer this surgical option to pregnant patients with invasive cervical cancer. The best period of pregnancy to perform a radical trachelectomy looks to be the early second trimester. Detailed investigation of similar cases would reveal the efficacy and safety of this procedure, although it is a technically difficult approach, and the importance of experience and centralization should be emphasized. Abdominal radical trachelectomy may prevent female patients to lose a much-desired pregnancy, their fertility, as well as their motherhood.

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