

# Therapeutic Pelvic Lymph Node Dissection in the Second Gestational Trimester: A Case Report and Literature Review

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**Abstract.** *Background: Management of cervical cancer during pregnancy remains unclear and varies according to stage of disease and gestational age at diagnosis. Specifically, local advanced cervical cancer in the third trimester of pregnancy presents as the most challenging. Materials and Methods: We reviewed all articles recently published in the Pubmed database about the treatment of cervical cancer in second and third trimester of pregnancy to be able to obtain the best decision regarding our presented case. The case and its treatment is described in detail and discussed according to available literature. Results: Our case proves that even beyond 25 gestational weeks a laparotomy with removal of 62 pelvic lymph nodes can be safely executed. Conclusion: Lymphadenectomy may be safe and feasible even after the 25th gestational week, and may be taken into consideration before making any decision concerning maintenance of pregnancy and providing individually-tailored oncological surgical procedure and optimal obstetrical care.*

Cervical cancer is the second most common gynecological malignancy and the most common malignancy diagnosed during pregnancy with an incidence of 1.6 to 10.6 per 10,000 pregnancies (1-3). Only 20% of these lesions are diagnosed during the prenatal period (4). Pregnancy does not seem to adversely significantly affect the prognosis of early-stage cervical cancer (5-9), therefore a planned delay of oncologic treatment can be a safe option after tumor metastasis to

lymph nodes has been histopathologically ruled-out (10), as lymph node metastasis is the most important negative prognostic factor in cervical cancer (11).

Due to the rarity of the disease during pregnancy, the absence of prospective clinical trials, and the complexity of all factors that have to be taken into consideration, the management of cervical cancer during pregnancy remains unclear and varies according to stage of disease and gestational age at diagnosis.

Traditionally, treatment of cervical cancer during pregnancy was avoided: the usual course of action was termination of pregnancy during the first two trimesters, or delay of treatment until fetal maturity in the third trimester, followed by standard treatment postpartum. In the last decade, pregnancy preservation and treatment during pregnancy (12) or delaying the therapy after confirming the negative lymph nodes status (10-11, 13) have become more common.

The new international guidelines resulting from the second international consensus meeting, published in March 2014, suggest that conisation alone is a sufficient and relatively safe treatment during pregnancy for stage IA1 cervical cancer. For higher stages of cervical cancer, pelvic lymphadenectomy is proposed to diagnose the high-risk disease (with positive nodes) that may necessitate termination of pregnancy and application of standard treatment (14).

A minimal number of 10 lymph nodes is suggested by the International Federation of Gynecology and Obstetrics (FIGO). Literature shows that lymphadenectomy can safely be performed (laparoscopically or via laparotomy) up to 22nd week of pregnancy. The current international guidelines have found 32 reported cases of lymphadenectomy in pregnancy, most of which have been treated before 22 weeks gestational age and producing a median of 19 lymph nodes (range=6-72) (14). With this case report we report the possibility to maintain pregnancy within cervical cancer by performing radical lymph node dissection even beyond 25 weeks gestational age.

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## Case Report

A twenty-six-year-old nulliparous patient presented in 25-week gestational age. She had had an external PAP Smear (Iva) followed by a conisation with parallel cerclage 10 weeks prior to presentation to our hospital showing an invasive adenocarcinoma of the cervix pT1b1, L0, V0, R1, Mx. The patient and her husband both had a very strong desire to maintain the pregnancy. The patient had been counseled to terminate the pregnancy, as the R1 situation made it unclear how large the tumor residual was. She came to our Institution for a second opinion.

After discussing this case in our interdisciplinary tumor board we decided to perform staging-laparotomy to extract pelvic lymph nodes for further diagnostic measures to be able to determine whether conservative management would be safe. Both the patient and her husband were informed, that this procedure was a common procedure performed beyond pregnancy, but that it also posed risks and the outcome on the pregnancy could not be guaranteed. After informed consent and following unremarkable second trimester ultrasound and fetio-biometry, we performed a lower abdominal vertical laparotomy at 26 plus 2 gestational week. Tocolysis was administered 4 hours before, throughout and up to 24 hours after the procedure. Low molecular weight heparin was applied 6 hours preoperatively and during the whole hospital stay. The procedure was performed in a slight left lateral tilt position to avoid vena cava syndrome.

The pregnant womb was covering the entire surgical field and had to be gently displaced by hand or using Breisky-Navratil retractors throughout the surgery. Lymphadenectomy was begun in the common iliac region to avoid major manipulation to the uterus in the beginning of surgery and decrease the chance of preterm labor. Lymph nodes retrieved from this region were sent to intra-operatively frozen section study to be able to decide about para-aortic lymph node dissection.

Dissection continued up to the obturator, external and internal iliac lymph nodes, where the uterus had to be lifted in order to gain visualization. After confirming the negative frozen section result (no tumor involvement in the common iliac region), we forwent any para-aortic lymph node dissection and ended the procedure. No intraoperative or postoperative complications were observed, and the patient was discharged in good gestational and common status.

Sixty-two pelvic lymph nodes were retrieved all of them free of tumor. In accordance to therapy protocol and in regard to the patients wish to maintain her pregnancy we determined postponed radical hysterectomy to be the adequate treatment option. The first postoperative control was performed in the 31 plus 4 gestational week and showed no conspicuousness.

In 37 plus 3 gestational week, the patient returned to our hospital for primary cesarean section with subsequent total mesometrial resection (TMMR). The cesarean section was performed via the former vertical laparotomy in epidural anesthesia to allow mother child bonding. Shortly after delivery of a healthy female newborn, general anesthesia was induced and total mesometrial resection was performed. The neonate weighed 2,780 g, with Apgar scores of 9/10/10.

Histology later showed minimal residual of the formerly diagnosed adenocarcinoma summing up to: pT1b1 (2.4 cm), pN0 (0/66), G3, R0, L0, V0. Tumor conference decided against further therapy according to current guidelines.

The patient was followed up oncologically for 26 months to date without any signs of lymphedema, development of lymphocele or clinical signs of tumor recurrence.

## Discussion

Pelvic lymph node metastasis is recognized as the most important prognostic factor for cervical cancer (15). To date, there is no reliable pre-operative examination (MRI, CT-scan, or FDG-PET) allowing valid determination of lymph node status with certainty in patients with cervical cancer.

Literature shows that lymphadenectomy as a staging procedure for pregnant women with stage I disease is feasible during pregnancy and allows for reliable risk stratification (16). In many reported cases, maternal and neonatal morbidity was low (10-11, 13).

The international guideline proposes that a complete pelvic and/or para-aortic lymphadenectomy is difficult to perform if the diagnosis of cervical cancer is made after the 22 to 25 week gestational age; therefore, the decision-making cannot rely on the nodal status (14).

Our case proves that even beyond 25 gestational week a laparotomy with removal of 62 pelvic lymph nodes can be safely executed, providing the chance to make informed decisions about whether or not maintaining the pregnancy and delaying oncological therapy by a few weeks if nodal status is negative thereby avoiding premature termination of the pregnancy.

Total mesometrial resection has been the standard of care in our institution for treatment of patients with early stage cervical cancer since 2012, laparoscopically as well as in open surgery (17, 18). TMMR means radical removal of embryologically defined uterovaginal (Müllerian) compartment except its distal vaginal part (19). This technique demands experience and competence to achieve very radical lymphadenectomy, which could be even more challenging in pregnancy. This explains the high rate of retrieved pelvic lymph nodes in our case. To the best of our knowledge, this is the first case report, which describes TMMR for a pregnant uterus.

Other treatment options, which could be applied during pregnancy, had been taken into account. There are few

published cases of antepartum trachelectomy, with a fetal loss rate of 33% (5/15) within 16 days after surgery (13, 20-21). Several studies have shown a parametrial involvement rate of less than 1% in patients with tumor size less than 2 cm, negative pelvic lymph nodes, and stromal invasion of less than 10 mm (22-26); this supports the option of less radical surgery without parametrectomy in patients that fulfill these criteria (27, 28). Therefore, we decided not to perform trachelectomy during pregnancy in this patient.

During pregnancy, Neo-adjuvant chemotherapy (NACT) can be used to aim for tumor down-staging or stabilization for patients with a stage IB1 tumor, larger than 2 cm and with negative pelvic lymph nodes or for patients in stage IB2 or higher stages, while awaiting fetal maturation (14, 29). In our patients, we did not think that NACT would add any more tumor control with no macroscopic residual tumor and no involvement of any lymph node after a radical pelvic lymph node staging, without forgetting the potential risk for the fetus by applying chemotherapy during pregnancy (30).

In accordance with current literature, we confirm the diagnostic value of lymphadenectomy during pregnancy to exclude metastasis and to ensure that oncologic treatment can be safely postponed. This procedure may be safe and feasible even after the 25-gestational week, and may be taken into consideration before making any decision concerning the maintenance of pregnancy and providing individually tailored oncologic surgical procedure and optimal obstetrical care.

### Conflicts of Interest

No financial or personal conflict of interest by any of the authors to declare.

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