



## Case Report

Radical vaginal trachelectomy at 16 weeks' gestation: A case report<sup>☆</sup>D.F. Kolomainen<sup>a,\*</sup>, R.J. Bradley<sup>b</sup>, P. Larsen-Disney<sup>b</sup>, J.H. Shepherd<sup>a</sup><sup>a</sup> Department of Gynaecological Oncology, The Royal Marsden NHS Foundation Trust, London, UK<sup>b</sup> Department of Gynaecological Oncology, Royal Sussex County Hospital, Brighton, UK

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## Case report

A 27 year old nulliparous woman presented in November 2008 with a 2 month history of intermenstrual/postcoital bleeding. All previous smears were negative and she is a non-smoker. Clinically on examination there was a 2 × 2.5 cm exophytic lesion on the anterior lip of the cervix. Biopsy taken was inconclusive but suggestive of severe cervical glandular intraepithelial neoplasia (CGIN). The patient was subsequently seen in colposcopy clinic in December 2008 and a superficial LLETZ (12 × 10 × 8 mm) was performed which revealed a moderately differentiated adenocarcinoma of the cervix (10 mm horizontal width × 5 mm depth), incompletely excised, with lymphovascular space invasion (LVSI). The patient was then referred to a cancer centre with the expertise to perform fertility-sparing surgery.

At the cancer centre review the pathology and MRI of the pelvis were suggestive of stage 1b1 cervical cancer with a suspicious right obturator node. An endovaginal MRI pelvis was performed in order to obtain the following two measurements to determine that the correct cervical length was excised: the endocervical canal measured 2 cm and the length from the internal os to the top of the uterine cavity 4.2 cm. At the time of referral the patient was not pregnant and detailed counselling of the patient and her partner not only included the standard treatment but also fertility-sparing surgery. They were warned about the risks of prematurity but also the need for completion treatment by chemoradiation.

In January 2009 the patient underwent a laparoscopic pelvic lymphadenectomy and all 39 nodes were negative. At that time the pregnancy test was negative. In February 2009 a radical vaginal trachelectomy was scheduled but on the morning of her operation the pregnancy test was positive despite having used condoms for contraception. The first day of her last period was 28/12/08.

The case was re-discussed at the weekly multidisciplinary meeting and the following options were discussed:

1. Termination of pregnancy would delay the subsequent procedure of radical vaginal trachelectomy for there would be a 6 week interval to allow for healing and resolution of artefact. This would defeat the purpose of preserving fertility and against the wishes of the couple.
2. Radical vaginal trachelectomy during second trimester. A glandular tumour with positive margins requires removal of the endocervical canal in its entirety i.e. up to the isthmus. This is associated with an increased risk of rupturing membranes and thereby miscarriage at the time of the procedure. Obstetric advice was sought and by performing the procedure during the second trimester would minimise the risk of miscarriage associated with the first trimester.

## Introduction

The incidence of cervical cancer in pregnancy is 1–10/10,000 (Duggan et al., 1993). The standard treatment for early-stage cervical cancer is radical hysterectomy and/or chemoradiation. Radical vaginal trachelectomy is an attractive alternative in women who wish to preserve their fertility (Shepherd and Milliken, 2008). However, a young woman diagnosed with early-stage cervical cancer while pregnant is a clinical dilemma. The maternal risks need to be balanced against the risks to the foetus. Treatment options would include: termination of pregnancy followed by standard treatment; cancers that are diagnosed after 24 gestational weeks can have their treatment deferred until delivery is feasible i.e. up to approximately 32–34 weeks; neoadjuvant chemotherapy whilst pregnant with in-utero foetal exposure to toxicity; and radical vaginal trachelectomy.

This is the seventh case report of radical vaginal trachelectomy performed during the second trimester in a young woman with an invasive cervical cancer (Ferrioli et al., 2012; Iwami et al., 2011; Siuotas et al., 2011; Van De Nieuwenhof et al., 2008) (see Table 1). The purpose of this case report is to continue to highlight to the gynaecological oncological community the clinical challenges encountered in young women diagnosed with cervical cancer whilst pregnant.

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**Table 1**  
Radical vaginal trachelectomy during second trimester of pregnancy: summary of literature.

Author	Stage	Cerclage in-situ	Complications	GA at delivery (weeks)	Adjuvant therapy	Follow-up (months)	Disease status	Neonatal outcome/ complications
Van De Nieuwenhof	1b1	Yes	No	36	Radical hysterectomy	9	NED	Uneventful
Iwami	1b1	Yes	No	34	No	14	NED	Uneventful
Siouta	1b1	Yes	No	37	No	47	NED	Uneventful
	1b1	Yes	No	29	No	30	NED	Uneventful
	1b1	Yes	No	37	No	27	NED	Uneventful
Ferrioli	1b1	Yes	No	31	Radical hysterectomy chemoradiation	N/A	Died of disease	Uneventful

GA = gestational age.

NED = no evidence of disease.

3. Neoadjuvant chemotherapy which would be implemented during the second trimester to avoid the greater teratogenic risk of treatment in the first trimester.

At 16 weeks' gestation a radical vaginal trachelectomy was performed and the specimen measured 40 mm × 40 mm × 38 mm. The maximum tumour dimension was 32 mm in addition to a tumour dimension of at least 10 mm in the LLETZ specimen. There was no evidence of LVSI in the trachelectomy specimen though it was evident in the LLETZ specimen. The anterior margin was close to the resection margin. The lateral and distal margins were well clear as was the proximal isthmic margin. By reviewing the reports in order to reconstruct the cervical cancer and estimate the size of the tumour, the conclusion reached was a diameter of 42 mm. The final stage was stage 1b2 moderately differentiated adenocarcinoma of the cervix.

In an attempt to prevent uterine contractions a prophylactic nifedipine patch was administered at the time of the procedure and continued for a further 24 h. There is a significant risk of preterm labour in this group and an empirical course of erythromycin 250 mg qds was administered for 10 days and repeated at 24 weeks. Elective steroid administration was administered at 24 weeks' gestation to accelerate foetal lung maturity. Bed rest was preferable at home rather than a prolonged hospital stay between 22 and 26 weeks. At 25 weeks' gestation she had ruptured her membranes and was admitted to her local hospital for conservative management with monitoring of inflammatory markers and received a course of antibiotics. The patient was admitted 10 days following rupture of membranes with an antepartum haemorrhage. However, there was clinical and biochemical evidence of chorioamnionitis and she underwent an emergency classical caesarean section. A live female infant weighing 830 g was delivered at 26 weeks' gestation with Apgar scores of 6 and 10, at 1 and 5 min, respectively. Neonatal complications included respiratory distress syndrome, chorioamnionitis, and necrotising enterocolitis. The infant was discharged at a corrected gestational age of 36 weeks weighing 2440 g.

At 3 months postpartum the patient underwent a staging examination with multiple random biopsies. There was no evidence of disease recurrence either clinically, radiologically, or histologically. It is now 46 months following primary treatment for cervical cancer and there is no evidence of recurrence as assessed clinically and radiologically.

## Discussion

This case demonstrates radical vaginal trachelectomy as a potential treatment option in pregnant women with a desire to continue the pregnancy. It also highlights the clinical dilemma not only for pregnant young women diagnosed with early stage cervical cancer due to the risks to the unborn child. The tumour was moderately differentiated and, although there was LVSI present in the original LLETZ, there was no evidence in the final specimen. There was a good node dissection of 39 nodes, all negative. The one adverse prognostic factor on the final pathology specimen was the anterior margin being only 1 mm clear of tumour. In such a situation the treatment option would be chemoradiation. Postpartum there was the dilemma as to whether

completion treatment was indicated. In the normal course of events radiotherapy would not be advised until 4–6 weeks after the event, and given that she was by then nine months after the original diagnosis with no clinical, radiological, or histological evidence of recurrence, a surveillance policy has been adopted. It is now 46 months with no evidence of disease recurrence.

In the approach described by Van De Nieuwenhof et al. 2008 a cerclage is placed abdominally at the cervico-isthmic junction prior to proceeding to the vaginal trachelectomy with the vaginal mucosa approximated to the cervical stump. We have always inserted a cerclage and this is well described in our publications (Shepherd et al., 1998; Shepherd and Milliken, 2008). We do not advocate a trial without cerclage. In the histological subtype of adenocarcinomas it is imperative to ascertain that the whole length of the endocervical canal is removed up to the isthmus. Therefore the technique described by the former authors of what appears to be a vagino-cervical anastomosis could potentially result in residual tumour. The difference here is the histological subtype. In squamous cell carcinoma of the cervix a section of proximal cervical stroma may be conserved at the isthmus providing an adequate 1 cm clearance is obtained.

In the literature there are two scenarios reported. Ben-Arie et al., 2004 are advocates of fertility-sparing surgery in pregnant patients with stage 1a2 cervical cancer. This subgroup can be managed by knife cone biopsy providing nodes are negative, and this approach can be adopted in pregnancy (Herod et al., 2010). In another clinical scenario of stage 1b1, grade 2, adenocarcinoma of the cervix with lymphovascular invasion diagnosed at 17 weeks' gestational twin pregnancy, nodal status was assessed laparoscopically. Neoadjuvant platinum-based chemotherapy was implemented until 32 weeks' gestation with delivery by elective caesarean section followed immediately by radical hysterectomy (Favero et al., 2010).

There is anecdotal evidence of the use of chemotherapy in more locally advanced disease. During the 1st trimester the main concern is congenital malformation, and during the 2nd and 3rd trimesters low birth weight and intra-uterine growth retardation (Boyd et al., 2009).

There is an associated 20% risk of preterm labour due to ascending infection and hence consideration should also be given to prophylactic use of antibiotics at 16 and 24 weeks' gestation. It is also important to ensure that during the second half of the pregnancy the patient is resting and relatively inactive in order to minimise strain on the isthmic suture. Antenatal care should be in a high risk obstetric unit with Level 3 neonatal facilities. Mode of delivery is by classical caesarean section.

This case demonstrates the potential role of radical vaginal trachelectomy in early stage cervical cancer with a favourable outcome to mother and baby. We do acknowledge a longer follow-up period is required not only with respect to the mother's prognosis but also the developmental sequelae associated with prematurity. A multidisciplinary approach was imperative in the management of both mother and baby.

## Conflict of interest statement

No conflict of interest.

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