

Use of an Arabin pessary to prevent preterm birth in pregnancy complicated by a short cervix after cervical conization for cervical adenocarcinoma with residual disease: A case report and literature review

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ABSTRACT

Surgical conization of the cervix for cervical cancer increases the risk of preterm birth in subsequent pregnancies. The ideal intervention to prevent preterm births in women with cervical insufficiency resulting from conization is not known. When histological margins of the cone biopsy are suspected to have residual malignancy, surveillance and oncological management during a concurrent pregnancy can be challenging. This case outlines the management of a pregnancy complicated by a short cervix secondary to conization for adenocarcinoma of cervix, with margins suspected to be not clear of disease. The patient had progressive shortening of the cervix despite vaginal progesterone, but maintained a cervical length of 16 mm following Arabin pessary insertion. She delivered a healthy neonate at 34 + 3 weeks of gestation (105 days following pessary insertion). The cervical pessary in combination with vaginal progesterone may be safe and effective in preventing preterm birth in a pregnancy with possible residual cervical cancer and a short cervix.

1. Introduction

The incidence of cervical cancer in pregnancy is 0.1 to 12 cases per 10,000 pregnancies.^[1] In countries with high uptake of cervical screening programs, most are diagnosed at an early stage.^[1] Treatment of cervical cancer in pregnancy is individualized, centred upon staging, gestation at diagnosis, obstetric risk factors and patient choice. Cervical cancer in pregnancy is likely to increase the risk of preterm birth (PTB).^[2] This risk is increased by 5-fold after a single cone biopsy and 10-fold after two cone biopsies.^[2] Conization removes the collagen-rich component and shortens the length of the cervical canal, leading to earlier dilatation and prostaglandin release.^[3] The presence of residual cancer may also affect the integrity of cervical tissue and function.^[4] Management options for pregnancy in a woman with a short cervix after conization and inadequate oncological margins is highlighted in our case.

2. Case Presentation

The patient, a medically well 37-year-old woman, para 4, was referred to the gynaecology clinic of a tertiary teaching hospital with 4

months of post-coital bleeding. A cervical screening test detected HPV 18, with normal liquid-based cytology (endocervical component present). Colposcopy assessment showed contact cervical bleeding and changes consistent with HPV seen on acetowhite/iodine staining. Biopsies were suspicious for invasive adenocarcinoma. A cone biopsy subsequently confirmed invasive adenocarcinoma (depth of invasion of 3.7 mm), with close endocervical margin (0.5 mm). Staging PET-CT showed no evidence of regional nodal disease or distant metastases. The diagnosis was Stage 1A2 adenocarcinoma of the cervix, with no lymphovascular space invasion. Radical hysterectomy with pelvic lymphadenectomy was recommended by the multidisciplinary team. The patient became pregnant while awaiting surgery. Extensive counselling followed to discuss management options. She elected to continue the pregnancy and delay invasive procedures and definitive treatment until postpartum.

Antenatal care was conducted through the high-risk obstetrics clinic. Routine antenatal screens were normal. Cervical length (CL) screening was initiated from 12 weeks of gestation and performed fortnightly as there were multiple risk factors for preterm birth (PTB). She had a history of PTB at 36 weeks in her third pregnancy, cervical conization and possible residual cervical cancer. At 12 weeks, CL was 28 mm, thus

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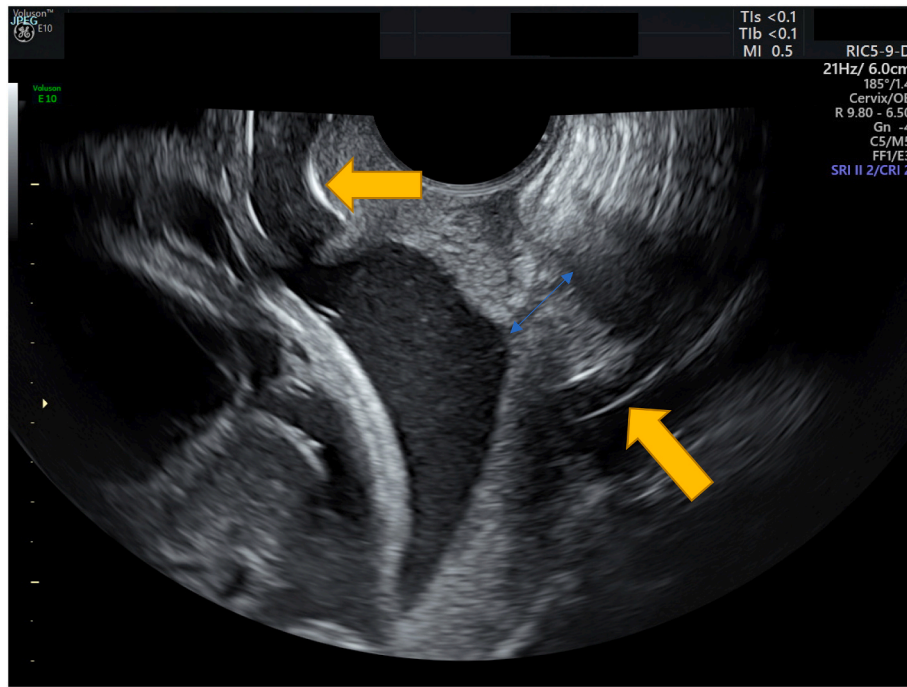


Fig. 1. Trans-vaginal ultrasound image measurement of cervical length (blue arrows), demonstrating Arabin pessary in situ (yellow arrows). (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

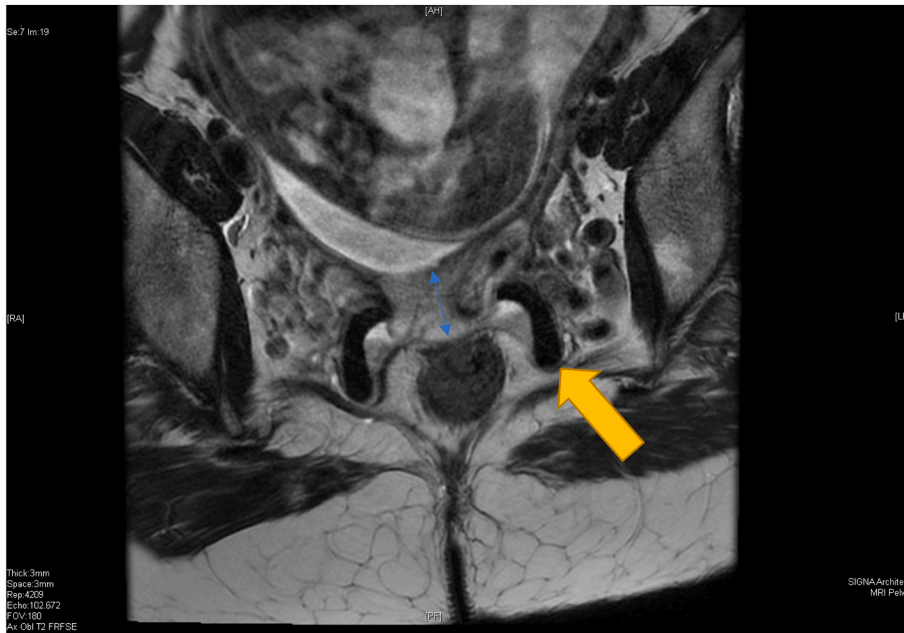


Fig. 2. Magnetic resonance image at 29 weeks of gestation due to concerns of disease progression. The cervix (blue arrows) is short, oedematous in appearance with some T2 heterogeneity within the cervix, but no definitive parametrial invasion or pelvic lymphadenopathy. The Arabin pessary in situ (yellow arrow) obscures the inferior half of the vagina and some of the cervix. (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

vaginal progesterone (200 mg) prophylaxis was commenced. Unfortunately, progressive cervical shortening was noted despite consistent use of progesterone, and by 18 weeks CL had reduced to 18 mm. Cerclage was considered an option to reinforce the cervix but decided against as it is invasive and carries the risk of bleeding with vascularity demonstrated on trans-vaginal ultrasound. The cervical pessary was preferred as it would not disrupt the underlying tissue.

An Arabin pessary (Dr Arabin GmbH, Witten, Germany; size 65/25/35) was inserted at 18 weeks (Fig. 1). The pregnancy continued with CL maintained at 18 mm with pessary in situ and ongoing vaginal progesterone. Our patient reported watery brown vaginal discharge at

appointments over the next 10 weeks. Investigations (blood tests, high vaginal swabs for microscopy and culture) did not suggest an infective cause. It was important to differentiate between discharge secondary to the pessary from cervical cancer progression and necrosis. Speculum exams were performed to evaluate for progression of disease and to exclude rupture of membranes. At 28 weeks, the pessary was temporarily removed to facilitate full examination of the cervix. No lesions were noted, and the colposcopy assessment was unchanged from early pregnancy. A fresh pessary was then inserted. MRI of the pelvis at 29 weeks showed no parametrial invasion or pelvic lymphadenopathy (Fig. 2). Fetal growth and wellbeing were assessed with four-weekly

ultrasound scans.

The woman presented with preterm premature rupture of membranes at 34 + 1 weeks of gestation, draining clear liquor. The Arabin pessary was removed (105 days from insertion), and progesterone ceased. Inflammatory markers were normal. Betamethasone was administered for fetal lung maturation and antibiotic prophylaxis per hospital protocol was commenced. Ultrasound showed slowing of fetal growth, with abdominal circumference on the 5th centile, and normal Dopplers. The decision was made to deliver at 34 + 3 weeks. Vaginal delivery was considered a safe option, so labour was induced with syntocin infusion. At 4 cm dilatation, CTG showed multiple complicated variable decelerations. A lower-segment Caesarean section was performed for fetal distress. The procedure was uneventful, with 300 ml estimated blood loss and no abnormal intra-operative findings. A live male infant weighing 1871 g, with Apgar scores of 6, 7 and 9 at 1, 5, 10 min respectively, was delivered and discharged from the neonatal ICU on day 10. The placental weight was below the 10th percentile for gestational age and placental histopathology was normal.

Post-partum PET revealed stable disease. A radical hysterectomy and pelvic lymphadenectomy with ovarian preservation was performed 10 weeks post-partum with no complications. Histopathology showed cervical fibrosis with no residual malignancy. Ongoing surveillance, including regular examination and HPV testing, was planned.

3. Discussion

The ideal intervention to prevent preterm births (PTBs) in women with cervical insufficiency resulting from conization is not known.^[5] When the histological margins of the cone biopsy are suspected to have residual malignancy, surveillance and oncological management during a concurrent pregnancy can be challenging. For stage 1A2 disease, in women with no desire for fertility, the standard treatment is radical hysterectomy and bilateral pelvic lymphadenectomy.^[6] If preservation of fertility is desired or for management during pregnancy, conization is considered sufficient treatment if it is possible to obtain negative margins. If margins are inadequate or positive, repeat conization or trachelectomy could be considered.^[1] Some women may decline active treatment during pregnancy; fortunately, the risk of progression during pregnancy is small.^[7] If pregnancy continuation is desired, surveillance should include regular examination, sentinel node procedure to assess nodal status at 12-14 weeks of gestation, and MRI if there is concern regarding disease progression. The importance of this approach was highlighted in our case, where reassuring colposcopy and MRI findings allowed the pregnancy to continue to an advanced gestation.

A short cervix seen on transvaginal ultrasound scan is considered a strong risk factor for pre-term birth (PTB).^[8] Our patient had several risk factors for PTB, and hence was advised to start progesterone from 12 weeks, after confirming fetal structural normalcy.

Vaginal progesterone is known to reduce the risk of PTB (relative risk 0.66)^[9]; however, a recent meta-analysis concluded there was no convincing evidence in women with a history of PTB.^[10] Therefore, with progressive CL shortening despite progesterone, mechanical reinforcement of the cervical structure, with either cerclage or pessary, is often required.^[11,12]

In our case, a cervical cerclage was considered, but decided against, for multiple reasons. According to RCOG guidelines, cervical cerclage is not routinely recommended in women who have had a previous cone biopsy.^[5] Other patient factors were also considered unsuitable for cerclage placement. Firstly, she had a deficient posterior lip of the cervix, which would have made insertion of a satisfactory suture difficult. Secondly, disruption of the potential underlying residual adenocarcinoma during cerclage placement, while not described in the literature, was a concern. Thirdly, significant vascularity was demonstrated on ultrasound, which would increase the risk of bleeding with cerclage.

An Arabin pessary is known to reduce the risk of PTB in asymptomatic women with a short cervix.^[3,11,13,14] Previous studies have also

demonstrated the effectiveness of the combination of pessary and vaginal progesterone, compared with progesterone alone for preventing PTB.^[11,12] Placement of the pessary does not disrupt cervical tissue, and it likely works by changing the angle of the cervix posteriorly.^[3] A commonly reported side-effect of the pessary is increased vaginal discharge due to fluid accumulating behind it, which is then released through perforations.^[13] This can be alarming in the context of an underlying cancer, which also presents with increased and malodorous vaginal discharge, especially if there has been progression.^[1] A high degree of suspicion should be maintained, and frequent assessment is required to exclude infection and progression of cancer. Removal of the pessary followed by replacement did not seem to have negative effects on the efficacy of the device in our case. The latency of gestation in our case was 105 days, which is likely suggestive of the efficacy of the device when used in this context. Route of delivery likely does not affect the prognosis of Stage 1 cervical cancer,^[15] and a Caesarean section should be offered for obstetric indications only. Increased bleeding and tumour seeding are considered rare complications in Stage 1A compared with stages beyond 1B.^[15]

In conclusion, a cervical pessary may be safe and effective in preventing preterm birth for a woman with possible residual cervical cancer and short cervix.

Contributors

Jessica Teoh was involved in literature review, collection of consent and case details, drafting the article, revisions and submission.

Selvan Pather was involved in patient care and contributed to review of oncological management.

Rajit Narayan was involved in patient care and was responsible for conception of the case report, literature review, revision for publication and overall guidance.

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Patient consent

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Provenance and peer review

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Conflict of interest statement

The authors declare that they have no conflict of interest regarding the publication of this case report.

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