Novel treatment (new drug/intervention; established drug/procedure in new situation)

Successful pregnancy following mid-trimester evacuation through a transabdominal cervical cerclage

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Summary

Preterm birth remains a major challenge in modern obstetrics and is increasing, even among low-risk primiparous women. Very few interventions have made a positive impact on outcome although cervical cerclage appears to benefit some women. Transabdominal cervical cerclage can be highly successful and should be considered in women with previous failed transvaginal cerclage, but requires operative abdominal delivery as it cannot be removed. The authors report the first case they are aware of, where a spontaneous abortion occurred with a transabdominal cerclage in situ and a mid-trimester dilation and evacuation was performed through the cerclage at 18 weeks gestation, instead of a hysterotomy. A subsequent pregnancy was successful and it was the first to go full term.

BACKGROUND

Preterm birth remains a major challenge in modern obstetrics and is increasing, even among low-risk primiparous women.^{1–3} In 2005 in England and Wales, 7.6% of all live births were preterm (ie, <37 weeks' gestation) although almost two-thirds of all infant deaths occurred in this group of babies.⁴ Very few interventions have made a positive impact on outcome although cervical cerclage, commonly practised where women have suffered more than one mid-trimester spontaneous abortion or early birth, appears to benefit some women.² Cervical cerclage is thought to maintain cervical length and reduce the risk of ascending infection. When this intervention fails, some clinicians will insert an abdominal cerclage in an attempt to improve the support to the cervix, and observational data suggest high levels of success in these women despite their poor history.⁵ Transabdominal cerclage has not been subjected to controlled trials, however, and has the disadvantage of often requiring a laparotomy for insertion and a caesarean section for delivery. In this scenario, the management of a mid-trimester loss is particularly challenging. We present what we believe to be the first report of a successful pregnancy following evacuation of a mid-trimester pregnancy through a transabdominal cervical cerclage. There are a number of important learning points that would change practice should a clinician encounter this rare event in the future.

CASE PRESENTATION

A 41-year-old African woman, with a body mass index of 33 kg/m², presented in her 10th pregnancy at 9 weeks' gestation. Previous obstetric history included three first trimester terminations of pregnancy followed by six mid-trimester spontaneous abortions between 16 and 24 weeks' gestation; the latter four had been managed with elective transvaginal McDonald cerclages at other hospitals. Her anticardiolipin IgM was raised on a single occasion (14.4 U/ml; normal <11 U/ml), but was subsequently normal.

Under our care in her 10th pregnancy, she underwent a transvaginal modified Shirodkar cerclage insertion with bladder dissection at 9 weeks' gestation following demonstration of a fetal heart beat. She was subsequently commenced on a regime of low molecular weight heparin (enoxaparin 5000 IU), aspirin (75 mg) and progesterone (400 mg per vaginam) all once daily, and fortnightly cervical scans were arranged. Routine scanning at 16 weeks' gestation revealed membranes bulging through the cerclage. Following discussion with the woman, a rescue purse string cerclage was inserted with replacement of the membranes. She was commenced on a cyclo-oxygenase inhibitor (indomethacin 25 mg three times a day). At 27⁺⁰ weeks' gestation, she presented with a history and examination strongly indicative of preterm prelabour rupture of membranes. In view of the risk of chorioamnionitis, she was advised to have both cerclages removed. Shortly afterwards, she delivered a live male baby vaginally. On cranial ultrasonography a few weeks after birth, a diagnosis of periventricular leukomalacia was made indicative of a perinatal infective insult and at 1 year of age, the baby was confirmed to have paraplegic cerebral palsy.

The woman was advised to consider a preconception transabdominal cerclage should she wish to conceive again. However, she subsequently chose to present in her 11th pregnancy at 13 weeks' gestation. A transabdominal cervical cerclage was inserted at 14 weeks' gestation following demonstration of a fetal heart beat and an adjusted risk of Down's syndrome of >1:250 following nuchal translucency screening. Under a regional anaesthetic block, a Pfannenstiel incision was made and the uterine vessels were displaced laterally while the cerclage (1.0 nylon Ethicon on a blunt needle) was guided through the broad ligament at the junction of the cervix and lower uterine segment by blunt perforation, and placed at the level of the internal os. Two weeks later, at 16 weeks' gestation, the transvaginal cervical length was 48 mm (normal cervical length ≥25 mm). At 18 weeks' gestation, she presented

Figure 1 Transvaginal ultrasonography of cervical length (32 mm) at 23 weeks' gestation in the 12th pregnancy. Note the difficulty in ultrasonographic detection of nylon suture material, which differs from the traditional images of Mersilene tape used in vaginal cervical cerclage.

to the antenatal day unit with painful uterine activity. A speculum examination revealed membranes bulging through the cerclage. Her membranes ruptured spontaneously later that day. The plasma C reactive protein concentration was mildly elevated (12 mg/l; normal range 0–7 mg/l). In view of the uterine activity, concern over chorioamnionitis and the poor fetal prognosis, a decision was jointly made between the woman and her clinician to terminate the pregnancy.

TREATMENT

In the operating theatre, under spinal anaesthetic, an attempt to remove the cerclage via a posterior colpotomy was unsuccessful. The cervix admitted a Hagar dilator of size 12 (the largest on the tray) with ease, and appeared to be approximately 2 cm dilated. A decision to remove the fetus under ultrasound guidance through the cerclage was made using sponge-holding forceps and a size 12-gauge suction curette, rather than revert to a hysterotomy which could increase uterine rupture risk in subsequent pregnancies. The woman had an uncomplicated recovery period and was discharged on oral antibiotics. Chromosomal analysis revealed a normal male karyotype.

OUTCOME AND FOLLOW-UP

The woman subsequently presented, aged 43 in her 12th pregnancy at 12 weeks' gestation, with the transabdominal suture in situ. She was taking aspirin (75 mg once daily) and no other medication. Two weekly transvaginal ultrasonography of the cervical length from 14 to 28 weeks' gestation was normal, with all measurements greater than 30 mm (figure 1). She did not require any antenatal inpatient admissions and delivered a live, healthy female infant weighing 3.88 kg by elective caesarean section at 38⁺1 weeks' gestation.

DISCUSSION

Transvaginal cervical cerclage is often the intervention of choice for a diagnosis of cervical insufficiency although it has a limited evidence base; only 1 in 25 transvaginal cerclages are thought to be beneficial in current clinical practice.⁴ In this woman with a confirmed history of cervical insufficiency, a preterm birth and multiple mid-trimester losses occurred despite having a transvaginal cervical cerclage in situ and as a result, a transabdominal cervical cerclage was thought to be an appropriate option. It was hypothesised that placing the suture anatomically higher (ie, close to the isthmus/internal os) would improve the ability of the cervix to act as a mechanical barrier between the vagina and intrauterine space. The repeated mid-trimester losses despite numerous insertions of both McDonald and a modified Shirodkar transvaginal cerclage indicate that the insertion of the transabdominal cerclage may have contributed to her eventual successful pregnancy. Although the cause for failure in the 11th pregnancy is unclear in light of normal cervical length measurements, it is indicative of the heterogeneous nature of preterm labour. It reminds us of the factors (eg, differing vaginal flora and potential ascending infection in the 11th pregnancy influencing outcome) other than cervical incompetence which contribute to the preterm labour syndrome. However, normal cervical length measurements do not preclude possible benefit of a higher placed cerclage.

Transabdominal cervical cerclage insertion was first described in the 1960s by Benson and Durfee⁶ as an alternative technique for the small group of women in whom transvaginal placement of cerclage was not possible; the indications for the procedure was expanded by Novy approximately 20 years ago to include women with previous failed transvaginal cerclages.⁷ Observational data of transabdominal cervical cerclage in situations where

transvaginal cervical cerclage have failed suggest that this approach is highly successful with success rates of greater than 90%.³ A transabdominal cervical cerclage may be inserted preconceptionally or during early pregnancy, although if inserted in the preconception period, this avoids the theoretical or potential risk of compromising the uterine vasculature during pregnancy. Our own experience suggests that a prepregnancy consultation is the ideal time to target these women. Although the placement of an abdominal cerclage may, in theory, result in a better outcome, it may also be associated with the possibility of a higher risk of operative complications as a result of two laparotomies. There is an urgent need to evaluate and compare the outcomes and complications of these different procedures.

Preterm labour or spontaneous abortion can be a particularly difficult management issue regarding route of delivery. It may require hysterotomy or as illustrated in this case, dilatation and evacuation through the cerclage is an alternate option. There is a literature reporting evacuation of retained products of conception through transabdominal cervical cerclages with first trimester losses and cerclages have been left in place for future pregnancies.⁸ However, it is unknown whether these women went on to conceive again and carried out a successful pregnancy. This case illustrates the value of considering a mid-trimester evacuation of an 18-week fetus through a transabdominal cerclage and the possibility of a subsequent successful pregnancy outcome. The cervix ripened, that is, softened and thinned allowing evacuation, at the time of the second trimester loss. Following evacuation, it is likely that the cervix underwent a degree of remodelling within the cerclage allowing it to return to the prepregnancy state, enabling it to maintain its integrity and function in its role as a mechanical barrier between the vagina and the intrauterine space. Traditionally, if attempts to remove a cerclage were unsuccessful, it was very common to perform a hysterotomy. This case should prompt experienced clinicians to consider evacuation of retained products of conception through a transabdominal cerclage within the second trimester if appropriate, with the knowledge that leaving the cerclage in place which can result in successful subsequent pregnancies.

Learning points

- Transabdominal cervical cerclage may be successful after multiple mid-trimester losses and could be considered in women with previous failed transvaginal cerclage. Ideally, the option should be discussed during prepregnancy consultations and inserted preconceptionally or in early pregnancy (before 14 weeks).
- In the rare event when a spontaneous abortion occurs with a transabdominal cerclage in situ in the early mid-trimester, dilation and evacuation can be performed through the cerclage instead via hysterotomy.
- Subsequent successful pregnancies are possible following mid-trimester evacuations through a transabdominal cervical cerclage.

Competing interests None.

Patient consent Obtained.

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