



Partial annular cervical tear: A case report

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ARTICLE INFO

Article history:

Received 16 April 2021

Received in revised form 27 April 2021

Accepted 28 April 2021

Keywords:

Annular tear

Cervical tear

Cervical laceration

Cervical avulsion

Case report

ABSTRACT

Background: Intrapartum annular cervical tears are a rare pregnancy complication. The mechanisms underpinning these tears remain to be elucidated and currently the optimal management and future pregnancy implications remain unknown.

Case Presentation: We present the case of a 35-year-old nulliparous woman who was diagnosed with a partial annular cervical tear following induction of labour. Her intrapartum course was also complicated by an intrapartum fever, prolonged labour induction and an antepartum haemorrhage. During the second stage of labour, a band of cervical tissue could be seen at the introitus and abutting the fetal head. Following normal vaginal delivery, a portion of cervical tissue was visualised, 2 cm thick by 5 cm long, avulsed at the lateral edge at 9 o'clock and extending in an annular anti-clockwise fashion towards 1 o'clock. She underwent surgical repair of the cervical tear and had an uneventful postnatal course. At 6 weeks post-partum her cervix appeared to be healing well with 2 cm length palpable on vaginal examination.

Conclusion: To the best of our knowledge, this case is the first report of a partial annular cervical tear to present in this manner. While the optimal management and outcomes for tears of this nature remain unknown, we recommend prenatal ultrasound cervical length screening with consideration of a cervical cerclage and elective caesarean section, which could avoid pre-term birth or the recurrence of this type of tear in future pregnancies.

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1. Introduction

Spontaneous annular detachment of the cervix is a rare intrapartum complication first described by Scott in 1821 [1]. The last reported incidence was 1:14500, based on a large case series in 1962 [2]. It is, however, thought to occur more rarely in modern obstetric practice, due to the high rates of caesarean section and practices that favour shorter lengths of labour [2,3]. Tears can present as complete detachment, also known as cervical avulsion, or as partial. In the latter instance, a semi-circular transverse cervical tear occurs and the lateral portions of the cervix remain attached, creating a bucket-handle tear. Described here is a case of partial annular detachment of the cervix in which one of the lateral portions of the cervix also detached and resulted in the unusual presentation of a band of cervical tissue unravelling and abutting the fetal head during the second stage of labour.

2. Case Presentation

A 35-year-old nulliparous woman of Japanese ethnicity presented for labour induction for advanced maternal age at 41 weeks of gestation. She had a routine antenatal course, had a body mass index of 25 kg/m² and had a previous laparoscopic ovarian cystectomy. She denied previous cervical trauma or surgeries.

Labour was induced with a 10 mg dinoprostone pessary (Cervidil®) and in accordance with the Queensland Clinical Guidelines [4]. Following 24 h of cervical priming, a modified Bishop score of 8 and 3:10 contractions were recorded. Subsequent artificial rupture of membranes (ARM) was performed with clear liquor observed. Soon after she described a strong urge to push despite only 3 cm cervical dilatation and new blood-stained mucous was noted. An epidural was placed and 6 h later a syntocinon infusion was commenced due to a lack of cervical progress. An intrapartum fever, managed with empirical antibiotics, was recorded 10 h after ARM. At 15 h after ARM a 30 ml antepartum haemorrhage was noted and examination demonstrated a soft non-tender abdomen, adequate resting tone, cervical dilatation of 4 cm and reassuring cardiotocography (CTG). At 18 h after ARM, cervical

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dilatation was 8 cm with a fully effaced cervix; however, when repeated at 22 h after ARM, the dilatation was largely unchanged except the cervix appeared more prominent on the maternal right.

Vaginal examination confirmed full dilatation with the fetal station at +1 two hours later. At this time a large band of vascular tissue, later confirmed as cervical tissue, abutting the fetal head extending to the maternal right introitus was also noted. Given the reassuring CTG and that the tissue was not actively bleeding or obstructing descent, the tissue was easily moved behind the fetal head and spontaneous vaginal delivery was achieved in 38 min. A live male infant was born with Apgar scores of 8 (1st minute) and 9 (5th minute), weight of 3500 g, and normal cord gases and lactate.

Following delivery of the placenta, closer examination revealed a partial annular cervical tear and second-degree perineal tear with a brisk 1000 ml post-partum haemorrhage. Blood loss was thought to be secondary to trauma as uterine tone was appropriate, the placenta was complete and there was no known history or concern for bleeding diathesis. Due to the unusual nature of the tear and post-partum haemorrhage, there was concern about vertical extension upwards into the lower uterine segment. The patient was transferred emergently to the operating theatre for an examination under anaesthesia and repair of the cervical and perineal tear.

Intraoperative examination revealed cervical tissue 2 cm thick that was detached from the base of the cervix from the 9 o'clock position anticlockwise to 1 o'clock. The tissue at 1 o'clock remained attached to the adjacent cervical tissue while the tissue at 9 o'clock was completely detached, creating a band of cervical tissue that extended 5 cm from the cervical canal towards the introitus. The tissue appeared healthy without evidence of devascularisation. Systematic repair with interrupted sutures using 2.0 vicryl was used to reattach the cervix and the perineal tear was repaired with a standard three-layer closure technique using 2.0 vicryl rapide. A further 200 ml blood loss occurred intraoperatively and good haemostasis was achieved.

The patient was debriefed in the immediate post-partum period and experienced an uneventful postnatal course. The baby was treated for presumed sepsis and placenta histopathology confirmed chorioamnionitis. At 6 weeks post-partum, the patient was recovering well and colposcopy demonstrated a well healed, fully formed cervix with an endocervical component and digital examination confirmed a 2 cm cervical length (Fig. 1). Counselling and recommendations for future pregnancy included the need for prenatal cervical length ultrasound monitoring with consideration for cervical cerclage given the potential for cervical

incompetence and an elective caesarean section to avoid the risk of recurrence of cervical tear.

3. Discussion

Annular cervical tears are rare in modern obstetrics and to our knowledge this is the first case published with this presentation. Previous reports describe the appearance of a 'bucket handle tear' in which cervical tissue has detached from the base but the lateral edges of the cervix remain attached. Our case is unique in that one of the lateral cervical edges detached, which led to an unravelling of the cervix, allowing it to present as a thick band of tissue abutting the fetal head during the second stage of labour. Some bucket handle tears have been reported as visualization of a band of tissue across the presenting fetal part, which was managed by either pushing the band behind the vertex [2,5] or excising it to facilitate delivery [3]. In our instance, the lateral detachment of one edge of the cervical tissue resulted in a band of tissue that abutted the fetal head but did not restrict descent or vaginal delivery.

While risk factors for annular cervical tears include nulliparity, early rupture of membranes and prolonged labour, the underlying mechanisms remain poorly understood [6]. Several mechanisms have been postulated, including strong uterine contractions, such as with syntocinon administration or bearing down prior to a fully dilated cervix, causing excessive pressure between the presenting part and a resistant cervix. This may impair cervical blood circulation and result in oedema, necrosis and avulsion [5,7]. Similarly, Jeffcoate & Lister (1952) suggested prolonged labour with cervical effacement may impair cervical blood supply and result in avulsion. Posterior annular cervical tears, as in our case, may occur secondary to anterior displacement of the cervix during dilatation, resulting in excessive posterior cervical effacement and pressure. Cervical injury, including previous tears or surgery, may also predispose to annular tears due to impaired blood supply and/or fibrosis rendering the cervix resistant to dilatation [5,7]. Lastly, while digital cervical examination assists labour progress monitoring, Neri et al., (1982) suggested it can cause a hole in the oedematous cervix and subsequent lateral extension may result in an annular cervical tear. In our case we postulate that the partial annular cervical tear was due to strong uterine contractions secondary to syntocinon and premature bearing down on a resistant cervix. An interesting differential diagnosis of tissue presenting by the cervix in labour could be undiagnosed fetus papyraceous, as reported by MatOvelo and Ndaboiné (2015) [8].

The implications of annular cervical tears for future pregnancies are not well known; however, Ingraham & Taylor (1974) reported increased spontaneous miscarriage [6]. We suggest annular cervical tear management, whether excised or surgically reattached, and post-partum cervical assessment should be taken into consideration for future pregnancies. Expectantly, during follow-up women with completely avulsed or excised annular tears have clinically shortened cervixes [2,3,5-7,9]. While we theorise that these women are at risk of pre-term birth, there is a scarcity of published reports. However, interestingly, there are reports of subsequent term spontaneous births by women who had a completely avulsed or partially excised cervix [6-7,9]. In contrast, given the reported cervical scarring following annular tears [2,5,10], others have managed subsequent births with an elective caesarean section to avoid recurrence [10,11]. Despite the appearance of a well healing cervix, the trauma of annular detachment may have caused a degree of cervical fibrosis in our patient, which may also increase her recurrence risk.

There are no reports on cervical cerclage efficacy for pregnancy continuation following an annular tear. However, a cervical cerclage is a known risk factor for vertical cervical tears [12] and recently Hulin et al. described an annular tear in a patient whose pregnancy was managed with a cervical cerclage [3]. Given this, we recommended serial prenatal ultrasound transvaginal cervical length scanning for future pregnancies, with consideration for a cervical cerclage, and an elective

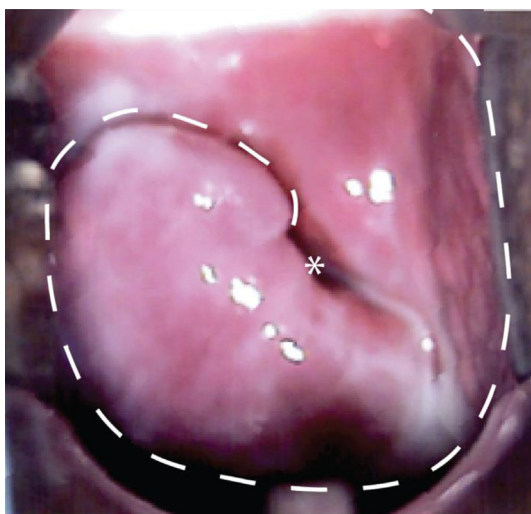


Fig. 1. Partial annular tear 6 weeks after the intraoperative repair during colposcopy examination. Dotted lines represent the area of tear. * external os.

caesarean section delivery to avoid the recurrence risk of this type of tear.

4. Conclusion

Spontaneous annular cervical detachment represents a rare and poorly understood obstetric complication. To our best knowledge, this is the first report of a partial annular cervical tear causing unravelling of the cervix, which presented as a band of cervical tissue abutting the fetal head during labour. Notably, this case did not require surgical interventions for successful vaginal delivery with successful surgical repair of the cervix. While the optimal management and outcomes for annular cervical tears are unknown, we recommend serial prenatal ultrasound transvaginal cervical length scanning for future pregnancies, with consideration for a cervical cerclage, and an elective caesarean section delivery to reduce the risks of pre-term birth and recurrence of annular cervical tear.

Contributors

Leah Mayne was responsible for visualization, original draft preparation, and manuscript review and editing.

Anusha Sudhahar contributed to review and editing, and preparation, creation and presentation of the published work.

Mayooran Veerasingham contributed to review and editing, and preparation, creation and presentation of the published work.

Conflict of Interest

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

Funding

No funding from an external source supported the publication of this case report.

Patient Consent

Obtained.

Provenance and Peer Review

This case report was peer reviewed.

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