CASE REPORT

Vaginal birth after two previous caesarean deliveries in a patient with uterus didelphys and an interuterine septal defect

Njoki Ng'ang'a,¹ Jonathan Ratzersdorfer,^{1,2} Yaakov Abdelhak^{1,2}

¹Department of Obstetrics & Gynecology, Hackensack University Medical Center, Hackensack, New Jersey, USA
²Maternal Resources, Hackensack, New Jersey, USA

Correspondence to
Dr Njoki Ng'ang'a,
njoki.nganga@hackensackmeridian.org

Accepted 27 April 2017

SUMMARY

Uterus didelphys is a congenital abnormality characterised by double uteri, double cervixes and a double or single vagina that affects 0.3% to 11% of the general female population. A 23-year-old woman, gravida 3 para 3003, with uterus didelphys, acquired an iatrogenic interuterine septal defect during an otherwise routine primary caesarean delivery for fetal malpresentation. The defect was repaired but noted to have dehiscence during her second pregnancy. A repeat caesarean section was performed due to fetal malpresentation after an unsuccessful external cephalic version. The dehiscence defect was left unrepaired. During her third pregnancy, the placenta implanted in the right uterus, but the fetus migrated to the left uterus at approximately 28 weeks gestation. The umbilical cord traversed the interuterine septal defect. With the fetus in the vertex presentation at term gestation, the patient underwent a vaginal birth after two previous caesarean deliveries without any major perinatal complications.

BACKGROUND

Uterus didelphys is one of a number of congenital female genital tract malformations acquired when histological differentiation between the sixth and ninth week of embryo development is incomplete or unsuccessful.^{1–4} Morphologically, uterus didelphys manifests as double uteri, double cervixes and a single or double vagina that develop when bilateral paramesonephric or müllerian ducts fail to fuse medially and form a single cavity.⁴ Paramesonephric ducts (PDs) begin to differentiate from the urogenital ridge, a derivative of the embryonic intermediate mesoderm, during the sixth gestational week in a series of steps mediated by genetic and hormonal factors.⁴ In normal embryo development, each PD extends caudally and then medially expecting its lumen to converge with the lumen of the opposite counterpart and create the uterovaginal primordium by the eighth gestational week.⁴ Total failure of the PD to coalesce results in uterus didelphys as is depicted in [figure 1](#).⁴

Population-based estimates of the prevalence of PD abnormalities vary widely due to methodological challenges associated with reliance on secondary data and use of heterogeneous diagnostic tests, some with low sensitivity in detecting uterine anomalies.^{5,6} The prevalence of uterus didelphys in the general population is reported to be between

0.3% and 11%,^{5–7} 0.3% and 2.9% in women with infertility^{5,6} and 0.6% and 0.8% in women with recurrent miscarriages.^{5,6} PD abnormalities are associated with an increased risk of adverse pregnancy outcomes such as miscarriage, growth restriction, preterm delivery and fetal malpresentation.^{8–12} Compared with women with normal uteri, the risk of preterm labour and fetal malpresentation in women with uterus didelphys is 3.58 and 3.7 times higher, respectively.⁹ Higher incidence of preterm labour and fetal malpresentation in turn increases the likelihood of caesarean delivery by as much as 20-fold.^{10,11}

CASE PRESENTATION

We report the case of a 23-year-old, gravida 3 para 3003, Orthodox Jewish American woman of Ashkenazi descent, who is known to have uterus didelphys. The patient has no significant medical history. To date, she reports no known renal abnormalities or complaints. Besides two previous caesarean deliveries performed at term gestation due to breech presentation, her surgical history was significant for resection of the vaginal septum. During caesarean delivery of her first child in 2012, which was supervised by another provider, the patient was incorrectly diagnosed with a bicornuate uterus, but found to have uterus didelphys on inspection of the uterus intraoperatively. The uterine incision inadvertently perforated both uteri creating an iatrogenic septal defect between the organs. The interuterine septal defect was repaired at that time to reconstruct two distinct uteri.

The patient was managed in our facility for the entirety of her second pregnancy in 2013. Ultrasound imaging showed dehiscence of the previously repaired interuterine septal defect at the lower uterine segment, thus reopening communication between both uteri. Because the patient expressed a desire for a trial of labour after caesarean section (TOLAC), a MRI study was performed around the 26th gestational week to assess the thickness between the saddle of the uterus and the communicating septum ([figure 2](#)). At 37 weeks gestation, an external cephalic version (ECV) of the fetus in the right horn was unsuccessful and a repeat caesarean section was subsequently scheduled for the 39th week. The communication in the interuterine septum was left unrepaired.

CrossMark

To cite: Ng'ang'a N, Ratzersdorfer J, Abdelhak Y. *BMJ Case Rep* Published Online First: [please include Day Month Year]. doi:10.1136/bcr-2016-219149

Figure 1 Uterus didelphys: class III paramesonephric duct abnormality (source: American Fertility Society/American Society for Reproductive Medicine¹).

Ultrasound imaging obtained during the first and second trimesters of the third pregnancy in 2016 showed the placenta implanted posteriorly and the fetus developing in the right horn while the left horn remained empty. Around the 28th gestational week, the fetus was observed on ultrasound migrating to the left horn through the interuterine septal defect in a manner similar to that depicted in figure 2. Maternal and fetal status remained reassuring for the entire course of the third pregnancy. With the fetus in vertex presentation, the patient was deemed a candidate for TOLAC.

At 40 weeks and 3 days gestation, the patient was admitted to the labour and delivery unit for a scheduled induction of labour. Continuous cardiotocography of the left uterus (fetus) was maintained for the duration of the labour. On admission, the left cervix was 1 cm dilated, 70% effaced and anterior in orientation; the vertex presentation was palpated at -2 station. The right cervix (placenta) was fingertip. Labour was induced by artificially rupturing membranes to reveal clear amniotic fluid and titration of an oxytocin drip according to facility protocol to a maximum of 6 mu/min. The patient received two doses of penicillin G, 5 million units followed by 2.5 million units 4 hours later, to treat group B streptococcus colonisation of the

genital tract. Epidural analgesia was administered at the patient's request.

OUTCOME AND FOLLOW-UP

In the latent phase of labour, both cervices dilated and effaced in tandem until 3 cm, 100% effacement and -1 station was reached 2 hours and 51 min after rupture of membranes. Cervical dilation progressed from 3 cm to 10 cm in 1 hour and 12 min; the first stage of labour lasted 4 hours and 3 min. The second stage took 63 min resulting in the vaginal birth after two previous caesarean deliveries (VBAC-2) of a live male infant weighing 3625 g (7 lbs 15.6 oz) who was assigned Apgar scores of 9 and 9 at 1 and 5 min, respectively. An intact placenta was spontaneously expelled 6 min after delivery of the fetus. The cervical septum avulsed from the anterior attachment remaining only on the posterior aspect, a process likely responsible for the precipitated first stage of labour. The cervical septum was reapproximated to the anterior aspect using 2-0 chromic suture in a running fashion. The patient also sustained a second-degree perineal laceration and a right vaginal sulcus tear, which were both repaired. Intrapartum blood loss was estimated to be 300 mL. Complete blood counts performed at a 17 hours interval, on admission and 11 hours after delivery, showed a 1.5% increase in haemoglobin (13.3 gm/dL vs 13.5 gm/dL) and 2.6% increase in haematocrit (38% vs 39%). The patient was discharged home 48 hours after delivery as per routine. A regular follow-up visit was scheduled 6 weeks after delivery following an unremarkable postpartum course. On speculum examination, one ectocervix was visualised giving the appearance that both cervices healed into one large cervix that is indistinguishable from a normal primiparous cervix except for a wider external os. At this time, the integrity of the cervical septum is unclear. Also uncertain is the impact of the cervical avulsion and subsequent repair on the histological architecture of the cervix that enables optimal performance of its role in maintaining successive pregnancies to term and dilation during labour. We discuss the implications of this finding in the next section.

DISCUSSION

To the best of our knowledge, singleton pregnancy and VBAC-2 in a patient with uterus didelphys where the fetus develops in one uterus and the placenta implants in the other connected by the umbilical cord, which traverses a septal defect between both uteri, has not been reported previously. Cases of simultaneous twin gestation in each cavity of a uterus didelphys have been reported in the literature¹²⁻¹⁵ although incidence is extremely rare and estimated to be 1 in every 1 million pregnancies.¹⁵ Based on available literature, VBAC in women with PD anomalies, including uterus didelphys, is a more common occurrence.^{11 15-17} While the case presented here is a variant of the scant published reports on VBAC in patients with uterus didelphys and the outcome realised for our one patient is limited in generalisability, this account serves to expand the existing body of knowledge. Our experience demonstrates that VBAC can be a safe, feasible option for patients with uterus didelphys even after two previous caesarean deliveries provided risks associated with TOLAC are carefully weighed and vigilant peripartum surveillance is maintained.

The composite risk profile assembled for our patient did not indicate a greater likelihood of major perinatal morbidity compared with other candidates seeking TOLAC after two caesarean deliveries. Erez and colleagues¹¹ found no significant differences in perinatal complications, such as uterine rupture,

Figure 2 MRI study performed around the 26th week of the second pregnancy in 2013. T2-weighted coronal image obtained using a 1.5 T magnet (Siemens Medical Solutions, Malvern, Pennsylvania, USA) showing two fully formed and non-fused uterine horns separated by an indentation measuring approximately 9 cm from the fundus to the communicating septum through which fetal parts appear to traverse (indicated by the yellow arrow).

non-reassuring fetal heart rate and prolapsed cord, between 165 women with PD abnormalities and more than 5000 women with normal uterine morphology who underwent TOLAC. A higher proportion of abruptio placentae was observed in the PD abnormality group than in the normal uterine morphology group (3% vs 1.2%, $p=0.055$), but when findings were segmented according to type of PD abnormality, there were no cases of abruptio placentae in the uterus didelphys group.¹¹ In a smaller study comparing perinatal outcomes between 25 women with PD abnormalities and 1788 women with normal uterine morphology, Ravasia and colleagues¹⁶ found statistically significant differences in incidence of cord prolapse (8% vs 0.45%, $p=0.0076$), uterine rupture (8% vs 0.61%, $p=0.013$) and non-reassuring fetal heart rate (52% vs 14.1%, $p<0.0001$). However, both cases of uterine rupture reported in the PD abnormality group underwent cervical ripening using more than one application of prostaglandin E₂ gel and neither of them had uterus didelphys.¹⁶ Higher incidence of non-reassuring fetal heart rate and cord prolapse in the PD abnormality group was attributed to the greater proportion of breech presentation observed in that cohort.¹⁶ Citing two large studies,^{18 19} whose conflicting results were not sufficient to support the hypothesis that odds of uterine rupture are higher in women attempting TOLAC after two caesarean deliveries than after one, the American College of Obstetricians and Gynecologists (ACOG)²⁰ concluded that women with two previous caesarean deliveries were eligible for TOLAC. The VBAC success rate for women with two previous caesarean deliveries was 67% to 74.6%.^{18 19} Still, we were cognisant that in both studies cited by ACOG, women undergoing TOLAC after two previous caesarean deliveries had higher odds of other major morbidities than women with one previous caesarean delivery, such as hysterectomy (odds ratio (OR) 2.99, $p=0.023$) and blood transfusion (OR 2.00, $p<0.001$).^{18–20} Odds of sustaining more than one major complication were 53% to 61% higher in women with two previous caesarean deliveries who attempted TOLAC than those with one previous caesarean delivery.^{18 19} Despite the higher odds of acquiring major complications, the absolute risk is small.^{18–20}

In view of the available evidence, the patient was counselled extensively regarding the risks and benefits of opting for a TOLAC versus an elective repeat caesarean delivery. Her expressed desire to build a large family throughout the remaining 15+ years of childbearing potential outweighed the known risks of pursuing a TOLAC after two caesarean deliveries. Importantly, the fact that the TOLAC would be supervised in a level III labour and delivery unit²¹ staffed with multidisciplinary specialists and equipped to handle serious perinatal complications was factored in the decision-making process. As per facility policy, the supervising attending physician remained in-house while oxytocin was infused. Similarly, continuous cardiotocography was in keeping with facility protocol. In this case, cardiotocography of only the left (fetus) uterine horn was recorded and analysed. The utility of assessing uterine contractions in the right (placenta) uterine horn was negated. Although each horn of a uterus didelphys is thought to contract independently 90% of the time during labour,¹² we surmised that any compromise to uteroplacental function in the right horn would be evident in the fetal heart tracing.

Avulsion of the cervical septum during labour could impact cervical integrity in future pregnancies in one of two ways: fibrotic tissue developing along the repaired ridge may hinder cervical dilation during another TOLAC²² or lead to cervical insufficiency.^{23 24} In the event of cervical fibrosis, future pregnancies are likely to be preserved until term gestation, but failure of the cervix to dilate may warrant a repeat caesarean section.²²

We did not find any reports characterising the risk of developing cervical insufficiency after avulsion, but we can extrapolate from pregnancy outcomes of patients who have undergone cervical surgery to treat epithelial dysplasia. Women with a history of laser conisation and loop electrosurgical excision procedure did not exhibit a higher incidence of mid-trimester cervical shortening (defined as <2.5 cm) than controls²⁴ but were at higher risk of preterm delivery.^{23 24} Sadler and colleagues²³ found that laser conisation was associated with a higher risk of preterm premature rupture of membranes leading to preterm delivery (risk ratio (RR) 2.7, CI 1.3 to 5.6) and that risk was greater with increasing vertical height of the cone (RR 3.6, CI 1.8 to 7.5). While it is not clear which of the two clinical scenarios will emerge for our patient, it is unlikely she would benefit from a prophylactic cervical cerclage whose efficacy has been shown to be poor in women without a history of previous preterm delivery.^{25 26} Nevertheless, closely monitoring the cervix for dynamic changes through serial transvaginal ultrasounds is prudent and adjustments to the management plan will be dictated by ongoing assessments.²⁵ Emphasising early initiation of antenatal care with subsequent pregnancies in this case is critical if timely identification of potential complications and appropriate intervention is to occur.

Greater incidence of fetal malpresentation in women with PD abnormalities compared with those with normal uterine morphology⁹ increases the likelihood that our patient will experience a recurrence of fetal malpresentation in future pregnancies. Both ACOG and the Royal College of Obstetricians and Gynaecologists recommend that, in general, women presenting with a singleton breech fetus at term should be offered ECV^{27–30} but are unclear whether women with PD abnormalities should be excluded.^{28 29} Lack of consensus regarding the optimal mode of delivery for breech presentation at term in women with PD abnormalities is attributed to a dearth of relevant data³¹ stemming from the fact that women with PD abnormalities are often excluded from studies assessing safety and efficacy of ECV.³² At the time ECV was attempted on our patient, presence of PD abnormalities was further complicated by a history of one previous caesarean section. In several small studies,^{33–35} evaluating obstetric outcomes in women with normal uterine morphology who underwent ECV after one previous caesarean section, no cases of uterine rupture were reported and the vaginal delivery success rate was more than 50%. Without proper quantification of maternal and fetal risk associated with ECV in the presence of a uterine scar and/or PD abnormalities based on data from large randomised trials, ACOG concluded the available evidence is insufficient to support clear guidelines regarding absolute and relative contraindications to ECV.²⁹ ACOG recommends following a highly customised approach to developing patient care plans and counselling candidates for ECV²⁹—a philosophy we will continue to implement should a term singleton pregnancy in the breech presentation be detected in the future. While it is unlikely we would offer this patient another ECV given the past failure, we cannot say in advance which mode of delivery will be pursued, but risks and benefits of both repeat caesarean section and vaginal breech delivery will be carefully weighed. Although our team is experienced in performing vaginal breech deliveries, eligibility will ultimately hinge on real-time assessment of multiple factors, including but not limited to estimated fetal weight and amniotic fluid volume, as well as maternal consent.

Lastly, we would like to comment briefly on some of the reasons that may partly explain why our patient received an incorrect diagnosis despite receiving regular antenatal care during her first

pregnancy. First, the accuracy of some diagnostic tests in detecting PD abnormalities is poor. Although two-dimensional (2D) ultrasound is the most commonly used imaging method in pregnancy, it is also the least accurate in diagnosing PD abnormalities.⁶ Compared with hysteroscopy, the sensitivity of 2D ultrasound in detecting PD abnormalities was 56%⁶ likely due to difficulty visualising the outer contours of the uterine fundus.³⁶ In comparison, 3D ultrasound and MRI are each reported to have a sensitivity of 100% in diagnosing PD abnormalities.^{6,37} Second, women who experience poor obstetric outcomes, such as recurrent miscarriages, and those diagnosed with infertility, are more likely than the general population to undergo extensive testing for uterine anomalies.^{5,6} It is possible that such testing results in the higher rates of PD abnormalities observed in women with poor obstetric outcomes than in the general population. Notably, fewer than 1% of women with recurrent miscarriages and 3% of women with infertility were found to have uterus didelphys.^{5,6} Finally, although not likely in our patient's case, it is still possible that low utilisation of preventive services, including gynaecological screening, among members of the Orthodox Jewish community could affect the rate of diagnosis.³⁸

Learning points

- ▶ Paramesonephric duct abnormalities significantly increase the likelihood of preterm labour and fetal malpresentation, which in turn results in higher caesarean delivery rates.
- ▶ Incorrect diagnosis of uterine anomalies can result in significant iatrogenic injury during caesarean deliveries; careful intraoperative inspection of the exposed uterus prior to incision is recommended.
- ▶ MRI and three-dimensional (3D) ultrasound demonstrate a higher sensitivity in detecting uterine anomalies than 2D ultrasound.
- ▶ Vaginal birth after two previous caesarean deliveries is associated with higher odds of major perinatal morbidities than after one previous caesarean delivery but can be accomplished safely provided individual patient circumstances are factored into the risk assessment.

Acknowledgements The authors are grateful to the patient and her family for granting consent to publish this case. We would like to acknowledge Cecile Candame RN, Jeffrey Friedlander MD (Department of Anesthesiology) and Cyrille Sabo RN who participated in the intrapartum care of our patient. We thank Mitchell Miller MD (Department of Radiology) for reviewing MRI images and contributing to our scholarly discussion on classification of müllerian duct anomalies. Our thanks go to Raizy Green for assistance in retrieving archived medical records.

Contributors NN, JR and YA provided direct care to the patient. NN, JR and YA conceived the paper. NN drafted the manuscript. NN, JR and YA revised the manuscript and approved the final version submitted for publication.

Competing interests None declared.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

© BMJ Publishing Group Ltd (unless otherwise stated in the text of the article) 2017. All rights reserved. No commercial use is permitted unless otherwise expressly granted.

REFERENCES

- 1 American Fertility Society. The American Fertility Society classifications of adnexal adhesions, distal tubal occlusion, tubal occlusion secondary to tubal ligation, tubal pregnancies, müllerian anomalies and intrauterine adhesions. *Fertil Steril* 1988;49:944–55.
- 2 Grimbizis GF, Gordts S, Di Spiezio Sardo A, *et al.* The ESHRE/ESGE consensus on the classification of female genital tract congenital anomalies. *Hum Reprod* 2013;28:2032–44.
- 3 Grimbizis GF, Campo R. On behalf of the Scientific Committee of the Congenital Uterine Malformations (CONUTA) common ESHRE/ESGE working group. Clinical approach for the classification of congenital uterine malformations. *Gynecol Surg* 2012;9:119–29.
- 4 DeUgarte CM. *et al.* Embryology of the urogenital system and congenital anomalies of the genital tract. In: DeCherney AH, Nathan L, Lauger N, eds. *Current diagnosis and treatment: obstetrics and gynecology*. New York: McGraw-Hill, 2013:38–66.
- 5 Chan YY, Jayaprakasan K, Zamora J, *et al.* The prevalence of congenital uterine anomalies in unselected and high-risk populations: a systematic review. *Hum Reprod Update* 2011;17:761–71.
- 6 Saravelos SH, Cocksedge KA, Li TC. Prevalence and diagnosis of congenital uterine anomalies in women with reproductive failure: a critical appraisal. *Hum Reprod Update* 2008;14:415–29.
- 7 Nahum GG. Uterine anomalies. How common are they, and what is their distribution among subtypes? *J Reprod Med* 1998;43:877–87.
- 8 Cunningham FG, Leveno KJ, Bloom SL, *et al.* *Williams obstetrics*. New York: McGraw-Hill, 2014.
- 9 Chan YY, Jayaprakasan K, Tan A, *et al.* Reproductive outcomes in women with congenital uterine anomalies: a systematic review. *Ultrasound Obstet Gynecol* 2011;38:371–82.
- 10 Hua M, Odibo AO, Longman RE, *et al.* Congenital uterine anomalies and adverse pregnancy outcomes. *Am J Obstet Gynecol* 2011;205:558.e1–558.e5.
- 11 Erez O, Dukler D, Novack L, *et al.* Trial of labor and vaginal birth after cesarean section in patients with uterine müllerian anomalies: a population-based study. *Am J Obstet Gynecol* 2007;196:537.e1–537.e11.
- 12 Maki Y, Furukawa S, Sameshima H, *et al.* Independent uterine contractions in simultaneous twin pregnancy in each horn of the uterus didelphys. *J Obstet Gynaecol Res* 2014;40:836–9.
- 13 Nohara M, Nakayama M, Masamoto H, *et al.* Twin pregnancy in each half of a uterus didelphys with a delivery interval of 66 days. *BJOG* 2003;110:331–2.
- 14 Kekkonen R, Nuutila M, Laatikainen T. Twin pregnancy with a fetus in each half of a uterus didelphys. *Acta Obstet Gynecol Scand* 1991;70:373–4.
- 15 Nhàn VQ, Huisjes HJ. Double uterus with a pregnancy in each half. *Obstet Gynecol* 1983;61:115–7.
- 16 Ravasia DJ, Brain PH, Pollard JK. Incidence of uterine rupture among women with müllerian duct anomalies who attempt vaginal birth after cesarean delivery. *Am J Obstet Gynecol* 1999;181:877–81.
- 17 Altwerger G, Pritchard AM, Black JD, *et al.* Uterine didelphys and vaginal birth after cesarean delivery. *Obstet Gynecol* 2015;125:157–9.
- 18 Landon MB, Spong CY, Thom E, *et al.* Risk of uterine rupture with a trial of labor in women with multiple and single prior cesarean delivery. *Obstet Gynecol* 2006;108:12–20.
- 19 Macones GA, Cahill A, Pare E, *et al.* Obstetric outcomes in women with two prior cesarean deliveries: is vaginal birth after cesarean delivery a viable option? *Am J Obstet Gynecol* 2005;192:1223–8.
- 20 American College of Obstetricians and Gynecologists. ACOG Practice bulletin number 115: vaginal birth after previous cesarean delivery. *Obstetrics Gynecol* 2010;116:450–63.
- 21 Menard MK, Kilpatrick S, Saade G, *et al.* Levels of maternal care. *Am J Obstet Gynecol* 2015;212:259–71.
- 22 Nasr A. Pregnancy and delivery after annular detachment of the uterine cervix. *Gynecol Obstet Invest* 1998;45:71–2.
- 23 Sadler L, Saftlas A, Wang W, *et al.* Treatment for cervical intraepithelial neoplasia and risk of preterm delivery. *JAMA* 2004;291:2100–6.
- 24 Fischer RL, Sveinbjornsson G, Hansen C. Cervical sonography in pregnant women with a prior cone biopsy or loop electrosurgical excision procedure. *Ultrasound Obstet Gynecol* 2010;36:613–7.
- 25 American College of Obstetricians and Gynecologists. ACOG practice bulletin number 142: cerclage for the management of cervical insufficiency. *Obstet Gynecol* 2014;123:372–9.
- 26 Berghella V, Keeler SM, To MS, *et al.* Effectiveness of cerclage according to severity of cervical length shortening: a meta-analysis. *Ultrasound Obstet Gynecol* 2010;35:468–73.
- 27 Impey LWM, Murphy DJ, Griffiths M, *et al.* On behalf of the Royal College of Obstetricians and Gynaecologists. management of breech presentation. *BJOG* 2017 (accessed 26 Mar 2017).
- 28 Impey LWM, Murphy DJ, Griffiths M, *et al.* On behalf of the Royal College of Obstetricians and Gynaecologists. external cephalic version and reducing the incidence of term breech presentation. *BJOG* 2017 (accessed 26 Mar 2017).
- 29 American College of Obstetricians and Gynecologists' Committee on Practice Bulletins-Obstetrics. Practice bulletin number 161: external cephalic version. *Obstetrics Gynecol* 2016;127:e54–e61.
- 30 ACOG Committee on Obstetric Practice. ACOG Committee Opinion No. 340. Mode of term singleton breech delivery. *Obstet Gynecol* 2006;108:235–7.
- 31 Rosman AN, Guijt A, Vlemmix F, *et al.* Contraindications for external cephalic version in breech position at term: a systematic review. *Acta Obstet Gynecol Scand* 2013;92:137–42.

- 32 Vaz SA, Dotters-Katz SK, Kuller JA. Diagnosis and management of congenital uterine anomalies in pregnancy. *Obstet Gynecol Surv* 2017;72:194–201.
- 33 Burgos J, Cobos P, Rodríguez L, *et al.* Is external cephalic version at term contraindicated in previous caesarean section? A prospective comparative cohort study. *BJOG* 2014;121:230–5.
- 34 Weill Y, Pollack RN. The efficacy and safety of external cephalic version after a previous caesarean delivery. *Aust N Z J Obstet Gynaecol* 2016 (accessed 27 Mar 2017).
- 35 de Meeus JB, Ellia F, Magnin G. External cephalic version after previous cesarean section: a series of 38 cases. *Eur J Obstet Gynecol Reprod Biol* 1998;81:65–8.
- 36 Robbins JB, Broadwell C, Chow LC, *et al.* Müllerian duct anomalies: embryological development, classification, and MRI assessment. *J Magn Reson Imaging* 2015;41:1–12.
- 37 Bermejo C, Martínez Ten P, Cantarero R, *et al.* Three-dimensional ultrasound in the diagnosis of müllerian duct anomalies and concordance with magnetic resonance imaging. *Ultrasound Obstet Gynecol* 2010;35:593–601.
- 38 Purdy S, Jones KP, Sherratt M, *et al.* Demographic characteristics and primary health care utilization patterns of strictly orthodox Jewish and non-Jewish patients. *Fam Pract* 2000;17:233–5.

Copyright 2017 BMJ Publishing Group. All rights reserved. For permission to reuse any of this content visit <http://group.bmj.com/group/rights-licensing/permissions>.

BMJ Case Report Fellows may re-use this article for personal use and teaching without any further permission.

Become a Fellow of BMJ Case Reports today and you can:

- Submit as many cases as you like
- Enjoy fast sympathetic peer review and rapid publication of accepted articles
- Access all the published articles
- Re-use any of the published material for personal use and teaching without further permission

For information on Institutional Fellowships contact consortiasales@bmjgroup.com

Visit casereports.bmj.com for more articles like this and to become a Fellow