Hemihysterectomy as management of ruptured cornual pregnancy in a bicornuate uterus

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SUMMARY

A bicornuate uterus arises from incomplete fusion of the two Müllerian ducts during embryogenesis, predisposing to adverse pregnancy outcomes. Rupture of the gravid horn in a bicornuate uterus is rare yet life-threatening. A high index of suspicion among clinicians is paramount for timely detection and management of this condition. We present a case of a 34-year-old woman, gravida 3, para 1+1 at 18 weeks gestation presented with severe abdominal pain and hypovolemic shock. Emergency laparotomy confirmed rupture of the right horn in a bicornuate uterus, resulting in expulsion of the foetus and placenta. A hemihysterectomy of the gravid right horn was performed, while preserving the intact left horn. The patient was discharged home three days following surgery.

INTRODUCTION

Failure of the Müllerian ducts to fuse completely during embryogenesis resulted in a range of uterine structural abnormalities, which can be symmetrical or asymmetrical. Examples of uterine anomalies include the didelphic uterus, bicornuate uterus, septate uterus, arcuate uterus, and uterus with rudimentary horns. Often at times, these anomalies remain undetected until difficulties arise, such as infertility, repeated miscarriages, or its discovery during an early prenatal ultrasound screening or during abdominal surgery. Our patient had a successful term pregnancy 15 years ago, and her current pregnancy had advanced to 18 weeks before a complication of uterine rupture happened. Pregnancy in a bicornuate uterus poses a risk of uterine rupture; even though the risk is small, it can potentially be fatal. Surgery is the mainstay treatment in managing the ruptured cornual of a bicornuate pregnancy, and hemihysterectomy was performed to remove the ruptured horn.

CASE PRESENTATION

A 34-year-old woman, G3P1+1 at 18 weeks gestation, was referred to our hospital due to severe abdominal pain persisting for one day and a history of presyncope. There was no reported vaginal bleeding, gastrointestinal symptoms, or trauma to her abdomen. The patient had a successful term pregnancy 15 years ago, delivered via caesarean section due to breech presentation, and experienced a miscarriage 13 years ago. The current pregnancy was spontaneously conceived, and she attended regular antenatal care from 8 weeks gestation. An early ultrasound examination revealed a suspicious mass adjacent to the gestational sac, initially thought to be a fibroid (Figure 1).

Upon presentation to the Emergency Department, the patient exhibited severe pain, pallor, and signs of hypovolemic shock, including a heart rate of 140 and a blood pressure of 90/60 mmHg. Her abdomen was tense with diffuse tenderness and guarding. Speculum examination revealed a single cervix with no evidence of vaginal bleeding or septum. Ultrasound examination confirmed a viable foetus consistent with 18 weeks of gestation but also showed a discontinuity of the uterine lining and massive free fluid up to Morrison's pouch, raising suspicion of uterine rupture. A diagnosis of hypovolemic shock secondary to suspected uterine rupture was promptly made, and the patient was expediently taken to the operating theatre.

Intraoperatively, 2 litres of hemoperitoneum were drained. The uterus appeared to be bicornuate, with both horns having similar dimensions and connected cavities. Each horn was connected to normal ipsilateral Fallopian tube and Ovary. The right gravid horn had ruptured, resulting in both the foetus and placenta expelled out of the uterus. To reduce the bleeding, clamps were applied between the two horns and the right uterine pedicle. It was decided to preserve the intact left horn and proceed with hemihysterectomy of the right horn. The ruptured right horn was separated medially by dissecting the attachment between the two horns which was clamped earlier, followed by suturing the connection with Vicryl 1. Laterally, the right horn was detached by dissection of the right round ligament. Retroperitoneal space was opened to identify the ureter and the blood vessels. The right ovarian ligament was dissected preserving the right ovary. The parametrium was dissected along the uterine horn and the right uterine artery was dissected and ligated with Vicryl 1. The uterovesical fold was separated and the bladder was gently displaced. The inferior attachment of the right horn was detached by placing a straight clamp horizontally above the cervix and cutting above it. The areas were sutured with Vicryl 1.

The patient received a massive blood transfusion, including a disseminated intravascular coagulation (DIC) regimen. Postoperatively, she exhibited rapid recovery and was discharged home after 3 days. She was counselled for long-acting reversible contraception and advised for caesarean section in the future pregnancies.

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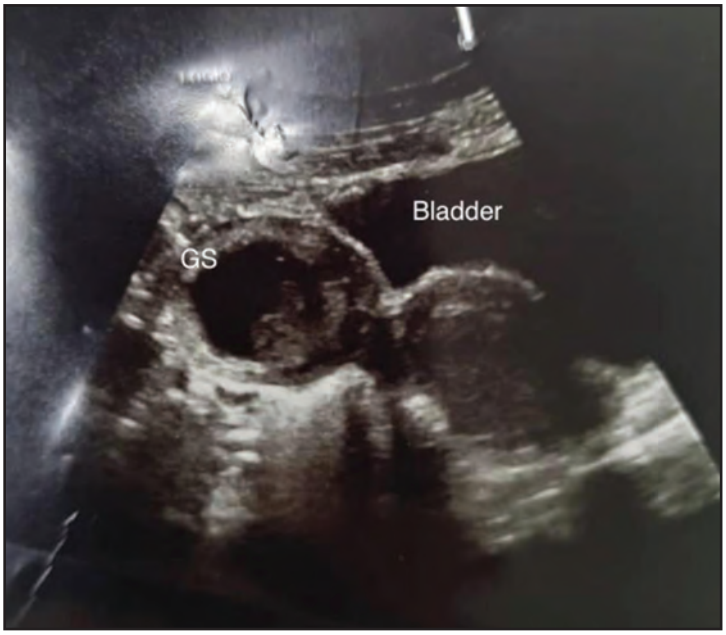

Fig. 1: First ultrasound report showing the gestational sac (GS) and the uterus which was mistakenly thought as fibroid

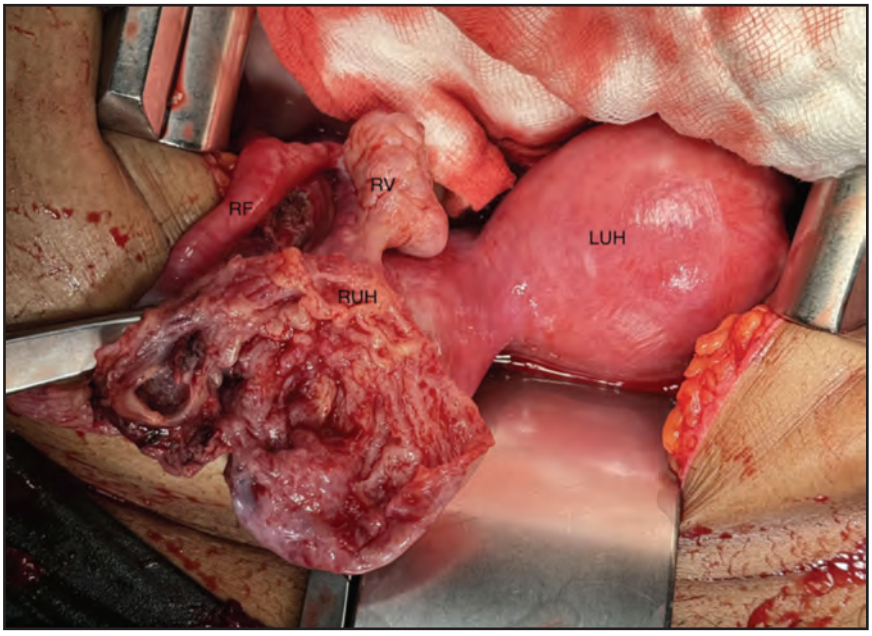

Fig. 2: Right uterine horn (RUH), Right Ovary (RV), Right Fallopian Tube (RF) and Left Uterine Horn (LUH)

DISCUSSION

Pregnancy with Müllerian anomalies are rare but can impose a significant danger to women's life. The frequency of major structural anomalies of the uterus in the general population is difficult to determine with certainty but it is estimated that the prevalence is 4 in 1000.[1] Bicornuate uterus is an anomaly caused by incomplete fusion of the two Müllerian ducts during embryogenesis and it is characterised by two separate but communicating endometrial cavities and a single uterine cervix. Failed fusion may extend to the cervix, resulting in a complete bicornuate uterus, or may be partial, causing a milder abnormality.[2] This patient has a partial bicornuate uterus and each uterus has a horn which is connected to ipsilateral Fallopian tube and ovary. The cavities of the two horns are connected and based on ESHRE/ESGE classification of female genital tract congenital anomalies, this patient is classified as V0C0U3c.[3]

Live birth rate of pregnancy in the bicornuate uterus is approximately 60% and this is evident in this patient as she had a successful term pregnancy 15 years ago. However, this condition also predisposes women to adverse pregnancy outcome such as early pregnancy loss, preterm labour, malpresentation and rarely uterine rupture.[2,4] The abnormal

uterine horn failed to expand as the pregnancy advances due to uneven thickness in the myometrium and abnormal placentation. Therefore, rarely the pregnancy can go beyond the second trimester before rupturing.[5] Ultrasound features of a cornual pregnancy will show an empty uterus with laterally located gestational sac surrounded by thin myometrium but in tubal pregnancy, the ring of myometrium will be absent.[6] Tsafrir et al. suggested the following criteria for diagnosing a pregnancy in the rudimentary horn: (1) a pseudo pattern of asymmetrical bicornuate uterus; (2) absent visual continuity between the cervical canal and the lumen of the pregnant horn, and (3) the presence of myometrial tissue surrounding the gestational sac.[6] In this case, there is no continuity of the uterine cavity containing the gestational sac and the cervix and the left horn was wrongly identified as fibroid.

The mainstay of management strategy for a ruptured cornual pregnancy is excision of the rudimentary horn and repair of the defect. Cornual wedge resection is the most commonly used technique in unicornuate uterus but in a bicornuate uterus, resection of the affected horn following the hysterectomy steps should be done. The reasons are because it significantly reduced bleeding and prevented future pregnancy in the abnormal uterine horn. A midtrimester rupture generally occurs at the fundus as opposed to lower-segment rupture during labour hence causing a more massive haemorrhage.[7] Hemihysterectomy of the affected horn can be performed via laparotomy or laparoscopic approach. In this case, laparotomy was chosen due to the patient's hemodynamic instability. The steps are similar to the standard hysterectomy procedure. The defect on the unaffected horn should be closed in two layers. Ravasia et al has reported the incidence of uterine rupture significantly increased in women with Müllerian anomalies who attempted vaginal birth after caesarean section in comparison to women with normal uterus, 8% and 0.6% respectively.[8] In this case, the patient had uterine rupture and history of previous caesarean section making her risk of uterine rupture in future pregnancy much higher. It would be wise to avoid pregnancy for at least a year and provide her with reliable contraception. The patient should be properly counselled regarding the risks involved if she decides to embark on another pregnancy.

CONCLUSION

Both horns of the bicornuate uterus may exhibit differing levels of myometrial strength and distensibility. Implantation of pregnancy in the abnormal, weaker horn can lead to a catastrophic consequence. Performing a hemihysterectomy on the aberrant horn is advised to prevent the occurrence of future pregnancies in the same location.

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DECLARATION

The authors have no conflict of interest to disclose.

REFERENCES

1. Byrne J, Nussbaum-Blask A, Taylor WS, Rubin A, Hill M, O'Donnell R, et al. Prevalence of Müllerian duct anomalies detected at ultrasound. Am J Med Genet 2000; 94(1): 9–12. https://doi.org/10.1002/1096-8628(20000904)94:1%3C9:AID-AJMG3%3E3.0.CO;2-H
2. Hoffman B, Schorge J, Schaffer J, Halvorson L, Bradshaw K, Cunningham F. Williams Gynecology, Second Edition. Texas: McGraw Hill Professional; 2012; 499-500.
3. Grimbizis GF, Gordts S, Di Spiezio Sardo A, Brucker S, De Angelis C, Gergolet M, et al. The ESHRE/ESGE consensus on the classification of female genital tract congenital anomalies. Hum Reprod 2013; 28(8): 2032–44. https://doi.org/10.1093/humrep/det098
4. Singh N, Singh U, Verma ML. Ruptured bicornuate uterus mimicking ectopic pregnancy: A case report. J Obstet Gynaecol Re 2013; 39(1): 364–6. http://dx.doi.org/10.1111/j.1447-0756.2012.01914.x
5. Jayaprakash S, Muralidhar L, Sexsena R. Rupture of bicornuate uterus. BMJ Case Rep 2011; 2011(oct27 1): bcr0820114633–bcr0820114633. http://dx.doi.org/10.1136/bcr.08.2011.4633
6. Tsafrir A, Rojansky N, Sela HY, Gomori JM, Nadjari M. Rudimentary horn pregnancy: First-trimester prerupture sonographic diagnosis and confirmation by magnetic resonance imaging. J Ultrasound Med 2005; 24(2): 219–23. http://dx.doi.org/10.7863/jum.2005.24.2.219
7. Singh N, Singh U, Verma ML. Ruptured bicornuate uterus mimicking ectopic pregnancy: A case report. J Obstet Gynaecol Res 2013; 39(1): 364–6. http://dx.doi.org/10.1111/j.1447-0756.2012.01914.x
8. Ravasia DJ, Brain PH, Pollard JK. Incidence of uterine rupture among women with mu llerian duct anomalies who attempt vaginal birth after cesarean delivery. Am J Obstet Gynecol 1999; 181(4): 877–81. http://dx.doi.org/10.1016/s0002-9378(99)70318-2
9. Shukla DV, Shukla SD, Shah, A. (2019) Laparos-copic Hemi-Hysterectomy-Retrospective Study of Case Series of over 9 Years. Open Journal of Obstetrics and Gynecology 9, 845-66. https://doi.org/10.4236/ojog.2019.96083
10. Chatziioannidou K, Fehlmann A, Dubuisson J. Case report: Laparoscopic management of an ectopic pregnancy in a rudimentary non-communicating uterine horn. Front Surg 2020; 7. http://dx.doi.org/10.3389/fsurg.2020.582954