Successful Application of B-Lynch Compression Suture for Primary Postpartum Haemorrhage in a Patient with Uterus Didelphys

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A patient with uterus didelphys underwent elective Caesarean section for breech presentation, which was complicated by uterine atony and massive primary postpartum haemorrhage. Application of a B-Lynch compression suture was successful in controlling the bleeding with uterine preservation. One and a half years later, the patient had a successful pregnancy in the contralateral uterine horn, with a full-term vaginal delivery. She then became pregnant again with implantation in the uterine horn of the first pregnancy a year later.
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Introduction

Postpartum haemorrhage is a major obstetric emergency and in up to 5% of deliveries; it can be life-threatening[1]. The commonest cause is uterine atony. The B-Lynch brace suture has been useful for controlling primary postpartum haemorrhage with an overall success rate of around 90%[1,2]. It has been used in both singleton and multiple pregnancies, as well as in cases of uterine atony, and placenta accreta[3,4]. To the best of our knowledge, this is the first case report of its application in controlling primary postpartum haemorrhage due to uterine atony in uterus didelphys (complete duplication of the uterus and cervix).

Case Report

The patient was a 27-year-old G4P0A3 women, with a known history of uterus didelphys and a single kidney. She had a history of one first trimester termination of pregnancy by suction evacuation and two first trimester missed miscarriages treated by suction evacuation; both uterine horns had been involved. The index pregnancy was in the right horn of the uterus didelphys. She received regular antenatal care from 10 weeks of gestation and her antenatal course was uneventful. At 38 weeks and 3 days, elective Caesarean section via the lower segment of the right uterine horn was performed under spinal anaesthesia because of breech presentation. A male baby weighing 3.51 kg with good Apgar scores was delivered. The placenta was removed manually and found to be complete. An intravenous bolus of 5 units of oxytocin (syntocinon) was followed by intravenous infusion of another 40 units in 500 mL normal saline. However, uterine contraction was suboptimal and there was heavy bleeding from the placental bed. The uterus was exteriorised. Hot pads with uterine massage were applied. Sulprostone (nalador) infusion was started when the estimated blood loss reached 1200 mL and the dose was stepped up cautiously, with awareness of potential severe side-effects (pulmonary oedema and coronary artery spasm). In view of persistent heavy bleeding, a B-lynch compression suture was applied to the right uterine horn (Figure 1) as described by B-Lynch et al[3]. This was performed using a No. 1 Vicryl (48-mm curved round-bodied needle with a 75-cm suture; available in violet, code W9251; Ethicon, Somerville [NJ], US). The uterine wound was closed as bleeding was under control. The total blood loss was estimated to be 2000 mL and 3 units of blood were transfused during the operation. The preoperative haemoglobin level was 112 g/L and the postoperative level (after blood transfusion) was 92 g/L; later it decreased to 75 g/L on day 3 postoperation. The patient remained afebrile and antibiotics were not given. Ultrasound examination of the uterus on day 3 was normal. The patient was discharged on day 5. However,

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Figure 1. A B-Lynch brace suture was applied to the right horn of the uterus didelphys for postpartum haemorrhage. The left uterine horn is indicated by the arrow

she presented with a secondary postpartum haemorrhage on day 16. Physical examination yielded a '14-week' size uterus, firm in consistency but tender on palpation. There was active oozing of blood from the cervical os. Transabdominal ultrasound examination revealed an enlarged right uterine horn measuring 10.7 x 6.4 x 7.3 cm. There was a 3.6 x 7.0 x 4.0 cm mixed echogenic shadow at the centre with vascular flow at the periphery, but the left uterine horn appeared normal. The differential diagnoses were retained blood clots versus uterine ischaemia or infarction due to the B-Lynch sutures. Magnetic resonance imaging (MRI) revealed blood clot inside the endometrial cavity of the right uterine horn and no evidence of uterine infarction. She was therefore managed conservatively with intravenous antibiotics, oxytocics, and tranexamic acid. On this regimen, her vital signs and haemoglobin concentration remained stable, her clinical condition improved, and she was discharged 4 days after readmission. She remained well and her uterus returned to its normal size by 6 weeks postpartum. Follow-up ultrasonography revealed normal endometrial cavities in both horns, and her menstruation returned 3 months postpartum.

One year later, she became pregnant again. This time, the pregnancy was in the left uterine horn. Trial of vaginal delivery was opted for at term as the fetus was in cephalic presentation. Spontaneous labour occurred at 39 weeks, for which vacuum extraction was performed due to a prolonged second stage and poor maternal effort. The placenta was complete and delivered smoothly. Again there was a primary postpartum haemorrhage due to uterine atony of the lower segment, despite prophylactic oxytocin infusion after delivery given in view of her obstetric history. The haemorrhage was controlled after infusion of sulprostone together with packing of the lower segment and vagina with two long vaginal gauzes introduced via the vagina. The estimated blood loss was 1300 mL and 2 units of blood were transfused. A heavy secondary postpartum haemorrhage also occurred 4 weeks after delivery. A pseudoaneurysm inside the left uterine artery was suspected on ultrasound and confirmed by pelvic angiography (Figures 2[5] and 3). The bleeding was successfully treated with left uterine artery embolisation using microspheres and Gelfoam. One year later, she became pregnant again with the conceptus in the right uterine horn. After counselling, she elected for

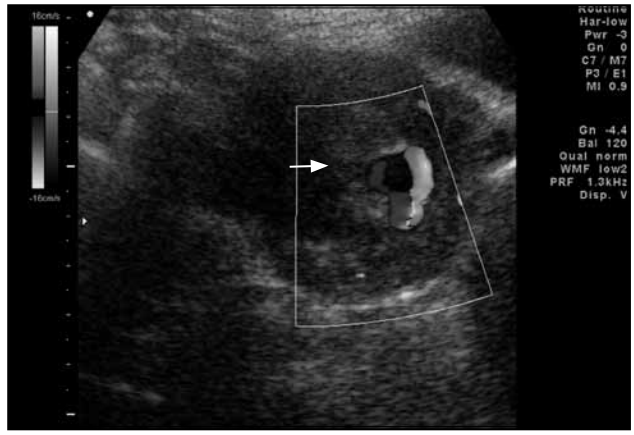

Figure 2. Pseudoaneurysm at the left uterine artery. Homogenous shadow with 'yin-yang' sign[5] on colour Doppler ultrasound is shown (arrow)

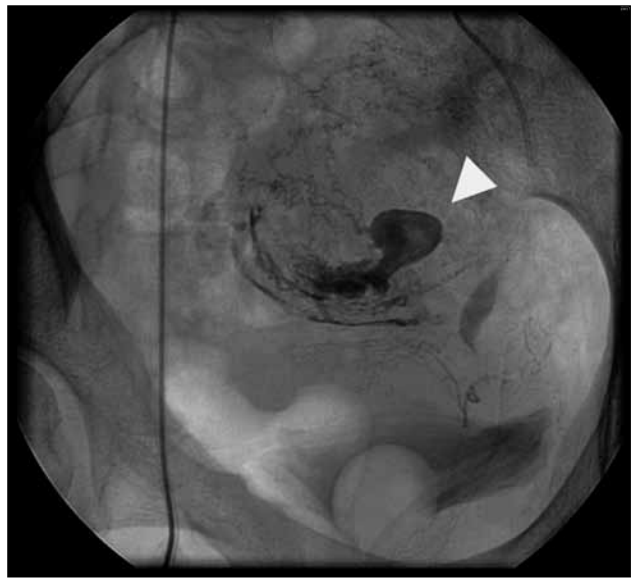

Figure 3. Pseudoaneurysm at the left uterine artery demonstrated by pelvic angiography before embolisation (arrow head)

termination of pregnancy and laparoscopic sterilisation, based on her anxiety and wish to no longer be fertile. Intra-operatively, there were dense adhesions between the right uterine horn and the anterior abdominal wall. Notably, there was persistent oozing from the right cervical os after suction evacuation, which was controlled by an oxytocin infusion and 800 μg of misoprostol per rectum. Estimated blood loss was 600 mL.

Discussion

Women with congenital uterine malformations usually have higher frequency of abnormal fetal presentations (23-28%) and a higher Caesarean section rate (28-62%)[6,7]. It was reported that breech presentation occurred in 43% and Caesarean section was performed in 82% of women with uterus didelphys[8]. Uterine anomaly was reported to have higher risk of postpartum haemorrhage[9]. However, a history of multiple suction evacuations (as in our patient) was another risk factor for postpartum haemorrhage.

In the management of massive primary postpartum haemorrhage occurring in uterus didelphys, the application of a B-Lynch brace suture is technically much simpler than ligation of pelvic or internal iliac arteries, as well as Caesarean hysterectomy[10]. In this patient, the classic B-lynch technique was applied to the right horn as it was completely separate from the smaller left horn. However, it can be modified in accordance with the clinical scenario and focusing on the atonic part of the uterus.

Regarding the suture materials, chromic catgut and a blunt needle were used in the classical version of the B-Lynch suture[3]. A more user-friendly suture material is now recommended, namely monofilament poliglecaprone 25 suture (Monocryl; 70-mm in length with a 90-cm suture; available in violet, code W3709; Ethicon, Somerville [NJ], US). It consists of a strong suture material mounted on a semicircular hand-held blunt needle, whose absorption profile is 60%, 20%, and 0% of the original strength at 7, 14, and 21 days, respectively[10]. Another learning point in this case was that prophylactic antibiotic therapy could be given to prevent the occurrence of secondary postpartum haemorrhage. Colour Doppler and MRI imaging can help to exclude rarely reported complications such as uterine necrosis following secondary haemorrhage. The appearances include absence of a central uterine blood flow apart from a very thin rim of peripheral vascularised myometrium on colour Doppler ultrasound, and an MRI showing hypoperfusion or complete avascularity of the uterus[11].

The postpartum complications of the second pregnancy were unlikely to have been related to the previous B-Lynch suture, as it was only applied to the contralateral uterine horn. Furthermore, her third pregnancy at the right horn was compatible with the current evidence showing that compressive sutures are associated with high rates of successive pregnancies, ranging from 11-75% (mean, 32%)[12]. The dense adhesive bands noted during laparoscopy very likely represented a type of minor uncommon complication ensuing after uterine compression sutures[13]. Whether there is any underlying inherited coagulopathy such as von Willebrand disease or factor XI deficiency is not known, as these too could explain recurrent primary and secondary postpartum haemorrhages in consecutive pregnancies[14].

Conclusion

In this case report, B-Lynch compression suture was useful in the management of primary postpartum haemorrhage due to uterine atony in a patient with uterus didelphys.

Declaration

No conflicts of interest were declared by authors.

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