CASE REPORT

Uterine rupture complicating sequential curettage and Bakri balloon tamponade to control secondary PPH

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SUMMARY

A 20-year-old para 2 woman had a preterm delivery at 25 weeks and 6 days, readmitted to the hospital 25 days after delivery with severe secondary postpartum haemorrhage (PPH). Uncontrolled by initial conservative management, she underwent uterine curettage followed by Bakri balloon tamponade. She later had laparotomy for continued bleeding. She was found to have uterine rupture and hysterectomy was carried out as a life-saving measure. She was transfused in total with 14 units of blood, 1 unit of platelet, 2 units of cryoprecipitate and 3 units of fresh frozen plasma. The patient had intensive therapy unit care and was discharged home on the sixth postoperative day. The histology report showed ectatic non-constricted vessels as the cause of the secondary PPH. No myometrial tissue, products of conception or evidence of endometritis. The sequential use of uterine curettage and balloon tamponade in the aetiology of uterine rupture is a rare occurrence.

BACKGROUND

Obstetric haemorrhage remains one of the major causes of maternal deaths in both developed and developing countries.¹ The widely practiced step-wise approaches in the management of postpartum haemorrhage (PPH) include resuscitation, use of uterotonic agents, antibiotics and uterine evacuation when a retained product is suspected. Other interventions include balloon tamponade, Brace sutures, radiological uterine artery embolisation and surgical ligation. In a systematic review the success rates of these interventions are similar.^{2 3}

With increasing interest in the use of intrauterine balloon tamponade, sequential use of curettage and balloon tamponade could be complicated by uterine rupture as illustrated in this case. The presentation and management present challenges over and above that required for management of uterine perforation.

We hope to increase the awareness of obstetricians and gynaecologists to this potentially fatal complication. Prompt and early recourse to laparotomy when balloon tamponade is unsuccessful is advocated.

CASE PRESENTATION

A 20-year-old para 2 woman had a preterm delivery at 25 weeks and 6 days, discharged on the second postpartum day, but was admitted to the accident and emergency department 25 days after delivery with severe bleeding per vaginam. The estimated blood loss was about 2 litres. She was very pale with a pulse of 110/min, and a blood pressure of 100/50 mm Hg. Uterus was 14 weeks

size on bimanual palpation. Her haemoglobin was 7.6 g/dl and an ultrasound scan revealed blood clots within the uterine cavity. She was resuscitated, given syntometrine, transfused with 4 units of blood and started on antibiotics. The bleeding subsided and the patient was under close observation. Placenta was documented to be complete at delivery.

Patient was reviewed on the ward 3 and 8 h after admission by consultant obstetrician and gynaecologist; bleeding was noted to have subsided. She suffered again severe bleeding per vaginam uncontrolled with further uterotonics including syntometrine, oxytocin infusion and prostaglandin F2 α . Uterine evacuation was performed, which revealed no identifiable retained products of conception. Bakri balloon was then inserted to stop the continued bleeding. The balloon was inserted entirely into the uterine cavity and was gradually filled up to 250 ml sterile normal saline. This initially reduced the bleeding. However, resurgence of heavy bleeding while assessing the effect of the tamponade, coupled with haemodynamics instability in this patient necessitated laparotomy. This was carried out about 1.5 h after uterine curettage and Bakri balloon insertion failed to control the bleeding. The findings at laparotomy were a haemoperitoneum of about 2 litres and a rent at the uterine fundus. She remained clinically unstable under anaesthetics and a decision was taken by two consultant obstetrician and gynaecologists for hysterectomy to be carried out as a life-saving measure.

INVESTIGATIONS

The histology report showed a tear at the fundus of the uterus measuring 55 $\times$ 20 mm that has retracted owing to formalin fixation. Upon microscopy the decidua and myometrium contained numerous large vessels, the majority of which were not constricted and in keeping with ectatic non-constricted vessels as the cause of the secondary PPH. No myometrial tissue, products of conception or evidence of endometritis was found.

TREATMENT

Oxytocics, uterine curettage and intrauterine balloon tamponade followed by laparotomy and hysterectomy. She was transfused with 14 units of blood, 2 units of cryoprecipitate, 3 units of fresh frozen plasma and 1 unit of platelet.

OUTCOME AND FOLLOW-UP

Postoperative care was initially in the intensive care unit, which was uneventful and was discharged home 6th postoperative day.

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DISCUSSION

Balloon tamponade in the management of PPH is well established and its use is increasing. It could be a life-saving procedure, readily available, simple to use, inexpensive and effective. It may also be useful by junior staff to control haemorrhage while waiting for senior help.⁴ It has been used in controlling haemorrhage from many obstetric and gynaecological conditions such as uterine atony, placenta praevia, placenta accreta, amniotic fluid embolism, secondary PPH, septic shock with disseminated intravascular coagulation, bleeding following abortion, cervical ectopic pregnancy and vaginal haemorrhage.^{4–7} Georgiou C, in a recent review of tamponade in the management of PPH mentioned a number of potential complications. These include ulceration from the pressure effect of the balloon in the uterus or vagina especially with prolonged use, unrecognised exsufflation, uterine rupture from uterine overdistension and uterine perforation during insertion.²

To our knowledge, this is the first case report of unexpected uterine rupture following sequential use of uterine curettage and Balloon tamponade in the management of PPH following a literature search of Pubmed, MEDLINE, EMBASE, CINAHL, TRIP, Cochrane Library, National Health Service (NHS) Evidence—Guidelines, NHS Evidence specialist collection—Women's Health, RCOG using the terms postpartum haemorrhage, Bakri balloon uterine rupture.

There is very limited experience with the use of uterine tamponade in the management of delayed secondary PPH in contrast to primary. In the case series by Bakri *et al*⁸ (five patients), there was no secondary PPH. One of the eight patients in the Keriakos series in Sheffield⁴ had Rusch balloon uterine tamponade 16 days postpartum. Two of the 16 patients in the series reported by Condus *et al*⁹ had delayed secondary PPH 18 and 36 days after delivery, respectively. Managing secondary PPH presents some challenges such as subinvolution, retained placental tissues, infection or inflammatory process of the endometrium and myometrium, which renders the uterus soft and more prone to perforation or rupture. This is in contrast to the uterus in primary PPH that is usually healthy, with thick, well-contracted and with uninflamed myometrium. Subinvolution with retained products may have been responsible for this patient's severe PPH as the histology revealed ectatic non-constricted vessels in decidua and myometrium. The possible mechanisms of uterine rupture in this case could be trauma either during insertion and or filling of the balloon in a uterus that was already soft and inflamed. Alternatively, occult or partial uterine perforation during curettage made worse during inflation of the Bakri balloon. Fundal tear measuring 55 mm after retraction in formalin is unlikely to be caused by uterine curettage alone. More so, no myometrial tissue, products of conception or evidence of endometritis was found neither during curettage nor at histology.

Ultrasound guidance during insertion of intrauterine balloon (not used in this case) has been advocated to ensure correct placement and allow estimation of uterine cavity volume.¹⁰ It may also help to ascertain uniform balloon distension of uterine cavity, exclude extrusion through the uterine wall and allowing early diagnosis of uterine rupture and prompt surgical intervention. Ultrasound guidance may therefore be considered where the skill and equipment are available and clinical condition of the patient permits.

Learning points

- ▶ Sequential use of curettage and balloon uterine tamponade in secondary postpartum haemorrhage (PPH) could cause uterine rupture.
- ▶ With increasing usage of balloon uterine tamponade, this potentially fatal complication may increase.
- ▶ Early recourse to laparotomy following continued, uncontrolled secondary PPH may aid diagnosis, stem bleeding and save life.
- ▶ A differential diagnosis of ectatic non-constricted vessels should be considered in the aetiology of secondary PPH unresponsive to uterine tamponade.

Competing interests None.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

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