Uterine haemorrhage controlled by an intrauterine balloon insufflated with hot water

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INTRODUCTION

Controlling uterine haemorrhage can be difficult. One cause is uterine atony, which is a rare and dangerous complication associated with halothane anaesthesia.

CASE REPORT

In August 2001 in a rural cottage hospital, at about 8.00am, two GPs were managing a routine evacuation of septic retained products of conception of a 20-week spontaneous abortion on a 30-year-old black woman. She had no children, and had had a similar event a year previously requiring no surgical intervention. One doctor administered a routine anaesthetic: thiopentone induction followed by oxygen, nitrous oxide and halothane (approximately 3%). With the patient in lithotomy position, the other proceeded to introduce a curette through an already dilated cervical os. At this stage arterial bleeding began which did not cease despite adequate removal of the products. Intravenous oxytocin/ergometrine was to no avail. Blood was taken for cross match and clotting time seemed normal.

The bleeding continued with the blood pressure dropping (70/50 mmHg) despite use of plasma expanders (Ringer's lactate and Haemacel, Hoechst Marion Roussel, Frankfurt am Main, Germany) and eventually four units of packed cells. The author's opinion was sought.

Examination revealed a catheterized bladder. However, a continuous but pulsatile jet of arterial blood was issuing from the os of a soft uterus similar in size to that of a 12-week pregnancy. Approximately 3 litres of clotted blood had collected in a basin below. Re-curettage revealed a clean uterus with no anatomical abnormality such as a septum.

Two more ampoules of oxytocin/ergometrine combined with bimanual fundal pressure for 5 minutes were to no avail. Application of sponge-holding forceps as haemostats around the cervical os was limited by the depth of the fornices – about 3 cm – and was also to no avail.

A diagnosis of probable halothane-induced uterine atony was made and the halothane was switched off at about 9.15am. Initially this idea was resisted but accepted on the realization that the cervix is only sensitive to stretching pain and was already dilated. Pain was thus not a problem and the halothane was merely compounding the cardiovascular instability. Intrauterine packs were inserted but the bleeding continued.

An emergency total abdominal hysterectomy was considered. From a anaesthetic point of view this was considered precarious: the only intravenous non-hypotensive agent available was ketamine and this was a veterinary preparation; epidural/spinal anaesthesia, apart from being unpredictable, meant manoeuvring the patient and would increase the hypotension. Further, the patient had been under anaesthetic for over an hour already. From a surgical point of view the three doctors involved were a little rusty on the procedure. From both point of views, the availability of blood was being exhausted. Further, as the patient had no children, such a procedure carried major social implications.

A large Foley's catheter (30 gauge) was then inserted into the uterus and its bulb blown up forcibly with 30 ml of boiling water. The bleeding virtually ceased. For good measure a double 0 Vicryl Shirodkar type purse-string suture sealed the cervix around the catheter. A unit of fresh O negative blood was given rapidly followed by 10 ml calcium gluconate to reverse any citrate anticoagulant.

The patient was stabilized at 10 am and the nitrous oxide terminated. Ultrasound examination in theatre of the pelvic contents revealed two Foley's catheter bulbs, one of 20 ml in the bladder and the other of 30 ml in the uterus, but no other abnormal fluid collections locally.

The patient was transferred to a specialist unit with better haematological facilities 80 km away and received a further two units of blood. This unit was advised about further halothane usage. Three days later the catheter was removed in theatre uneventfully without anaesthetic.

DISCUSSION

Halothane-induced uterine atony is rare but frightening event. The author only recalls one case in nearly 30 years of generalist practice which occurred in a term caesarean section, also in a black woman. Halothane is considered an inert agent, although some is metabolized. Saturation of the body tissues occurs after about 20 minutes of inhalation. However, being poorly water soluble, once this equilibrium is reached in the body fat, it may take a considerably longer period to breathe off. Hence its reversal cannot be expected to be rapid.

Should the myometrium fail to constrict thus crimping its vascular tree, the uterine arteries will bleed profusely. Ergometrine should help stop this, bearing in mind the risk of digital artery spasm. Oxytocin, however, has little action on a uterus less than 18 weeks pregnant. Haemorrhage can often be controlled by simple measures such as elevation and pressure but the uterus does not lend itself easily to these.

Intrauterine balloon catheterization is a simple method of applying such pressure to the uterine cavity and its arteries. Insufflating the balloon with hot water causes blood to become hypercoaguable and, further, possibly stimulates the necessary uterine contraction. No references to this procedure were found using a key word (uterus+haemostasis+balloon) search of the Mayo Clinic Website.

Perhaps the old anaesthetic agent trichloroethylene should be made available once again on obstetric anaesthetic machines, it being both safer and better proven (and cheaper) than halothane. HM

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