

Aortic balloon for the intraoperative management of placenta accreta spectrum: need for standardised methodology and safety data

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In 2003, Bell-Thomas et al (BJOG 2003;110:1120-1122) reported on the emergency use of a transfemoral aortic occlusion catheter to control massive haemorrhage in a case of caesarean hysterectomy for placenta percreta. This was only the second case published in the international literature on the use of an intra-abdominal aortic balloon occlusion (IABO) in the management of placenta accreta spectrum (PAS) (Paull et al. *Anesth Intensive Care* 1995;23:731-734). A non-exhaustive Pub-Med literature review of articles published in English on this the topic over the last 20 years, identifies 27 articles, 23 of which come from the Peoples Republic of China, where IABO seems to be increasingly popular in the management of PAS.

In brief, IABO involves the insertion of a balloon catheter into the infrarenal abdominal aorta above the aortic bifurcation under fluoroscopy guidance. The procedure is performed in a hybrid operating room or interventional radiology (IR) suite with secondary transfer to the operating room. In all but one study (Zhu et al *Biomed Res Int*.2017:8604849), the balloon was inflated after delivery of the newborn.

All publications so far have been retrospective and most are case-control studies, comparing the outcomes of IABO with those of routine surgical techniques with or without additional procedures such as intra-uterine tamponade. Recently, authors have also started to compare IABO with iliac artery balloon occlusion.

Overall, these studies have shown that IABO is associated with reduced estimated blood loss and transfusion requirement, ICU admission and hysterectomy and suggested that IABO is more effective than iliac artery balloon occlusion, presumably as arterial occlusion is more effective.

However, there is wide variation between studies in prenatal imaging and clinical selection criteria, intraoperative IR methodology and confirmation of the diagnosis of PAS at birth. For example, the pre-operative fluoroscopy time ranges between 2 and 25 minutes with fetal radiation exposure of 4 to 25 mGy; intraoperative balloon inflation/deflation time varies between 5-10/1 minutes and 45-80/10 minutes. The size of the balloon and the need for transfer between the IR room and the operative theatre is rarely described. Most studies lack histopathology confirmation of the diagnosis and/or stratification by PAS grade.

Heterogeneity in methodology and design leads to a high risk of confounding, bias or chance. There is also a high risk that the relationship is not causal. One major concern is the risks-benefit ratio of the use of IABO for both mothers and fetuses, in particular if they do not have PAS. The most commonly reported post-operative complication associated with IABO are arterial thrombosis of the external iliac or the femoral

artery. There are no data on the long-term follow of the children born after IABO.

In 2018, the expert panel of the RCOG green top guidelines 27a (Jauniaux et al., BJOG.2019;126:e1-e48) concluded that larger studies are necessary to determine the safety and efficacy of IR before this technique can be advised in the routine management of PAS. The 10 new studies published in 2019-2010 on the use of IABO in the management of PAS are insufficient to change this statement.

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Disclosure of interests

The authors declare no conflicts of interest.

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