



Royal College of  
Obstetricians and  
Gynaecologists



Royal College of  
Radiologists



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Interventional  
Radiology

## THE ROLE OF EMERGENCY AND ELECTIVE INTERVENTIONAL RADIOLOGY IN POSTPARTUM HAEMORRHAGE

### 1. Purpose

The purpose of this guidance is to urge all obstetric units to consider early or prophylactic interventional radiology as an important tool in the prevention and management of postpartum haemorrhage. Arterial balloon occlusion and embolisation can prevent major blood loss, obviating the need for blood transfusion and hysterectomy. Potentially, this may reduce the need for intensive care and decrease maternal morbidity and mortality.<sup>1-4</sup>

### 2. Aetiology of postpartum haemorrhage

Postpartum haemorrhage remains a significant cause of maternal morbidity and mortality. Confidential enquiries and near-miss reports indicate that large numbers of women suffer severe morbidity requiring blood transfusions, hysterectomy and intensive care facilities, because of excessive blood loss. This may be predictable where there is known placenta accreta or placenta praevia. However, the majority of postpartum haemorrhage is unpredictable and is typically secondary to:

- atonic uterus following a normal or prolonged labour resulting in normal delivery or caesarean section
- uterine and cervical injury (this occurs most commonly as a result of instrumental delivery or at the time of caesarean section secondary to surgical complications; it is more common in association with placenta praevia and placenta accreta)
- delayed bleeding in the recovery unit or on the postnatal ward in women who have delivered normally or undergone a caesarean section; rarely, secondary haemorrhage can present after 24 hours
- uncontrolled bleeding after emergency hysterectomy for postpartum haemorrhage because of coagulopathy or surgical complications.

### 3. Indications for using interventional radiology in postpartum haemorrhage

#### 3.1 Emergency intervention

Interventional radiology should be considered in the management of postpartum haemorrhage secondary to:

- atonic uterus following normal or prolonged labour, with or without caesarean section
- surgical complications or uterine tears at the time of caesarean section
- bleeding while on the recovery unit or in the postnatal ward following a normal delivery or a caesarean section
- bleeding following hysterectomy.

In order for interventional radiology to be performed in the emergency situation, access to imaging is desirable either in the obstetric unit or in an adjacent special procedures unit in the radiology department.

In all these situations, access to the anterior division of the internal iliac arteries via a femoral artery approach and subsequent embolisation with a suitable embolic material (such as absorbable gelatine preparations like Gelfoam®, Pharmacia & Upjohn) under image guidance should be considered.<sup>2-4</sup>

### 3.2 Elective and prophylactic intervention

Interventional radiology can also be used as a prophylactic measure where there is a known or suspected case of placenta accrete, such as placenta praevia on previous caesarean section scar, or placenta accreta diagnosed by scan/colour Doppler or magnetic resonance imaging.<sup>5</sup> Balloons are placed in the internal iliac or uterine arteries before delivery. The balloons can be inflated to occlude the vessels in the event of postpartum haemorrhage. Embolisation can be performed via the balloon catheters if bleeding continues despite inflation. Even if hysterectomy is still required, blood loss, blood transfusion and numbers of admissions to intensive care units can be reduced. If this facility is not available locally, it might be prudent to arrange transfer to a hospital where it is available electively.

## 4. Conclusion

NHS trusts should have in place protocols that include the use of interventional radiology in the management of obstetric cases where postpartum haemorrhage is likely. In addition, NHS trusts must have clear strategies for the management of unpredicted postpartum haemorrhage. In hospitals with an interventional radiology service, treatment algorithms must be drawn up which clearly identify the timing and place of interventional radiology in the management of postpartum haemorrhage. Where interventional radiology services are not available locally or where there is no continuous on-call interventional radiology service, hospital trusts should ensure that there is an agreed formal arrangement for the provision of these services either with a larger centre nearby or through formation of a network with surrounding trusts.

This advice should be used alongside the existing RCOG guideline on management of placenta praevia and placenta accreta.<sup>5</sup>

## References

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2. Pelage JP, Le Dref O, Mateo J, Soyer P, Jacob D, Kardache M, *et al.* Life-threatening primary postpartum hemorrhage: treatment with emergency selective arterial embolisation. *Radiology* 1998;**208**:359-62.
3. Hansch E, Chitkara U, McAlpine J, El-Sayed Y, Dake MD, Razavi MK. Pelvic artery embolization for control of obstetric haemorrhage; a five year experience. *Am J Obstet Gynecol* 1999;**180**:1454-9.
4. Doumouchtsis SK, Papageorghiou A, Arulkumaran S. Systematic review of conservative management of postpartum haemorrhage; what to do when medical treatment fails. *Obstet Gynecol Surv* 2007;**62**;(in press).
5. Royal College of Obstetricians and Gynaecologists. *Placenta Praevia and Placenta Accreta: Diagnosis and Management*. Green-top Guideline No. 27. London: RCOG; 2005 [[www.rcog.org.uk/index.asp?PageID=527](http://www.rcog.org.uk/index.asp?PageID=527)].

This good practice guidance was produced as a joint document on behalf of the Professional Standards Committee of the Royal College of Obstetricians and Gynaecologists, the Interventional Radiology Sub-Committee of the Royal College of Radiologists and the Education Committee of the British Society of Interventional Radiology.

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The RCOG will maintain a watching brief on the need to review this guidance.