Issue date: November 2005

NHS
National Institute for Health and Clinical Excellence

Intraoperative blood cell salvage in obstetrics

1 Guidance

1.1 Intraoperative blood cell salvage is an efficacious technique for blood replacement and its use is well established in other areas of medicine, but there are theoretical safety concerns when it is used in obstetric practice. Data collection is therefore important and clinicians should report all complications to the Medicines and Healthcare products Regulatory Agency (www.mhra.gov.uk).

1.2 Whenever possible, patients should be fully informed of the potential complications. In addition, use of the Institute's *Information for the public* is recommended.

1.3 This procedure should only be performed by multidisciplinary teams who develop regular experience of intraoperative blood cell salvage.

2 The procedure

2.1 Indications

2.1.1 Blood replacement may be required in obstetric practice during caesarean section, or after vaginal delivery in patients with conditions such as placenta previa or placenta accreta. The usual method of blood transfusion is standard (allogenic) transfusion from a donor.

2.1.2 Intraoperative cell salvage may reduce the incidence of transfusion reactions and transfusion-related infection, compared with allogenic transfusion, and may also be useful when there are difficulties with cross-matching.

2.1.3 Intraoperative blood cell salvage is commonly used in cardiac, orthopaedic and vascular surgery. It has not been routinely adopted in obstetrics because of specific concerns about amniotic fluid embolism and about haemolytic disease in future pregnancies as a result of re-infusing amniotic fluid or fetal red blood cells.

2.2 Outline of the procedure

2.2.1 Intraoperative blood cell salvage is the process whereby blood shed during an operation is collected, filtered and washed to produce autologous red blood cells for transfusion to the patient.

2.2.2 During intraoperative blood cell salvage in caesarean section, blood that is lost during the operation is aspirated from the surgical field using a catheter. The blood is then suctioned into a reservoir in which a filter removes gross debris. The filtered blood is washed and resuspended in saline for transfusion. It may be retransfused either during or after the operation.

2.2.3 The aspirate may include amniotic fluid and blood cells from the fetus. A leukocyte depletion filter is nearly always used in this process to reduce the amount of amniotic fluid contaminants in transfused blood to levels approaching those found in maternal blood.

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This guidance is written in the following context

This guidance represents the view of the Institute which was arrived at after careful consideration of the available evidence. Health professionals are expected to take it fully into account when exercising their clinical judgement. This guidance does not, however, override the individual responsibility of health professionals to make appropriate decisions in the circumstances of the individual patient, in consultation with the patient and/or guardian or carer.

Interventional procedures guidance is for health professionals and people using the NHS in England, Wales and Scotland.

This guidance is endorsed by NHS QIS for implementation by NHSScotland.

NHS Quality Improvement Scotland

2.3 Efficacy

2.3.1 In the blood cell salvage arm of a controlled trial, the median volume of re-infused blood was between 250 and 543 ml per woman (n = 139). There was no significant difference in length of hospital stay, or time on ventilatory support between women who received salvaged blood and women in the control group, who received standard transfusions.

2.3.2 In another comparative study of 68 women who had had a caesarean section, the length of hospital stay was significantly shorter with the blood cell salvage procedure – 5.3 days compared with 7.3 days for women who had had the standard transfusion ($p < 0.003$). For more details, refer to the Sources of evidence.

2.3.3 The Specialist Advisors noted that the efficacy of the procedure may depend on the rate and volume of the blood loss.

2.4 Safety

2.4.1 In the blood cell salvage arm of a controlled trial, there were no instances of clinically apparent amniotic fluid embolism in 139 women. In the blood cell salvage arm of a comparative study of 68 women who had a caesarean section, there were no reported complications from re-infusing salvaged blood. Unused salvaged blood from 15 women was analysed and found to contain fetal haemoglobin at a concentration of 1.8–2.0% in 20% of cases (3/15). These same women were also found to have fetal haemoglobin in maternal blood samples. No complications were reported using salvaged blood treated with a leukocyte depletion filter in a series of four reported cases. For more details, refer to the Sources of evidence.

2.4.2 In a controlled trial there was no significant difference in disseminated intravascular coagulation or rate of infection between women who received salvaged blood and women in the control group, who received standard transfusions.

2.4.3 The Specialist Advisors noted that the theoretical safety concerns include infusion of fetal cells, which could potentially cause haemolytic disease in future pregnancies. Advisors also noted the potential risk of amniotic fluid embolism.

Andrew Dillon
Chief Executive
November 2005

Information for the public

NICE has produced information describing its guidance on this procedure for patients, carers and those with a wider interest in healthcare. It explains the nature of the procedure and the decision made, and has been written with patient consent in mind. This information is available from www.nice.org.uk/IPG144publicinfo

Sources of evidence

The evidence considered by the Interventional Procedures Advisory Committee is described in the following document.

Interventional procedure overview of intraoperative blood cell salvage in obstetric procedures, December 2004

Available from www.nice.org.uk/ip040overview

Ordering information
Copies of this guidance can be obtained from the NHS Response Line by telephoning 0870 1555 455 and quoting reference number N0935. *Information for the public* can be obtained by quoting reference number N0936.

The distribution list for this guidance is available at www.nice.org.uk/IPG144distributionlist

Published by the National Institute for Health and Clinical Excellence, November 2005; ISBN 1-84629-104-6

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N0935 1P 10k Nov 05