525.1 USE OF CELL SALVAGE IN OBSTETRICS
MAT/Intrapartum/46

Massive haemorrhage continues to be one of the leading causes of maternal death in the UK[1].

Cell salvage is a mode of autologous blood transfusion that in obstetrics has a place when there is no realistic alternative to provide red cells for oxygen carriage, as in massive haemorrhage, because of placenta accreta, trauma, life threatening haemorrhage or massive haemorrhage in Jehovah's Witnesses. It has advantages over homologous transfusion by reducing disease transmission, less acidosis, less potassium, higher levels of 2,3 diphosphoglycerate and is acceptable to some patients who are Jehovah's Witness. Blood salvaged from a cell saver has a haematocrite of 40-60 and when given back to the patient its volume is equivalent to twice as much whole blood. Cell salvage in obstetrics is becoming widely used in the UK.

Fear of amniotic fluid embolism has limited its use in obstetrics until the addition of a leukocyte depleting filter (Palls Medical, RS leukocyte depleting filter) which is shown to reduce significantly particulate contaminants to a concentration equivalent to maternal venous blood at caesarean section[4]. There have not been reports in the literature of any amniotic embolism and this now remains only a theoretical risk[3]. The other main concern is Rhesus immunisation of the mother by transfusing fetal incompatible blood. A calculated dose of anti-D should be used when there is Rhesus incompatibility.

At Stoke Mandeville Hospital we own one cell saver machine, an Electa Dideco. This is kept in New Wing theatres. Palls Medical, RS leukocyte depleting filters are stored in the cell saver trolley. This will have to be transported to the Delivery Suite. The disposable parts of the machine can be kept in the Delivery Suite. There is one cell saver machine at Wycombe Hospital and this is kept in Loakes theatres.

Indications for use of cell saver[2]:

- Anticipated blood loss ≥20 % of estimated patient's blood volume.
- When blood is routinely x-matched for the procedure.
- ≥10% will require blood transfusion.
- The mean transfusion volume for the procedure exceeds 1 unit of blood.
- For women having a caesarean section who decline homologous blood transfusion on religious grounds (e.g. Jehovah's Witness)[3].
- When there is no alternative method to provide red cells for oxygen transport.

Indications for use of cell saver in obstetrics:

- For women having a caesarean section or a surgical intervention when blood loss will require transfusion of red cells and who decline homologous blood transfusion on religious grounds (e.g. Jehovah's Witness)[1,3].
- When there is no alternative method to provide red cells for oxygen transport (e.g. massive haemorrhage, placenta accreta, trauma, history of blood antibodies when it is difficult to find compatible blood)[1,3].

Contraindications for use of cell saver[1]:

- Bacterial contamination of the surgical field; malignant disease; blood containing fat or amniotic fluid; topical clotting agents such as collagen, cellulose, gelatin and thrombin; topical antibiotics or cleansing agents used in the perioperative field should not be aspirated.
- Complications have occurred with sickle cell disease.
- Lack of trained staff familiar with its use.

How to use the cell saver in obstetrics:

1. Use of the cell saver in obstetrics should be used when appropriate trained staff are available and according to the instruction manual.
2. When possible the patient should be warned of potential complications[6].
3. Decision to use a cell saver should be made at the discretion of the clinician involved with the case.
4. Separate suction equipment should be used to remove all the amniotic fluid and until the fetus and the placenta have been removed. All swabs should be separated and new ones brought together when suction for the cell saver is opened.
5. Blood stained swabs that have not been in contact with amniotic fluid can be soaked in 1L of N. saline 0.9% for suctioning in the reservoir of the cell saver.
6. Before salvaged blood is given to the mother, LeucoGuard® RS filter (Pall Medical) must be used to filter the salvaged blood.
7. As the cell saver is unable to distinguish between fetal and maternal red cells, if the mother is Rhesus negative and there is a concern about Rhesus factor incompatibility, fetal red cells entering the maternal circulation can be estimated by the Kleihauer-Betke test and the dose of anti-D immunoglobulin calculated accordingly.
8. Allogenic blood should be given back to the patient within six hours of collection and only if the blood loss is considered to require blood transfusion. Blood should be clearly labelled with the patients name, hospital number, date of birth and should remain with the patient and not be stored in the fridge. The label must state clearly “UNTESTED BLOOD: FOR AUTOLOGOUS USE ONLY”[2].
9. In Jehovah’s Witness the machine is set up in-continuity with the patients circulation. For this the circuit is flushed with saline and connected to the patient’s vein via an intravenous cannula before the circuit is completed by aspirating blood from the surgical field into the aspiration side of the circuit[3].

References:

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