

SWAB WASHING

AREA of APPLICATION

The efficiency of red cell recovery by cell salvage is very much dependent on the ability to recover the blood lost in a useable form. During surgery, blood loss can be removed from the operative site by a combination of suction and swabs. Blood loss to swabs during surgery has been estimated at between 30%¹ and 50%² of the total surgical blood loss. By washing swabs, the blood that is normally discarded can be collected and the overall efficiency of red cell recovery improved.³

STAFF

All staff involved in the cell salvage process.

PROCEDURE:

1. Set up a sterile bowl with 1000ml IV normal saline (0.9% NaCl)*.
2. Soak blood soiled swabs[†] for a few minutes in the saline to extract red cells. Gently compress the swabs to express any residual solution before discarding.
3. At the end of the procedure[#] aspirate the swab wash solution into the cell salvage reservoir using the suction line and process in the same manner as for blood aspirated directly from the sterile field.

*Some centres use anticoagulant in the swab wash e.g. 10,000 IU heparin per litre saline.

[†]Avoid washing swabs contaminated with betadine or other substances contraindicated in cell salvage.

[#]In a long procedure consider evacuating the swab wash every two hours to avoid stagnation. In cases with high blood loss, consider retrieving the blood in the swab wash earlier.

NOTES

Estimated total blood loss can be calculated using the formula on the next page.

Caution: For the protection of the operator, swab washing may not be appropriate in orthopaedic procedures where sharp bone shards may be present in the swabs.

At the end of the procedure, when all of the blood from the collection reservoir has been processed, an estimate of the volume of blood the patient has lost during the procedure can be made using a simple calculation.

The information you will need is:

- **'Fluid in' volume** (machine read out) – Total volume of fluid processed by the machine, includes: blood aspirated from the surgical field, anticoagulant and irrigation from the surgical field.
- **Irrigation fluid** – Volume of sterile irrigation fluid used within the surgical field and aspirated into the ICS collection reservoir, (this is **not** the volume of IV normal saline (0.9% NaCl) wash solution used by the machine – this volume is **not** required for the blood loss calculation).
- **Anticoagulant used** – An estimate of the volume of anticoagulant that has been used.
- **Swab wash** – Volume of IV normal saline (0.9% NaCl) used to wash swabs.
- **Theatre suction** – Volume of blood in theatre suction.
- **Wet-dry weight of swabs** – Compensates for blood *and* saline swab wash retained on swabs and allows them to be weighed outside of the sterile field after washing.

Once you have all of this information, an estimate of blood loss can be calculated as shown below:

Calculation

$$\begin{array}{ccccccccc} \text{Fluid in} & - & \text{Irrigation fluid} & - & \text{Anticoagulant used} & - & \text{Swab wash} & + & \text{Theatre suction} & + & \text{Wet - Dry weight of swabs} & = & \text{Approx. blood loss} \end{array}$$

Example

$$\begin{array}{ccccccccc} 2,500 \text{ ml} & - & 200\text{ml} & - & 400\text{ml} & - & 1,000 \text{ ml} & + & 150\text{ml} & + & 200\text{ml} & = & 1,250\text{ml} \end{array}$$

REFERENCES:

1. Takaori M: Perioperative autotransfusion: haemodilution and red cell salvaging. Can J Anaesth. 1991; **38**:604-7
2. Ronai AK, Glass JJ, Shapiro AS: Improving autologous blood harvest: recovery of red cells from sponges and suction. Anaesth Intensive Care 1987; **15**:421-4.
3. Haynes SL, Bennett JR, Torella F, McCollum CN: Does washing swabs increase the efficiency of red cell recovery by cell salvage in aortic surgery? Vox Sanguinis 2005; **88**: 244–248.

The information contained in this ICS Technical Factsheet has been sourced from members of the UK Cell Salvage Action Group (UKCSAG) and is generally agreed to be good practice. The UKCSAG does not accept any legal responsibility for errors or omission