

# Vaginal Cell Salvage Case Reports

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# Content

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- Set up at RCHT
- Two case reports



# Is cell salvaged vaginal blood loss suitable for re-infusion?

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## Feasibility study 2015

## Blood collected from 50 women in theatre following PPH >200ml



**Table 2** Constituents of salvaged blood

	Pre-wash	Post-wash	Post-filter
Haemoglobin (g/dL)	3 [1.9–4.4]	15.4 [15.3–17.9]	11.2 [6.0–15.3]
Haematocrit	0.087 [0.054–0.1]	0.461 [0.314–0.5]	0.333 [0.167–0.5]
AFP (KU/L)	62 [23–294]	<1 [1–3]	<1 [1–1]
LDH (IU/L)	374 [239–762]	183 [125–350]	87 [47–192]
Albumin* (g/L)	11 [6–13]	0.011 [0.005–0.030]	0.013 [0.005–0.021]
Heparin (IU/mL)	6.3 [5.9–6.5]	0 [0–0]	0 [0–0]
Free haemoglobin (g/dL)	0.13 [0.07–0.3]	0.1 [0.04–0.25]	0.11 [0.03–0.38]
Fetal RBCs (mL)	0.28 [0.02–1.4]	0.15 [0.04–1.99]	0.08 [0.002–0.77]

Data are median [IQR]. \*Albumin derived from micro-albumin test; AFP: alpha-fetoprotein; LDH: lactate dehydrogenase; RBC: red blood cells.



- Vaginally salvaged blood of same quality as blood salvaged during C-section in terms of albumin, AFP, heparin, LDH washout
- Fetal red cells present in all except 3 samples, at similar volume to C-section salvaged blood
- Volume of salvaged blood not related to amount of fetal red cell contamination

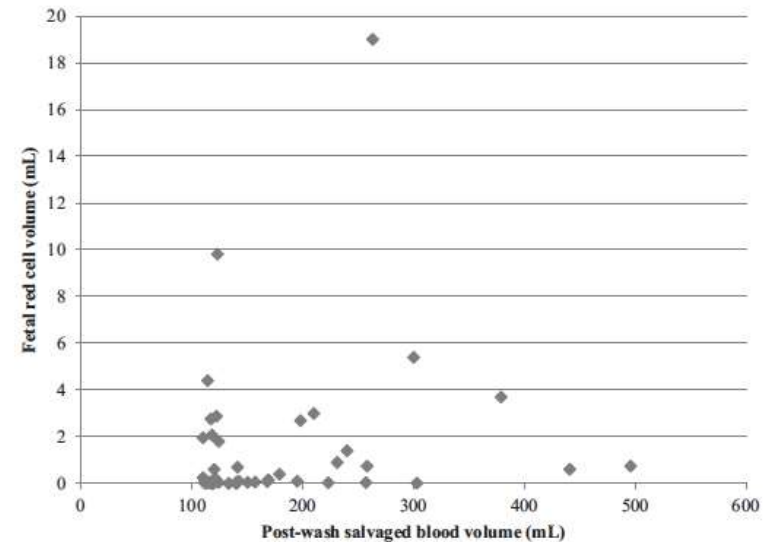


Fig. 3 Fetal red cell volumes detected in post-wash samples



**Table 5** Species of bacteria detected from partial and full bowls.

	Vaginal delivery		Caesarean section
	Pre-wash (n=50)	Post-wash (n=50)	Post-wash (n=20)
<i>Escherichia coli</i> *	34	39	1
<i>Enterococcus</i> spp.*	33	36	3
<i>Enterobacter cloacae</i>	0	0	1
Coagulase-negative staphylococcus	14	11	16
<i>Staphylococcus saprophyticus</i>	2	0	0
<i>Staphylococcus aureus</i>	0	0	1
<i>Lactobacillus</i> spp.	5	3	0
Mixed anaerobes	4	3	0
Coliforms	2	1	0
Alpha haemolytic streptococci	2	1	2
Group B streptococci*	2	1	0
Haemolytic streptococci mixed (Non-A, B, C)	1	2	0
Diphtheroids	2	0	1
<i>Proteus</i> *	1	1	1

Data are numbers. \*Organisms found in the three vaginal samples with the highest bacterial counts.

**Table 4** Bacterial counts from vaginal delivery and caesarean section

	Vaginal delivery*			Caesarean section
	Pre-wash	Post-wash	Post-filter	Post-wash <sup>‡</sup>
Bacterial concentration (cfu/mL)	8 [1–84]	2 [1–25]	3 [1–14]	1 [1–1] <sup>§</sup>
Total bacterial count (cfu)	3400 [1278–52200]	303 <sup>†</sup> [188–1245]	438 <sup>†</sup> [98–2115]	

Data are median [range]. \*Data from 32 patients. <sup>†</sup> $P < 0.001$  compared to pre-wash.; <sup>§</sup>Maximum value 30 cfu/mL.; <sup>‡</sup>Median post-wash volume 165 mL.

## Autotransfusion of vaginally shed blood as a novel therapy in obstetric hemorrhage: A case series



Jaclyn M. Phillips<sup>1</sup> | Takahiro Tamura<sup>2</sup> | Jonathan H. Waters<sup>2</sup> |  
Jacob Larkin<sup>1</sup> | Sara Sakamoto<sup>1</sup>

- Retrospective case series of 64 patients who received autotransfusion of vaginally shed blood at time of obstetric haemorrhage
- Average reinfusion volume 384ml (equivalent to 1.3 RBC) IQR 244-520ml
- No direct adverse events observed during transfusion
- No documented cases of maternal infection or severe infectious morbidity

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- **Autotransfusion of vaginally shed blood is a feasible and reasonable technique to employ during severe obstetric haemorrhage**
- Autotransfusion volume not dependent on location (426mls delivery room, 420mls theatre, 504mls both)
- 72% of women still required an allogeneic transfusion
- Volume of autologous blood recovered relatively small compared with volume of haemorrhage observed

## Cell salvage for postpartum haemorrhage during vaginal delivery: a case series

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**Table II** - Outcomes associated with transfusion of salvaged shed blood during vaginal delivery.

	Salvaged blood transfused (n=10)	No salvaged blood transfused (n=18)	p-value
Duration of stay (days)	4.9±4.8	3.8±1.4	0.36
Wound infection	0 (0)	0 (0)	-
Sepsis	0 (0)	0 (0)	-
Thromboembolic events	0 (0)	0 (0)	-
Suspected amniotic fluid embolism	0 (0)	1 (5.5)	1.0
Allogeneic blood transfused, by product			
PRBC (units)	2 [0-4]	0 [0-6]	0.11
FFP (units)	0 [0-2]	0 [0-6]	0.54
Cryoprecipitate (units)	0 [0-2]	0 [0-6]	0.92
Platelet (packs)	0 [0-2]	0 [0-1]	0.21

Data are presented as mean±standard deviation, frequency (percentage), or median [range].

PRBC: packed red blood cells; FFP: fresh-frozen plasma.



# Vaginal cell salvage at RCHT for PPH

**Indication: severe, life threatening haemorrhage with no safe alternative**

1. Deliver the baby
2. Place the under-buttock V pouch drape
3. Lower A&A line into pouch
4. Run in 200ml HepSal
5. Treat bleeding
6. Aspirate blood from drape into cell salvage reservoir
7. Process in automatic mode with double wash volume



# Case Report 1: March 2021

- 29 yrs old, PMH: essential HTN since 2015, asthma, BMI 49
  - Methyldopa 250mg qds
  - Nifedipine 20mg qds
  - Labetalol 200mg tds
- Jehovah's Witness, advance directive regarding transfusion wishes in place.
- Advised to take iron tablets as Hb 136g/L at 12 weeks > 107g/L at 28 weeks



# Case Report 1: Delivery

- IOL 39+5 as BP escalating
- Hb 109 on arrival on D/S
- Propess, ARM, syntocinon infusion, SVD
- Ragged placenta, PV blood clots, EBL 1.2L and ongoing bleeding
- Syntocinon infusion restarted, TXA administered, ongoing blood loss, high fundus
- Decision to transfer to theatre for EUA
- Patient declining blood products but accepting vaginal cell salvage



# Case Report 1: EUA in Theatre

- Spinal anaesthetic. Further 500ml PV, MOH called
- Placental membrane and clots removed from uterus
- 1mg misoprostol PR & 5mins bimanual compression
- Uterus well contracted, no vaginal/cervical trauma visible, haemostasis declared
- Total EBL 2000mls, Hb 99. MDT discussion and discussion with patient: reinfused in case of further bleed. 125mls blood reinfused
- IV co-amoxiclav to continue for 24 hours post reinfusion (Micro then advised a further 48 hours). Ferrinject given D1 (Hb 98)



# Case report 2



- 27yrs, PMH hydronephrosis
- Previous EMCS and PPH.
- Booked at 8 months having moved from Salisbury.
- Induction of labour for pre-eclampsia, delivered 27/12/2019 23:52, instrumental delivery, EBL 400mls. Post del Hb 80
- 7th January 2020 secondary PPH (day 11)
- Theatre for evacuation of retained blood products under GA, EBL >2000mls
- 120mls reinfused & 2 units RBC intraoperatively
- No adverse incidents after re-infusion (Hb 76 on discharge)

# Conclusions

- Vaginal cell salvage is feasible, blood can be salvaged in useful volumes
- Increasing number of safely reinfused published cases
- Most common concern is infection (allogeneic transfusion also associated with this risk)

*Final thought: carbon footprint*

- 1 unit of blood: 6.5kg CO<sub>2</sub>e



# References

- Lim et al. Cell salvage for postpartum haemorrhage during vaginal delivery: a case series. *Blood Transfusion* 2018; 16: 498-501
- Phillips et al. Autotransfusion of vaginally shed blood as a novel therapy in obstetric haemorrhage: a case series. *Transfusion* 2022; 62: 613-620
- Teare et al. Is cell salvaged vaginal blood loss suitable for re-infusion? *IJOA* 2015; 24:103-110