



LETTER TO EDITOR

A simple device for whole blood autotransfusion in cases of hemoperitoneum and hemothorax



To the Editor,

Blood collected as hemoperitoneum (HP) and hemothorax (HT) after abdominal and thoracic trauma can be used for whole blood autotransfusion as it is incoagulable and can be easily salvaged for use. We share our experience using a simple easily available disposable device.

100 adult patients (96 Males and 4 Females, Average age 33.5 years; range 19–65 years), coming to the hospital within 24 h of injuries, underwent autotransfusion using this simple device, when necessary blood group was not available in blood bank. Trauma patients, on admission were assessed and managed with standard protocol. Biliary, urinary and intestinal contamination of HP was ruled out by imaging/peritoneal paracentesis. There were 60 patients having HP (Splenic injury, $n = 34$; Liver injury, $n = 14$ and Mesenteric injury, $n = 12$) and 40 with HT (2 patients had associated Liver injury and 1 had associated Splenic injury, all managed conservatively). Maximum amount of blood transfused was 1800 ml and minimum 500 ml (mean 809.66 ± 325.87 ml). In cases of HP a right or left (according to suspected pathology) flank intraperitoneal abdominal drainage tube of 32

gauge was inserted after induction of anesthesia, and blood was collected in a sterile disposable abdominal drainage bag of 2000 ml capacity (ROMO – Abdominal Drain Kit, Romsons Scientific & Surgical Pvt. Ltd., Agra, Uttar Pradesh, India; Cost \$1). After opening the abdomen, gastrointestinal, biliary and urinary contamination was again ruled out. The collected blood was heparinized with 3 IU/ml of blood and the same bag was turned upside down. The inlet tube of the bag was clamped and a blood transfusion set containing micro filter was inserted at the outlet of the bag and transfusion was started immediately. In cases of HT, intercostal tube drain was put in the relevant intercostal space on the affected side, blood was collected in a sterile disposable under water seal drainage bag of 1000 ml capacity (ROMO drain, Romsons Scientific & Surgical Pvt. Ltd., Agra, Uttar Pradesh, India; Cost \$4). Rest of the procedure was same as above. Blood culture was sterile in all the samples. All patients had safe and unremarkable transfusion. Pre and post transfusion biochemical parameters are shown in [Table 1](#).

We have used whole blood because of non-availability of a cell salvage device, which is expensive and not

Table 1 Pre and post transfusion biochemical parameters.

Biochemical parameters	Pre Transfusion (N = 100)	Post transfusion (N = 100)	Significance
Haemoglobin (gm %)	9.344 ± 1.72	10.41 ± 1.51	$p < 0.001$
Bleeding time (minutes)	2.24 ± 0.82	2.31 ± 0.67	$p > 0.05$
Clotting time (minutes)	3.47 ± 0.88	3.57 ± 0.89	$p > 0.05$
PCV (%)	42.62 ± 2.48	42.54 ± 2.47	$p > 0.05$
Platelets (lacs/cubic mm)	2.10 ± 0.87	2.11 ± 0.84	$p > 0.05$
Blood urea (mg/dl)	37.40 ± 9.71	35.80 ± 7.42	$p > 0.05$
Serum Creatinine (mg/dl)	0.925 ± 0.179	0.921 ± 0.11	$p > 0.05$
Prothrombin time	12.96 ± 1.57	13.52 ± 1.24	$p > 0.05$
Serum Bilirubin (mg/dl)	0.594 ± 0.50	0.7175 ± 0.225	$p < 0.05$

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available in most hospitals in developing world.¹ A review of autotransfusion for ruptured ectopic pregnancy revealed that the procedure was performed completely manually – using filtered whole blood - in developing countries and with the help of a cell salvage device in developed countries.² Using low cost-technology to retrieve blood from HP/HT, filtration of blood and autotransfusion of whole blood using an ordinary transfusion set is safe.³ Simple economical portable blood salvage and autotransfusion equipment for developing world are currently being developed for this purpose.^{4,5}

Whole blood autotransfusion is safe, provided all aseptic precautions are taken. Our simple economical disposable device can be used anywhere, especially in austere resource-poor circumstances of developing world.

Conflict of interest

Nil.

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Appendix A. Supplementary data

Supplementary data related to this article can be found at <https://doi.org/10.1016/j.asjsur.2019.01.018>.

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Reena Kothari
Nityanand Pandey
Dhananjaya Sharma*
*Department of Surgery, NSCB Government Medical College,
Jabalpur, MP, 482003, India*

*Corresponding author.
E-mail addresses: reena.kothari00@gmail.com (R. Kothari),
nityanand_pandey@yahoo.co.in (N. Pandey),
dhanshar@gmail.com (D. Sharma)

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