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Pericardial Suction Blood—What Are We Doing About It?

Tim Willcox, Dip Perf, CCP; Gillian Chase, Dip Perf, CCP; Jean-Luc Charlier, BSc, ECP;
Katherine Place, BSc, Dip Perf, CCP; Jude Clark, Dip Perf, CCP; Nathan Ibbott, BSc, Dip Perf, CCP;
Tom Hick, BSc, ACPS; Rach van Uden, ECP; Jennie O’Shea, CCP
Green Lane Perfusion, Auckland City Hospital, Auckland, New Zealand

INTRODUCTION

In August 2004 we introduced the Dideco 903 Avant hard-shell membrane oxygenator (Mirandola, Italy) into our practice that incorporates a cardiotomy reservoir integral to the venous reservoir that enables pericardial suction blood (PSB) to be separated from the circulation and sequestered.

METHODS

Following ethics committee approval, a prospective audit of the treatment of PSB was conducted on 58 adult patients undergoing elective cardiopulmonary bypass (CPB) at Auckland City Hospital. A sheet was filled out for each procedure to include patient demographics, whether unprocessed PSB was reinfused and reason for reinfusion, use of the blood cell processor, and perioperative hematology, blood product transfusion and blood loss.

RESULTS

Pericardial suction blood was reinfused unprocessed in 28% of patients (group R) and sequestered and not returned in 72% (group S). The reason for reinfusion of PSB unprocessed in Group R was “excessive volume” in all cases.

While the age and weight of patients both groups were similar (62.8 yrs vs. 65.5 yrs and 81.5 Kg vs. 76.8 Kg) the case mix and CPB times were different. The operating room (OR) discard suction was variably used regardless of whether PSB was sequestered or reinfused.

Table 1. Discarded OR suction and sequestered PSB volumes.

	Group R	Group S	<i>p</i>
Mean OR discard suction (ml)	545	439	ns
Mean OR discard equated units	0.86	0.35	0.02
Mean sequestered PSB discarded	249	125	ns
Mean sequestered PSB equated units discarded	1.7	0.4	ns

Where blood was not processed ($n = 45$), in 53% no processor disposables were used. A cell processor reservoir plus aspiration line was used and wasted in 13% of cases, the majority of these being CABG where there was insufficient PSB volume to process.

BLOOD PRODUCT USE

Table 2. Blood product use.

	RBCs	Plts	FFP	Cyro	Donor Exp
Group S	1.4	0.36	0.5	0.05	3.8
Group R	2.5	1.4	1.9	0.18	11.8
<i>p</i>	ns	ns	ns	ns	0.02

There was no difference post operative chest drainage (24 hour) between Group R and Group S (770ml and 716ml respectively).

CONCLUSION

These limited data show the Avant 903 cardiotomy to enabled improved avoidance of reinfusion of cardiotomy blood with an open system (72% vs. 4% for the year prior to its introduction). Discarded blood in group R yielded a significantly greater red cell mass (and hence equated units of blood) than group S and this should have been directed to a blood processor. While there is level 1 evidence that PSB contains deleterious elements there is currently no strong evidence on the impact of avoidance of reinfusion of PSB on patient outcome. Further prospective clinical trials are warranted.