

bleeding. The acute PAP increases might represent the "lung tamponade syndrome" secondary to compressive bleeding from the PA perforation.

The diagnosis of PA perforation can be made only by a high degree of suspicion whenever the patient with a PAC develops hemoptysis or unexplained cardiac or respiratory changes. The list of suspicions should include any acute PAP elevations after wedging of the PAC.

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## Autologous Blood Deposit and Aprotinin in Elective Cardiac Surgery

*To the Editor:*

Patients who undergo heart surgery and cardiopulmonary bypass are at risk of serious postoperative bleeding.<sup>1</sup> They often require blood therapy though reoperation for bleeding is necessary for only 7% of patients. In spite of the increasing application of intraoperative hemodilution<sup>2</sup> and transfusion of mediastinal blood,<sup>3</sup> blood from the blood bank is still widely used.

Since 1986, we have been using preoperative autologous blood donation,<sup>4</sup> and since 1989, we have also been using high-dose aprotinin in an attempt to reduce homologous blood requirements.<sup>5,6</sup> To evaluate whether the association of aprotinin and autologous blood donation could reduce blood loss and blood bank requirements more than autologous blood donation or aprotinin alone, we performed the following study during CABG.

Patients were divided into three Groups of 50 patients each, using a randomized assignment in a blinded way. Group A was composed of autologous blood donors: every 3 days, 350 mL of blood was withdrawn from each patient for a total blood withdrawal of 1,050 mL. The blood was centrifuged immediately in order to divide red cells from plasma. Prior to each donation the hematocrit (HCT) level was measured and blood was not drawn if it was less than 35%. The patients underwent operation approximately 11 days after the last withdrawal. Patients in Group B also had autologous donation, but they also received aprotinin during the operation. Patients in Group C were treated with the same doses of aprotinin as Group B, but without autologous donation. The HCT value was evaluated until the patient was discharged. Homologous banked blood was used only when the HCT was lower than 28%.

**Table 1. Mediastinal Drainage and Homologous Transfusion Requirements**

	Group A (N = 50)	Group B (N = 50)	Group C (N = 50)
Mediastinal drainage (mL)	909 ± 252	476 ± 244*	527 ± 238*
Homologous units	1.81 ± 2.65	0.26 ± 0.92*	1.22 ± 1.66†

Note. Data are given as mean ± SD.

\* $P < 0.0001$ .

† $P < 0.02$ .

The HCT after donation was 34.2% in Group A, 34.1% in Group B, and 42.1% in Group C (no donation). At discharge, the HCT level was not significantly different among the three groups: 30.5% in Group A, 30.8% in Group B, and 30.3% in Group C. Table 1 shows the total mediastinal drainage and the perioperative transfusion requirements (units). Thirty-three patients in Group A (66%) and 31 patients in Group C (62%) did not receive banked blood; in Group B, 46 patients (92%) did not receive blood.

About 60% of our patients are treated with autotransfusion. The technique is safe and no reaction to phlebotomy has been seen in the patients although 66% had a previous myocardial infarction. Aprotinin, combined with autologous blood collection, permits elective surgery in cardiac patients while decreasing the risk of transfusion-related reactions and infections. In our experience, autologous blood collection is better than aprotinin alone in reducing homologous transfusion. The difference in costs is staggering, because aprotinin is far more expensive than autodeposit.

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