
Establishment of a Quality Control Program for Platelet Gel Preparation: A Comparison of Four Commercial Devices

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**Presented at the Society of Cardiovascular Anesthesiologists Meeting: 9th Annual Update on
Cardiopulmonary Bypass, March 14 – 19, 2004, Snowmass, CO**

Purpose

The production of autologous platelet gel (APG) has been shown to be an effective strategy in the promotion of wound healing in a variety of patients. However, the efficacy of this treatment is based upon clinical observation, which lacks objectivity. The present study describes the development of a quantitative quality improvement program for APG.

Methods and Results

Between January and December 2003, 414 patients undergoing surgery had autologous blood removed for the production of APG with one of the following four devices: Harvest™ Generation I (GEN I), Harvest™ Generation II, (GEN II), Fresenius Continuous Autotransfusion System™ (CATS), and Medtronic Magellan™ (MAG). Quality controls were performed on 193 patients, which included platelet count, fibrinogen, white blood cell count, and thromboelastography™ (TEG). A subset of 24 patients had additional volumetric determinations completed on samples taken from the whole blood-anticoagulant mixtures, and serve as the basis for this analysis. All data were corrected for volume differences between devices and is expressed as mean±SDEV. The GEN II had a significantly higher ($p<.01$) platelet yield ($72\pm 25\%$, 4.5 times higher than baseline) when compared to GEN I ($18\pm 4.5\%$, 2.1 times higher than baseline), the CATS ($53\pm 15\%$, 2.4 times higher than baseline) and MAG ($51\pm 34\%$, 3.0 times higher than baseline). All samples had significantly greater TEG coagulation indices when PRP were compared to PPP samples.

Conclusions

In conclusion, there exists a significant difference in platelet yield amongst the tested commercially available systems.

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