

Autologous Platelet Gel in Coronary Artery Bypass Grafting: Effects on Surgical Wound Healing

See N. Vang, CCP;*† Chad P. Brady, MPS, CCP;*† Kevin A. Christensen, MPS, CCP;*† Keith R. Allen, MD;‡ John E. Anderson, MD;‡ Jack R. Isler, MD;§ David W. Holt, MA, CCT;† Lynette M. Smith, MS¶

**Department of Perfusion Services, Mercy Medical Center, Sioux City, Iowa; †Clinical Perfusion Education, School of Allied Health Professions, Omaha, Nebraska; ‡Department of Cardiovascular and Thoracic Surgery, Mercy Medical Center, Sioux City, Iowa; §Department of Anesthesia, Intensive Medical Services of Siouxland, Mercy Medical Center, Sioux City, Iowa; ¶Department of Preventive and Societal Medicine, University of Nebraska Medical Center, Omaha, Nebraska*

Abstract: Stimulating the body's natural healing at the cellular level can be achieved through the application of growth factors located within platelets. Once combined with a mixture of calcium and thrombin, this substance, now referred to as autologous platelet gel (APG), can be applied to surgical wound sites for patients undergoing cardiac surgery. The purpose of this study was to examine the effects of APG on surgical site infection, post-operative pain, blood loss, and bruising. After 30 mL platelet-rich plasma (PRP) was processed, 10 mL PRP was distributed on the sternum after re-approximation and 7 mL PRP before skin closure. Ten milliliters PRP was used on the endoscopic leg harvest (EVH) site. The remaining 3 mL was sent to the laboratory for hematologic testing. Both the control (CTR) and treatment (TRT) groups were well matched, with the exception of ejection fraction and pre-operative platelet count, which was sig-

nificantly higher in the TRT group. Average platelet count yield was $4.2 \pm 0.5 \times 10^3/\text{mCL}$, white blood count (WBC) yielded $1.9 \pm 0.7 \times 10^3/\text{mCL}$, and fibrinogen yielded $1.2 \pm 0.2 \text{ mg/dL}$ above baseline. There were no deep or superficial sternal infections. However, one patient from each group did experience a leg infection at the EVH site, which occurred after hospital discharge. More patients in the TRT group experienced less pain on post-operative day (POD) 1 and at the post-operative office follow-up. Blood loss and bruising was less in the TRT group on POD 2; however, there was no statistical significance. The application of APG seems to confer beneficial effects on pain, blood loss, and bruising. However, further studies with a greater sample size are needed to power significant differences. **Keywords:** growth factors, autologous platelet gel, surgical site infection, pain, nociceptors, bruising. *JECT. 2007;39:31-38*
