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THE EVOLUTION OF PATIENT BLOOD MANAGEMENT PROGRAMS IN AORTIC VALVE SURGERY: WHAT IS THE ULTIMATE FRONTIER?

Kevin McCusker¹, Serdar Gunaydin², Steve Singh³; New York Medical College, Valhalla, New York¹; Department of Cardiac Surgery, University of Health Sciences, Ankara-Turkey², Brigham and Women's Hospital, Boston, MA³

Kevin.McCusker@HCAHealthcare.com

Presented by Dr. Serdar Gunaydin

New York Medical College, Valhalla, New York¹; Department of Cardiac Surgery, University of Health Sciences, Ankara-Turkey², Brigham and Women's Hospital, Boston, MA³

Key Words: Patient Blood Management; Minimally Invasive Surgical Procedures; Aortic Valves; Minimally Invasive Extracorporeal Circulation

Purpose:

The implementation of a multidisciplinary patient blood management (PBM) program, the goal of which is meticulous surgical and perioperative hemostasis and minimization of blood loss, may therefore contribute to a reduction in transfusion requirements, a decrease in health costs and an improvement in patient outcomes. We compared three different time intervals of aortic valve replacement (SAVR) under different strategies of blood management.

Methods:

This retrospective cohort study included high-risk patients (Euroscore II >5) undergoing aortic valve surgery under different PBM strategies during the period from January 2009 until July 2018 (Table). Patients were matched for age, gender, BMI and STS score: Group 1: (2009-2012) N=247; Group 2: (2012-2015) N=271 and Group 3: (2015-2018) N=234.

Results: The percentage of patients received transfusion and rate are summarized in Figure. Postoperative hemorrhage (Group 1: 775 ± 100 mL, Group 2: 445 ± 50, Group 3: 245 ± 30; p=0.0022), respiratory support duration (11.8 ± 2 / 8.4 ± 2 / 4.4 ± 1 h– p=0.011) and ICU stay (2.2±1.1/ 1.5±1.2 / 1.05±1 days, p=0.045) were significantly better in the Group 3. No difference in mortality and major complications were noted. Stepwise multiple logistic regression analysis demonstrated minimally invasive surgery (OR:4.8), minimized extracorporeal circulation (OR: 3.66) and fibrinogen concentrate (OR:2.3) as leading independent predictors of the reduction in transfusion. Cost analysis demonstrated 3.45% decrease in Group 2 and 3.02% in Group 3 with respect to Group 1(p=0.225)

Conclusions:

Based on available evidence, PBM protocols are likely to be most productive for high-risk cardiac patients. The extent is in significant progress introducing additional measures but cost-effectiveness is still an issue regarding the use of novel Technologies. Studies with higher patient population is still warranted.

References

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	2009-2012 (N=247)	2012-2015 (N=271)	2015-2018 (N=234)
PBM Training of Related Staff	+	+	+
IV Fluid Restriction	+	+	+
Transfusion Log	+	+	+
Revision & Adaptation of PBM Guidelines	+	+	+
Minimized Extracorporeal Circulation	-	+	+
Utilization of Salvaged Blood	-	+	+
Microplegia	-	-	+
Minimally Invasive SAVR	-	-	+
Preoperative IV Iron Supplementation	-	-	+
Fibrinogen Concentrate	-	-	+

