

Case Study: Pulmonary Embolism

Patient Data

Indication for Use: Pulmonary Embolism (Saddle Embolism), Type II Prothrombin blood disorder
Type of Support: RVAD AB5000
Age: 22 **Sex:** Female
Weight: 70 kg **Height:** 66 inches **BSA:** 1.81 m²

Surgical Data

Surgical Procedure: Trendelenberg Procedure, RVAD AB5000 implantation
CPB Time: 139 minutes

IABP was placed after RVAD explanted

Patient Hemodynamics

	Pre-Implant	On-Support	Explant (PO Day #4)
CI:	119/83	99/48	110/65
EF (RV):	10%	30%	50%
CVP:	—	8	14
Creatinine:	1.0	0.8	0.4
Bilirubin:	—	1.19	.62

Anticoagulation

Titrate heparin initiation time: after re-exploration for bleeding, ~17 hours after initial RVAD implant

ACT range: 181-191

Patient will be maintained on Coumadin[®] anticoagulation therapy upon discharge

Implanting Surgeon:

Vincent Scavo, MD, Primary Implant Surgeon Indiana-Ohio Heart/Lutheran Hospital
Jonathan Philpott, MD, 1st assist
William Deschner, MD, 2nd assist

Explanting Surgeon:

Joseph Ladowski, MD, Indiana-Ohio Heart/Lutheran Hospital.

Clinical Consultant: Kim Byrum Chappell

History

On April 24, 2006, Melissa Moser (nee Munn), a 22-year-old college student, arrived at a community hospital via an ambulance with a decreased level of consciousness and shortness of breath. She had previously been treated for pneumonia-type symptoms over the prior two weeks.

Clinical Course

Soon after arrival in the emergency room, Melissa went into cardiopulmonary arrest, requiring mechanical ventilation and cardiopulmonary resuscitation (CPR) along with inotropic support. Subsequently, a palpable pulse and rhythm were obtained. Once the patient was stabilized, she was air-lifted to Lutheran Hospital in Fort Wayne, Indiana, for further evaluation.

Upon arrival at Lutheran Hospital, an echocardiogram (echo) and chest CT were performed. The echo demonstrated left ventricular under-filling and significant right ventricular dysfunction with a mobile element within the body. The chest CT (computed tomography or CAT scan) showed a massive pulmonary embolism in the distal left main pulmonary artery and in the right descending pulmonary artery (i.e., Saddle Embolism).

Operative Summary

The patient was emergently taken to the operating room (OR) by Dr. Vincent Scavo of Indiana-Ohio Heart and placed on CPB. The embolism was removed, and a Greenfield filter was inserted. After weaning the patient from cardiopulmonary bypass (CPB), the right ventricle failed and the AB5000 was placed on the right side

A 32 Fr cannula was placed in the mid-free wall of the atrium with double concentric purse-string sutures with pledgets. For arterial cannulation, a 10mm Hemashield[®] graft was end to side anastomosed to the pulmonary artery. Total CPB time was 139 minutes. Heparin was reversed with Protamine at 25 mg and AB5000 RVAD flows were 3.7-4.1 L/min coming out of the OR.



Post-Operative

Post-Operative (PO) day #1:

The patient experienced a large amount of chest tube drainage, which required a return to the OR to re-explore the chest for surgical bleeding 12-15 hours after she was placed on support. Patient received five units of packed red blood cells (PRBCs), one unit of platelets and one unit of cryoprecipitate. No active bleeding source was identified.

PO day #3:

The patient was extubated.

PO day #4:

Increased right ventricle function was noted and the patient was taken to the OR to evaluate recovery. The patient was weaned in the OR and AB5000 was successfully explanted. Upon removal of the right atrial Abiomed cannula, there was a very large clot noted around the cannula and in the right atrium requiring removal before weaning from CPB. Subsequently, an intra-aortic balloon pump (IABP) was placed. Melissa has been diagnosed with Type II Prothrombin, a condition that can lead to excessive clotting of her blood.

PO day #14:

Melissa was discharged home.



Melissa Munn on her wedding day, only months after recovering the function of her heart with the AB5000™ Circulatory Support System. She graduated from Taylor University a month following her recovery and married shortly after that. She is now Mrs. Melissa Moser.

“When they weaned me off the RVAD my heart started working which was amazing. A nurse said she had never seen an operating room where everyone had tears in their eyes,” says Melissa Moser.