

## Case Study: PCCS with LVAD BVS 5000

### Patient Data

**Indication for Use:** Post-cardiotomy cardiogenic shock (PCCS)  
**Type of Support:** LVAD BVS<sup>®</sup> 5000 **Age:** 49  
**Sex:** Female  
**Weight:** 170 lbs **Height:** 5' 4" **BSA:** 1.7m<sup>2</sup>  
**Blood Type:** A positive

### Surgical Data

**Surgical Procedure:** CABG x 4  
BVS 5000 LVAD implant  
**CPB Time:** 275 minutes  
**Cross Clamp:** 121 minutes

### Patient Hemodynamics

	Pre-Implant	On-Support	Explant (PO Day #10)
<b>CI:</b>	0.5 - 1.1	2.7 - 2.9	2.8
<b>EF:</b>	5%	30%	45%
<b>MAP:</b>	40	60 - 80	78
<b>PAD:</b>	32	19	16

### Organ Function

**Liver:** Elevated liver enzymes  
**Renal:** Creatinine level increased to 3.8  
**Pulmonary:** Adult Respiratory Distress Syndrome (ARDS)  
**Extubated during support:** No

### Inotropic and Vasopressor Support

**Pre-implant:** Dobutamine, Primacor<sup>®</sup>, Levophed<sup>®</sup>, Norepinephrine and Epinephrine drips

**On Support:** Vasopressin<sup>®</sup> at 0.3 – 0.6 units/min, Dobutamine at 7.5 mcg/kg/min, Primacor at 0.5 mcg/kg/min

**Post-support weaning:** Patient was on Primacor Primacor at 0.375 mcg/kg/min x 5 days and then did not require any further inotropic or vasopressor support

### Anticoagulation

**Blood products in OR:** 4 packs of platelets, 4 units of cryoprecipitate, 8 units of packed red blood cells (PRBCs), 10 units of fresh frozen plasma (FFP)

**Blood products post-operative:** 24 packs of platelets, 28 units of PRBCs, 20 units of FFP, 8 units of cryoprecipitate

**Anticoagulation post-op:** Heparin reversed with Protamine in the OR. Multiple doses given in the CVICU due to bleeding. Diagnosed with HITTS, Refludan started for anticoagulation. Activated Partial Thromboplastin Time (aPTT) remained between 70-90 seconds.

**Surgeon:** Dr. Ed Owen, Methodist North Hospital, Memphis  
**Clinical Consultant:** Scott Arthur

### History

In March, 2001, Janie Adkins, a 49-year-old wife and mother of 13-year-old daughter Dana, began having intermittent episodes of jaw pain, arm numbness, back pain and dyspnea on exertion that progressively worsened. She had a strong family history of coronary artery disease (CAD).

Janie Adkins' symptoms began one year prior to admission. Multiple cardiac evaluations were performed by her family physician with normal results.

On March 13, 2001 she underwent a cardiac catheterization that showed multi-vessel CAD with a normal left ventricular ejection fraction.

An elective coronary artery bypass grafting (CABG) surgery was scheduled two weeks after her catheterization on March 26, 2001.

### Operative Summary

Adkins was taken to the Operating Room (OR) on March 26 by Dr. Ed Owen. The patient was placed on cardiopulmonary bypass (CPB) for a CABG x 4. The operative course was uneventful.

When preparing to move the patient to the Cardiovascular Intensive Care Unit (CVICU), she experienced acute ST segment elevation, hypotension, heart block and subsequent cardiac arrest.

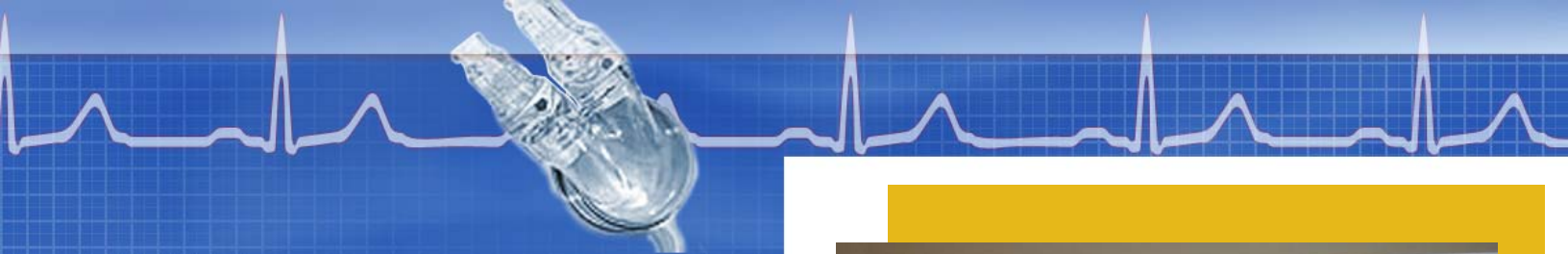
The patient was emergently placed back on CPB with global cardiac failure noted upon re-entering the chest. White thrombus was found at anastomosis sites of all four grafts. Thrombectomies were performed to all grafts, and a new graft bypassed to the distal circumflex.

Patient continued to be hypotensive with ventricular ectopy noted. High doses of Primacor, Levophed and Amiodarone were started accompanied by the insertion of an intra-aortic balloon pump (IABP), showing little improvement in cardiac condition.

After several attempts to close the chest, the decision was made to place patient on an Abiomed BVS<sup>®</sup> 5000 ventricular assist device (VAD).

A 32 Fr. atrial cannula was inserted via the inter-atrial groove with the 10 mm Hemashield<sup>®</sup> arterial cannula end-to-side anastomosed to the ascending aorta.

*For additional information, please refer to the Instructions for Use (IFU) found at [www.abiomed.com/products/ifus.cfm](http://www.abiomed.com/products/ifus.cfm).*



## Post-Operative

Patient admitted to CVICU with LVAD flows of 5.0L/minute.

### **Post-operative Day (PO Day) #1:**

The patient remained unstable hemodynamically due to bleeding. Chest re-explored for bleeding. Multiple blood transfusions given along with clotting factors. High dose inotropic support was continued with Levophed and Primacor in addition to vasoactive support with Vasopressin and Neosynephrine. Multiple doses of Protamine were given.

### **PO Day #3:**

The patient was returned to the OR for bleeding and re-exploration of her chest. She was diagnosed with Heparin Induced Thrombocytopenia Thrombosis Syndrome (HITTS). Recludan (Lepirudin) was initiated for anticoagulation.

Postoperatively the patient had evidence of multi-system organ dysfunction, including: acute renal failure, “shock liver” and adult respiratory distress syndrome with respiratory failure. She was seen by multiple physician consultants and successfully stabilized with aggressive diuresis using an intravenous Lasix infusion, early nutritional support and extended mechanical ventilatory support with high positive end expiratory pressure (PEEP).

### **PO Day #4:**

The patient was awake and following commands.

### **PO Day #10:**

The patient was taken back to the OR for weaning trial of the LVAD BVS Blood Pump. She was successfully weaned and explanted. An IABP was inserted. She returned to CVICU following procedure.

On June 8, 2001, Janie Adkins was discharged from Methodist North Hospital and transferred to HealthSouth Rehabilitation Hospital. She underwent extensive rehabilitation therapy before being discharged home.

Janie Adkins returned to Methodist North Hospital for a Celebration of Life party on Friday, February 23, 2007, nearly six years after her hospitalization with mechanical circulatory support. At the Celebration of Life party, Janie’s



Janie Adkins, Dr. Ed Owen and Janie’s daughter Dana.

***“I am so thankful to God and that Abio-med device. The past six years I have gotten to watch my daughter grow up and be such an active part of her life. Every day is a gift!” says Janie Adkins***

doctor, Dr. Ed Owen presented Janie’s case study, while honoring her native heart recovery following refractory cardiogenic shock. Dr. Owen also highlighted current statistics and trends in women’s heart disease. Many of Janie’s caregivers were surprised to learn that heart disease is the number one killer of women and that more women die of heart disease than men every year in the United States. The party was a huge success and attendees were surprised by how healthy Janie appeared.

## **Quote of the Month**

“Janie is a testament to the fact that patients who experience profound cardiogenic shock can achieve myocardial recovery and long term survival if given the opportunity to be placed on circulatory support,”

—Ed Owen, MD

Cardiothoracic Surgery

The Owen Cardiovascular Clinic, Memphis