The American Academy
of
Cardiovascular Perfusion

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Fall 2024

The Academy Newsletter

Inside this issue

Message from the AACP President

I turned 50 this spring. "Wow – half a century.....", I was quickly reminded of by a colleague (and friend) not too long ago. I graduated from Perfusion School in 1999. Throughout the 25 years of my career many things have changed, and many have remained a comfortable consistency. I started my career in 1999 not knowing what the American Academy of Cardiovascular Perfusion truly was but found out quickly. I worked at a hospital in which the Academy was richly engrained into our department. When I reflect on the deep roots of the Academy, I am in awe that it started just five short years after I was born, with its first meeting the following year.

This year's American Academy of Cardiovascular Perfusion will mark the 46th annual meeting of the society. The Academy has withstood controversy, tough times, and a global pandemic. The AACP has maintained dignity and pride with how we have served the perfusion community through "the encouragement and stimulation of research and study to increase knowledge of cardiovascular perfusion". That is what we are built on. That is the constant. We honor tradition first and then find ways to continue the tradition and build bigger.

Editor

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I distinctly remember the first fireside chat I moderated at an Academy meeting, and the first podium talk I gave as well. I was terrified. When I finished, I still had a bit of fear in me, but boy was I excited, and boy was I proud. My chiefs at the time encouraged me to go outside of my comfort zone and present at the meeting. I pushed back, but finally they convinced me and helped me. All of them. They practiced with me and gave me every pointer they had. And then it was a little less scary. The following year when I presented at the annual AACP conference yet again, I was just as proud, and it became less scary than the first time.

For anyone out there who are students, new to the Academy, members of the Academy, or just thinking about checking it out, I have shared this experience to show you all what a welcoming place the Academy is. New perfusionists as well as senior perfusionists all attend the annual AACP meeting, and quickly come to mingle. There are the original members at the meeting who love telling their stories and talking to the new guys. Preconceived notions are always in the mix when we enter the unknown for the first time, but any lines that existed are quickly erased. There are experiences unique to the Academy that everyone loves, and foster the collegiality: the Sponsor's workshop, the Fireside Chat's, and the new friendships.

As we approach meeting season, I would like to extend an extra welcome to everyone. Come check it out (and ski a little bit too)! I have no doubt that those who attend will instantly recognize the blocks on which the American Academy of Cardiovascular Perfusion was built upon, find a camaraderie with those in attendance, and want to continue to build the future that has yet to be defined, knowing where we have come from.

Allison Weinberg
AACP President

Lilly Tran, EMT-P

Perfusion Student
School of Perfusion Technology
The Texas Heart Institute
Houston, Texas

Lilly has been a paramedic for five years, providing critical care in emergency situations. She is now expanding her expertise as a perfusion student, focusing on advanced cardiovascular perfusion techniques at Texas Heart Institute.

Pre-Hospital ECMO Initiation and Transport: A Case Report

Abstract
This case report details one of the first pre-hospital initiation and transport of Extracorporeal Membrane Oxygenation (ECMO) in North America. The patient, a 65-year-old male, experienced a witnessed cardiac arrest with immediate bystander compression-only CPR. This report discusses the logistics, challenges, and outcomes of initiating ECMO in a pre-hospital setting.

Introduction
Pre-hospital care refers to the medical assistance provided before a patient arrives at the hospital, typically through emergency medical services (EMS). This includes bystanders, police officers, firefighters, EMTs, and paramedics, and sometimes nurses or physicians. Extracorporeal Membrane Oxygenation (ECMO) is a critical care technique used to provide prolonged cardiac and respiratory support to patients whose heart and lungs are unable to provide an adequate amount of gas exchange or perfusion to sustain life. Traditionally, ECMO is administered in hospital settings, but advancements have made it possible to initiate ECMO pre-hospital.

ECMO Overview
ECMO involves perfusing organs from outside the body, using a device capable of exchanging CO2 and O2. Pre-hospital ECMO refers to implementing this technique outside the hospital, significantly enhancing critical care capabilities during emergencies.

Case Presentation
EMS Dispatch: A 65-year-old male experienced a witnessed cardiac arrest and immediate bystander compression-only CPR. The patient had a past medical history of Type 2 Diabetes and smoking. History was obtained from the patient's family members, who also activated EMS. The resources dispatched included an engine company, paramedic rescue, paramedic transport unit from Ambulance Service (AS), and a pre-hospital ECMO (P-ECMO) crew.

ECMO Resources: The ECMO-1 team was comprised of a critical care physician, two paramedics trained in cannulation assistance, and a second physician who arrived separately. Equipment included an expandable metal table, Getinge Maquet Rotaflow hand-crank, Getinge Quadrox oxygenator, ECMO Medline pack, cannulation kit, and a small ultrasound device.

On Scene: The patient was initially noted to be in ventricular fibrillation (v-fib) and was shocked to a sinus rhythm but returned to v-fib. Despite multiple defibrillation attempts, doses of epinephrine and amiodarone, and a protected airway, the patient remained in refractory v-fib. The patient met the inclusion criteria for ECMO: immediate CPR, no history of liver/kidney failure, advanced cancer, prior stroke, bleeding disorders, or sepsis, and initial rhythm of v-fib.

ECMO Set-Up and Initiation: The ECMO team utilized a "7-Layer Bean Dip" technique for cannulation, a step-by-step method developed to facilitate pre-hospital ECMO initiation. Cannulation involved micro-puncture kits and dilators for femoral arterial and venous access, bilateral Amplatz wires, and 15 and 25 French femoral arterial and venous cannulas respectively.
Transport: The patient was hand-cranked to the hospital at 3000 RPMs with a flow rate of 4.5 LPM. Good color change was noted, and mean arterial pressure (MAP) was maintained at 50-60 mmHg.

Hospital Arrival: Upon arrival, the patient was switched from hand-cranking to the Getinge Maquet Rotaflow Device with the help of a perfusionist. The total pre-hospital time was 72 minutes, with ECMO-1 on scene for 37 minutes. The hospital's assessment included a CT scan, EKG, and transfer to the cath lab for a stent placement in the LAD. The patient was admitted to the CV ICU and placed on a cooling protocol.

Discussion

The successful initiation and transport of ECMO pre-hospital highlight the potential for integrating advanced critical care techniques into EMS protocols. The case underscores the importance of well-trained EMS personnel and the necessity of clear protocols and collaboration between pre-hospital and hospital care teams.

Conclusion

This case demonstrates the feasibility and potential benefits of pre-hospital ECMO initiation and transport. It sets a precedent for expanding the scope of emergency medical services to include advanced life-saving techniques traditionally reserved for hospital settings.

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LUCAS Device
https://www.lucas-cpr.com/clinical_evidence/#:~:text=LUCAS%20has%20documented%20chest%20compression,time%20compared%20to%20manual%20CPR

ECMO Circuitry
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3742331/#:~:text=ECMO%20involves%20draining%20blood%20from,the%20venous%20or%20arterial%20circulation

Zachary Bixler

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School of Perfusion Technology
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After graduation from Perfusion school in Winter 2024, Zach will be joining a perfusion team in Louisville, Kentucky

Advantages of Washed PRBC Transfusions for Extracorporeal Circulation

Extracorporeal circulation, in its simplest form, is the circulation of blood outside of the body. Different forms of extracorporeal circulation include, but are not limited to: VADs, ECMO, Left Heart Bypass, Cardiopulmonary Bypass, etc. Due to the complex nature of these surgeries and the typical health status of the patients needing them, many people on extracorporeal circulation will need one or more transfusions of donated packed red blood cells. Unfortunately, these packed red blood cells (PRBCs), while sometimes necessary, also come with a host of deleterious effects that can negatively impact the patient. Washing these PRBCs with an autologous cell salvage device however can lessen these negative effects, improve patient outcomes, reduce postoperative complications and decrease overall mortality.

PRBCs and their Storage

Packed red blood cells are red blood cells that have been sequestered from a donated unit of whole blood. PRBCs are prepared by centrifugal separation from the other solid components of whole blood and the plasma. They can be used in many different circumstances but are usually needed to treat symptomatic anemia. By restoring volume, PRBC transfusion will have a direct effect in raising a patient's hemoglobin and hematocrit which in turn will improving the blood's oxygen carrying capacity. Unfortunately, there are quite a few downsides to PRBC transfusion, and many of them arise due to the particular storage strategies of PRBCs and the nutritional additives needed to keep the cells alive during this storage. The average age of transfused PRBCs in the United States is over 2 weeks, however, PRBCs can be stored for up to 42 days per AABB guidelines. To help keep the cells alive during storage, a nutritional additive is used that is composed of citrate (as an anticoagulant), phosphate, dextrose, and ATP. Unfortunately, despite this additive, cell hemolysis still occurs during this extended storage period. When RBCs lyse, they release all their intracellular contents, which include hemoglobin, ATP, potassium, etc.

Another disadvantage to long storage times is the physiological and morphological changes that occur to red cells the longer they go unused. Physiologically, the red blood cells 2,3-diphosphoglyceric acid (2,3-DPG) levels decrease over time. This increases hemoglobin's affinity for oxygen, which then in turn hinders the offloading of oxygen at the peripheral tissues that need it. Morphologically, PRBC size is decreased, deformability is decreased, and friability is increased; all of which can alter blood flow through peripheral capillary beds. These problems are compounded in septic patients with constricted vessels. This poor deformability can cause microcirculatory occlusions and lead to increased tissue hypoxia. This issue is then amplified by the fact that these red cells are already reluctant to give up their oxygen because of the decreased 2,3-DPG levels.

Negative Effects of Transfusing PRBCs

The list of negative side effects from PRBC transfusion is quite extensive and can cause major issues in patients that are already in critical condition. Some of the broader issues with PRBCs are things like transfusion reactions, coagulopathy, infection, hypotension, etc. but there are also more specific issues that arise. When PRBCs are transfused, you are also transfusing the patient with nutritional additives needed to keep the cells alive, as well as some lysed cells and all their intracellular contents. This intracellular content of lysed cells is what negatively impacts the immune system, causes inflammation, increases acidosis, increases lactate and potassium levels, and releases harmful cell free hemoglobin. Hyperkalemia in particular, due to the increase in potassium, is a significant side effect that can cause major problems, including potentially fatal cardiac events. A small elevation in extracellular potassium can cause EKG changes like peaked T waves, loss of P-wave amplitude, prolonged PR interval and QRS duration. While a large elevation can cause ventricular fibrillation or asystole.

Specific Risks for Extracorporeal Circulation

Transfusion of PRBCs during extracorporeal circulation is something that is usually avoided unless absolutely necessary. While on extracorporeal circulation the body is in a controlled state of shock and will have an increased inflammatory response (SIRS), which is a natural reaction. Adding PRBCs to the patient in this state will only exacerbate this response leading to tissue damage/organ dysfunction. PRBC transfusion also has a chance of interfering with normal hemodynamics while on extracorporeal circulation, leading to transient periods of hypotension and coagulopathy. Keeping in mind most of these patients are already in critical condition and usually have some sort of compromised Heart/Lung function like ARDS or TRALI, PRBC transfusion in this case will significantly increase the risk of post op complications. Studies have shown that these patients have worse outcomes as measured by several different parameters, including organ failure, pulmonary complications, length of stay, infection, and mortality.

Washed Transfusions

A washed PRBC transfusion is one that has been spun down and washed with an autologous cell salvage system. A number of different companies produce cell salvage systems (Medtronic AutoLog/Sorin Xtra/Fresenius CATS, Etc.) but they all work in a similar fashion. These machines work by collecting whole blood lost from the patient and, by using a centrifugal system, separate the red blood cells from the whole blood. Once the red blood cells are separated, they can then be washed using a crystalloid solution like normal saline or normosol. This washing process can rejuvenate even the oldest of units. The centrifugal spin, plus the proceeding wash significantly diminishes many of the issues caused by extended storage.

Washed transfusions will have decreased levels of hemolysis, decreased potassium, decreased lactate, decreased microvesicle accumulation, decreased plasma free hemoglobin, decreased osmotic fragility, result in decreased risk of transfusion reactions, and post operative complications, increased hemoglobin and hematocrit and improved patient outcomes. Patients receiving washed PRBCs showed significantly lower levels of inflammatory markers (IL-6, TNF-Alpha, Etc.), had a lower incidence of complications (AKI, respiratory distress, infections), had a shorter length of stay in the ICU/faster recovery, and a decrease in overall mortality. The proven advantages of washing PRBCs before transfusion are extensive and implementing this can be accomplished quite easily in the operating room or ICU setting.

Summary

In conclusion, PRBCs are necessary, especially in emergent situations where the patient may need volume fast. However, they are not without issue and these issues can have significant deleterious impacts, especially on patients that have received these transfusions while on some sort of extracorporeal circulation. Washing these transfusions with a cell salvage device before administering can greatly reduce the unfavorable complications caused by storage and improve patient outcomes. This can be accomplished without significant cost and could be integrated in operating rooms and intensive care units wherever needed.

Failed Total Arch Replacement Graft Due to Prior Radiation Therapy Clinical Case Report

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Zachary Brenner is a fourth-semester Cardiovascular Perfusion student at Emory University. In 2021, he graduated from Louisiana State University with a degree in Biochemistry. He has two years of experience in surgery as an anesthesia technician/perfusion assistant at Ochsner Medical Center in Louisiana. In his free time, he enjoys reading, exercising, and hiking.

CVP-611-1: Clinical application II
Dr. McNair
July 18, 2024

This paper represents my own work in accordance with the School and University regulations.

Abstract

This case is noteworthy due to its demonstration of how external chest wall radiation therapy can adversely affect surgical outcomes, leading to patient mortality. A 58-year-old female presents with worsening chest pain and bilateral lower extremity (BLE) weakness. A CT was conducted, and a subtotal occlusion of the right iliac, left kidney w/infarction, and superficial femoral artery (SFA) narrowing was observed. She was diagnosed with acute thoracic type A dissection extending into the abdomen, later classified as a Stanford type B aortic dissection shown in Figure 1 along with the classifications in Figure 2 (Levy et al., 2023). The patient underwent total arch replacement surgery with antegrade cerebral perfusion through a right axillary arterial approach. This case was unique due to complications related to anastomotic integrity and vessel tissue fragility caused by prior external radiation treatment. The interventions included using artificial and periosteal pledgets and a pericardial patch wrapped circumferentially around the entire aortic Gelweave graft.

Figure 1. Sagittal CT scan of patient descending aorta

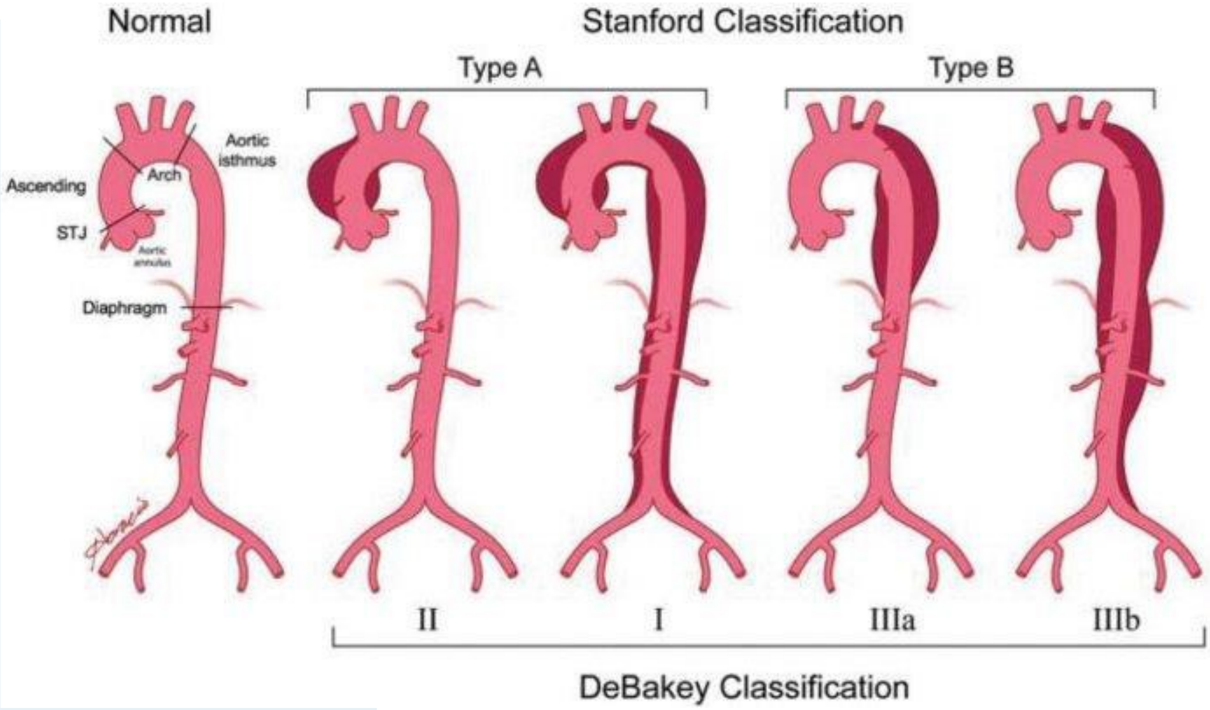

Figure 2. Aortic Dissection Classifications

Introduction

A 58-year-old female presents to the clinic with worsening chest pain and bilateral lower extremity (BLE) weakness. A computed tomography (CT) scan was ordered, and a subtotal occlusion of the right iliac artery left kidney with infarction and superficial femoral artery (SFA) narrowing was displayed. The patient was initially diagnosed with an acute thoracic type A dissection extending into the abdomen. The CT was later classified as a Stanford type B aortic dissection. A total arch replacement procedure occurred, and the patient underwent antegrade cerebral perfusion through a right axillary arterial approach.

This report presents a comprehensive summary of the circumstances under which a significant and noteworthy case occurred, emphasizing the clinical implications of external chest wall radiation therapy on surgical outcomes. The patient underwent a total arch replacement procedure with antegrade cerebral perfusion through a right axillary arterial approach. Despite the procedural efforts, the intervention was notably complicated by the patient's history of chest radiation therapy. This case is being reported to highlight the critical clinical message that prior chest radiation therapy can significantly complicate surgical procedures, leading to adverse outcomes that are often missed or undetectable in clinical trials.

A review of the background literature reveals sporadic documentation of similar complications in patients with a history of radiation therapy, but comprehensive data remains limited (Carlson, et al., 2021). This gap in knowledge underscores the need for increased awareness and further research in this area. Radiation therapy is known to cause fibrosis and vascular changes, which can interfere with surgical procedures by increasing tissue fragility and altering typical anatomical structures, thus raising the risk of adverse outcomes (Ott et al., 2022).

This report aims to provide both practical and educational insights into the disease process and the impacts of radiation therapy on surgical success. It advocates for enhanced screening protocols and tailored surgical approaches for patients with a history of chest radiation, emphasizing the importance of personalized medical care. Doing so aims to improve patient safety and outcomes, highlighting the necessity for a multidisciplinary approach to managing complex cases with prior radiation exposure.

Case Description

Baseline ACT/Blood gas

Once the patient entered the operating room, blood gas was initially run along with an activated coagulation time (ACT). The blood gas device was an ABL90 Flex Plus, and the ACT machine was an HMS Hemostasis Management System. The ACT cartridge used was a heparin dose response (HDR). The patient had a baseline ACT of 117 seconds with a 2.5 g/ml concentration. With the heparin response, the HMS calculated a heparin dose of 24,400 units to be administered by anesthesia. The initial blood gas values of the patient were a pH of 7.35, pCO_2 of 35.8, and a pO_2 of 455.

Point of Care Testing (POCT)/Sweep Gas/Flow Rate

POCT used throughout the case was the HMS Hemostasis Management System and the ABL90 Flex Plus. Additionally, the patient had a body surface area (BSA) of 1.6, placing the perfusionist's 2.0 cardiac index (CI) at an initial systemic flow rate of 3.22 l/min. The systemic flow rate was later increased to 3.52 L/min at a CI of 2.2. Due to the patient's BSA of 1.6, the initial sweep gas was set at 2.0 with an FiO_2 of 80%. Upon cooling, the arterial oxygen saturation increased to 496 while the CO_2 decreased to 33.6. This resulted in the sweep being changed to 1.5 and the FiO_2 to 70%. The resultant gas after the changes yielded an arterial oxygen saturation of 421 and a CO_2 of 36.4. For activated coagulation time (ACT), the initial result after the initial heparin dose of 24,400u was 450 seconds. Due to a lower ACT value, the perfusionist told anesthesia to give an additional 3,000u of heparin. After the additional heparin dose, the second ACT resulted in 623 seconds. Even with this ACT result, perfusion still gave 5,000u of heparin both in the prime and after bypass was initiated. Another blood gas was run during cooling, resulting in a low sodium bicarbonate of 19.1 mmol/L and a base excess (BE) of –5.6 mmol/L. Because of this, 50mEq/ml of sodium bicarbonate was given to the patient through the cardiotomy. This resulted in a $cHCO_3^-$ level of 22.6 mmol/L and a BE of –2.1 mmol/L. After this result, an additional 50mEq/ml of sodium bicarbonate was administered, which yielded a $cHCO_3^-$ level of 24.8 mmol/L and a BE of 0.2 mmol/L.

Cannulation

Since circulatory arrest would be utilized, the patient would undergo antegrade cerebral perfusion (ACP). This case used two arterial reinfusion sites. The first site of arterial refusion was the axillary artery. This site allows for cerebral perfusion while circulation is halted. The second arterial reinfusion site would be connected to the lateral side of the total arch Gelweave graft. The graft includes the three head vessels and a lateral tubing graft extension, allowing systemic perfusion. This second cannula would systemically perfuse the body after the distal anastomosis of the aortic arch graft was secured. The cannula size chosen for the two arterial reinfusion sites was a 22 French Optisite cannula connected to an 8mm Gelweave graft. The drainage site was from the right atrium and was a 29/29/29 French size venous cannula. To prepare the double arterial reinfusion line, the surgical technician connected a Y-connector to two 3/8-inch tubes and added another Y-connector to the end of each tube. The perfusionist primed the tubes with crystalloid, after which the surgical technician disconnected the distal Y-connector.

Cooling

Before surgery, the surgeon and perfusionist discussed temperatures to cool the patient's body and the inflow temperature to the brain during ACP. The surgeon specified that the body would be cooled to 28 degrees Celsius. Once this temperature is reached, the perfusionist would communicate this to the surgeon and say the patient has been adequately cooled and is ready for circulatory arrest. After the patient reached 28 degrees Celsius, the perfusionist waited for the surgeon’s instructions to begin ACP and would begin inflowing cooled blood at 18 degrees Celsius. During the waiting period for the patient to be cooled and the surgeon to prepare for ACP, the perfusionist initiated hard cooling to 18 degrees Celsius to decrease both wait time and time on bypass.

Surgical Approach

The surgical approach involves preparing cannula sites, aortic clamp placement, and the order of steps for anastomoses. As mentioned earlier, the 8mm Gelweave graft connected and inflowed up the right common carotid artery and down the right common carotid artery to flow to the body. Once the patient was systemically cooled to 28 degrees Celsius and the surgeon was ready for ACP, the surgeon specified that the perfusionist's flow would be turned down and begin antegrade cerebral perfusion. Once the perfusionist turned down the flow, the surgeon clamped the right common carotid artery to stop the systemic flow and opened the aorta to begin implanting the Gelweave graft. Cerebral perfusion flowed at 1.61 L/min with a cerebral pressure of 110 mmHg. Flow to the brain at 18 degrees Celsius commenced, and the surgeon began working on the graft. The surgeon's steps to implant the graft were to work from the distalmost portion of the aorta to the most proximal. The surgeon began graft anastomosis just after the curve of the aortic arch as displayed in Figure 3. Once the most distal portion of the graft was completed, the surgeon placed another clamp across the aortic graft just after the left subclavian artery outlet and just before the systemic reinfusion arterial line inlet. This allowed for systemic flow from the cardiopulmonary bypass machine while the rest of the graft was implanted. The surgeon carried on to the next step, the anastomosis of the three head vessels, starting with the left subclavian artery and finishing with the right common carotid artery. After this step, the surgeon finished the final anastomosis of the most proximal portion of the Gelweave graft to the ascending aorta. Reimplantation of the right and left coronary arteries finally took place.

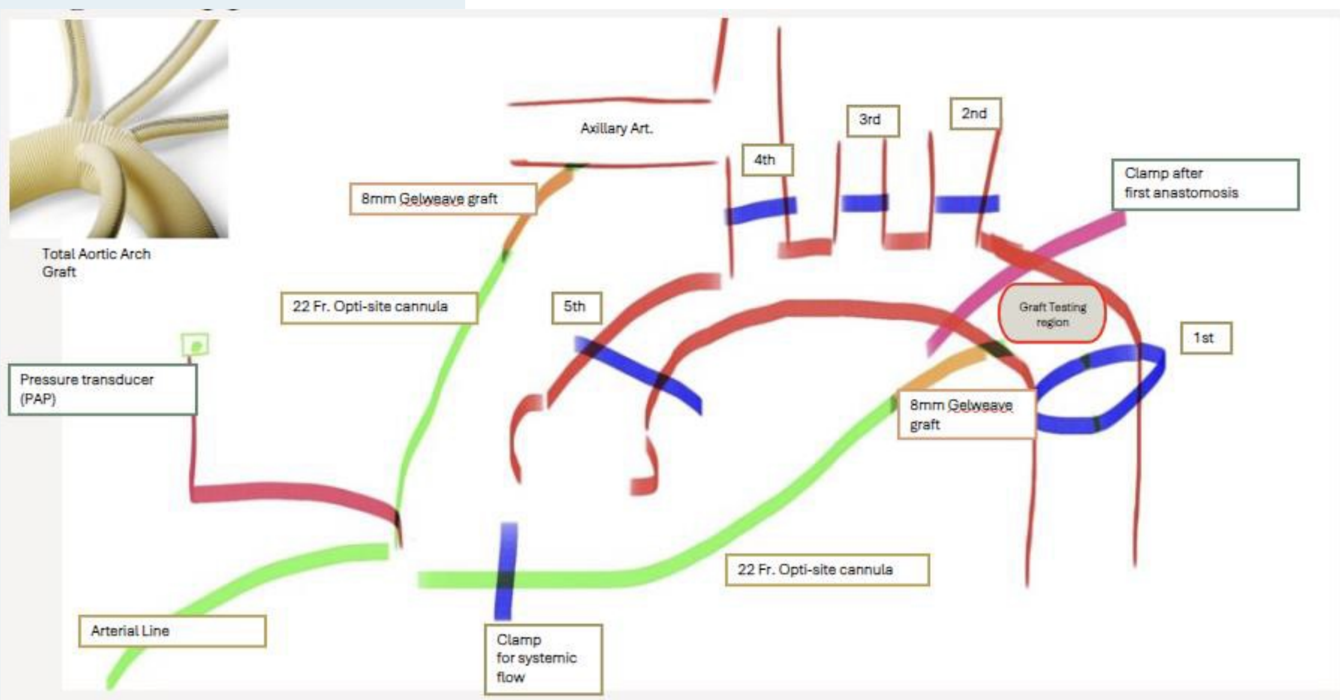

Figure 3. Total Arch Surgical Approach

Complications

During the first anastomosis of the Gelweave graft to the patient's aortic tissue, the native aortic tissue was extraordinarily fragile and could not hold any sutures or pressure. Upon finishing the first anastomosis, the surgeon asked for a pressure test of the graft, but the graft could not hold any pressure, and blood leaked from the suture sites at the posterior portion of the graft. This resulted in the surgeon reconstructing and reinforcing the graft and suture sites with pledgets. The pressure test was conducted thrice more with multiple pledgets added, and the sutures failed each time. The surgeon then took the patient's fibrous periosteal tissue from the sternum to make a tissue pledget. The pressure test was conducted thrice more, and the sutures continuously failed. The surgeon finally removed the entire aortic Gelweave graft and used a new one. The same problem occurred; however, after a few more times, the pressure test was moderately successful. The pressure test, which included switching between cerebral and systemic flowing, occurred twelve times. The final head vessels and proximal aorta were sutured, and the perfusionist began rewarming the patient. During rewarming, the surgeon called the anesthesiologist in the room to get a second opinion on the suture sites. They concurred that the graft would not hold and would continue to leak blood. Because of this, the surgeon asked for a pericardial patch to wrap over the entire aortic graft circumferentially. This was to keep more blood from leaking from the sutures.

Post-operation

The patient's lab results revealed a white blood cell (WBC) count 11,000; factor VII was administered to increase blood clotting. During the post-operative period, the patient's sutures continued to bleed out. This led to hypoperfusion and, eventually, mesenteric ischemia and multisystem organ failure (Monita & Gonzalez, 2023). A CT scan indicated inadequate perfusion to the mesenteric vessels, and an order for a thoracic endovascular aortic repair (TEVAR) was initiated. The TEVAR was to restore perfusion to the mesenteric vessels as shown in Figure 4. During this post-operative period, the patient also continued to become more acidotic and develop severe lactate. Eventually, the mesenteric ischemia became severe to the point that the patient became deceased.

Discussion/Perfusion Application

The reason this is a unique and relevant report stems from the fact that a perfusionist can know that this might happen before the surgery is initiated. The perfusionist would look in the patient chart and see that they have had a mastectomy and external radiation that would cause tissue fragility (Wijeranthe et al., 2021). With this information, the perfusionist can see if there would be potential problems with the patient having fragile tissue and the grafts and sutures not holding. With this knowledge, the perfusionist can initially be more delicate when testing the graft to see if it holds pressure. The perfusionist can also converse with the surgeon to ask to start slowly with a pressure test and gradually build up so as not to burst the sutures. Additionally, the perfusionist would know to wean off bypass more carefully due to the fragility of the sutures. If the perfusionist delivers too quickly or too much volume simultaneously, it can weaken the sutures.

Conclusion

More research needs to be done concerning tissue fragility and perfusion safety. The perfusionist delivers flow and pressure, which tests the integrity of sutures and grafts. Because of this, the perfusionist needs to adopt strategies and methods for supplying adequate flows and pressures tailored to fragile tissue that result from radiation therapy. The perfusionist should also know what patient history could indicate fragile tissue.

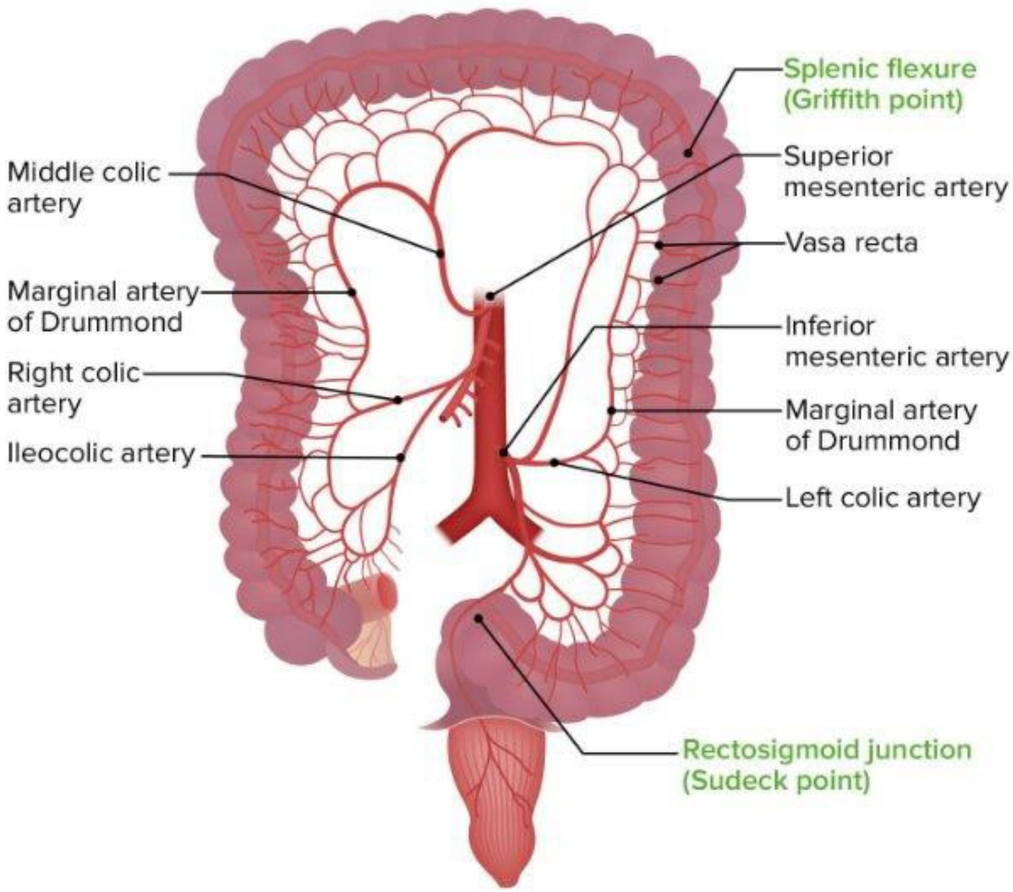

Figure 4. Superior and Inferior Mesenteric vessels (Oiseth et al., 2024)

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46th Annual Seminar of
The American Academy of Cardiovascular Perfusion
Embassy Suites Denver Downtown Convention Center
1420 Stout St, Denver, CO 80202
February 5-8th, 2025
(Tentative Program)

Wednesday, February 5th, 2025

1:00 pm – 5:00 pm	REGISTRATION
2:30 pm – 5:00 pm	**Manufacturers' Breakout Rooms**
5:00 pm – 5:30 pm	Opening Business Meeting *Fellow, Member, Senior, and Honorary Members*
5:30 pm – 7:00 pm	**Special Scientific Panel Session – Pro/Con Debates** *AI vs. Focus on the Patient and Not the Buttons* *Transplant Harvest: Traditional vs. NRP*

Thursday, February 6th, 2025

7:00 am – 10:00 am	REGISTRATION
7:00 am – 7:45 am	Video Presentations and Breakfast
7:45 am – 9:45 am	**Special Scientific Panel Session – Transplants and Controversy** *Normothermic Regional Perfusion (NRP)* *Harvest Pool Challenges* *Legal and Ethical Hurdles* *Panel Discussion*
9:45 am – 11:45 am	**Fireside Chats** *Everything ECMO* *Pediatrics* *Precepting our Future Colleagues* *Simulation: Low and High Fidelity* *Students Only Forum*
11:45 am – 12:45 pm	Lunch
12:45 pm – 2:45 pm	**Special Scientific Panel Session – Future Technology** *AI and Simulation* *AI and Apps* *AI and Perfusion* *Panel Discussion*
2:45 pm – 3:15 pm	Break
3:15 pm – 5:00 pm	**Scientific Paper Session**
5:30 pm – 8:30 pm	**Sponsor's Hands-On Workshop & Reception**

Friday, February 7th, 2025

7:00 am – 10:00 am	REGISTRATION
7:00 am – 7:45 am	Video Presentations and Breakfast
7:45 am – 9:45 am	**Special Scientific Panel Session – Pediatrics** *Overview of Blood Conservation in Pediatrics* *Adequacy of Perfusion in Pediatrics* *Autologous Prime in Pediatrics* *New Spin to Old Techniques in Blood Conservation* *Wrapping it up, What we do with the Blood* *Panel Discussion*
9:45 am – 11:45 am	**Fireside Chats** *Pediatrics and Pediatric ECMO* *AI in Perfusion* *Perfusion Accidents* *Team Dynamics* *Simulation: Low and High Fidelity*
11:45 am – 1:00 pm	Lunch
1:00 pm – 2:45 pm	**Special Scientific Panel Session – ECMO** ECPR *ECPR Survivor* *Pediatric Ambulatory ECMO* *ECMO Resource Management* *Panel Discussion*
2:45 pm – 3:15 pm	Break
3:15 pm – 5:00 pm	**Memorial Session** *Introduction – David Fitzgerald* *Charles C. Reed Memorial Lecture* *Thomas G. Wharton Memorial Lecture (Allison Weinberg)*
6:30 pm	**Induction Dinner** *All Attendees and Guests (pre-registration required)*

Saturday, February 8th, 2025

7:00 am – 10:00 am	REGISTRATION
7:00 am – 8:00 am	Video Presentations and Breakfast
8:00 am – 10:00 am	**Scientific Paper Session**
10:00 am –12:00 pm	**Fireside Chats** *ECMO and VAD Challenges* *Emerging Techniques of Transplant and Organ Procurement* *The Future of Our Career* *Shortage Solutions* *Women in Perfusion*
12:00 pm	Closing Business Meeting *Fellow, Senior, and Honorary Members Only*

46th Annual Seminar of
The American Academy of Cardiovascular Perfusion
Fireside Chat Topics

Thursday, February 6, 2025

In-Person

- **Everything ECMO**-*Collaborate with colleagues about the intricacies of what goes into all parts of ECMO*
- **Pediatrics**- *An open forum to discuss standards of care, challenges, and new practices in the field*
- **Precepting Our Future Colleagues**- *Everything from training new hires to training students, what have you found that works the best/ worst*
- **Simulation: From Low to High Fidelity**- *See what other centers are doing to build and grow this important technique (Combo: chat and simulation)*
- **Students Only Forum**- *A forum to meet and greet for students only*

Webcast

- **Team Dynamics-** *Team challenges and how to deal with them within small, large, and always changing teams*
- **Future of Our Career –** *What does our future career look like with staffing shortages vs flooding of the market, emerging technologies, and coverage of all ancillary technique*

Friday, February 7, 2025

In-Person

- **Pediatrics and Pediatric ECMO-** *What's new, what's not, and what struggles do we face as the specialty moves forward*
- **AI in Perfusion-** *Let's discuss what this looks like, where this is going, and could it go too far?*
- **Perfusion Accidents**- *If you can think of it, it has either happened to someone else or will to you. Let's share and learn*.
- **Team Dynamics-** *Team challenges and how to deal with them within small, large, and always changing teams*
- **Simulation: From Low to High Fidelity-** *See what other centers are doing to build and grow this important technique (Combo: chat and simulation)*

Webcast

- **Shortage Solutions-** *From human resources to material resources*
- **Everything ECMO**-*Collaborate with colleagues about the intricacies of what goes into all parts of ECMO*

Saturday, February 8, 2025

In-Person

- **Emerging Techniques of Transplant and Organ Procurement** -*Emerging techniques, what do you do, how do you do it? Is it better? Or should we keep it simple?*
- **Women in Perfusion-** *Collaborate with some special situations and challenges of other women in the field*
- **Future of Our Career –** *What does our future career look like with staffing shortages vs flooding of the market, emerging technologies, and coverage of all ancillary techniques*
- **ECMO and VAD Challenges: Scenarios and Transports -** *Let's learn from each other as transports (intra and inter hospital) are becoming their own new specialty*
- **Shortage Solutions-** *From human resources to material resources*

Webcast

- **Pediatrics**- *An open forum to discuss standards of care, challenges, and new practices in the field*
- **AI in Perfusion-** *Let's discuss what this looks like, where this is going, and could it go too far?*

Call For Abstracts

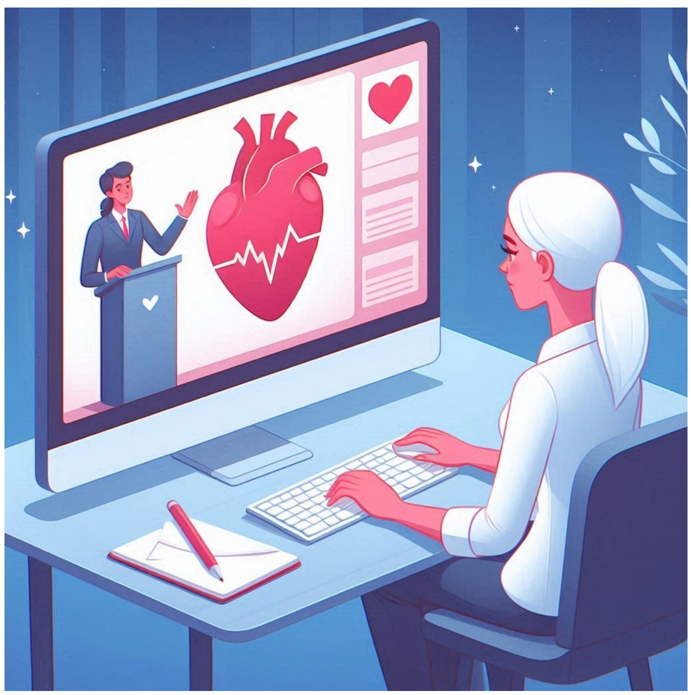
Have you or a colleague been working on a project in the field of Perfusion?

Would you like to share this exciting work with the Perfusion community and possibly get it published in the *Perfusion* journal?

The deadline for abstract submission for the 46th Annual Seminar of the AACP is **October 15th, 2024**. Please submit your abstract to office@theAACP.com using the Abstract Submission Form available on the AACP website.

Live Webcast of the AACP Conference

The AACP will be offering a Live Webcast of the 2025 Annual Seminar in Denver, CO. Virtual attendees will be able to stream all of the General Sessions, as well as have two virtual Fireside Chats each day, exclusively for virtual attendees. Virtual attendees will have the opportunity to again ask questions of the moderators, ensuring qualification for Category I CEUs!



Winter Fun
Pre or Post Conference

Attendees of the 46th Annual AACP Seminar in Denver, CO, who wish to take advantage of their time in Colorado before or after the conference, can now utilize exclusive links for discounted lodging and lift tickets at two world class ski resorts!

Winter Park Ski Resort

“From snowshoeing and ski biking to sunset snowcat tours and tubing, you'll find adventure around every turn (skis or no skis!) at Winter Park. Day or night, there's a way to elevate your winter trip with unique, memory-making experiences”.

Lodging: 30% off all lodging at the resort
Ski Pass Promo Code: corp25dwda
(Good for $109 lift tickets if purchased before 11/1/24, $119 lift tickets after)

Keystone Ski Resort

From skiing, riding, tubing, skating, and playing in the world’s largest snow fort, to dinning at restaurants on the mountain or shopping in town, Keystone has something for everyone!

Lodging: (available ONLY at Keystone Resort)
Reservations: (855) 948-0696
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Important Academy Dates

The ACADEMY ANNUAL MEETING DEADLINES

ABSTRACT DEADLINE	**October 15, 2024**
MEMBERSHIP DEADLINE	**December 3, 2024**
PRE-REGISTRATION	**January 11, 2025**
HOTEL REGISTRATION	**January 11, 2025**
2024 ANNUAL MEETING	**February 5-8, 2025**

2025 Annual Meeting

Denver, Colorado
February 5-8, 2025

Our Host Hotel
Embassy Suites Denver Downtown Convention Center

1420 STOUT STREET, DENVER, CO 80202

Reservations: 1-800-HILTONS

Single/Double Occupancy: $219.00

Remember to mention that you will be attending the Annual Conference of The American Academy of Cardiovascular Perfusion (AACP).

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