

# The Sensor

**A Serpiginous  
Thrombus in Transit  
Through a Patent  
Foramen Ovale:  
Pathophysiology  
and Role of Three-  
Dimensional  
Transesophageal  
Echo**

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## Editorial Board

Otoniel Castillo

Greg Farmer

### ASATT Office

414-295-9220

[asatt@asatt.org](mailto:asatt@asatt.org)

6737 W Washington St

Suite 4210

Milwaukee, WI 53214

[www.asatt.org](http://www.asatt.org)

---

## ASATT Executive Committee/Officers

Greg Farmer, AA, Cert.A.T.

**PRESIDENT**

[president@asatt.org](mailto:president@asatt.org)

Michael Kosanke, Cer.A.T.T.

**PRESIDENT-ELECT**

[president-elect@asatt.org](mailto:president-elect@asatt.org)

Otoniel Castillo, BA, Cer.A.T.T.

**TREASURER**

[treasurer@asatt.org](mailto:treasurer@asatt.org)

Stephanie Monteiro, Cer.A.T.T.

**SECRETARY**

[secretary@asatt.org](mailto:secretary@asatt.org)

# Perspective

## PRESIDENT'S LETTER



As we prepare to close another year, I am honored to share an exciting vision for the future of ASATT and the anesthesia technology profession. Our commitment to **lead, innovate, and inspire** remains steadfast, and I am pleased to announce the development of a new **5-Year Strategic Plan**. This plan will position ASATT to advance

our profession, elevate standards, and provide meaningful resources for our members.

### A New Chapter: Welcoming New Board Members

In alignment with our forward-focused vision, we are thrilled to welcome new members to the ASATT Board of Directors. Their expertise, diverse perspectives, and passion for anesthesia technology will strengthen our ability to achieve our goals. Together, we will continue to advocate for the vital role anesthesia technologists play in healthcare and build pathways to innovation and excellence.

### Revamping the National Conference

After careful evaluation, we have made the difficult decision to pause the **2025 ASATT National Conference**. This hiatus reflects our response to rising costs, which have increased by 30-40% annually, and a concerning trend of declining attendance over the past three years. While we have actively sought input from our members regarding what they value most in a national conference, attendance has not met expectations.

We believe this pause presents a unique opportunity to **revamp, revive, and reintroduce** the ASATT National Conference in a way that better meets the needs and interests of our members. Throughout 2025, we will focus on reimagining the event to ensure it is accessible, engaging, and impactful for a diverse and growing membership.

### Looking Ahead

The coming years will be transformative for ASATT. With our new strategic plan, refreshed leadership, and a renewed commitment to innovation, we are poised to lead anesthesia technology into an exciting new era. We will keep you informed as we make progress on these initiatives, and we encourage you to share your ideas and feedback to help shape the future of our organization.

Thank you for your continued dedication and passion for anesthesia technology. Together, we will advance our profession and inspire the next generation of leaders in healthcare.

With gratitude and determination,

**Greg Farmer Cer.A.T.**

*ASATT Former President*

[president@asatt.org](mailto:president@asatt.org) 

# From the Executive Director



JENNIFER  
RZEPKA, CAE

## GETTING TOWARDS GRATITUDE - EVEN WHEN IT'S HARD

At times, life can seem to lead us through some pretty challenging paths, where heavy trepidation, discomfort, fear and disappointment abounds. Everyone goes through these kinds of times, especially during times of big life changes like unexpected career shifts, familial distress, loss of a loved one or receiving a troubling medical diagnosis. The overshadowing negative thoughts often color the way everything else in life is perceived.

When in this kind of negative mindset, everything in life can seem a little different. A mid-afternoon phone call from a caring family member might feel like a bothersome disruption to the workday. The constant chatter and giggling of a toddler that would have brought a smile to your face now seems irritating and distracting. A bright, crisp, fall day might seem empty, cold and lonely. It may have been easier to read the news and reasonably filter the facts from the feelings without falling into a downward spiral.

It can be difficult to navigate even the most mundane things in life when everything is filtered through these intrusive negative thoughts. Many therapists share tips about practicing gratitude as a way to shift thinking towards a healthier, more positive mindset. There are countless articles online about journaling, writing thank-you notes to people and jotting down daily lists of what you are grateful for. That kind of practice never resonated well with me because personally, writing feels like work. The last thing I want to do when in a dark mood is more work. Still, I have been in spaces where I've needed something to focus on appreciating to break into the cycle of negative thinking. If you ever have felt similar, maybe this will be helpful to you too.

When in a mentally tough space, despite what the psychological community conveys, you don't necessarily need to pick-up a pen. Just start small. When I find myself in a dark headspace, that's exactly what I do, I start small.

First, I think about my legs. I have two. AND I'm fortunate enough that they both work! I do find myself grateful that I am healthy enough for that to be true.

AND, I can see them! I also have two functioning eyes! Sure, glasses are a necessary aid at this point in life, but my eyes do work. I am happy and relieved for that.

That's about all it takes to slowly begin shifting the negative thinking.

I usually end up taking a breath at about that point. Huh. Breathing really does feel good. I'm also grateful that I'm healthy enough to be able to take a breath. A deep breath. Then I take a deep breath and it really does help release physical tension.

That usually starts me moving my back and neck as I take some more deep breaths. The physical movement itself is a helpful way to start appreciating the other parts of my body that also function as designed.

As I start thinking about those things, and the fact that I also have ten functioning fingers that allow me to easily type this out, I often find myself starting to smile and breathe a little easier.

And that's just the beginning. It's just the starting steps of getting more towards gratitude, and shifting to a more positive mindset. Sometimes that's all it takes, and once the negativity cycle is disrupted, a more balanced perspective on life begins to return.

However, on some days I have to let my thinking go much further than my physical being, and I end up having to consciously take stock of where I am, appreciate that there's a roof over my head, running water, food to eat, etc.

Other days I have to get all the way to appreciating some of the things in Maslow's next level in the Hierarchy of Needs.

Steps beyond my physical being and location can get all the way to being grateful for the relationships I've been blessed with, the comforts in my life, and the opportunity of being gainfully employed.

For as much challenge as all those things can bring into life, I start thinking more reasonably about how grateful I am for the lessons and experiences that they have all provided me, and for the growth and understanding I've been able to gather from them.

Writing a list seemed like daunting work, getting towards gratitude and appreciating what exists might be closer than you imagine if you just start small. Small steps. Baby steps. Any steps towards shifting from a negative mindset towards a more positive mindset are still steps in the right direction – no matter how small.

**Jennifer Rzepka, CAE**  
ASATT Executive Director  
[j.rzepka@asatt.org](mailto:j.rzepka@asatt.org)

# 2025 ANESTHESIA TECH WEEK

## March 31 – April 4



*We celebrate and deeply appreciate the invaluable contributions made by anesthesia technicians to patient care!*



## Exciting News! The ASATT Online Store is Now Open!

We're thrilled to announce the launch of the brand-new ASATT Online Store! Visit the store today for t-shirts, pins, and more. [CLICK HERE TO SHOP!](#)

Be sure to check back regularly for new items. Thank you for being a valued member of the ASATT community!

# Spotlights

## MEMBER SPOTLIGHT

### Bob Reno, Cer.A.T.

#### *University of Texas Southwestern Hospital*

Bob Reno is a Certified Anesthesia Technician at UT Southwestern Hospital in Dallas, Texas. He is currently Chief Anesthesia Technician in the Clements University Hospital tower. Bob has been at UTSW for 13 years.

Bob started his career being recruited by a neighbor in 1972. The anesthesia tech that was working at Baylor University Medical Center was returning to college and the anesthesia dept. needed assistance. Dr. John Melvin and Dr. Donovan Campbell wanted someone that could help with lines and was willing to learn. Bob started as a regular technician, helping to start the cases in the morning. He encountered significant pushback from nurses who were not happy with Bob bagging the patient and receiving so much attention and training from the anesthesiologists.

In 1975, Bob began working under Dr. Roy Simpson. Dr. Simpson became the Chief of Anesthesia at Baylor University Medical Center. He instituted multiple policies to enable the anesthesia techs to prepare arterial lines. This was previously performed by the pulmonary team. They were very happy with the new change, seeing that it freed them for other responsibilities.

In those days, the equipment Bullet Monitor, E for M monitor for hearts, Bennet ventilators.

As the years progressed, Bob became familiar and proficient with multiple different monitors, machines and ventilators. There have been many changes and innovations over the 52 years of Bob's anesthesia technician career.

Bob has trained multiple anesthesia techs over the years and



all have progressed past their role as anesthesia techs. Some became anesthesiologists, doctors, nurses, perfusionists etc. One of Bob's favorite aspects of the career, besides the interaction between providers and staff, is the changes in the equipment and facilities over the years.

Bob Reno has been a proud member of ASATT since 1998. That is when he passed the anesthesia technician exam and became a member. Bob helped organize the 10th ASATT Anniversary National Conference in October 1999! Sensor Vol.9 #4. Bob has also assisted in organizing ASATT regional Meetings in the past.

His fondest memory of ASATT is watching the growth of ASATT through the years. He particularly enjoyed the



National Meetings in the past. After the ASATT meeting he would go to the ASA conference and peruse the exhibition hall.

Bob's proudest accomplishment in life has been the fact that he has taught hundreds of techs and watched them grow into different avenues of healthcare. He is happy and content with the enduring legacy he has built over his 52 year career.


Bob's favorite food is country comfort food. Chicken fried steak, fried chicken, fried catfish and all the fixings. Bob has a weekend cabin the country that he enjoys spending his time off. Lumberjacking, hunting, fishing and relaxing in the quiet solitude of the east Texas piney woods.

People would be very surprised to know about Bob is being well known as a proven leader and capable of team building.

In his off time, Bob enjoys going to the farm. Bob enjoys gardening, cooking, baking and traveling. He has been to Australia and San Francisco as well as other places in the world.

Bob's favorite type of music is oldies rock and roll and country. Ronnie Millsap and Merle Haggard are two of his favorite.

His favorite movies are any Clint Eastwood films.

A bucket list item for Bob would be to take a nice road trip through the USA again and enter Canada. AN Alaskan cruise is also one of his journeys for his 50th wedding anniversary. 

## 2025 ASATT CALENDAR

### 2025 WEBINARS

**Quarter 1:** Saturday, March 22, 2025  
12:00 pm – 4:00 pm CT  
Presented jointly by Region 6 & Region 7  
[Register Today!](#)

**Quarter 2:** Saturday, June 28, 2025  
12:00 pm – 4:00 pm CT  
Presented jointly by Region 1 & Region 3

**Quarter 3:** Saturday, September 13, 2025  
12:00 pm – 4:00 pm CT  
Presented jointly by Region 2 & Region 4

**Quarter 4:** Saturday, December 2025  
12:00 pm – 4:00 pm CT  
Presented by Region 5  
(After the Annual Business Meeting)

**Annual Business  
Membership Meeting:**  
Saturday, December 13, 2025  
11:00 am - 12:00 pm CT

### 2025 IN PERSON REGIONAL MEETINGS

**Quarter 1:** Region 5 • Saturday, April 5, 2025 • UTSW Dallas, TX

**Quarter 2:** Region 2 • Saturday, May 2025 • Pittsburgh, PA

**Quarter 3:** Region 6 • Saturday, July-Sept 2025

**Quarter 4:** Region 1 • Saturday, November 2025

### 2025 SENSOR

**Quarter 1**  
February 24, 2025 – Content Due  
March 15, 2025 – Distribution Date

**Quarter 2**  
June 2, 2025 – Content Due  
June 21, 2025 – Distribution Date

**Quarter 3**  
August 18, 2025 – Content Due  
September 6, 2025 – Distribution Date

**Quarter 4**  
November 17, 2025 – Content Due  
December 6, 2025 – Distribution Date

[Submit Your Content to asatt@asatt.org](mailto:asatt@asatt.org)



# 2023 ASATT Annual Report

The 2024 Annual General Membership meeting reflected on ASATT's accomplishments in 2023 and highlighted exciting updates for the future. The Board of Directors' impactful initiatives bring visibility of our profession, proving new opportunities for our members and future generations of anesthesia technicians and technologists. Download the 2023 Annual Report [here](#).

## Inside the 2023 ASATT Annual Report

### • National Conference Update

The ASATT National Conference has always been an important tradition, offering education, networking, and professional growth. After much consideration, the ASATT Board of Directors made the decision to place the National Conference for 2025 on hiatus. This decision was not made lightly and was driven by rising costs—up 40-50%—and declining attendance in recent years. This pause allows for a reimagining of the conference, better serving ASATT members with accessible and impactful educational opportunities to ensure a sustainable and meaningful future for the society.

### • Regional Meetings and Increasing Visibility


ASATT is pleased to announce the return of in-person regional meetings in 2025, aimed at attracting new professionals to the field and strengthening connections with hospital management and administration. These meetings will include hands-on technical workshops, educational sessions, and opportunities to gather valuable feedback to enhance the National Conference. Regional meetings will foster a stronger sense of community, increased engagement, and advocacy within the profession.

## Five-Year Strategic Plan

ASATT's Five-Year Strategic Plan (2025-2030) outlines key goals for the continued growth and success of the society and the profession:

1. Placement on the ASA Care Team Definition: Advocate for the role of anesthesia technicians and technologists to be elevated from the appendix to the main ASA care team definition, recognizing their critical contribution to patient care.
2. AORN Liaison for the Board: Establish a liaison with the Association of periOperative Registered Nurses (AORN) to

strengthen collaboration and enhance visibility within the perioperative space.

3. Increased Certification Numbers: Increase the number of certified anesthesia technicians and technologists through targeted outreach and educational initiatives.
4. Grassroots Advocacy: Strengthen advocacy efforts by growing state component (chapter) societies, expanding state components (chapters), and providing ASATT members with a stronger voice at the state and local levels.
5. Robust Committee Structure: Develop a robust and structured committee system to engage members and guide the direction of the society, including the creation of an Educator Committee to support the development of anesthesia technologist programs and expand access to education and professional training. 

**ASATT's 2023  
Annual Report  
is ready!**

▼ **Check it out here** ▼



# A Serpiginous Thrombus in Transit Through a Patent Foramen Ovale: Pathophysiology and Role of Three-Dimensional Transesophageal Echo



LIDA SHAYGAN, DO

**KEYWORDS:** Intraoperative transesophageal echo, serpiginous thrombus, patent foramen ovale, paradoxical embolus, systemic embolization, hypercoagulable state, three-dimensional transesophageal echo

## INTRODUCTION

A patent foramen ovale (PFO) is an embryologic slit like opening between the two parts of the interatrial septum, which allows for communication of blood flow between the left and right atria.<sup>1</sup> While a PFO is usually asymptomatic, its incidence can be as high as 35% in the general population.

A PFO combined with the presence of a thrombus in the right atrium (RA) can lead to potential paradoxical emboli in the systemic circulation.<sup>2,3</sup> In a patient with bilateral pulmonary emboli (PE), a serpiginous thrombus traversing the PFO is a rare condition and carries a high mortality rate. Furthermore, the presence of elevated right sided heart pressures (due to an acute PE) results in right to left shunting across this PFO and an even higher incidence of paradoxical cerebral emboli and peripheral ischemic events.<sup>4</sup>

This is a case report of a patient with bilateral PEs, bilateral renal emboli, and a serpiginous thrombus traversing a PFO, for whom intraoperative TEE guidance led to a difference in intraoperative management and surgical treatment with intracardiac thrombectomy and PFO closure.

## CASE REPORT

A 47-year-old Caucasian female with history of a right uterine leiomyoma, fibroids, bilateral ovarian cysts and bilateral renal cysts presented with acute hypoxic respiratory failure secondary to sub-massive pulmonary embolus. She denied any history of prolonged immobilization,

recent surgery, bleeding disorders, deep vein thrombosis, pulmonary embolism, or clotting disorders. She also denied any history of smoking tobacco, drinking alcohol or using recreational drugs. Upon arrival to the emergency room, she became unresponsive and was intubated for airway protection. A chest computed tomography (CT) with contrast showed bilateral pulmonary emboli with a moderate embolic load and a dilated main pulmonary artery (Image 1). A CT abdomen and pelvis demonstrated a large, right sided, complex ovarian cyst and bilateral renal infarcts (Image 2). The CT head without contrast was negative for an acute intracranial process and lower extremity dopplers were negative for deep vein thrombosis. Given concern for potential endocarditis, the patient was started



**Image 1.** CT chest with contrast demonstrating bilateral pulmonary embolism and enlargement of the main pulmonary artery.



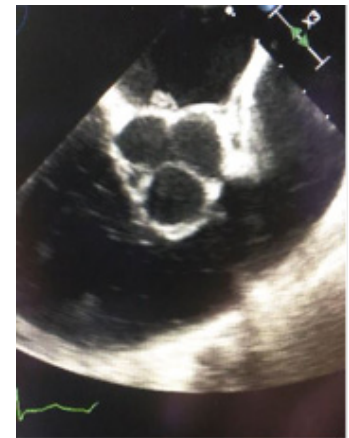
**Image 2.** Bilateral renal infarcts and cysts seen on CT abdomen and pelvis.

on vancomycin and ceftriaxone. TTE was performed by cardiology, which demonstrated pulmonary hypertension, a pulmonary artery systolic pressure (PASP) of 37, RV enlargement, McConnell sign, a hyperdynamic right ventricle, left ventricle ejection fraction of 60-65%, and a poorly



**Image 3.** Multiplane TEE (0°) thrombus appearing to be attached to the lower third of the interatrial septum.

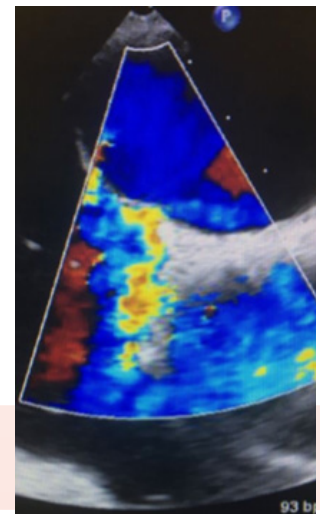
characterized echo-dense structure in the left atrium (consistent with a mass versus vegetation). Physical examination findings were significant for diminished bilateral basilar breath sounds and left lower extremity pedal edema. Laboratory values were normal except slightly elevated troponin levels. Electrocardiography showed a normal sinus rhythm and T wave inversion in inferior leads.



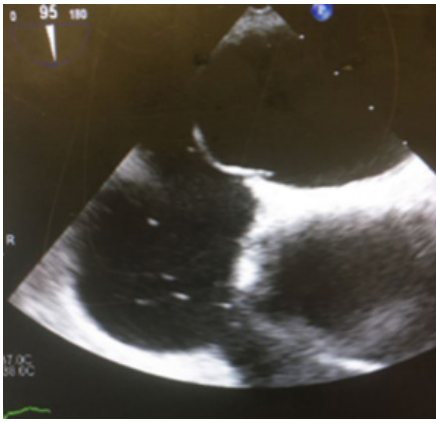
**Image 4.** Multiplane TEE (0°) thrombus appearing to be attached to the lower third of the interatrial septum.

Intraoperative TEE initially revealed a serpiginous left atrial echogenic structure (suspicious for a left atrial myxoma) attached to the lower third of the interatrial septum (Image 3). The structure was mobile and extended to the mitral annulus (Image 3, 4). Although a PFO flap was seen on TEE, color doppler did not demonstrate an inter-atrial communication, and bubble study was negative (Image 5,6).

Upon closer inspection with three-dimensional (3D) TEE, a serpiginous thrombus was



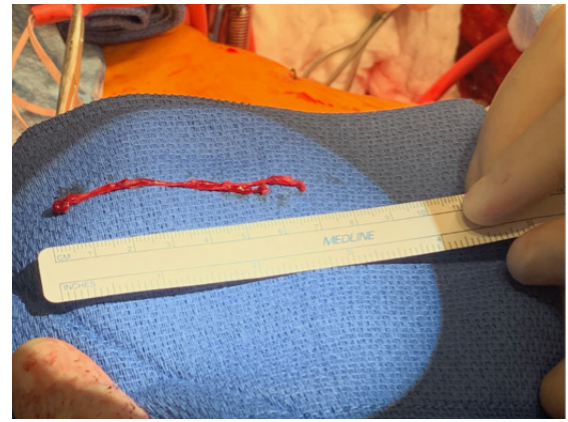
**Image 5.** Color doppler showing lack of interatrial communication



**Image 6.** Bicaval view of PFO flap and negative bubble study.



**Image 7.** 3D TEE showing serpiginous thrombus traversing PFO



**Image 8.** Intraoperative view of extracted thrombus.

revealed traversing a PFO flap and extending from the right to left atrium (Image 7). A seven-centimeter (cm) thrombus was extracted (Image 8), a 1.5cm PFO was closed, and the left atrial appendage was ligated with an AtriClip. Post-operative TTE revealed no evidence of a thrombus, and the patient recovered with no neurological complications. She was discharged home on apixaban and seen by hematology service for workup of a potential hypercoagulable state. Her blood work did not support a diagnosis of genetic predisposition, including negative bloodwork for factor 5 Leiden, protein C deficiency, and antithrombin deficiency. At one month follow-up, TTE revealed a normal left ventricular ejection fraction, normal right ventricular size and function, normal PA pressures, no significant valvular lesions.

## DISCUSSION

Paradoxical embolism is characterized by an abnormal communication between the right side of the heart and the systemic arterial circulation.<sup>5</sup> This diagnosis is made when a source of embolus is caught in transit through an opening, which can be intracardiac (PFO, atrial septal defect, ventricular septal defect) or extracardiac (ie: pulmonary arteriovenous fistula).<sup>6</sup>

### Anatomical Variables

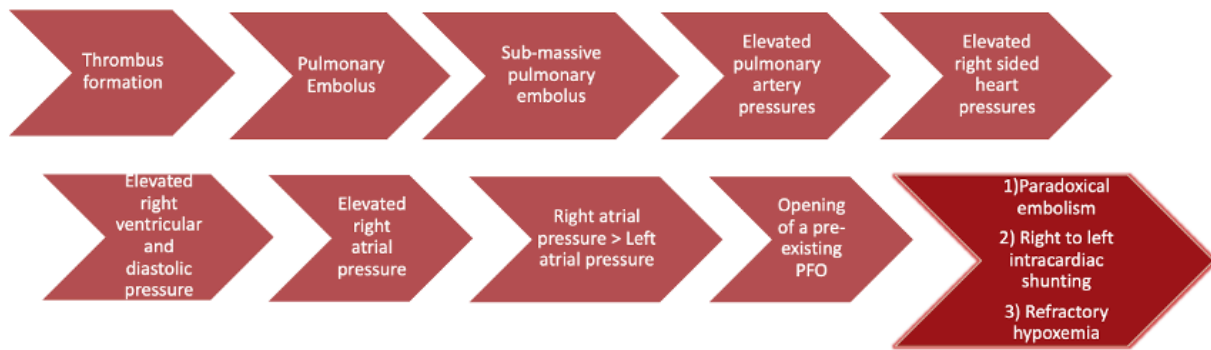
There are a few known anatomic variations that make a patient more susceptible to paradoxical embolization. In patients with a pre-existing interatrial communication, a prominent eustachian valve or Chiari's network will promote forward blood flow from the inferior vena cava toward the PFO.<sup>7,8</sup> This event will then lead to right to left shunting across a PFO and increase the chance of paradoxical embolization.<sup>9,10</sup> An atrial septal aneurysm (ASA), defined as a more than 10mm protrusion of the interatrial septum, is also

associated with the presence of a PFO, as approximately 60% of patients with an ASA have a PFO.<sup>8,11,12</sup> In addition, a PFO seen in a patient with pre-existing ASA tends to be larger and is associated with a higher prevalence of embolic events.<sup>13,14</sup> While our patient's imaging did not reveal a prominent eustachian valve, Chiari's network, or ASA, these anatomic variations are useful to look for on TEE or TTE imaging as they may reveal a higher risk of paradoxical embolization.

The size of a PFO is also an independent risk factor for cerebrovascular ischemic events. According to a clinical study by Schuchlenz et al., a PFO diameter greater than 4mm is associated with higher risk of recurrent strokes.<sup>15</sup> In this patient case scenario, a large PFO size of 1.5cm further increased the magnitude of right to left shunting and risk of an impending paradoxical embolization.

### Pathophysiology

A thrombus traversing a PFO in a patient with bilateral pulmonary and renal emboli is rare, however requires quick intervention and attention as it carries a high mortality, given the risk of an impending paradoxical embolism. A sequence of progressive events explains the mechanism of paradoxical embolization (Figure 1). Initially, thrombus formation and dislodgement lead to sub-massive pulmonary emboli, which in turn cause pulmonary artery dilation and an increase in pulmonary artery pressures. This backup of flow then results elevated right sided heart pressures and right ventricular strain. These hemodynamic alterations then promote higher right atrial pressures, opening of a pre-existing PFO, and increase in right to left shunt. Right to left intra-cardiac shunting as a result leads to not only entrapment of a thrombus in the PFO, but also refractory hypoxemia and paradoxical embolism. Hence, the likelihood of paradoxical



**Figure 1. Sequence of events leading to paradoxical embolization. Thrombus formation and dislodgement lead to pulmonary emboli, elevated right sided heart pressures and opening of an existing PFO. This results in a right to left intra-cardiac shunt, refractory hypoxemia, and entrapment of a thrombus in the PFO.**

embolization and right to left shunt is often higher and widely reported in patients with pre-existing pulmonary embolism.<sup>3,16</sup> Other patient scenarios, which carry a higher risk of right to left shunting through a PFO, include a right ventricular infarction, severe tricuspid regurgitation, or a left ventricular assist device.<sup>17</sup>


Conversely, elevated left sided heart pressures will mitigate the patency of a right to left shunt. In fact, a PFO in patients with left sided heart disease might not be detected, even with TEE, as elevated left sided pressures decrease the presence of an observed right to left shunt.<sup>18</sup>

### Role of 3D TEE

Identifying the inter-atrial serpiginous thrombus on TEE played a vital role in this case since a thrombus traveling through a PFO carries a high risk of systemic embolism and was in this case contributing to the patient's multi-systemic disease process. TEE imaging changed the scope of surgical approach as a PFO closure and intracardiac thrombectomy

was performed. Furthermore, with continuous intraoperative TEE monitoring, there is a greater likelihood of immediately detecting a potential embolization.

This case also demonstrates potential challenges with the use of intraoperative TEE in diagnosing a serpiginous thrombus traversing a PFO. Diagnosis of the serpiginous thrombus, in this case, was made by visualization of the thrombus traversing the interatrial septum using 3D TEE. While a PFO flap was seen in the mid-esophageal bicaval view, color doppler and bubble study did not demonstrate flow through the PFO flap, likely due to thrombus occlusion of the interatrial septum opening.

In this rare case of a thrombus in transit, TTE alone was not sufficient enough in evaluating a right to left intra-cardiac shunt. Multiplanar 2D and 3D modalities on TEE were necessary in correctly identifying the atrial attachment of the clot in relation to the PFO flap and led to a change in surgical 

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# From Murder to Miracles: The Basic Principles of Autologous Cell Salvage and the Bloody History That Led Us Here



**SAMANTHA  
GROSHEK,  
CERT. A.T.T.,  
PBMT**

## INTRAOPERATIVE CELL SALVAGE

Intraoperative cell salvage has become a cornerstone of contemporary surgical practice, significantly contributing to blood conservation and optimizing patient outcomes. The evolution of this technology is intricately connected with the historical challenges and advancements in blood transfusion practices over the centuries. This article examines the historical evolution of blood transfusion, elucidates the fundamental principles underlying cell salvage, and discusses its current applications in both intraoperative and postoperative settings. In understanding the historical trajectory of blood transfusion and cell salvage, we can better appreciate the advancements that have shaped modern surgical practices and continue to inform future innovations.

## FUNDAMENTAL PRINCIPLES

### Collection and Anticoagulation

Blood collection during surgery is achieved through specialized suction tubing, designed to integrate

anticoagulants at the point of collection, channeling the blood into a filtered collection reservoir or cardiotomy reservoir. Given that excessive turbulence from high vacuum pressures can result in erythrocyte destruction, it is critical to apply the lowest suction pressure acceptable to the surgical procedure, typically regulated to 160 mm Hg or less. Using the largest available suction tip is advisable to optimize the collection of pooled blood while minimizing damage to red blood cells. To prevent hemolysis, skimming or suctioning at the blood-air interface should be avoided. Soaked lap sponges, which can retain up to 100 mL of blood, should be rinsed in isotonic solution, wrung out, and the resulting blood-tinged solution should be collected via suction into the cardiotomy reservoir.

The anticoagulant-to-blood ratio must be meticulously titrated, typically to 15 mL of anticoagulant per 100 mL of blood. It is prudent to err on the side of administering excess anticoagulant, as insufficient anticoagulation can lead to clot formation, whereas higher doses pose no significant clinical risk (Waters, 2005). Standard practice involves using 30,000 units of heparin per 1,000 mL of normal saline. However, in patients with contraindications to heparin—such as heparin allergies, antithrombin III deficiency, or a history of heparin-induced thrombocytopenia (HIT)—alternative anticoagulation strategies, such as citrate-based Acid

Citrate Dextrose Solution A or ACD-A or “Citrate: for short, are recommended. ACD-A functions by chelating calcium and inhibiting the initial steps of the coagulation cascade. For patients with compromised hepatic function, administering small doses of calcium may be necessary to counteract citrate toxicity.

### Centrifugation

Blood, a complex fluid comprising various components such as plasma, water, proteins, electrolytes, lipids, erythrocytes, leukocytes, and platelets, is separated by centrifugal force based on the relative densities of these components. Erythrocytes, being the most dense, migrate toward the outer walls of the centrifuge or bowl (Waters, 2005).

### Washing

The washing process involves passing a normal saline solution through the packed erythrocytes, effectively removing

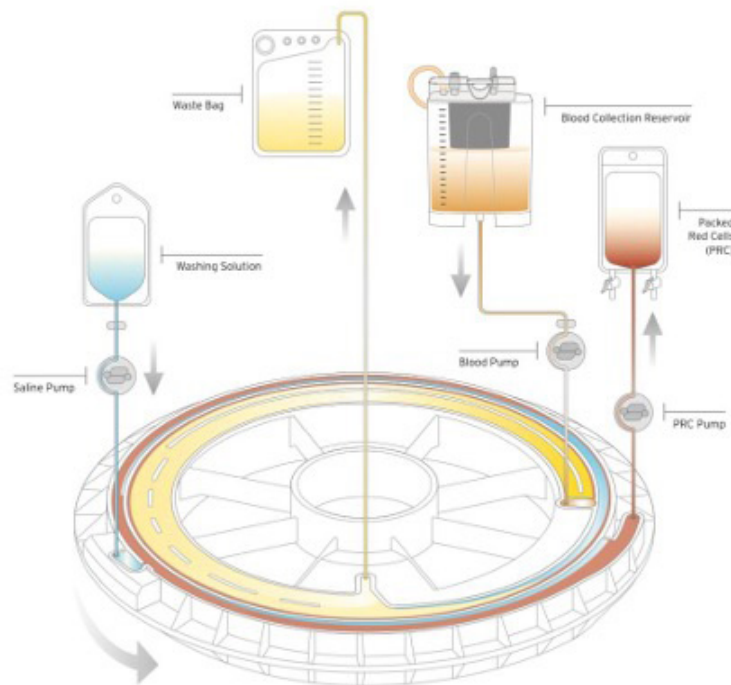
residual debris, agglomerates, lipids, anticoagulants, and free hemoglobin. This step is crucial for ensuring that the reinfused blood is free from harmful contaminants, thereby enhancing patient safety.

### Reinfusion

The reinfusion of concentrated erythrocytes must occur within six hours of processing to maintain cellular viability and clinical efficacy. Blood collected postoperatively should also be processed and reinfused within six (6) hours from the start of collection. The autotransfusionist must visually inspect the final product and take necessary precautions to eliminate the risk of air embolism before transfusion. Direct transfusion from the machine’s reinfusion bag should be avoided when possible. Instead, the collected cells should be filtered into a transfer bag, with air removed or 'burped' before transfusion. A minimum 170-micron blood filter is required for reinfusion, although the use of a 40-micron microaggregate filter is strongly advised to further reduce particulate matter. The final product should ideally exhibit a hematocrit between 50% and 80% (AABB, 2023).

## INDICATIONS AND ADVANTAGES

Autotransfusion offers several advantages, including the elimination of risks associated with transfusion-transmitted infections, transfusion reactions, immunosuppression, and



*Centrifuge disposables in the Fresenius-Kabi CATSmart Autotransfusion system. Image courtesy of Fresenius-Kabi*



alloimmunization. Additionally, it obviates the need for blood typing and cross-matching.

Autologous blood is generally acceptable to patients who refuse homologous transfusion on religious grounds, provided it remains within the closed circuit of their body, meaning it is not separated from the patient's circulatory system during processing. The rapid availability of autologous packed erythrocytes following blood loss, with a hematocrit exceeding 50%, is a significant clinical benefit.

The clinical efficacy of autotransfusion has been well-documented in cardiothoracic and vascular surgeries, liver transplantation, orthopedic procedures, and in the management of ruptured ectopic pregnancies. The following factors may guide the decision to use cell savers: when a patient has been cross-matched for allogeneic blood preoperatively, or when an estimated blood loss of 1,000 mL or the anticipated transfusion of one unit of blood is expected intraoperatively or postoperatively.

Advanced systems now offer plasma sequestration capabilities, allowing for the collection and separate processing of plasma from salvaged blood. This technique is particularly beneficial in surgeries involving significant losses of coagulation factors and plasma proteins, such as liver transplants, major trauma surgeries, and cases involving coagulopathies (Johnson & Brown, 2019).

## CONTRAINDICATIONS

Blood contaminated with agents such as betadine, hydrogen peroxide, distilled water, alcohol, fibrin glue, or collagen-based hemostatic agents should not be collected for autotransfusion. Similarly, surgical site contamination with substances such as meconium, urine, intestinal or gastric contents, bile, or amniotic fluid renders the blood unsuitable for reinfusion. In cases where malignant tumors are present, the use of cell savers may be contraindicated; however, a risk-benefit analysis should be conducted, with the final decision resting with the attending physician (Mynster & Nielsen, 2000). Patients with certain hemoglobinopathies, including sickle cell disease, may also be unsuitable candidates for autologous cell salvage due to the altered rheological properties of their erythrocytes, which may compromise the efficacy of the salvaged product.

## QUALITY ASSURANCE STANDARDS

To ensure optimal clinical outcomes, the American Association of Blood Banks (AABB) has established rigorous

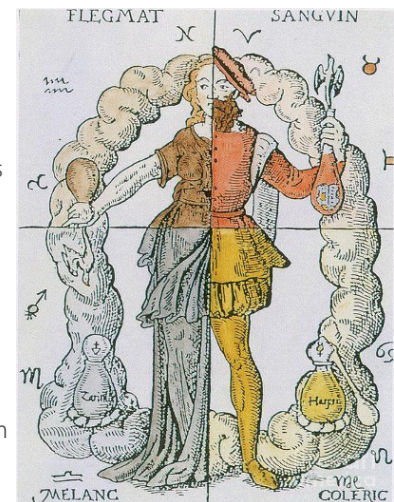
standards. These standards, published as Perioperative Autologous Blood Collection and Administration (AABB, 2023), are designed to ensure the safety and efficacy of cell salvage programs through comprehensive quality assurance protocols. Quality assurance testing encompasses critical aspects such as device performance, sterility, and the quality of salvaged blood. The AABB provides detailed guidelines for device management, staff training, and patient safety. Hematocrit levels should be tested quarterly on each machine in use and by each operator, with acceptable levels ranging between 50% and 80%. While specific standards for wash quality have not been universally established, testing for heparin washout, potassium washout, albumin removal, and free hemoglobin levels may serve as useful indicators.

## FROM HUMORS TO STANDARD OF CARE: TRACING THE EVOLUTION OF AUTOTRANSFUSION

The progression from rudimentary blood transfusion techniques to the sophisticated autotransfusion practices of today exemplifies the intersection of human ingenuity, scientific perseverance, and the often arduous path of medical discovery.

Ancient civilizations, such as the Egyptians, Greeks, and Romans, attributed mystical properties to blood, believing it to be a vital substance. Historical accounts detail how Egyptian royalty used blood baths for rejuvenation, while Roman gladiators consumed blood to enhance strength and stamina.

In 1492, Pope Innocent VIII reportedly received blood from three young boys in an attempt to restore his health, though it is believed this was likely an oral ingestion rather than an intravenous transfusion, as the circulatory system had not yet been discovered (Roets et al., 2019; Lindeboom, 1954). Andreas Libavius, a German physician, is credited with proposing the concept of intravenous blood transfusion in



*The Theory of the Four Humors originated in the works of Aristotle and was developed by Hippocrates. It became a mainstay of medical belief for two thousand years. The Greeks believed that the body was made up of four main components or Four Humors. These humors were blood, phlegm, black bile, and yellow bile. Image credit: Wellcome Collection, London*

1615, predating the discovery of the circulatory system. The first documented description of blood circulation by William Harvey in 1628 laid the groundwork for modern intravenous transfusion practices (Aird, 2011).

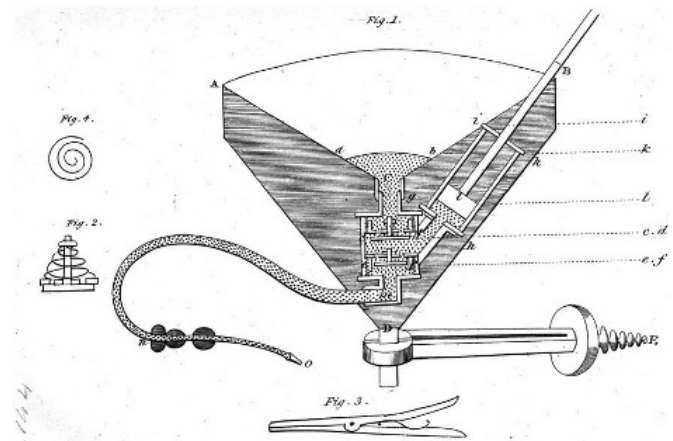
Experiments involving animal-to-human and human-to-human blood transfusions began in the mid-17th century, often with fatal outcomes. The notorious case of Jean-Baptiste Denis, who performed a lamb's blood transfusion on a mentally ill nobleman, resulting in the deaths of both man and lamb, underscores the perilous nature of early transfusion attempts. Denis was arrested after the widow accused him of poisoning her husband, though he was later acquitted (Tucker, 2011). Following this incident and others like it, several European countries prohibited transfusion practices and human experimentation, leading to a hiatus in transfusion-related research that lasted nearly 150 years.

Early animal studies encountered significant challenges with vein-to-vein transfusion due to clotting, prompting investigations into anticoagulation methods. Mechanical approaches, such as "defibrination," involved physically disrupting clots using devices like churns, wire whisks, and sieves. Chemical anticoagulants, including sodium phosphate, sodium bicarbonate, ammonia, paraffin-coated tubes, and hirudin, were also explored. Hirudin, a potent natural thrombin inhibitor, was discovered by John Berry Haycraft in 1884 and is derived from leech saliva. The practice of blending leeches to extract hirudin, prior to the isolation of the compound and advancements in asepsis, led to numerous febrile reactions and documented cases of toxicity and morbidity (Blumberg, Cholette, & Pietropaoli, 2010). The practice of sterilely isolating hirudin and marketing the medicine commercially did eventually occur in the 1950s.

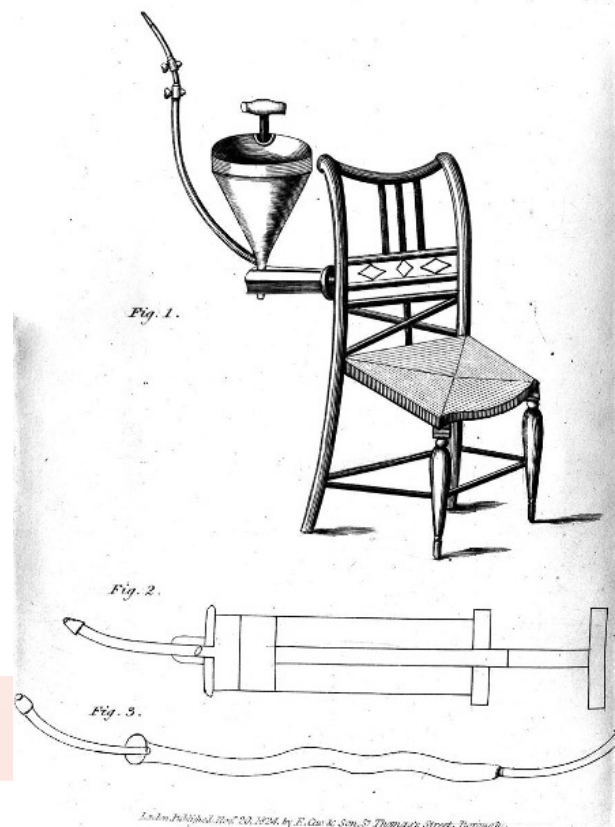
James Blundell, a London obstetrician, is often credited with the first autotransfusion, although this attribution may be inaccurate according to researcher Ashworth, who suggests that Blundell's writings do not conclusively indicate that the transfused blood was autologous (Ashworth & Klein, 2010). Nevertheless, Blundell made significant contributions to the field, publishing numerous articles in *The Lancet* and authoring a comprehensive textbook in 1824 that detailed the equipment, techniques, and adverse reactions associated with blood transfusion. Interestingly, Blundell expressed a preference for male blood donors, citing their lower likelihood of fainting, and emphasized the high risks associated with transfusion, reserving it as a last-resort therapy (Jones, 2003).

## THE FIRST DOCUMENTED AUTOTRANSFUSION

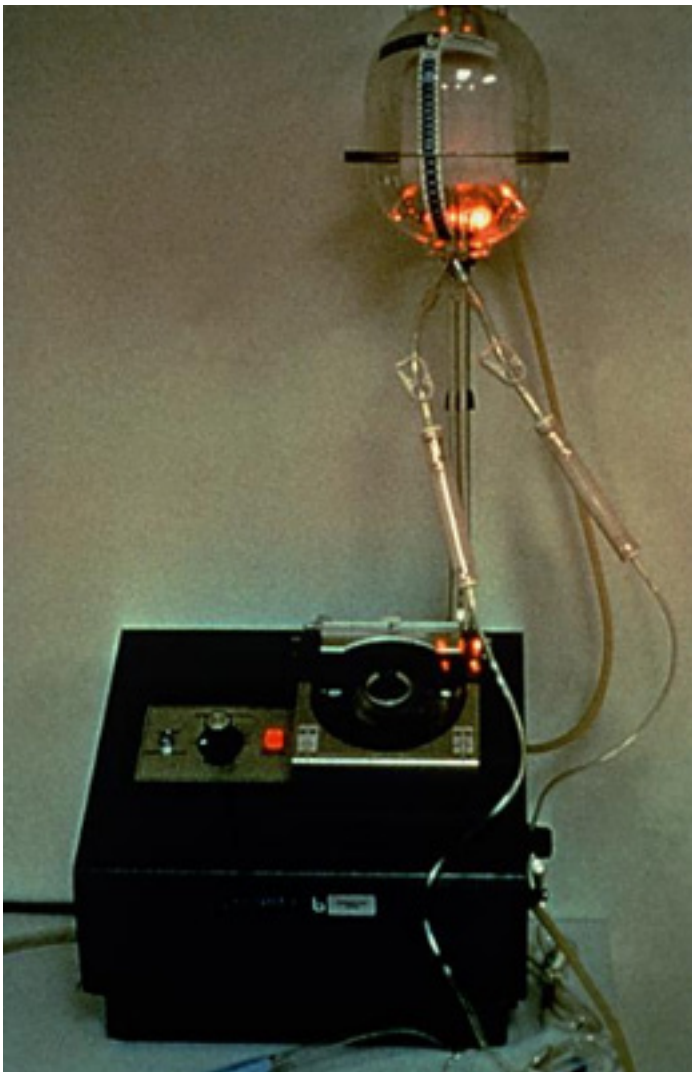
The first documented case of autotransfusion was reported by Dr. William Stewart Halsted in 1883. Halsted described a patient suffering from carbon monoxide poisoning, a common and often fatal condition at the time. Upon the patient's arrival at the clinic, unconscious with a strong pulse, minimal respiratory effort, and dilated pupils, Halsted withdrew blood from a radial artery. He then 'defibrinated,'



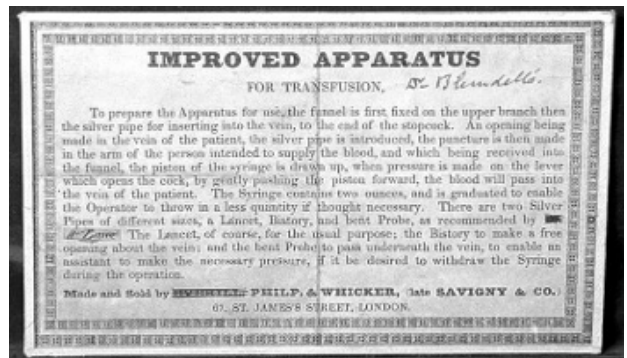
*Cross section of Blundell's Impellor.  
Image courtesy of Wellcome Collection, London.*



*Blundell's Impellor, 1824.  
Image courtesy of Wellcome Collection, London.*



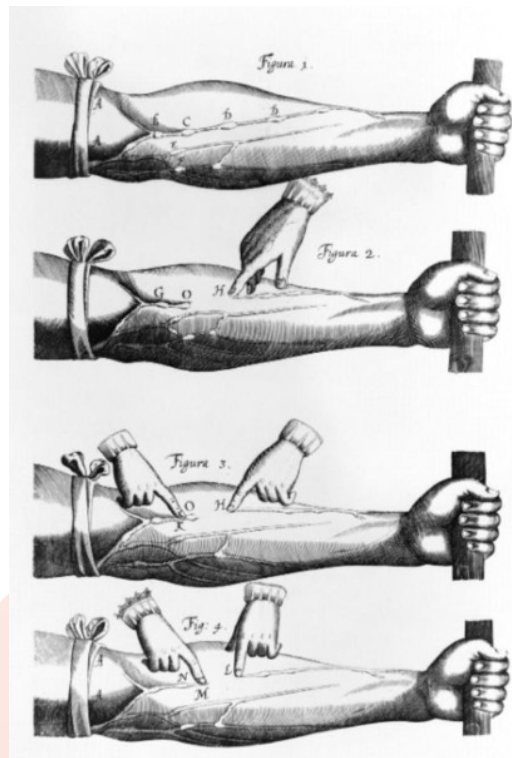
Dr. Klebenhof's Bentley ATS-100, circa 1970. This machine was pulled from the market after deaths associated with air embolism and disseminated intravascular coagulation (DIC). Image courtesy of Wellcome Collection, London.



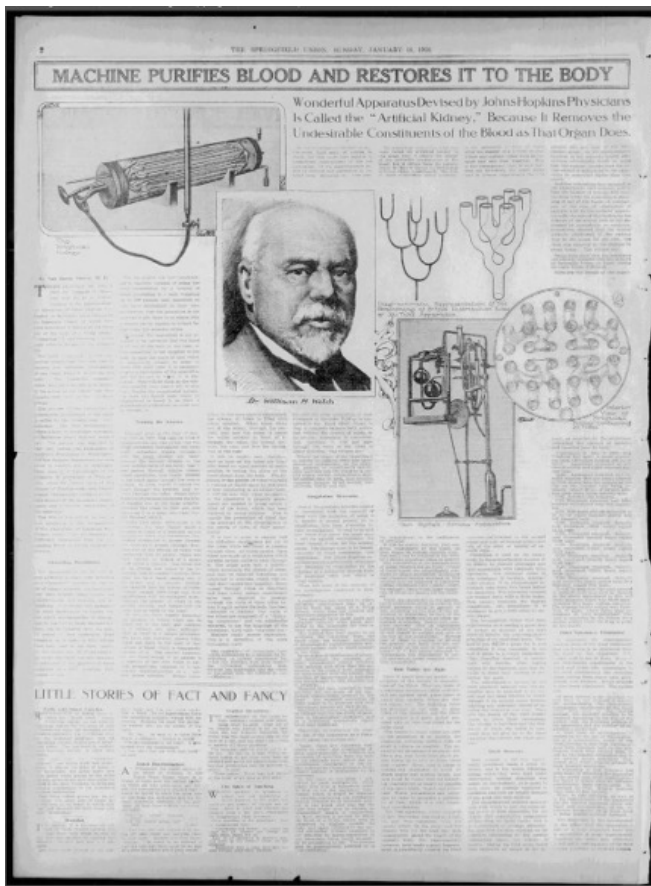
James Blundell's Gravitator. Image courtesy of Wellcome Collection, London.



Early 19th century obstetricians began research of blood transfusion and refusion to save the lives of women dying of perinatal hemorrhage. Image: James Blundell, "Observation on the Transfusion of Blood," *The Lancet*, Saturday, June 13, 1829. Image courtesy of Wellcome Collection, London.



Dr. William Harvey's (1578-1657) anatomical research on his discovery of the circulatory system. Image: Guilielmi Harvei, *Exercitatio anatomica de motu cordis et sanguinis in animalibus*, 1628. Image courtesy of Wellcome Collection, London.



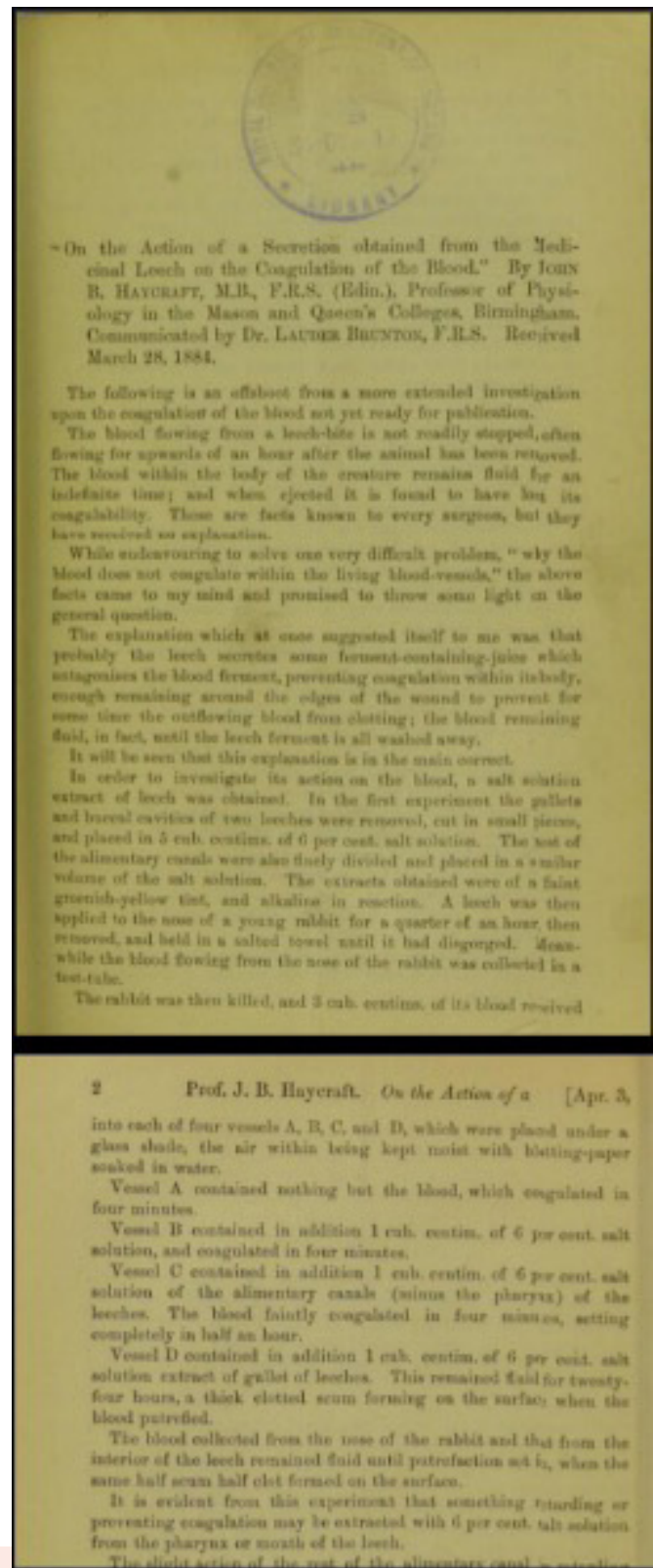
An example of the use of blood collection, filtration, and reinfusion from 1914 using Hirudin. *The Springfield Union*, January 18, 1914. Image courtesy of Wellcome Collection, London.

'strained,' and 'warmed' the blood before reinfusion. The patient showed some improvement, prompting Halsted to withdraw additional blood, which he mixed with donor blood prior to transfusion. The patient regained consciousness 27 hours later and continued to recover over the following six months. Although the precise contribution of the autotransfusion to the patient's recovery remains unclear, the case was considered a clinical success.

During World War II, autotransfusion was employed in 1927 for the first time during abdominal trauma surgery. The surgeon collected blood via suction or "mopping," used citrate for anticoagulation, and filtered the blood through cheesecloth. Between 1914 and 1934, autotransfusion became a common practice for managing significant blood loss in patients with ruptured ectopic pregnancies (Jones, 2003).

## THE EVOLUTION OF AUTOTRANSFUSION EQUIPMENT

In the early 19th century, Blundell developed a device known as the "impellor," which remained in use until the turn of the 20th century. While the equipment has undergone significant



On the action of a secretion obtained from the medicinal leech on the coagulation of the blood / by J.B. Haycraft ; [communicated by Dr. Lauder Brunton]. Public Domain Mark. Source: Wellcome Collection. <https://wellcomecollection.org/works/zrb7xad5>

advancements, the fundamental principles of blood collection, anticoagulation, and reinfusion have remained largely unchanged. By 1885, practitioners were utilizing sterile basins for blood collection, sodium phosphate as an anticoagulant, and syringes for reinfusion. In 1943, Arnold Griswold developed one of the first formal cell salvage devices, which suctioned blood into a bottle containing a cheesecloth filter and anticoagulant before reinfusion. At that time, clinicians had learned to avoid contaminants such as bile, tissue, fat, and bacteria (Tucker, 2011). In 1968, Wilson and Taswell introduced a suction machine with a centrifuge to separate erythrocytes and wash them with normal saline or lactated Ringer's solution. This machine also allowed for continuous reinfusion. Klebanoff and Dyer later added roller head pumps and filtered cardiomy reservoirs to the centrifuge machine, and by 1970, the Bentley Autotransfuser was being manufactured for commercial use in California. Unfortunately, the reinfusion pressure from the roller head pumps led to many fatal air embolisms. Subsequent developments addressed this risk, and by 1976, both Sorenson and Haemonetics had introduced improved cell saver autotransfusion systems.


## FUTURE PROSPECTS

The future of cell salvage technology is promising, with ongoing advancements aimed at enhancing efficiency,

reducing complications, and broadening the scope of application. Innovations include the development of miniaturized and portable cell savers for use in emergency and battlefield settings, integration with real-time blood analysis systems to ensure optimal erythrocyte quality, and the creation of automated systems that further minimize the need for manual intervention. Additionally, research is focused on refining the washing process

to more effectively remove contaminants, thereby ensuring the highest possible quality of salvaged blood for reinfusion.

## CONCLUSION

Intraoperative cell salvage has progressed from rudimentary blood transfusion practices to a sophisticated, life-saving technology in modern surgery. By comprehending and acknowledging the historical challenges and innovations that have shaped its development, we gain a deeper appreciation for the crucial role that autologous cell salvage systems play in contemporary medical practice. As technology continues to advance, cell salvage is poised to become an even more integral component of patient care. By ensuring safer and more efficient blood conservation strategies, this technology will likely play a crucial role in the future of surgery, providing life-saving solutions in increasingly complex medical environments. 

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# Important Updates

## ACLS CERTIFICATION REQUIREMENT FOR CER.A.T.T. - SUBMIT BEFORE DECEMBER 31, 2024

If you hold the Cer.A.T.T. credential and have not yet documented your ACLS certification on your ASATT profile, you must submit it by December 31, 2024. [Click here to read more.](#)

Since 2015, ACLS (Advanced Cardiovascular Life Support) certification has been a requirement for all Cer.A.T.T. holders, as outlined in the [Scope of Practice](#) (SOP). This certification is vital for ensuring safe and effective anesthesia care.

If you do not have a current ACLS certificate on file, please submit an updated copy in PDF, JPEG, or PNG format along with your [2024 Recertification application](#). Only complete the recertification form if you are due for recertification 12/31/2024. If you are recertifying in 2025, email your ACLS certificate to [asatt@asatt.org](mailto:asatt@asatt.org) by December 31, 2024.

While your facility may not require ACLS training or reimbursement, holding the Cer.A.T.T. credential means that this is an ASATT certification requirement. Please note, this has been part of the SOP since 2015, and even if you were allowed to recertify without ACLS documentation in the past, it is now mandatory for every recertification cycle moving forward.

[10/24/2024 memo](#)

[11/01/2023 memo](#)

**If you do not have your ACLS, these are the requirements:**

### Scenario #1: By December 31st

Complete your ACLS course before you recertify by year-end. The only approved/valid courses are through the American Heart Association or American Red Cross. If you complete this by year-end and submit your recertification on time, there will be no impact to your credential.



**BETH  
MCVEIGH**

### Scenario #2: By January 31st

If you cannot complete your ACLS before year-end but can do so by January 31st, you may complete your recertification by January 31st and pay the \$75 late fee.

### Scenario #3: After January 31st

If you cannot complete your ACLS by December 31st or January 31st, your credential will expire. You may apply for provisional certification for a \$200 fee (plus your recertification fee). If you choose this option, the CEUs you earned in the past two years will not count toward provisional recertification. You will need to earn 40 CEUs (with an additional 10 CEUs required for provisional certification) and complete your provisional certification by December 31, 2025. Your expiration date will not change during the provisional period. If you do not meet the provisional requirements, your certification will expire on December 31, 2025, and you will need to complete the refresher program and retake the National Certification Exam (NCE). Note: Scenario #3 ONLY applies if you are unable to complete your ACLS by January 31st.

**Beth McVeigh**

*ASATT Coordinator*

[asatt@asatt.org](mailto:asatt@asatt.org) 

# Notes

## REGIONAL UPDATE



Where does time go? As the snow falls and the cold settles into the air, the memories of Christmas' past fill my heart with all the love from family gatherings, sliding parties, Christmas trees so loaded with presents, stories told of the older relatives and friends would pass onto us younger ones and so much more. Writing

this reminds of such good times. We all need to embrace our loved ones and families and share these stories and memories. I hope you all enjoy your Holidays however you choose to celebrate.

As I get older, I am going to start looking for a replacement for the Region 1 Director. It is time for someone else to get to experience and excitement of being the Region 1 Director. Yes, it is a lot of work, no pay for the position, however you learn so much from Board members and gather friends from all over the country. I am also looking for someone that would like to host a Regional Meeting in the fall of 2025. I am not able to hold one here where I work. If you are interested

### REGION 1

in hosting one, please email me at [region1@asatt.org](mailto:region1@asatt.org) I will help however I can, you would need to get speakers, provide a place to have the meeting in be in touch with the Regional Director as much as you can possibly do.


In March there will be another Webinar that will be offered to you for a price that you cannot afford to miss out on. You also have the Sensor Quizzes that you can do.

#### 2025 Webinars are as follows:

- **Q1** – Region 6 and 7, Saturday March 22, 2025, from 12 -4 pm CT
- **Q2**- Region 1 and 3, Saturday in June: Specific date to be determined

AGAIN, if you are interested in hosting a meeting, please feel free to reach out to me and I would be more than happy to explain to you how it works.

HAPPY HOLIDAYS EVERYONE !!

Respectfully Submitted,  
**Jonnalee Geddis, Cer.A.T.**  
[region1@asatt.org](mailto:region1@asatt.org) 



Thank you again for allowing me to serve as your new Region 2 Director! Those of you that know me already know that I will not take this responsibility lightly. For those of you that do not, I am looking forward to hearing from you and collaborating within our region! I want to be a voice for you, the

organization and most importantly, our profession. As a 20+ year veteran of the society and field, I have seen many ups and downs. Instead of sitting back and watching from afar, I felt I could play a positive role in progress by jumping in

feet first! I have already vocalized many concerns as well as ideas to the board and plan to continue to do so to the best of my abilities!

That being said, I am only ONE PERSON. I am the program director at our local community college in Pittsburgh and I remain on staff at one of the city's busiest (and finest) hospitals. Taking on this role will certainly add some craziness to my already crazy life, but I am incredibly happy to do so knowing that I have the support of our region in my corner!

So here is my challenge to YOU, REGION 2...I CHALLENGE you to step up and SERVE on a committee!! Help me formulate a formidable team by having our region

### REGION 2




represented in every aspect of ASATT! One of the goals I vocalized to the BOD was to have 1 person from each region represented on EVERY committee, so make a choice to not just sit back but to STEP UP!

I am already planning a dynamic, in-person meeting for May 2025 in the Pittsburgh area as well as a webinar for September 2025. More details on both to follow!

In the meantime, please email me, send me your ideas and let us work together and bring some positive progress to all!

Additionally, I have created a Facebook group that you are welcome (and encouraged) to join—simply search “Region 2-Anesthesia Techs” and let’s connect!

Respectfully submitted,

**Wendi Slusser , Cer.A.T.T.**  
[region2@asatt.org](mailto:region2@asatt.org) 


### REGION 3



Happy Holidays. I’m still looking for techs to get involved with advocating for Region 3. As the leader of this Region, I would like to get as many techs as possible to help advocate for techs to get more recognition and pay. Some of you having been asking, “what can we do to get our certification recognized and pay increased?” It will take

a lot of work and time. I have done a lot of advocacy, but please understand ASATT can not do this alone. I/we can help advocate for you. I know it’s been discouraging, but we have to come together and fight for our profession.

Please email me at [region3@asatt.org](mailto:region3@asatt.org) if you would like to get involved or if you have any questions.

Sincerely,  
**Phillip Hood, Jr., Cer.A.T.**  
[region3@asatt.org](mailto:region3@asatt.org) 

### REGION 4



As we settle into winter, Region 4 is experiencing the familiar changes this season brings. Snow-covered landscapes and brisk temperatures remind us to stay prepared for the challenges and beauty winter offers. With the busy holiday season upon us, it’s also a time to reflect and prepare for the year ahead, both

professionally and personally.

ASATT continues to provide valuable opportunities for education and growth. Don’t miss out on our quarterly webinars and the Sensor publication, which deliver up-to-

date and relevant content directly to you. Additionally, we are excited to announce plans for in-person regional meetings in the coming year. These smaller, highly requested gatherings will foster education, networking, and camaraderie in an engaging and interactive environment. Stay tuned for details—I look forward to seeing you there!

As we close out 2024, I want to thank you for your dedication and commitment to our profession. Wishing you a safe, joyful winter season and a bright start to the new year. May this time bring you warmth, peace, and inspiration as we look forward to all that lies ahead in 2025.

Sincerely,  
**Samantha Groshek, Cer. A.T.T.**  
[region4@asatt.org](mailto:region4@asatt.org) 

## REGION 6



Hello, everyone! My name is Sara Paraspolo, your neighborhood-friendly anesthesia technologist, educator, and now Region 6 Director. You may recognize me as I was just the past ASATT Treasurer. Mr. Otoniel Castillo and I have just switched roles. I currently

wear many hats. You will find me in Pasadena, California, at the Kaiser Permanente School of Anesthesia, teaching the Anesthesia Technology Program. As I was once a student in this program, I have come full circle in hopes to be a major supporter and advocate of our profession to see it thrive and stand the test of time. I am also part-time faculty at Riverside City College's new Anesthesia Technology Program. –Many hats!

I am happy to be in this role for the first time and eager to have an in-person meeting for our region. As plans are made in the coming New Year, I hope to meet many of you in the surrounding states. Be on the lookout for information as the New Year progresses, so you have time to plan and travel during the Quarter 3 time. I am looking forward to networking with many of you as we grow together.

Be well,

**Sara Paraspolo, Cer. A.T.T.**

[region6@asatt.org](mailto:region6@asatt.org) 

## EARN 4 CEUS AT ASATT'S Q1 EDUCATIONAL WEBINAR!

Earn up to 4 CEUs at ASATT's 2025 Q1 Educational Webinar, presented in partnership by Region 6 & Region 7. This live virtual event takes place on Saturday, March 22, 2025, from 12:00 PM to 4:00 PM CST. Registration Details:



- \$40 for ASATT members
- \$80 for non-members

ASATT members may be eligible to redeem a complimentary webinar credit. To check your eligibility, redeem your credit, and secure your spot, email [asatt@asatt.org](mailto:asatt@asatt.org) (insert link to email). Members can redeem one webinar credit within a 12-month membership period (membership benefits do not carry over).

[Click Here](#) to register for ASATT's Q1 Webinar, held live via Zoom!

## CAREER MANAGEMENT AND PROFESSIONAL DEVELOPMENT RESOURCES



ASATT invites organizations to share job postings that could benefit our valued members. Explore career growth, discover top talent, and access professional development opportunities on our website. Visit our [Careers Page](#) and sign up for job alerts to stay up-to-date on the latest openings.

# Important Updates

## 2024 RECERTIFICATION DEADLINE - END OF THE MONTH!

The deadline for 2024 Recertification is fast approaching—don't wait until it's too late! To remain in good standing with ASATT, Technicians (Cer.A.T.) and Technologists (Cer.A.T.T.) must recertify every two years. **Only complete the 2024 Recertification application if you are due for recertification 12/31/2024.**

### Recertification Requirements:

- **Technicians (Cer.A.T.):** Earn 20 Continuing Education Credits per 2-year period.
- **Technologists (Cer.A.T.T.):** Earn 30 Continuing Education Credits per 2-year period.
- **Timeframe:** All CEUs must be earned between **1/1/23 and 12/31/24.**
- **Certified Technologists:** ACLS/ALS certification is required (must be obtained through the **American Red Cross** or **American Heart Association**). [Click here to read more.](#)
- *Submit your additional credentials in PDF, JPEG, or PNG format with your recertification application.*

### What Credits Are Accepted?

- CEUs earned at ASATT events, annual conferences, webinars, or sensor quizzes.
- BLS, ALS/ACLS, and PALS certifications from AHA & American Red Cross.
- Events co-branded by ASATT or approved Anesthesia Technology Programs.
- Third-party credits (subject to review and additional fees).
  - » PLEASE NOTE when submitting any virtual non-ASATT CEUs (aside from those listed as an exception above) that ASATT only accepts 5 virtual third party credits PER DAY. This means that you can take as many third-party courses as you would like, so long as they are spread out over several days, and you do not take more than 5 on each of those days.



**BETH  
MCVEIGH**

### View your CEUs:

- [Click here to learn how!](#)
- Once you are logged into the ASATT website click on Member Home.
- Then click View my CEs.
- Enter Date Ranges and click Apply Filters.
  - » For example, if your certification expiration date is 12/31/24, the date range is 1/1/23 - 12/31/24.
- View Hours Total for your current number of CEUs.

### [Click here to view your CEUs.](#)

Applications post-marked, paid, or submitted after 12/31/24 will be subject to a \$75 late fee.

**Grace Period:** ASATT grants a renewal extension until January 31st, 2025, for application submissions ONLY (CEUs must be earned prior to your certification expiration date, NO EXCEPTIONS). If the 31st of January falls on a Saturday, your packet is due by the end of business on Friday. If the 31st of January falls on a Sunday, your packet is due by the end of business on Monday. There will be no exceptions made for packets received after January 31st, unless prior arrangements were made with the Recertification Committee. Any recertification applications postmarked/sent/completed between 12/31/24 and 1/31/25 will be subject to a late fee of \$75 on top of all previously existing recertification and credit fees.

### Don't Let Your Certification Expire!

We are committed to making the recertification process as smooth as possible and provided detailed instructions online. Click the link below to get started:

[Recertify Online](#) (preferred).

**Beth McVeigh**

ASATT Coordinator

[asatt@asatt.org](mailto:asatt@asatt.org)

# Write an article for *The Sensor*

Interested in writing an article for the *Sensor*? It's a wonderful opportunity for you to gain national recognition and earn CEUs!

To support you, the Editorial Board will be available to answer questions and provide guidance: proofing grammar, reference documentation, etc.

[Click here](#) for details outlined on the ASATT website. 



## DID YOU KNOW?

You can now earn up to **5 CEUs** per year for contributing *SENSOR* articles!

Keep an eye out for an email with more information.

# 2024 Platinum Sponsors

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## Looking to Volunteer on a Committee?

Join one of our ASATT Committees by visiting our [Committee page](#).

- Bylaws / Policies and Procedures Committee
- Continuing Education Committee
- Ethics Committee
- Financial Committee
- National Certification Examination (NCE) Committee
- Nominations Committee
- Strategic Planning Committee
- Annual Conference Committee



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ANESTHESIA TECHNOLOGISTS  
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6737 W. Washington  
St. Ste 4210  
Milwaukee, WI 53214  
414.295.9220

[asatt.org](http://asatt.org)