

**TSRA Announcements and Deadlines** January 2020 — Volume 1, Issue 1

**All are welcome at STS events at STS**  
Medical students, residents, fellows, and super fellows attending the STS Annual Meeting are encouraged to attend all STS and TSRA Resident events listed in this Newsletter!



**Get Involved!**  
To get involved with a **TSRA committee**, contact any of the following Committee Chairs for more details:

- Projects Committee: [Clauden Louis](#)
- Education Committee: [Hunter Mehaffey](#)
- Membership Committee: [Jordan Bloom](#)
- Communications Committee: [Alex Brescia](#)

**Resident Events at STS**

**Cardiothoracic Surgery Training: Awareness of Reimbursement and Compensation Models**  
If you are an integrated, traditional, or 4+3 cardiothoracic surgery trainee, please complete the following short survey on physician compensation and reimbursement: [CLICK HERE TO ACCESS SURVEY](#)

**Find us on social media**  
Connect with the TSRA through our [Facebook page](#), Instagram ([tsra\\_official](#)), and Twitter ([@TSRA\\_official](#)) and tag us to highlight trainee excellence at #STS2020!

**STS Residents Symposium: Transition from Training to Practice**  
Sunday, Jan 26th 10:00am-12:00pm  
Convention Center Rivergate Room

**STS Residents Luncheon**  
Sunday, Jan 26th 12:00-12:45pm  
Convention Center Mosaic Lounge

**STS Residents World Championship**  
Sunday, Jan 26th 4:45pm  
Exhibit Hall

**Trainee Opportunities in CT Surgery**

By: J. Hunter Mehaffey

Click on the links below for more information about these opportunities with upcoming deadlines for application:

- General surgery residents, cardiothoracic fellows, and international cardiothoracic surgery residents are eligible for **Associate Membership** in the TSRA by submitting [this application form](#)
- No deadline; rolling
- AATS Resident Poster Competition**  
January 31, 2020
- STS/ELSO ECMO Management Symposium**  
Early bird pricing ends February 1, 2020
- Leadership Program in Health Policy Management**  
February 15, 2020
- The James L. Cox Fellowship in Atrial Fibrillation Surgery**  
March 1, 2020

**TSRA Resident Luncheon**  
Monday, Jan 27th 12:15-1:15pm  
Convention Center Rivergate Room

Keynote: Gorav Ailawadi, MD  
"Surgical Mentorship"

**TSRA Resident Mixer**  
Monday, Jan 27th 4:30-6:30pm  
Cochon Restaurant  
930 Tchoupitoulas St., Suite A  
New Orleans, LA, 70130

"All medical students, residents, and fellows are welcome"

**TSRA Awards Presentation**  
Tuesday, Jan 28th 9:30-9:45am  
Great Hall A-D

TSRA Socrates Award  
TSRA/GoGov Award  
TSRA/STS Traveling Fellowship  
TSRA/STS Global Outreach Fellowship

**Beypoint Burnout: What You Should Know and Do Going Forward**  
Tuesday, Jan 28th 1:00-3:00pm  
Room 208

**Inaugural TSRA Presidential Address: Preserving the Passion in Cardiothoracic Surgery Training**

By: Xiaoying Lou  


I remember the awe of feeling the human heart beating in my palm for the first time. I was in high school - impressionable, mesmerized by its beauty, its persistent drumming, and the sense of purpose and commitment of the team around me working towards a common goal. I knew then that cardiothoracic surgery was what I wanted to do with my life.

Over the years, I remained devoted to this singular drive, fueled by the image of who I wanted to become, the patients I hoped to help, and the support and encouragement of those around me. Throughout college and medical school, grueling days spent juggling numerous exams, research, and all my other activities, I never lost sight of this passion and confidence.

But nothing quite prepares you for training. Fast forward a few years, and now I'm over half-way through my residency. There are days when I look back and feel as if I were naive - particularly on days when sleep is hard to come by, when the demands seem endless, and nothing you do seems quite good enough.

[Click here to read the full Presidential Address](#)

**TSRA Advice Column**

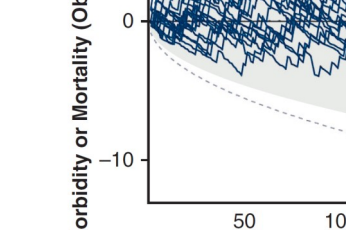
By: Jason Han

Each month, we will pose a question on the minds of trainees to some of our favorite faculty mentors. Our inaugural Advice Column includes mentor responses to the following question:

**How should trainees prepare for each case to perform well and also to get as much as we can out of it?**

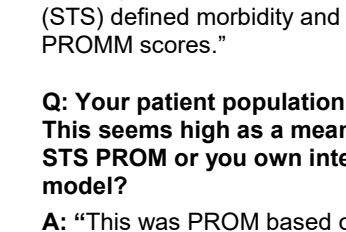
Here are the mentors who answered this month:

**Elizabeth Stephens, MD, PhD**  
Congenital Heart Surgeon  
Assistant Professor of Surgery, Mayo Clinic  
[@ElHStephensCHD](#)



"I found that I learned best by writing and drawing. This started out as writing down steps and surgeon's preferences, then became more elaborate with diagrams showing needle angles and set-ups for anastomoses, etc. By the time I was on the surgeon's side, the night before I would write down the whole operation, including details such as needle angles and drawing how things should be set up. Also, before each case I would write down what I wanted to improve upon..."

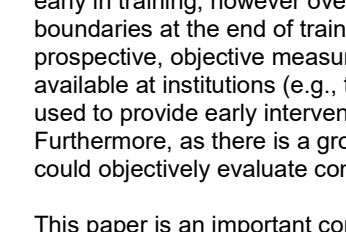
**Colleen M. Pietras, MD**  
Adult Cardiac Surgeon  
Heart Transplant and Mechanical Circulatory Support  
Assistant Professor at Yale School of Medicine  
[@cimpmd](#)



"1. Have a conversation with the attending about the pathology and plan for surgery (ideally on a day prior to the case). Make a point of approaching your attending for this discussion before you scrub. Showing your investment in the care of the patient may change the dynamics and opportunities for learning. Have a plan with the attending about what you will do in each case.

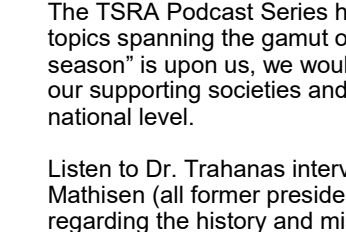
2. Follow the patient even after their operation, even if they are not assigned to your service..."

**Tom C. Nguyen, MD**  
Chief of Cardiac Surgery  
Director of Minimally Invasive Valve Program  
Associate Program Director for Cardiothoracic Surgery  
McGovern Medical School at the University of Texas  
[@Tomcnguyen](#)



"...DURING: Try to own it. Approach it like a chess match, i.e. anticipate the next steps and have contingency plans. Have room awareness and control (e.g. you might be starting into a chest cavity but be aware of all the sights and sounds that are happening in the room. Use your CN VIII and listen to your surrounding environment (e.g. beep, beep, beep). Always keep moving (e.g. you ask for a chest tube and it's not in the room, don't stare at the ceiling, find something else to do). A fast operation is about steady motion..."

**Ara Vaporciyan, MD**  
Chief of Thoracic and Cardiovascular Surgery  
MD Anderson Cancer Center  
Thoracic Surgery Directors Association President  
[@AraVaporciyan](#)



"...Remember, you are slowly building a mental model of the conduct of a case, dealing with unexpected findings and anatomical relationships. Your model's veracity improves through constant challenge. A good teacher asks questions that challenge your model. A good learner then modifies their model and keeps testing it. When that level of teaching is absent it is up to you to ask the questions. If your model didn't give you the right answer find out why, don't just memorize the correct answer..."

[Click here to see their full responses](#)

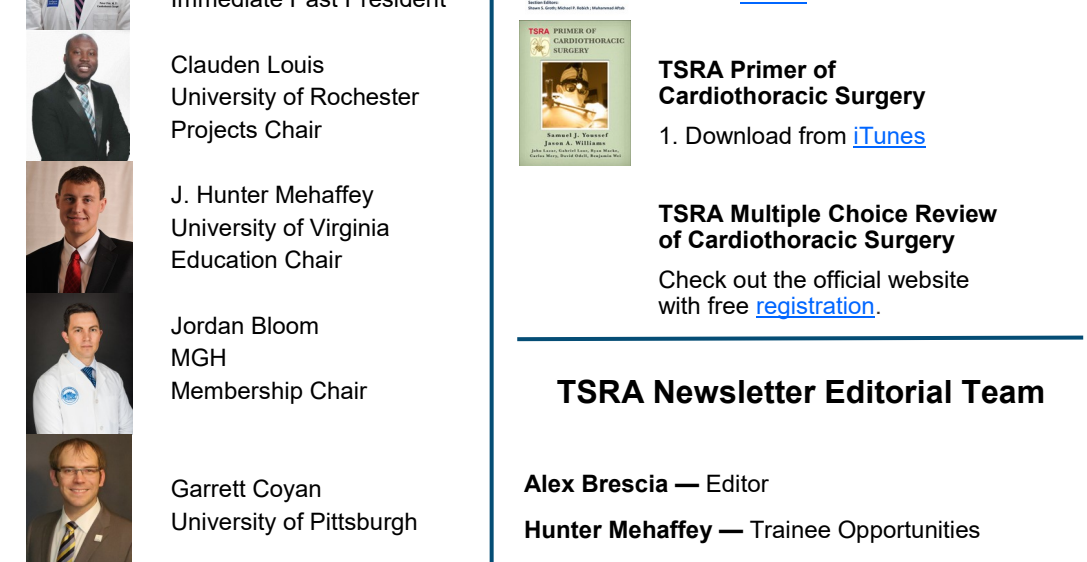
**Manuscript of the Month**

By: Jordan Bloom

**Objective Measure of Learning Curves for Trainees in Cardiac Surgery via Cumulative Sum Failure Analysis**

Elizabeth D. Krebs, MD, MSc, William Z. Chancellor, MD, Robert B. Hawkins, MD, MSc, Jared P. Beller, MD, J. Hunter Mehaffey, MD, MSc, Nicholas R. Teman, MD, Gorav Ailawadi, MD, Leora T. Yarboro, MD

The authors used cumulative sum to analyze quality and learning curves for cardiac surgery trainees. These curves have been validated to provide a risk-adjusted metric of quality based on mortality. The authors studied 3,937 procedures done by 19 cardiac track fellows from 2007 to 2017. They calculated internal observed to expected (O:E) rates of mortality and compared each trainee performance to their internal controls. Each of the 19 residents had O:E ratios less than 1 (i.e., better than expected). With respect to the learning curve analysis, the authors found that there was a slight increase in adverse events at the beginning of training, peaking at 70 cases, followed by an improvement by 140 cases. The authors conclude that there was no association between individual trainees and adverse events.



**FIGURE 1.** Learning curves of residents performing cardiac surgery procedures, risk adjusted by institutional predicted outcomes. The shaded gray boundary represents the 95% CI "early alert" boundary, and the dashed boundary represents the "concern" 98% CI boundary (Appendix E1). STS-PROM, Society of Thoracic Surgeons Predicted Risk of Mortality.

**Question and answer with lead author Dr. Elizabeth Krebs**

**Q: Please explain to readers how a cumulative sum failure analysis works and how you used it in this paper.**  
**A:** "In this study, we used the Cumulative Sum Failure Analysis (Cusum) method to retrospectively review the learning curves of cardiac surgery trainees. Cusum is a method that was specifically designed for detecting minute to minute variation in manufacturing. It plots "successes" vs. "failures" on a vertical axis over time, and is most useful for early detection of outliers, in terms of excessive "failures" or "successes". We used Society of Thoracic Surgeons (STS) defined morbidity and mortality as our metric, controlling for the patients' preoperative PROM scores."

**Q: Your patient population has a mean PROM of 3.34%. This seems high as your mean STS PROM. Was this the STS PROM or you own internal PROM based on your model?**  
**A:** "This was PROM based on the STS models. This likely seems high as we did include emergent/urgent/salvage cases, rather than simply elective cases, and the mean was likely skewed by cases with PROM values as high as even 30%-50%. We reported mean rather than median for consistency with evaluating O:E ratios and using mean for the Cusum plots. Additionally, as a tertiary referral center, our mean preoperative risk is likely higher than the mean risk across the board."

**Q: What do these data tell you about learning curves and how might these data be used for trainees in the future?**  
**A:** "We did find variation in learning curves, with some fellows who followed 'within appropriate boundaries' at the end of training. In the future, we believe this method could be used as a prospective, objective measure of trainee competence. Using values that are often already available at institutions (e.g., the STS predicted risk scores) trainee learning curves could be used to provide early intervention and mentoring for trainees in need of further support. Furthermore, as there is a growing focus on competency-based education, this is one tool that could objectively evaluate competency throughout training."

This paper is an important contribution to a growing body of literature confirming the safety of operative teaching of cardiac surgery. We applaud the authors for their work and commitment to resident education.  
[Click here to read the full manuscript](#)

**Featured TSRA Podcast**

By: Garrett Coyan

The TSRA Podcast Series has a collection of resident-coordinated topics spanning the gamut of cardiothoracic surgery. As "conference season" is upon us, we would like to feature 2 podcasts highlighting our supporting societies and detailing how to get involved at the national level.

Listen to Dr. Trahanas interview Dr. Sundt, Dr. Cameron, and Dr. Mathisen (all former presidents of our major cardiothoracic societies) regarding the history and mission of the STS, AATS, STSA, and other surgical societies in this career-oriented podcast:  
[TSRA Career Podcast - Past Presidents](#)

Next, join Dr. Boys as he interviews Dr. Lau regarding society involvement at all career levels:  
[TSRA Career Podcast - Society Involvement](#)

If you have any ideas for our new podcast topics or would like to help us record an existing topic in our line-up (found HERE), please contact us and we will get you involved with this exciting continuing TSRA project!

**TSRA Executive Committee (2019-2020)**

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**TSRA Educational Resources**

**TSRA Decision Algorithms in Cardiothoracic Surgery**  
1. As a print book on [Amazon](#).  
2. As a [Kindle](#) e-book on Amazon.

**TSRA Review of Cardiothoracic Surgery (2nd Ed)**  
1. As a print book on [Amazon](#).

**TSRA Clinical Scenarios in Cardiothoracic Surgery**  
1. As a print book on [Amazon](#).  
2. As a [Kindle](#) e-book on Amazon.  
3. As an iPad & iPhone app on [iTunes](#).

**TSRA Operative Dictations in Cardiothoracic Surgery**  
1. As a print book on [Amazon](#).  
2. As a [Kindle](#) e-book on Amazon.

**TSRA Primer of Cardiothoracic Surgery**  
1. Download from [iTunes](#)

**TSRA Multiple Choice Review of Cardiothoracic Surgery**  
Check out the official website with free [registration](#).

**TSRA Newsletter Editorial Team**

- Alex Brescia** — Editor
- Jason Han** — TSRA Advice Opportunities
- Hunter Mehaffey** — TSRA Advice Blog and Young Surgeon's Notes
- Jordan Bloom** — Manuscript of the Month
- Garrett Coyan** — Featured Podcast
- Clauden Louis** — TSRA Educational Resources and Multiple Choice Questions
- Zachary Spigel** — Abstract & Conference Dates
- Tariq Sohail Babar** — Diagnostic Challenge
- Parth Patel** — Graphic Support

**Abstract Deadlines and Conference Dates**

By: Zachary Spigel

| Meeting  | Submission deadline | Location                   | Dates                |
|--|---------------------|----------------------------|----------------------|
| Society of Thoracic Surgeons (STS)                               | CLOSED              | New Orleans                | Jan 25-28, 2020      |
| Academic Surgical Congress (ASC)                                 | CLOSED              | Orlando                    | Feb 4-6, 2020        |
| Southeastern Surgical Congress (SESC)                            | CLOSED              | New Orleans                | Feb 8-11, 2020       |
| American College of Cardiology (ACC)                             | CLOSED              | Chicago                    | Mar 28-30, 2020      |
| American Surgical Association (ASA)                              | CLOSED              | Washington, D.C.           | Apr 16-18, 2020      |
| International Society for Heart and Lung Transplantation (ISHLT) | CLOSED              | Montreal, Canada           | Apr 22-25, 2020      |
| AATS Aortic Symposium  | CLOSED              | New York                   | Apr 23-24, 2020      |
| American Association of Thoracic Surgery (AATS)                  | CLOSED              | New York                   | Apr 25-28, 2020      |
| American Society for Artificial Internal Organs (ASAIO)          | Feb 3, 2020         | Chicago                    | Jun 10-13, 2020      |
| Transcatheter Valve Therapy (TVT) Structural Heart Summit        | Apr 15, 2020        | Chicago                    | Jun 17-20, 2020      |
| Western Thoracic Surgical Association (W TSA)                    | CLOSED              | Vail                       | Jun 24-27, 2020      |
| Transcatheter Cardiovascular Therapeutics (TCT)                  | May 28, 2019*       | Miami                      | Sep 23-27, 2020      |
| American College of Surgeons (ACS)                               | Mar 2, 2020         | Chicago                    | Oct 4-8, 2020        |
| Eastern Cardiothoracic Surgical Society                          | Aug 1, 2019*        | Manalapan, FL              | Oct 7-10, 2020       |
| CHEST Annual Meeting   | Mar 31, 2020        | Chicago                    | Oct 17-21, 2020      |
| Congenital Heart Surgeons' Society (CHSS)                        | May 28, 2019*       | Boston                     | Oct 22-24, 2020      |
| Southern Thoracic Surgical Association (STSA)                    | Apr 7, 2019*        | Orlando                    | Nov 4-7, 2020        |
| American Heart Association (AHA)                                 | Jun 6, 2019*        | Dallas                     | Nov 14-16, 2020      |
| Southern Surgical Association (SSA)                              | Jul 1, 2019*        | Palm Beach                 | Dec 6-9, 2020        |
| Society of Thoracic Surgeons (STS)                               | Aug 13, 2019*       | Austin                     | Jan 30 - Feb 2, 2021 |
| Academic Surgical Congress (ASC)                                 | Aug 26, 2019*       | Houston                    | Feb 2-4, 2021        |
| Southeastern Surgical Congress (SESC)                            | Sep 13, 2019*       | Atlanta                    | Feb 13-16, 2021      |
| American College of Cardiology (ACC)                             | Oct 31, 2019*       | Atlanta                    | Mar 20-22, 2021      |
| American Surgical Association (ASA)                              | Nov 25, 2019*       | Seattle                    | Apr 15-17, 2021      |
| International Society for Heart and Lung Transplantation (ISHLT) | Oct 15, 2019*       | Sydney, Australia          | Apr 21-24, 2021      |
| AATS Mitral Conclave   | Jan 6, 2019*        | New York                   | Apr 29-30, 2021      |
| American Association of Thoracic Surgery (AATS)                  | Oct 15, 2019*       | Seattle                    | May 1-4, 2021        |
| Western Thoracic Surgical Association (W TSA)                    | Jan 6, 2020*        | Victoria, British Columbia | Jun 23-26, 2021      |

\* Designates previous year's deadline, if current deadline not yet available.

**Sample Questions from the TSRA Multiple Choice Question Bank**

By: Clauden Louis

**1. A newborn infant with Ebstein's anomaly has cyanosis and severe right-sided heart failure. Echocardiography shows a large PDA with left to right shunt and no pulmonary stenosis. There is increase in antegrade pulmonary blood flow on administration of Nitric Oxide. The best treatment strategy includes:**

- A. Using pulmonary vasodilators to decrease PVR
- B. Give PGE1 to keep the ductus open
- C. Stop PGE1 to help ductus close
- D. Perform emergency surgery to repair the tricuspid valve.

**Answer and Explanation**  
Answer C. This newborn has functional RVOT obstruction due to increase in RV afterload due to flow from a large PDA. The increase in antegrade pulmonary flow on administration of pulmonary vasodilator supports the diagnosis. Closure of the PDA will help improve RV failure. However, if pulmonary atresia is present, then the PDA may be the only source for pulmonary blood flow.

**2. A cardiologist refers a patient to you for aortic and mitral valve replacement and two vessel bypass: OM2 and RCA. You evaluate the patient and review his echocardiogram and find that he does not need to have both his aortic and mitral valve. Upon review of his cath, you agree that he will need a two vessel bypass. You schedule him for surgery. On the day of the surgery your operative strategy is:**

- A. Put on CPB, replace aortic valve, repair the mitral valve and then bypass the coronaries.
- B. Put on CPB, repair the mitral valve, replace the aortic valve and then bypass the coronaries C. Stay off pump under normothermia, repair the mitral valve, replace the aortic valve and then bypass the coronaries
- D. Put on CPB, do the distal anastomosis, open and debride the aortic valve, replace the mitral valve, replace the aortic valve and then the proximal anastomosis prior to coming off pump.

**Answer and Explanation**  
Answer D. Perform the distal anastomosis first as it is difficult to get good exposure once the valves are placed. In addition, once the distal anastomoses are completed cardioplegia can be administered down the graft distal to the obstruction, which improves myocardial preservation. If repairing the mitral valve then keep the aorta closed, as it will help in testing the mitral valve after repair. If replacing the mitral valve then the aorta can be opened prior to working on the mitral as the neo-mitral valve will not need to be tested. Replacing the mitral valve first may cause AV groove disruption when the heart is lifted up for performing the distal anastomosis.

**3. A 50-year-old male with a painful and enlarging right rib mass undergoes a CT scan that demonstrates a 10 cm mass and boney destruction of two ribs. The most appropriate next step is:**

- A. FNA of the lesion
- B. Inisional biopsy
- C. En bloc resection of the mass with chest wall reconstruction
- D. Neoadjuvant radiation therapy

**Answer and Explanation**  
Answer C. The lesion is likely a chondrosarcoma. Chondrosarcomas should not undergo incisional biopsy. The treatment is resection with 5 cm margins and when indicated chest wall reconstruction. FNA would not yield an accurate diagnosis because histology is often mixed throughout the tumor. Chondrosarcomas are not radio or chemo sensitive.

**Diagnostic Challenge**

By: Tariq Sohail Babar

**Case Scenario:**

A 12-year-old male boy was referred to the emergency department with recurrent chest infections and shortness of breath on exertion. On exam normal, peripheral oxygen saturation was 92% with a 2/6 grade ejection systolic murmur at sternum. Left sided congenital thorax with slight shift of heart towards the right side. Echocardiogram showed dextro-position of the heart with a large atrial septal defect (ASD) secundum type, shunting left to right with mild pulmonary artery hypertension. Pulmonary artery pressures were 35 mmHg plus central venous pressure. CT of the chest showed a complete collapse of right upper lobe with right sided pulmonary veins draining into inferior vena cava by a vertical vein. Right heart catheterization was performed which revealed the pulmonary vascular resistance (PVR) of 6 woods units in air and confirmed vaso-reactivity. PVR was reduced to 4 woods units with 100% oxygen. It was also showed that pulmonary veins drained into the IVC by a vertical vein.

**Explanation:**

**Scimitar syndrome (SS)** is an extremely rare congenital cardiopulmonary (veno-lobar) anomaly, with an estimated incidence of 1 to 3 of 100,000 live births annually. George Cooper in 1836 first mentioned this anomaly during the autopsy of a 10-month-old infant and Neill in 1960 observed the radiographic appearance of the anomalous vein parallel to the right heart border resembling a curved Turkish sword, or "scimitar."<sup>1</sup>

It represents the characteristic curvilinear anomalous right pulmonary vein, the scimitar vein (SV), that drains into the inferior vena cava either above or below the level of the diaphragm with dextro-position of the heart (60%). Scimitar syndrome is associated most commonly with atrial septal defect (80%), ventricular septal defect (30%), and right-sided diaphragmatic hernia (15%).<sup>2</sup>

Currently, surgical management involves either lobectomy/pneumonectomy or cardiac surgical procedures. Lobectomy or pneumonectomy in patients with SS are done in the case of severe hypoplasia of the right lung, recurrent chest infections, persistent haemoptysis, and diffuse bronchiectasis, but with risks of respiratory insufficiency and scoliosis.<sup>3</sup>

Cardiac reconstruction procedures involving either intra-atrial baffle repair or re-implantation of scimitar vein to right atrium. A multicenter Italian and also an Australian study compared all types of repairs. An intra-atrial baffle repair was done in 56-71% of the patients while 23-31% underwent a reimplantation of the scimitar vein on the left atrium. Mortality was higher in reimplantation group (33%) compared to the intra-atrial baffle group (5.9%) in the Australian study. In the reimplantation group, the cause of death was severe pulmonary arterial hypertension causing repeated pulmonary hypertensive crises. None of these techniques influenced the pulmonary vein stenosis.<sup>4,5</sup>

Postoperative pulmonary vein pathway obstruction (50%) is the main complication from these procedures and may be due to long and tight tunnels, narrow anastomoses, turbulent blood flow, synthetic grafts, and kinking or distortion of the reconstructed pathway. It is more common with reimplantation (63%) compared to baffle procedures (46%). Therefore, a wide rerouting made of autologous tissue is preferable, though appropriate surgical approach for Scimitar syndrome is still debated.<sup>6</sup>

**References:**

- 1. Wang CC, Wu ET, Chen SJ, et al. Scimitar syndrome: incidence, treatment, and prognosis. Eur J Pediatr. 2008; 167:155-160.
- 2. Cipek S, Arslan AH, Ugrutucan M, Yildiz Y, Ay S. Scimitar Syndrome: The Curved Turkish Sabre. Semin Thorac Cardiovasc Surg Pediatr Card Surg Annu. 2014;17(1):56-61.
- 3. Vida VL, Paddalino MA, Boccuzzo G, et al. Scimitar syndrome: a European Congenital Heart Surgeons Association (ECHSA) multicentric study. Circulation. 2010; 121(12):1159-66.
- 4. Brown JW, Ruzmetov M, Minnich DJ, Vijay P, Edwards CA, et al. Surgical management of scimitar syndrome: an alternative approach. J Thorac Cardiovasc Surg. 2003 Feb;125(2):238-45.
- 5. Brink J, Yong MS, Udekem Y, Weintraub RG, Brizard CP, Konstantinov IE. Surgery for scimitar syndrome: the Melbourne experience. Interact Cardiovasc Thorac Surg 2015;20: 31-4.
- 6. Alsoufi B, Cai S, Van Ardsen GL, Williams WG, Calderone CA, Coles JG. Outcomes after surgical treatment of children with partial anomalous pulmonary venous connection. Ann Thorac Surg. 2007; 84:2020-6.