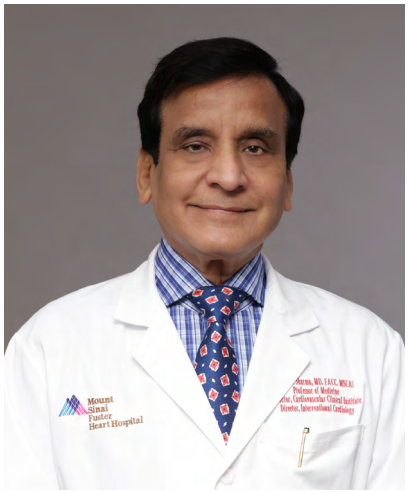
SP AND SEEMA LOHIA CARDIOVASCULAR CLINICAL INSTITUTE

DR. SAMIN K. SHARMA FAMILY FOUNDATION

# Cardiac Catheterization Laboratory


**2025 Clinical Outcomes and Innovations Report**

Mount Sinai Fuster Heart Hospital




**Samin K. Sharma, MD, FACC, MSCAI**

Director, SP and Seema Lohia Cardiovascular Clinical Institute

Director, Interventional Cardiology, Mount Sinai Health System

President, Mount Sinai Fuster Heart Hospital Network

**Annapoorna S. Kini, MD, MRCP, FACC**

Director, Cardiac Catheterization Laboratory

Interventional Director, Structural Heart Disease, Mount Sinai Health System

Director, Interventional Cardiology Fellowship Program

# Cardiac Catheterization Laboratory Leadership

Dear Colleagues,

At the Mount Sinai Cardiac Catheterization Laboratory at The Mount Sinai Hospital, we have long believed that excellence in cardiovascular care is not achieved in moments of brilliance alone, but through the disciplined, collective pursuit of precision, safety, and innovation. The Samin K. Sharma Family Foundation Cardiac Catheterization Laboratory stands as a reflection of that philosophy—one built over decades of leadership, collaboration, and an unwavering commitment to our patients.

Under the guidance of Dr. Samin K. Sharma, a globally recognized leader in interventional cardiology, and Dr. Annapoorna S. Kini, Director of the Cardiac Catheterization Laboratory, our program has grown to become one of the busiest and most advanced in the nation, performing more than 15,000 procedures annually while maintaining exceptional safety and outcomes.

This report highlights both the scale of our work and the depth of our mission. From complex coronary and structural interventions to the integration of emerging technologies—including artificial intelligence to enhance decision-making and patient care—we continue to push the boundaries of what is possible in modern cardiology. Excellence is found in repetition done properly, in standards upheld when no one is watching, and in the collective understanding that reputation is built through habits.

Equally central to our purpose is education. Through one of the largest interventional cardiology fellowship programs in the country and global live case transmissions reaching more than 100 nations, we are committed to training the next generation of physicians while sharing knowledge across borders.

The 2025 Clinical Outcomes and Innovations Report reflects the dedication of an extraordinary team—physicians, nurses, technicians, and staff—whose daily work is defined by rigor, compassion, and an unrelenting pursuit of better outcomes.

As we look ahead, we remain guided by a simple principle: to deliver the highest standard of care, to innovate responsibly, and to advance the field of cardiovascular medicine for patients everywhere.

# Table of Contents



For more information, visit **www.mountsinai.org/interventional-cardiology-cath-lab**

# Mount Sinai Fuster Heart Hospital Leadership

## President, Mount Sinai Fuster Heart Hospital

**Valentin Fuster, MD, PhD, MACC**

Physician-in-Chief, The Mount Sinai Hospital
President, Mount Sinai Fuster Heart Hospital

At Mount Sinai Fuster Heart Hospital, our team of expert physicians, nurses, and support staff are advancing the boundaries of what is possible in interventional cardiology. We see patients from all walks of life, and are committed to treating some of the most complex cardiovascular conditions, including those considered too high risk elsewhere, from advanced heart failure to congenital defects.

Our interventionalists, Drs. Sharma and Kini, are leaders in cardiovascular medicine. They lead not only with innovative solutions and the latest advancements, but also with compassionate care, never losing sight of the unique needs of each patient. Thanks to their tireless work, I am proud to report that our success rate remains above 99 percent, reflecting both the skill of our team and our steadfast focus on quality and safety.

I am pleased to share the 2025 Clinical Outcomes and Innovations Report, which showcases the team's remarkable achievements and advanced research, along with powerful stories from patients whose lives have been transformed.

Thank you for your continued trust, support, and partnership.

## Director, Mount Sinai Fuster Heart Hospital

**Deepak L. Bhatt, MD, MPH, MBA**

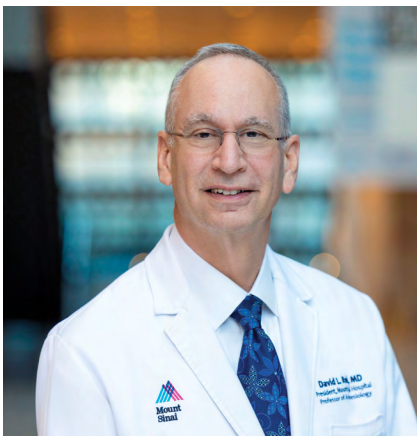
Director of Mount Sinai Fuster Heart Hospital
Dr. Valentin Fuster Professor of Cardiovascular Medicine

The Mount Sinai Hospital is consistently recognized as one of the nation's top hospitals for cardiovascular care. A large component of that success is the Cardiac Catheterization Laboratory at The Mount Sinai Hospital, which continues to reach new milestones each year. As Director of the Mount Sinai Fuster Heart Hospital, I have had the privilege of witnessing firsthand the exceptional care and commitment that define this team. Drs. Sharma and Kini have built an exemplary group of cardiologists, interventional specialists, advanced practice providers, nurses, and support personnel who have a steadfast commitment to delivering the highest standard of patient-centered care.

Every patient who walks through our doors can expect to receive an unparalleled quality of care, thanks to the dedication of these individuals. We remain committed to adopting emerging techniques and technologies that will further improve patient experience and expand the possibilities of cardiovascular medicine. I am confident that this group will help ensure the Mount Sinai Fuster Heart Hospital will continue to distinguish itself as a leader in cardiovascular care for years to come.

# The Mount Sinai Hospital Leadership

## Chief Clinical Officer, The Mount Sinai Health System, and President, The Mount Sinai Hospital



**David L. Reich, MD**

Chief Clinical Officer,
The Mount Sinai Health System
President, The Mount Sinai Hospital

"Our mission, reflected in the information and heartfelt patient stories in this book, is clear: to create change, to lead, and to provide unmatched care."

At the Mount Sinai Fuster Heart Hospital at The Mount Sinai Hospital, our pursuit of excellence propels us to push the limits of what is possible in cardiac care. As always, our mission is to redraw boundaries, set standards for excellence, and then seek to exceed those standards. We are honored to be ranked No. 2 in the nation for Cardiology, Heart & Vascular Surgery by *U.S. News & World Report*® for 2024-25.

We are driven by discovery. In every corner of the hospital, our physicians and researchers do not rely on the current medical trends; instead, they seek to redefine those trends. We continually pursue new technologies and bring breakthrough treatments to our patients, challenging limitations with the goal of transforming cardiac care and improving heart health.

We thrive on knowledge. Even as we make discoveries, we are seeking ways to share them, both with our colleagues across the health system and with the next generation of leaders in cardiac care. It is this group that will help ensure that innovative treatments and advancements reach patients around the country—and the world.

Medicine is more than a collection of treatments and procedures—it's about the committed professionals who deliver those treatments and procedures to patients. Each member of our team is committed to offering patients the very best care possible, and to treating them with respect and dignity. These efforts expand far beyond the procedure room.

In these pages, you will see how the specialists at the Cardiac Catheterization Laboratory at The Mount Sinai Hospital leverage expertise, employ new approaches, and harness science to deliver high quality patient care and to reset the standard in cardiac intervention.

This report reflects the collaboration we enjoy at The Mount Sinai Hospital. Together, Dr. Sharma, Dr. Kini, and the entire Cardiac Catheterization Laboratory team continue to dedicate themselves to innovation and knowledge-sharing with peers worldwide. Our mission, reflected in the information and heartfelt patient stories in this book, is clear: to create change, to lead, and to provide unmatched care.

# The Cardiac Catheterization Laboratory at The Mount Sinai Hospital

## An Overview of Services and Outcomes

**From left:** Vishal Kapur, MD, Bhavanadhar Penta, MBBS, Amit Hooda, MD, David D. Song, MD, Pedro Moreno, MD, Prakash Krishnan, MD, Samin Sharma, MD, Annapoorna S. Kini, MD, George Dangas, MD, PhD, Joseph M. Sweeny, MD, Sahil Khera, MD, Gregory Serrao, MD, Raman Sharma, MD, and Jeffrey Bander, MD.

## “Quality is never an accident; it is always the result of high intention, sincere effort, intelligent direction, and skillful execution.”

**— JOHN RUSKIN**

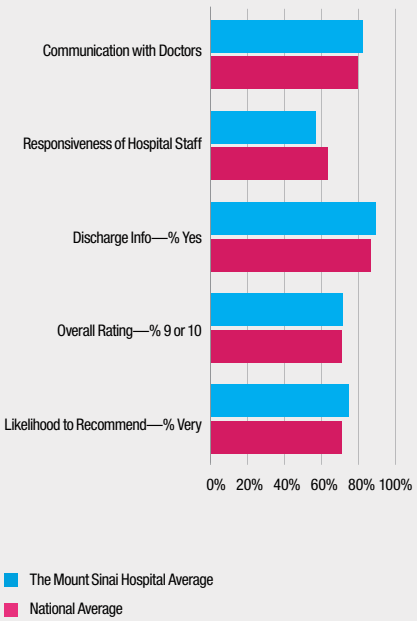
**AUTHOR AND PHILOSOPHER**

The Cardiac Catheterization Laboratory at The Mount Sinai Hospital is among the highest-volume centers, yet also among the safest interventional catheterization laboratories in the United States. Each staff member of the Cardiac Catheterization Laboratory has a strong work ethic and takes pride in his or her contribution to the principal goal: delivery of appropriate, efficient, and safe care to patients in need. As a result, the Cardiac Catheterization Laboratory consistently reports a high level of patient satisfaction; 58 percent of patients are discharged on the same day after their successful interventional procedure.

The system of established standard protocols, rigorous attention to detail, and a strong sense of teamwork have helped us achieve the best interventional outcomes in the country. Overall angiographic success of non-CTO lesions remains more than 99 percent in our Cardiac Catheterization Laboratory.

We continue to improve our outcomes every year, maintaining low procedural complications in 2025. This remarkably low complication rate has been achieved despite high complexity and comorbid medical conditions of patients treated in the Cardiac Catheterization Laboratory.

**PATIENT SATISFACTION**: 2025 HCAHPS SURVEY

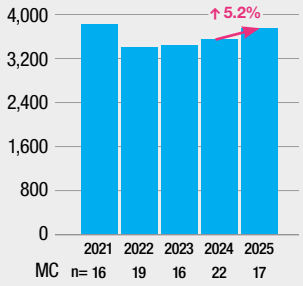



# 58 percent

**OF OUR ELECTIVE INTERVENTIONAL PATIENTS ARE DISCHARGED ON THE SAME DAY OF THE PROCEDURE**

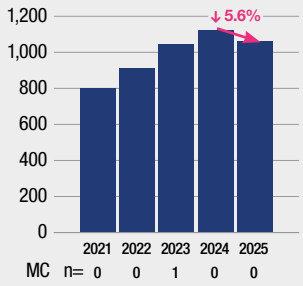
## INTERVENTIONAL VOLUME AND MAJOR COMPLICATIONS (MC) 2021–2025

### CORONARY INTERVENTIONS (PCI)

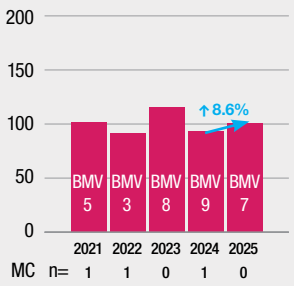



MC = Major Complications

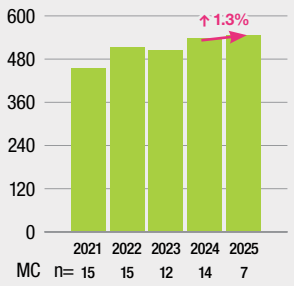
### ENDOVASCULAR INTERVENTIONS (PTA)




### VALVULOPLASTY (BAV/BMV)




### TAVR/TAVI

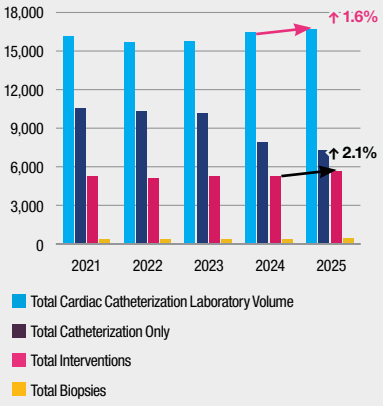



**2025**

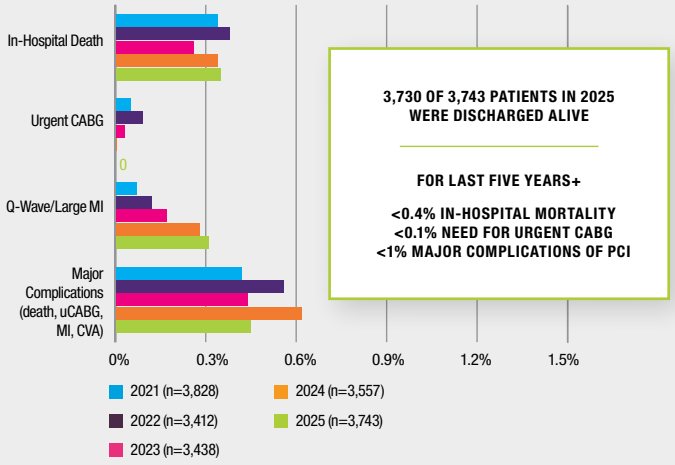
Septal Ablation = 3
TEER = 78
TMVR = 6
TriClip = 25
TTVR = 18
PFO/ASD Closure = 43
LAAO = 11

## CARDIAC CATHETERIZATION LABORATORY VOLUME AT THE MOUNT SINAI HOSPITAL

PROCEDURES OVER THE LAST FIVE YEARS




## SAFETY OF PCI: TEMPORAL TRENDS IN COMPLICATIONS AT THE MOUNT SINAI HOSPITAL

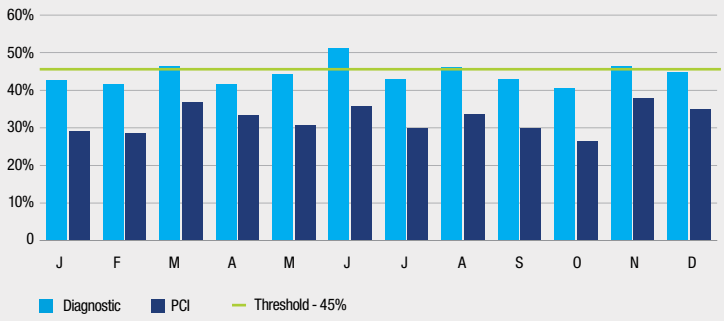



**3,730 OF 3,743 PATIENTS IN 2025 WERE DISCHARGED ALIVE**

**FOR LAST FIVE YEARS+**

**<0.4% IN-HOSPITAL MORTALITY**
**<0.1% NEED FOR URGENT CABG**
**<1% MAJOR COMPLICATIONS OF PCI**

## RADIAL PROCEDURES AT MOUNT SINAI — 2025




# 35 percent

OF PCIs AND 45 PERCENT OF DIAGNOSTIC CATHS WERE DONE VIA **RADIAL ACCESS**

## Comparison of The Mount Sinai Hospital Interventional Outcomes with New York State Data: 2019–2025

Our Cardiac Catheterization Laboratory continues to serve the full range of cases, from simple to the most complex cases with high clinical comorbidities and complex angiographic characteristics. Despite any added complexity, the majority of percutaneous coronary intervention (PCI) complications at The Mount Sinai Hospital have been one-third to one-half of the rate of New York State hospitals.

Reports of 30-day risk-adjusted mortality rates (RAMR) for PCI have consistently placed The Mount Sinai Hospital Cardiac Catheterization Laboratory (or its interventionalists) among the lowest for in-hospital and 30-day risk-adjusted mortality, earning them the double star denoting statistically significantly lower RAMR than the statewide average consistently over the last 24 years of New York State Department of Health (NYSDOH) PCI reporting.

The last-published NYSDOH reports from 2017-2019 showed that 30-day risk-adjusted readmission rate post-PCI has been statistically lower than the statewide average, earning the double-star notation for the last six consecutive reports.

**NYS-DOH REPORT OF PCI 2017–19**
**DATA ON THE TOP 10 VOLUME CENTERS IN NY STATE 30-DAY RAMR**

| PCI Statistics 2017-19 | # Cases | All Cases | Non-Emergency Cases | Emergency Cases |
|---|---|---|---|---|
| 1. The Mount Sinai Hospital | 10,347 | 0.85** | 0.50** | 3.06 |
| 2. Saint Francis Hospital | 8,750 | 0.93** | 0.60 | 2.48 |
| 3. North Shore University Hospital | 7,214 | 1.16 | 0.72 | 3.23 |
| 4. NYU Hospitals Center | 6,634 | 0.97 | 0.57 | 3.25 |
| 5. Columbia Presbyterian Hospital | 6,478 | 1.56* | 1.03* | 3.97 |
| 6. Saint Joseph's Hospital | 6,151 | 1.17 | 0.76 | 3.14 |
| 7. Lenox Hill Hospital | 5,557 | 0.61** | 0.37** | 1.73 |
| 8. Mount Sinai Beth Israel | 4,416 | 1.00 | 0.55 | 3.46 |
| 9. Buffalo General Medical Center | 4,350 | 1.18 | 0.59 | 3.54 |
| 10. Stony Brook University Hospital | 4,247 | 1.44 | 0.90 | 4.01 |
| NYS Total | 157,140 | 1.22 | 0.79 | 3.24 |

www.nyhealth.gov

*Risk-Adjusted Mortality Rate (RAMR) significantly higher than NY statewide rate

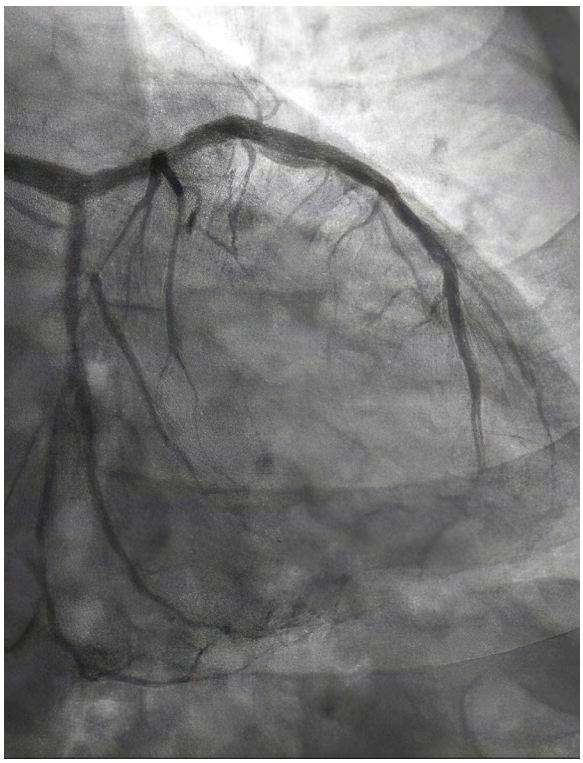
**Risk-Adjusted Mortality Rate (RAMR) significantly lower than NY statewide rate

# 16,000+ Cases Per Year

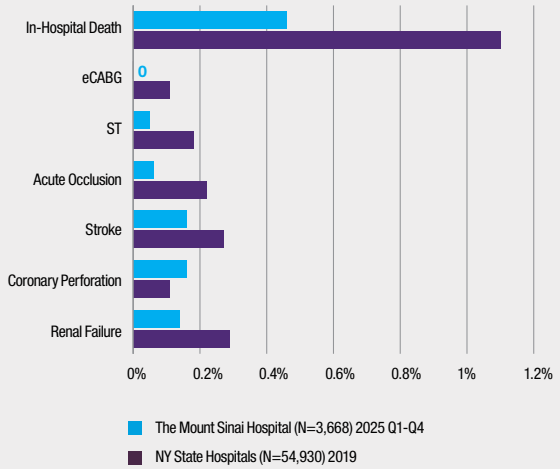
**LED BY FIVE SENIOR FULL-TIME INTERVENTIONALISTS**, WHO TOGETHER PERFORM MORE THAN 9,500 CASES PER YEAR

# 24 percent of 3,743

**CASES HAD A PLAQUE MODIFICATION STRATEGY** BEFORE STENT IMPLANTATION DUE TO LESION COMPLEXITY

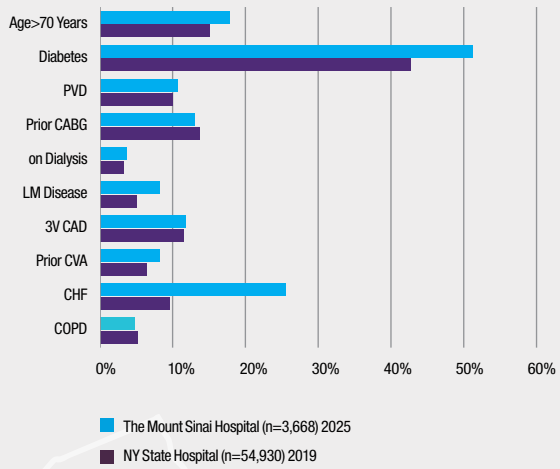


### PCI COMPLICATIONS: THE MOUNT SINAI HOSPITAL VS. NY STATE HOSPITALS




### IMPORTANT BASELINE CLINICAL AND LESION CHARACTERISTICS OF PCI

NY STATE HOSPITAL DATA 2019–2025




# 24 Consecutive Years

THE MOUNT SINAI CARDIAC CATHETERIZATION LABORATORY AT THE MOUNT SINAI HOSPITAL HAS RECEIVED THE PRESTIGIOUS TWO-STAR RATING FOR PCI IN **NEW YORK STATE.**

**Annapoorna S. Kini, MD, with the 2025–26 fellows.**

## COMPARISON OF THE MOUNT SINAI HOSPITAL INTERVENTIONAL OUTCOMES WITH OTHER U.S. HOSPITALS: 2025 R4Q2 ACC-NCDR REPORTS

The American College of Cardiology-National Cardiovascular Data Registry (ACC-NCDR) reports the characteristics and in-hospital outcomes after PCI of more than 1,600 hospitals in the United States, providing data of more than 1 million patients annually.

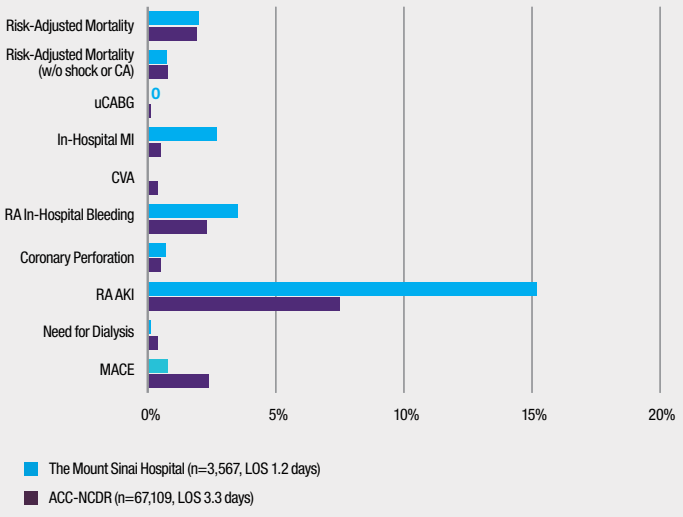
On the next pages are the important baseline and procedure characteristics of The Mount Sinai Hospital versus ACC-NCDR hospitals. These graphs show superior outcomes despite higher complexities for PCI patients at The Mount Sinai Hospital in comparison to other U.S. hospitals in the ACC-NCDR report for 2025 R4 Q2.

At Mount Sinai, we have established evidence-based protocols for proper evaluation of coronary artery disease (CAD) patients before scheduling catheterization and possible intervention. We follow a rigorous application of the appropriate use criteria (AUC) of the American College of Cardiology and fractional flow reserve (FFR/iFR) guiding the decision-making for appropriately indicated PCI.

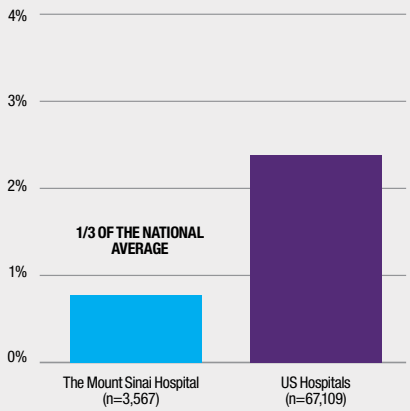

# Established Protocols

AT MOUNT SINAI, WE HAVE ESTABLISHED EVIDENCE-BASED PROTOCOLS FOR PROPER EVALUATION OF CAD PATIENTS **BEFORE SCHEDULING CATHETERIZATION AND POSSIBLE INTERVENTION**

**PCI OUTCOMES THE MOUNT SINAI HOSPITAL VS ACC-NCDR HOSPITALS: 2025 Q2**
ACC-NCDR DATA FOR 2025 Q2




**NATIONAL PCI OUTCOME METRICS; MAJOR COMPLICATIONS**
COMPOSITE: PROPORTION OF PCI PATIENTS WITH DEATH, ECABG, STROKE, OR ETVR; THE MOUNT SINAI HOSPITAL VS. ACC-NCDR (N=1,600 HOSPITALS) FOR 2025 Q2



# Complex High-Risk Percutaneous Coronary Interventions

SAMIN K. SHARMA, MD, AMIT HOODA, MD, AND ANNAPOORNA S. KINI, MD

Earlier randomized clinical trials have suggested the benefits of coronary artery bypass graft (CABG) surgery in higher angiographic complexity cases over percutaneous coronary intervention (PCI). Based on data evidence, there is an increasing tendency to recommend CABG for patients with more complex coronary artery disease (CAD) and PCI for low to intermediate complexities. Ultimately, the decision to have either CABG or PCI lies with the patient and his or her family, after consultation with the Heart Team, which includes a cardiologist, cardiothoracic surgeon, and an interventional cardiologist. Approximately half of all patients with complex CAD choose revascularization with PCI, due to lower short-term complications and relative ease of recovery compared to surgery.

As far as the left main (LM) CAD is concerned, a recent pooled analysis of four randomized clinical trials comparing PCI to CABG in patients with vs. without acute coronary syndrome (ACS), showed that for patients with ACS compared to non-ACS patients, PCI and CABG have similar rates of all-cause death over 5 and 10 years, but higher in MI and repeat procedure after PCI compared to CABG. These positive outcomes are reflected in the recent ESC 2024 guidelines.

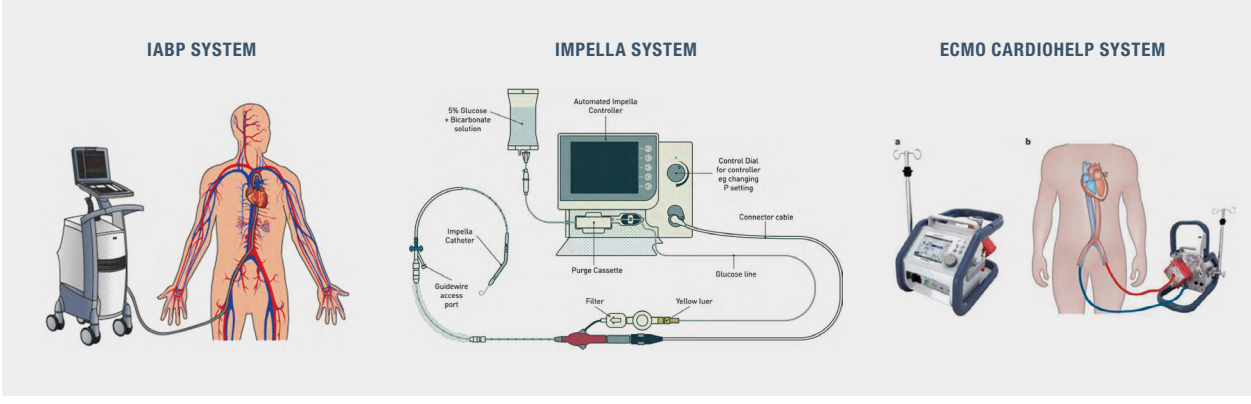
The recent FAME-3 trial comparing FFR-guided PCI with CABG in three-vessel coronary artery disease found PCI to be inferior in the composite of death, myocardial infarction, or stroke at one-year follow-up compared with CABG, but at five years, major outcomes were similar after CABG or PCI.

Based on the current data and practice guidelines, the following patient groups will benefit more from CABG than PCI:

- Three-vessel CAD and SYNTAX Score >32
- Diabetics with three-vessel CAD or complex two-vessel CAD with proxmal LAD lesion
- Left main ± additional vessel CAD with SYNTAX Score >32

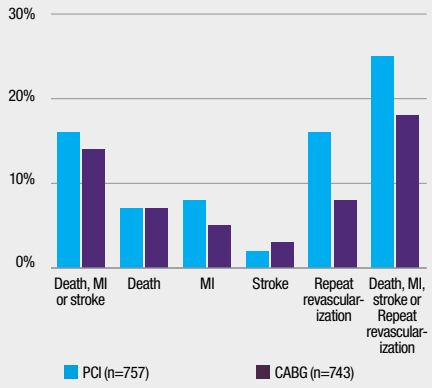
Based on the evidence from the data, there is a set protocol at The Mount Sinai Hospital to recommend CABG for patients with more complex CAD. In addition to expertise in interventional treatment of complex CAD, our Cardiac Catheterization Laboratory serves as a tertiary center for complex coronary intervention (bifurcation, calcified, left main, CTO, and/or vein graft lesions) and patients with low ejection fraction (LVEF <35 percent).

We use a variety of adjunct interventional techniques in these complex coronary cases, such as atherectomy (24 percent of lesions) and thrombectomy/

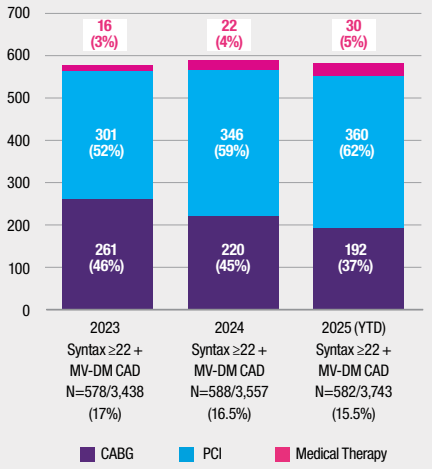


distal protection devices (two percent for thrombotic and vein graft lesions). In a small number of complex lesion patients (approximately five percent of PCI), many have reduced ejection fraction (LVEF <35 percent), so we use LV assist devices such as IABP, Impella, or ECMO CardioHelp to safely and reliably perform these high-risk PCIs (protected PCI).

**FAME 3 TRIAL: CLINICAL OUTCOMES AT FIVE YEARS**




**REVASCULARIZATION CHOICES FOR COMPLEX CAD (HIGH SYNTAX SCORE AND/OR MV DIABETES): THE MOUNT SINAI HOSPITAL DATA 2023–2025**




## Susan Leary

**Diagnosis:** Crescendo angina from LM CAD

**Treatment:** Successful atherectomy and 2 DES of LM and LCx

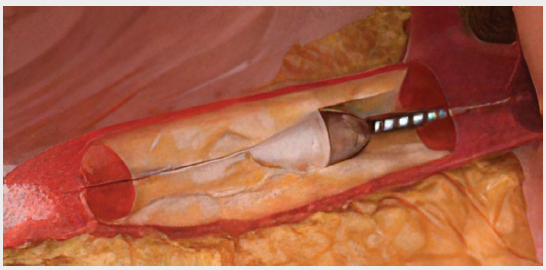
"Dr. Sharma was amazing and so genuine when I met him."

"I eat well, I love to walk and exercise, so I never imagined this could have happened to me. My husband and I would often go on trail walks about two years ago. During one of our regular walks, I suddenly felt like I couldn't breathe. It felt worse than just shortness of breath. I knew it wasn't good and so I wanted to get some answers. After a stress test, they immediately scheduled me for a cardiac catheterization. During the procedure, the doctor stopped and stated that I needed bypass surgery. After a search for the surgeon who was most qualified and could see me quickly, I had an open-heart surgery with a double bypass.

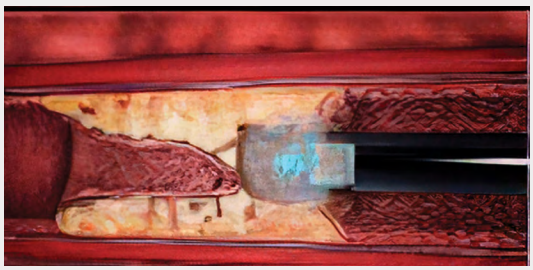
"I was doing well in my recovery until about a year later, when I began experiencing shortness of breath again. A cardiac catheterization I had revealed a blockage was back and I was having a very intricate problem that they couldn't fix.

"After venting to one of my cousins who had had a similar problem, he told me about how Dr. Sharma had fixed him. I immediately called Dr. Sharma at Mount Sinai, and he said he could help me too. So, we traveled from North Carolina to New York. Dr. Sharma was amazing and so genuine when I met him. Shortly after my first meeting, my procedure was scheduled. When he was done cleaning out my artery and I was in recovery, he came to tell me himself that he got it out and that I would be okay. I only had to stay overnight one night and everyone who worked there was wonderful. From the intake to the operation and after, everyone was so kind and really made me feel like everything was going to be okay. They did a great job of making me feel better about the whole situation. Since then, I haven't had the shortness of breath again."

### ROTAPRO ROTATIONAL ATHERECTOMY SYSTEM (RA)

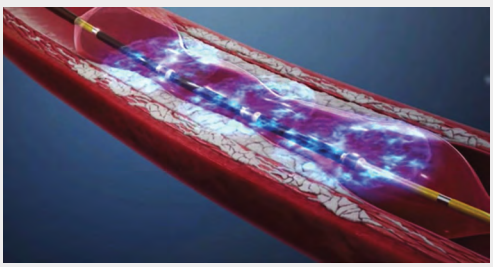



### EXCIMER LASER ATHERECTOMY SYSTEM (ELCA)

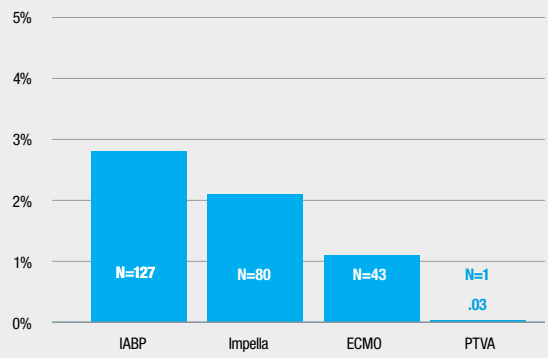


### DIAMONDBACK 360 ORBITAL ATHERECTOMY SYSTEM (OA)

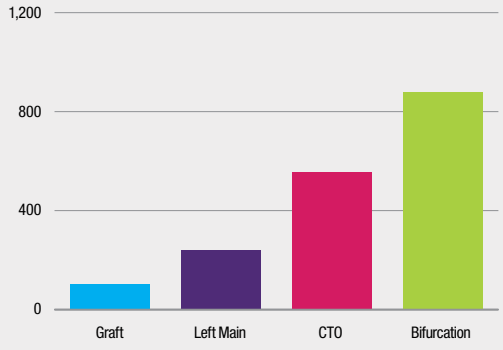

### SHOCKWAVE INTRAVASCULAR LITHOTRIPSY (IVL)



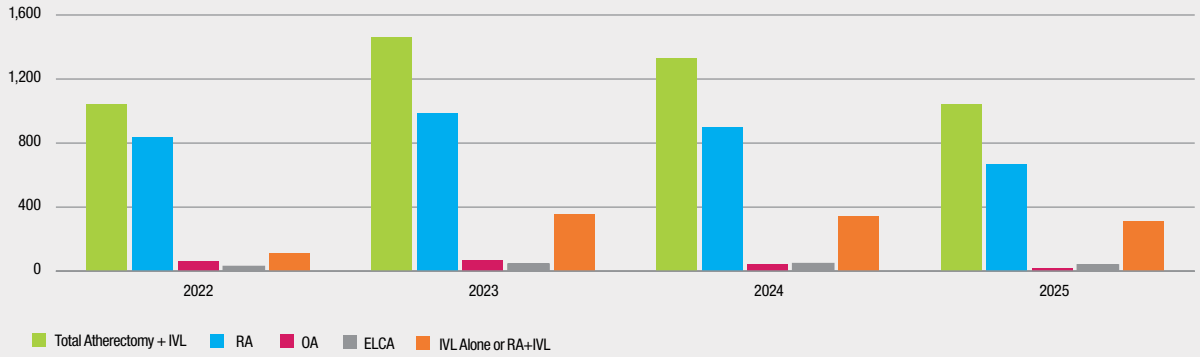
## HIGH RISK PCI WITH LV SUPPORT IN 2025 AT THE MOUNT SINAI HOSPITAL: (N=3,743)

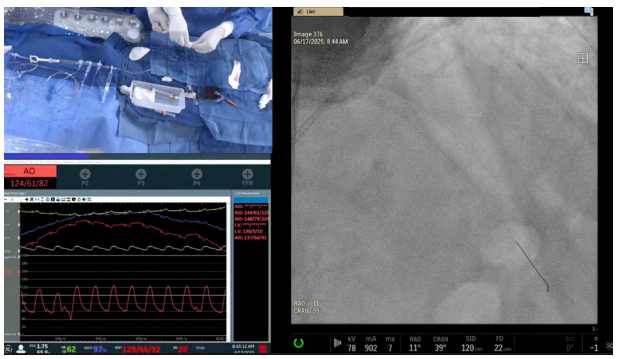



## COMPLEX CORONARY INTERVENTIONS IN 2025
(N=3,743)




## TOTAL ATHERECTOMY (INCLUDING IVL) VOLUME AT THE MOUNT SINAI HOSPITAL
LAST FOUR YEARS



**TO VIEW A RECORDED PCI CASE FEATURING A COMPLEX RA OF SEVERELY CALCIFIED CIRCUMFLEX,** SCAN THE CODE


References

1. Sabatine MS, Bergmark BA, Murphy SA, O'Gara PT, Smith PK, Serruys PW, et al. Percutaneous coronary intervention with drug-eluting stents versus coronary artery bypass grafting in left main coronary artery disease: an individual patient data meta-analysis. *Lancet.* 2021:398;2247-2257.
2. Fearon WF, Zimmerman FM, Ding VY, Takahashi K, Piroth Z, van Straten AHM et al. Outcomes after fractional flow reserve-guided percutaneous coronary intervention versus coronary artery bypass grafting (FAME 3): 5-year follow-up of a multicentre, open-label, randomised trial. *Lancet.* 2025:405;1481-1490.

## Alfredo Santamaria

**Diagnosis:** Bilateral critical limb-threatening ischemia with non-healing foot ulcers

**Treatment:** Successful limb salvage using the LimFlow Deep Vein Arterialization System

"Dr. Krishnan offered me something I had not heard before: a real chance to save my limbs."

"I first learned I needed specialized cardiac and vascular care after being diagnosed with severe peripheral artery disease. The circulation problems began affecting both of my feet, and over time, the symptoms became impossible to ignore.

"I had constant pain in both legs, especially in my right foot. I could not walk more than a block, and I began having pain even when I was resting at night. I developed ulcers on both feet that would not heal. I had already been treated on my left side, including a toe amputation. When my right foot began showing the same warning signs, I knew I needed advanced care quickly.

"Other doctors had told me that amputating both legs below the knee might be my only option. Then I learned about Prakash Krishnan, MD, and the Mount Sinai Cardiac Catheterization Laboratory at The Mount Sinai Hospital. I was told that Dr. Krishnan was one of the few specialists performing deep vein arterialization, an advanced procedure that could help restore blood flow to the foot when the usual arteries are too blocked.

"Going into my first appointment, I was scared but hopeful. Facing the possibility of losing both legs was terrifying. But Dr. Krishnan offered me something I had not heard before: a real chance to save my limbs.

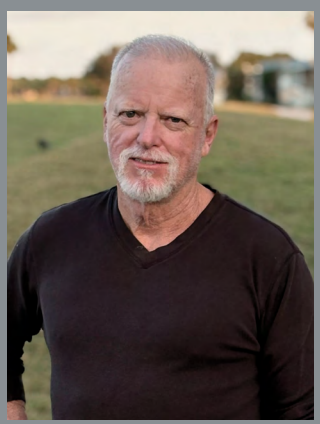
"His plan was to reroute blood flow into my foot through a vein, bypassing the blocked arteries. My care team performed angiograms to look at the blood vessels, opened my anterior tibial artery with a stent, and used the LimFlow system to create a new pathway for blood to reach my foot.

"Today, I am walking and working with both feet. Dr. Krishnan and the Mount Sinai team gave me my life back. To anyone considering care at Mount Sinai Fuster Heart Hospital, I would say: go. They gave me hope when other places had given up."

## John Scanlon

**Diagnosis:** Unstable angina from complex CAD

**Treatment:** Successful DES (x3) PCI of LCx, OM1, and ramus



"I play jazz piano gigs, walk the golf course, exercise, travel, and most importantly, I am able to spend quality time with my family."

"I was diagnosed with stage IV cancer back in the late '90s. Doctors on Long Island were able to save my life through chemotherapy and then radiation therapy. It was the radiation therapy that eventually caused my RIHD (radiation-induced heart disease) almost 20 years later. I've had several heart procedures over the ensuing years, including a double bypass. Then came my latest episode—after a lifetime of exercise (golfing, hiking, gym time), all of which I was able to successfully resume following previous procedures, my health deteriorated suddenly to where I could hardly walk without being short of breath. For the first time, my cardiologist in Indiana (where we had moved for family) felt unable to do the necessary procedures to open my current closed-off arteries—the procedure would be too complex and risky.

"Then came a fateful coincidence. Our good friend on Long Island, Jaimie LaMarca, is program coordinator for cardiologist Aaron Freilich, MD. She (and Dr. Freilich) had always taken an interest in my case from the start, and now Dr. Freilich believed his colleague and friend Dr. Sharma might consent to look at, and even possibly take up, my current case—and the rest is history. Despite never having met me, Dr. Sharma generously agreed to attempt a very complex and specialized procedure at The Mount Sinai Hospital in August—which ultimately included trifurcation stents and an atherectomy—and which was ultimately successful.

"I am now back to enjoying a physically active retirement. I play jazz piano gigs, walk the golf course, exercise, travel, and most importantly I am able to spend quality time with my wife, family, and grandkids after our recent move to Indiana. I've had to face the prospect of losing all that and more. I am eternally grateful to Dr. Sharma for his generous spirit and unsurpassed skill—and to the excellent and kind staff at The Mount Sinai Hospital for their hard work and compassion."

# Artificial Intelligence Improving Cardiac Outcomes

JEFFREY BANDER, MD

The cardiac catheterization laboratory has long been defined by what happens during the procedure, precise imaging, hemodynamic assessment, and coronary intervention. However, the period following catheterization and percutaneous coronary intervention (PCI) remains a critical window during which complications such as arrhythmias, stent thrombosis, and hemodynamic instability may develop undetected. The artificial intelligence (AI)-powered wearable biosensors are now transforming this post-procedural landscape by enabling continuous, remote cardiac monitoring that extends beyond hospital discharge.

AI-driven electrocardiogram (ECG) analysis tools have achieved approximately 90 percent accuracy in detecting atrial fibrillation, as validated at Mayo Clinic, while Cleveland Clinic has reported a 25 percent reduction in cardiac readmissions through implementation of AI-enhanced remote monitoring platforms.[1] The Modern wearable biosensors—including chest-worn patches capable of continuous two-channel ECG recording for up to seven days and consumer smartwatches with single-lead ECG capabilities—now integrate directly with enterprise platforms such as GE HealthCare's MUSE NX system, enabling near-real-time data transmission into the electronic medical record.

The clinical sophistication of these devices extends beyond simple rhythm monitoring. Meta-analyses demonstrate that AI-enabled smart rings now achieve atrial fibrillation detection with 98.9 percent sensitivity and 94.3 percent specificity. Perhaps most transformative is the application of predictive analytics: machine learning algorithms analyzing continuous biosensor data can now identify patterns of clinical deterioration 24 to 48 hours before overt symptom onset, enabling proactive intervention rather than reactive emergency management.[2]

With an estimated 60–80 percent of U.S. health systems already utilizing some form of AI-enabled ECG analysis, and connected devices generating approximately 25–50 gigabytes of patient data per day, the infrastructure for scalable post-procedural cardiac care is rapidly maturing.[1] The convergence of interventional cardiology and artificial intelligence marks a defining shift in cardiovascular care, transforming the catheterization laboratory into a fully connected ecosystem where innovation does not end at the procedure, but continues seamlessly into the patient's home.

**Figure 1. AI-Driven Post-Procedural Cardiac Monitoring Pathway. Wearable biosensors applied at discharge enable continuous data transmission through cloud-based AI platforms integrated with hospital EMR systems, facilitating early detection of post-procedural complications.**

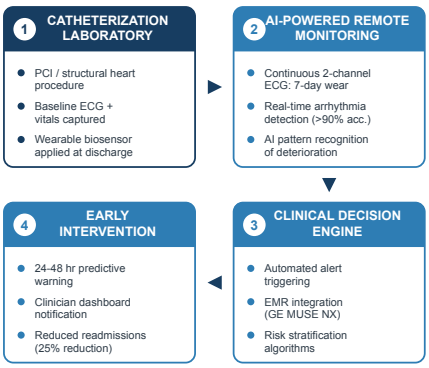
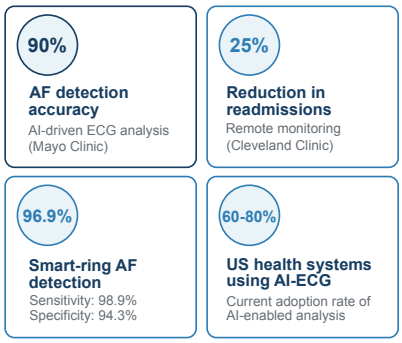



**Figure 2. Clinical Impact of AI-Powered Wearable Cardiac Monitoring. Key outcome metrics demonstrating the current evidence base for AI-driven wearable biosensors in post-procedural cardiac surveillance and remote patient monitoring.**




References

1. Moreland R, Lyons C, Chandra S. AI-Driven Remote ECG Monitoring and Predictive Analytics: Transforming Cardiac Care from Arrhythmia Detection to Perioperative Optimization. *Am J Health Care Sci.* 2025;1(3). doi:10.61449/ajhcs.2025.8.

2. Gaoudam N, Sakhamudi SK, Kamal B, et al. Wearable Devices and AI-Driven Remote Monitoring in Cardiovascular Medicine: A Narrative Review. *Cureus.* 2025;17(8):e90208. doi:10.7759/cureus.90208.

3. Abedi A, Verma A, Jain D, et al. AI-Driven Real-Time Monitoring of Cardiovascular Conditions With Wearable Devices: Scoping Review. JMIR mHealth uHealth. 2025;13:e73846. doi:10.2196/73846.

# Advances in Treatment of In-Stent Restenosis

SAMIN K. SHARMA, MD, AND ANNAPOORNA S. KINI, MD

## Understanding ISR

In-stent restenosis (ISR) is a condition where the previously stented segment of a blood vessel gradually narrows again due to scar tissue formation. This typically occurs 9 to 12 months after stent placement. Despite significant advancements in drug-eluting stent (DES) technology, ISR and the need for repeat revascularization still occur in 2 to 10 percent of cases within the first year and at a rate of one to two percent per year thereafter.

Most patients with ISR experience recurrent chest pain, but in some cases it can present as an acute myocardial infarction. The management of ISR has evolved considerably, focusing on technological innovations, targeted drug delivery, and personalized patient care. Subsequent restenosis after first ISR treatment is high—up to 30 percent especially when only balloon angioplasty is used. For that reason, many other devices have been used to treat ISR with better long-term success: atherectomy, excimer laser atherectomy, restenting, drug-coated balloon, intravascular brachytherapy, etc.

Mount Sinai has achieved a high rate of procedural success with low complication rates and lower ISR recurrence, even in complex patient cases.

## Drug-Coated Balloon (DCB) Technology: A Breakthrough in ISR Treatment

The treatment of ISR has advanced significantly with the introduction of drug-coated balloons (DCB), a newly FDA-approved technology that represents a major shift in ISR management.

DCBs are coated with drugs such as paclitaxel, sirolimus, or everolimus, which are released during balloon angioplasty. This targeted drug delivery system helps prevent excessive cell proliferation and reduces the risk of recurrent ISR while minimizing systemic drug exposure. As a result, DCBs lower the need for additional stents and subsequent restenosis, offering a less invasive and more precise treatment approach.

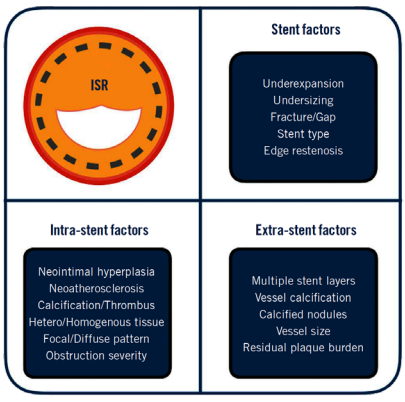
As research continues, the integration of DCB technology into clinical practice is expected to become more widespread, further improving long term outcomes in ISR management.

Mount Sinai has participated in the Sirolimus-Coated Balloon Trial, which evaluated the safety and effectiveness of the SELUTION SLR ISR Drug-Eluting Balloon for ISR treatment with highest enrollment. Now the MAGICAL ISR trial is ongoing.

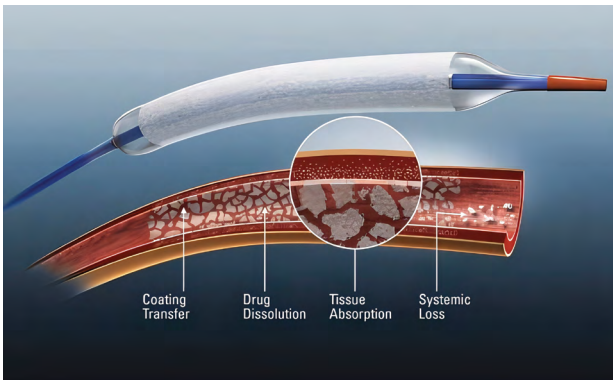
As research continues, the integration of DCB technology into clinical practice is expected to become more widespread.

These ongoing advancements position Mount Sinai at the forefront of ISR treatment, continually enhancing patient care through cutting-edge research and innovation.

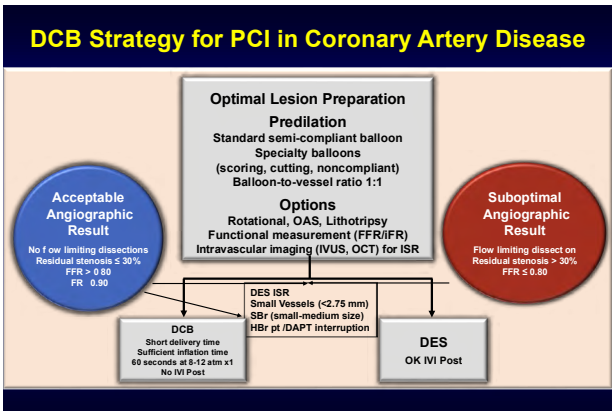
FACTORS TO CONSIDER WHEN PERFORMING ISR-PCI



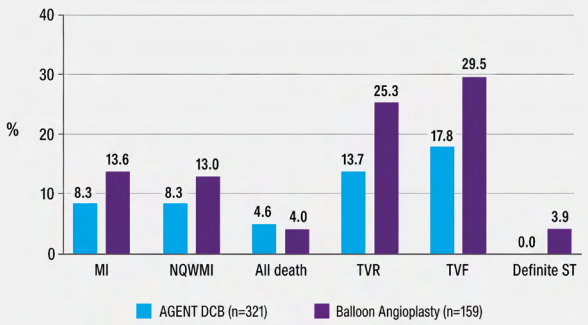
### DRUG-COATED BALLOONS




### DCB STRATEGY FOR PCI IN CORONARY ARTERY DISEASE



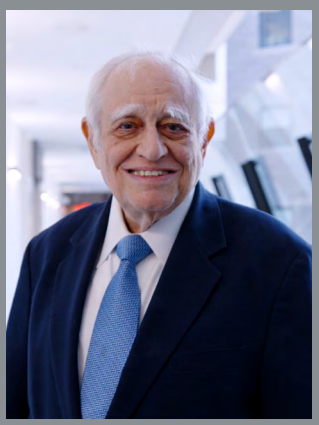

### AGENT IDE TRIAL: CARDIAC ENDPOINTS AT 1 YEAR




## William Green, MD

**Diagnosis:** Crescendo angina from LAD CTO

**Treatment:** Successful atherectomy & DES for LAD and DCB to diagonal branch



"I am a physician who is board certified in physical medicine and rehabilitation. I've been doing this for over 50 years. In 2021, I was an attending physician at three medical centers in Brooklyn. I was very busy and active.

"Toward the end of 2021, I began having chest pain and shortness of breath, so I went to see my cardiologist at NYU Langone, who suggested I get a cardiac catheterization. During my catheterization in February 2022, doctors found a chronic total occlusion in the left anterior descending artery. The interventional cardiologist tried to go into that artery three times, but was unsuccessful. He then sent me for cardiac rehabilitation in an effort to cause collateral circulation to form to compensate for the blockage.

"Unfortunately, I couldn't tolerate the rehabilitation exercises because of the chest pain I was having. After bringing up this point to my cardiologist, he spoke to other interventional cardiologists at NYU, who concluded that nothing could be done.

"I wanted another opinion, so I went to The Mount Sinai Hospital. If no one could help me, I was surely going to die. A doctor I met with at The Mount Sinai Hospital referred me to Dr. Samin Sharma because he had saved her own father's life with his skills. She said he was the best interventional cardiologist. So, on this recommendation, I went to see Dr. Sharma, who said he would take my case. On December 5, 2023, Dr. Sharma removed the occlusion from my left anterior descending artery, placed a stent, and saved my life.

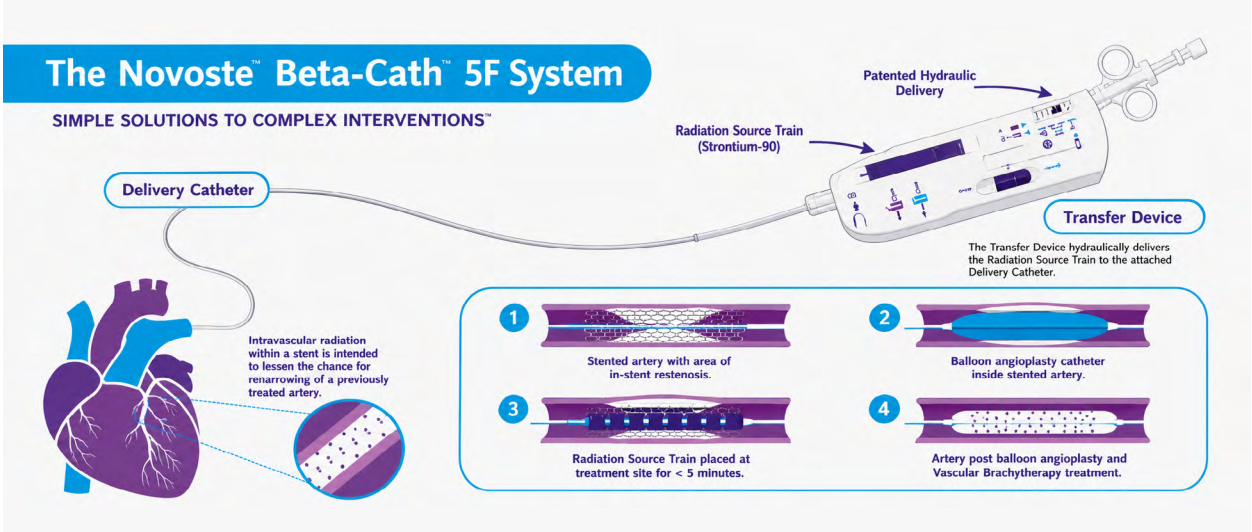
"After the procedure, I was able to go home the very next day. I no longer had any chest pain or any shortness of breath, all thanks to Dr. Sharma. He made me feel 50 years younger. He saved my life by performing a complicated procedure that so many interventional cardiologists couldn't do. I am so thankful he accepted my case and was able to help me. He is truly unbelievable."

**TO LEARN ABOUT DR. GREEN'S EXPERIENCE IN HIS OWN WORDS, SCAN THE CODE**

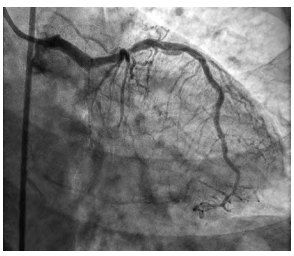
## Intravascular Brachytherapy for Multilayer DES In-Stent Restenosis (ISR)

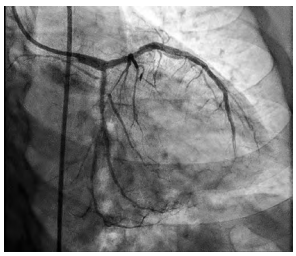
Treating multilayer ISR remains a challenge, with risks of recurrent ISR and poor long-term outcomes after multiple stent layers. Intravascular brachytherapy (IVBT) has seen growing interest as a treatment for multilayer ISR (>2). Our compared outcomes of IVBT using the Novoste Beta-Cath 5F system vs. non-IVBT PCI for multilayer ISR at three-year follow-up showed the sustained benefit of IVBT in those complex cases without added complications; sustained 25 percent reduction in target lesion revascularization (TLR) at three years.

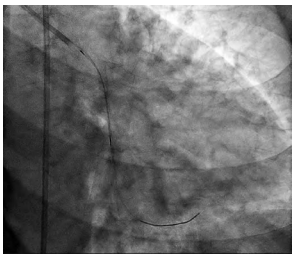
NOVOSTE™ BETA-CATH™ 5F SYSTEM

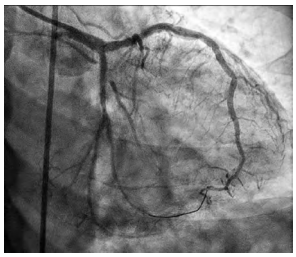



INTRAVASCULAR BRACHYTHERAPY TREATMENT

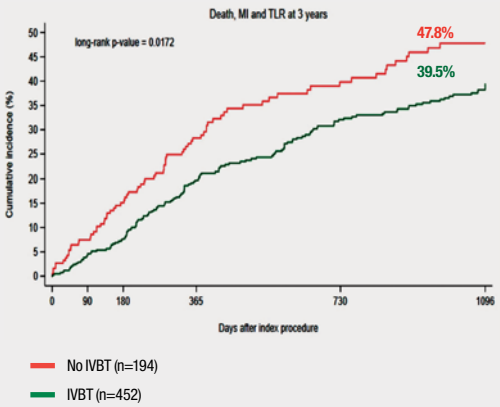

Baseline


Post PCTA

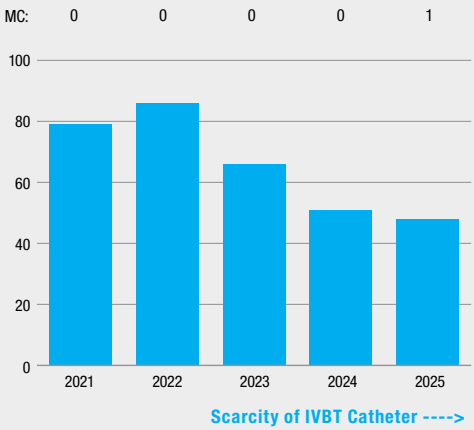

IVBT Catheter


Post PCTA and IVBT

### MACE AT THREE YEARS AFTER IVBT + PCI IN CURRENT MULTILAYER DES-ISR: MSH EXPERIENCE




### IVBT VOLUME AT THE MOUNT SINAI HOSPITAL




References

1. Giustino G, Kini A, Sharma S et al., Coronary in-stent restenosis; JACC State-of-the-art review. J Am Coll Cardiol 2022;80:348.
2. Yeh RW, Shlofmitz R, Moses J, Bachinsky W, Dohad S, Rudick S, et al. Paclitaxel-coated balloon vs uncoated balloon for coronary in-stent restenosis: the AGENT IDE randomized clinical trial. *JAMA* 2024;331:1015-24.
3. Alfonso F, Coughlin JJ, Giacoppo D et al., Management of In-Stent Restenosis. *EuroIntervention* 2022;18:e103-e123.

# Gajanana Prabhu Gaunkar

**Diagnosis:** Crescendo angina from bifurcation CAD

**Treatment:** Successful DES PCI of LAD and diagonal using MiniCrush Technique

"After international travel that included periods of relatively high physical exertion, I noticed atrial fibrillation for the first time on my Apple Watch. My routine stress test two years earlier had been reported as normal. In view of a forthcoming travel plan and knowing that I had undergone angioplasty with a stent placed in the RCA (right coronary artery) 20 years earlier, I was advised to get a cardiac CT scan. The scan indicated possible blockages. Although a physician and cardiologist agreed that I could proceed with my travel plan, I began noticing a few new symptoms that had not been present before.

"We consulted another cardiac care facility, where I was informed that there were blockages in the system and that cardiac bypass surgery would be the best intervention to allow me to return to full activity. After discussing this as a family, we decided to consult Roxana Mehran, MD, FACC. After reviewing my records and conducting a fresh evaluation with a clear explanation of treatment options, she immediately put us in touch with Dr. Annapoorna Kini and scheduled a procedure. The Mount Sinai team was very efficient in guiding us through scheduling tests and consultations, the intervention itself, and recovery time at the facility.

"I cannot say enough good things about the team that made me feel at home before, during, and after the intervention. We had time to talk and share observations about common non-medical interests, such as travel to different countries. I have been able to resume my normal physical activities, such as routine gym exercise, cycling, yoga, meditation, and trekking, without having to think about earlier limitations. Since the intervention, I have visited countries from Japan to Portugal for various reasons, including treks in national parks, cities, the countryside, and even jungles. I participated in the Europe-25 bird count with a group at Lambesc Forest in France and photographed flamingos in the Camargue."

# Expanded Indications of Transcatheter Aortic Valve Replacement

SAMIN K. SHARMA, MD, ANNAPOORNA S. KINI, MD, AND SAHIL KHERA, MD

Multiple trials of transcatheter aortic valve replacement (TAVR) in patients with varying levels of surgical risk (based on the Society of Thoracic Surgeons [STS] Score) have shown TAVR as a viable therapeutic option for patients who have severe, symptomatic calcific aortic stenosis (AS) at all levels of surgical risk.

The EARLY TAVR trial looked into performing TAVR before symptoms develop, to assess whether it could benefit patients with AS. The study groups were randomly assigned to Early TAVR Group (these patients got the valve replacement right away) or Watch-and-Wait Group (these patients were monitored, and they only got the valve replacement if they developed symptoms). After a five-year study, the EARLY TAVR trial demonstrates that performing TAVR before symptoms develop in patients with severe AS can lead to better outcomes, including lower rates of death, stroke, and unplanned hospitalizations.

A seven-year follow-up of PARTNER 3 trial comparing TAVR vs SAVR in low risk AS patients showed excellent comparable outcomes and hence a new viable alternative.

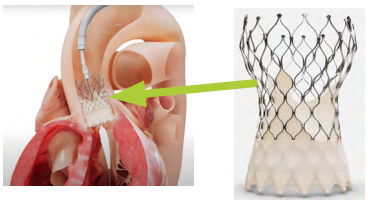
At Mount Sinai, the SENTINEL™ device was being used in 50 percent of TAVR cases. But recent data by randomized trials have shown the futility of the cerebral embolic protection for TAVR and hence now it is used in less than 5 percent of cases. The Mount Sinai Hospital was the first center in the United States to deploy the CoreValve™, in December 2010. Since then, our TAVR volume and outcomes have improved significantly compared with other centers in the Transcatheter Valve Therapy (TVT) Registry. There are some AS patients who have had a higher incidence of complications after implanting TAVR. These patients should preferably be referred to open surgical aortic valve replacement (SAVR); currently 20 percent of AS patients undergo SAVR at The Mount Sinai Hospital.

SAVR will be indicated in the following scenarios of severe AS:

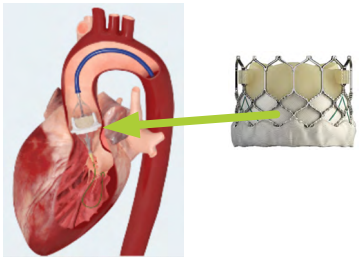
- Age <65 years old
- Low to intermediate STS risk and extensive/complex coronary artery disease (CAD)
- Bicuspid aortic valve (BAV) with low STS risk
- Concomitant aortic root/aorta dilatation (>4.6cm)
- Heavy left ventricular outflow tract (LVOT) calcification (high chance of annular rupture)
- Low-intermediate STS risk bioprosthetic dysfunction
- Adverse anatomy (low coronary height, too small or large annulus)
- Concomitant significant mitral valve (MV) disease with low surgical risk

**TRANSCATHETER AORTIC VALVES**
FDA-APPROVED DEVICES

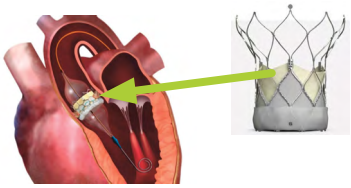
EVOLUT™ FX+



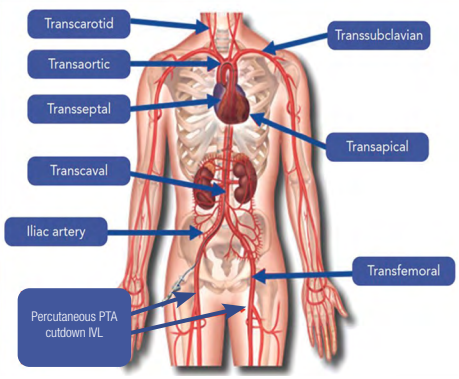
SAPIEN-3 Ultra RESILIA

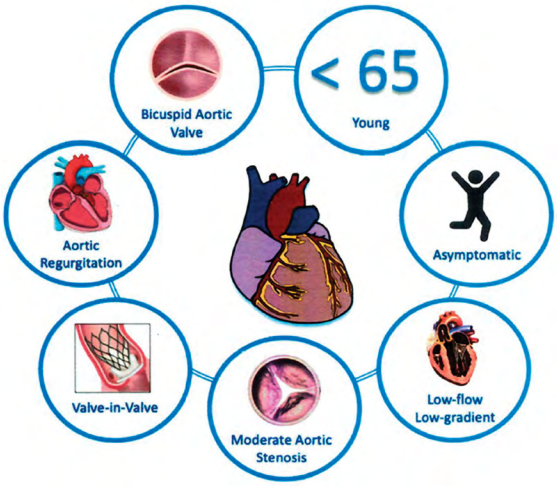


Navitor Vision

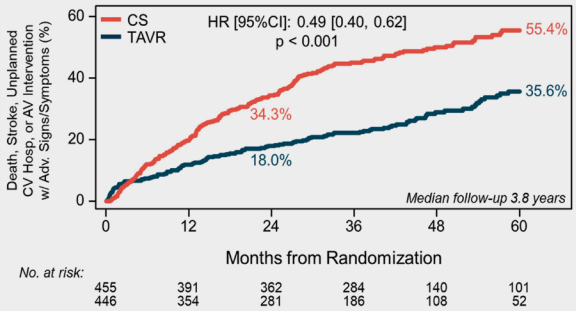


**OVERVIEW OF APPROACHES FOR TAVR**

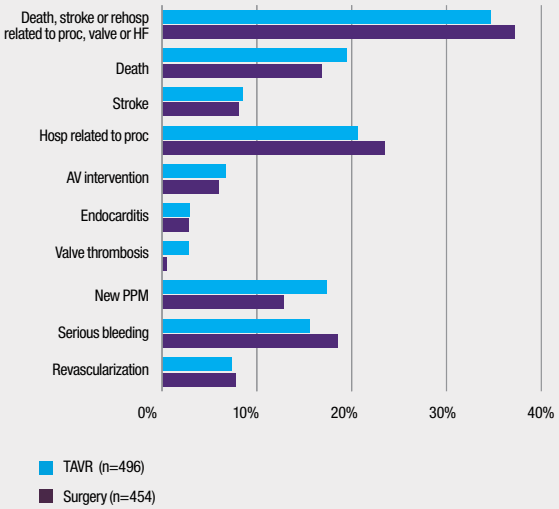




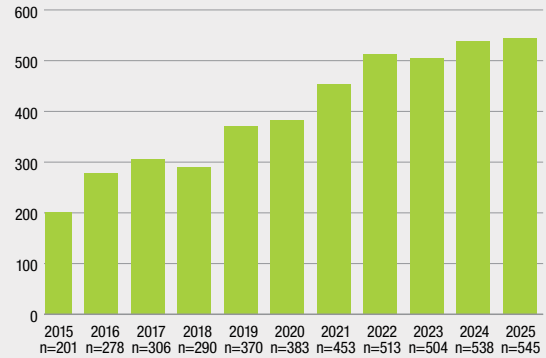

## EARLY TAVR TRIAL: EXPLORATORY ANALYSIS OF THE PRIMARY ENDPOINT




## PARTNER 3 TRIAL: FIRST PRIMARY ENDPOINT AND ITS COMPONENTS AT SEVEN YEARS




## GROWING STRUCTURAL TRANSCATHETER HEART INTERVENTIONS TAVR PROCEDURES AT THE MOUNT SINAI HOSPITAL: 2015 TO 2025



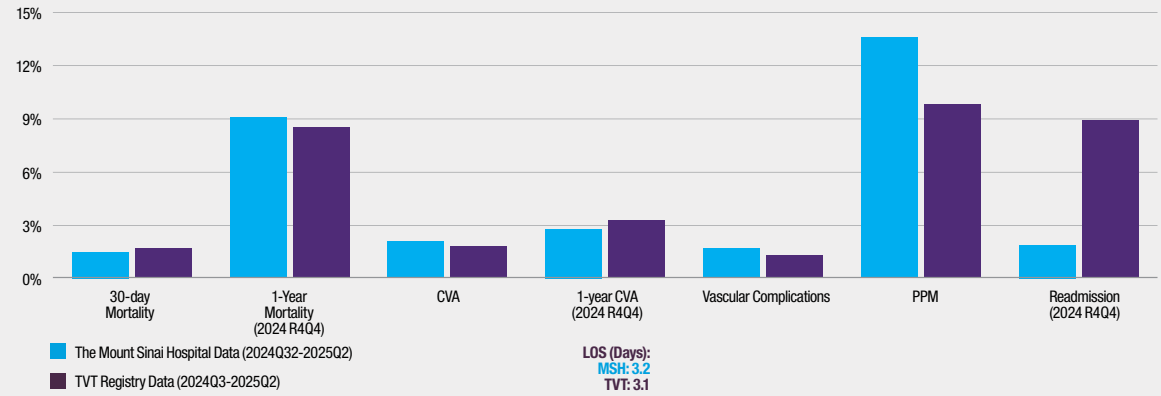

**TO VIEW A RECORDED TAVR CASE FEATURING THE NAVITOR VISION VALVE, SCAN THE CODE**

# 4,200+ TAVR CASES

**SINCE MOUNT SINAI PERFORMED THE FIRST CASE IN THE USA IN DECEMBER 2010**

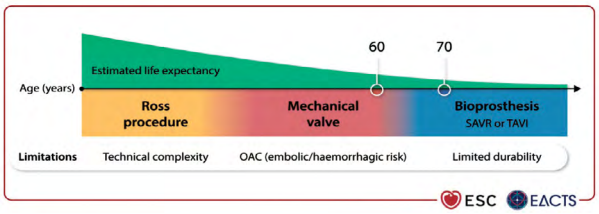
## THE MOUNT SINAI HOSPITAL TAVR OUTCOMES 2025

- N=545 (60% SAPIEN-3, 29% EVOLUT-R/FX COREVALVE, 11% NAVITOR)
- 83.9% MAC; 16.1% GA. 4.4% CEP
- 99.3% PERC FEMORAL; 6.6% CUTDOWN FEMORAL; 0.7% TRANSCAROTID. 9.4% VIV (N=51; 26 TAV-IN-SAV, 25 TAV-IN-TAV)
- 99.3% TF TAVR

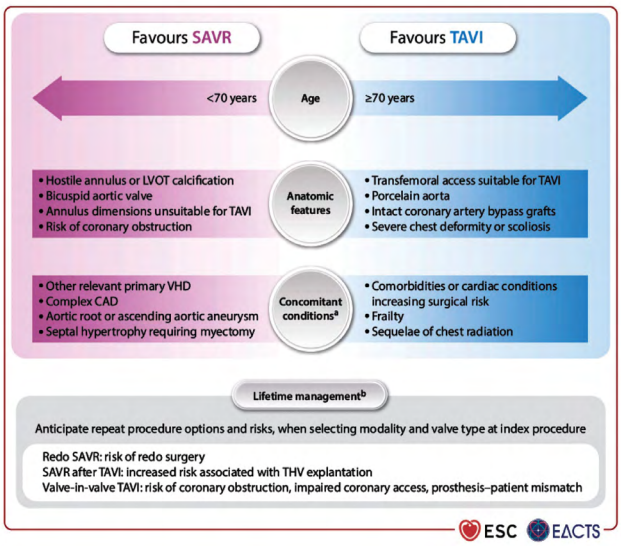


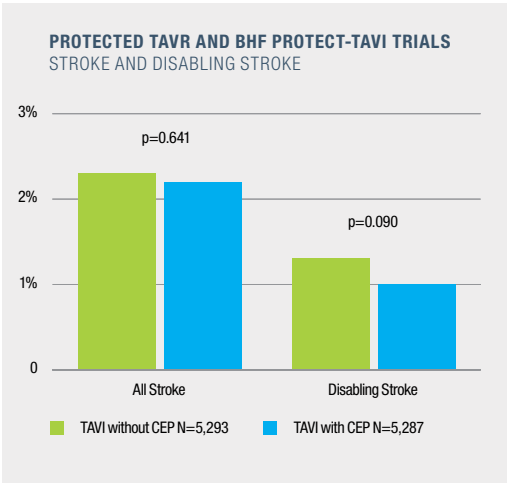

**Approximately 99 percent of TAVR procedures at The Mount Sinai Hospital are done via a femoral approach**

## MODE OF INTERVENTION IN PATIENTS WITH SEVERE AORTIC STENOSIS




| Recommendations | Class | Level |
|---|---|---|
| **Mode of intervention** | | |
| It is recommended that AV interventions are performed in Heart Valve Centres that report their local expertise and outcome data, have on-site interventional cardiology and cardiac surgical programmes, and a structured collaborative Heart Team. | I | C |
| It is recommended that the mode of intervention is based on Heart Team assessment of individual clinical, anatomical, and procedural characteristics, incorporating lifetime management considerations and estimated life expectancy. | I | C |
| TAVI is recommended in patients ≥70 years of age with tricuspid AV stenosis, if the anatomy is suitable. | I | A |
| SAVR is recommended in patients <70 years of age, if the surgical risk is low. | I | B |
| SAVR or TAVI are recommended for all remaining candidates for an aortic BHV according to Heart Team assessment. | I | B |





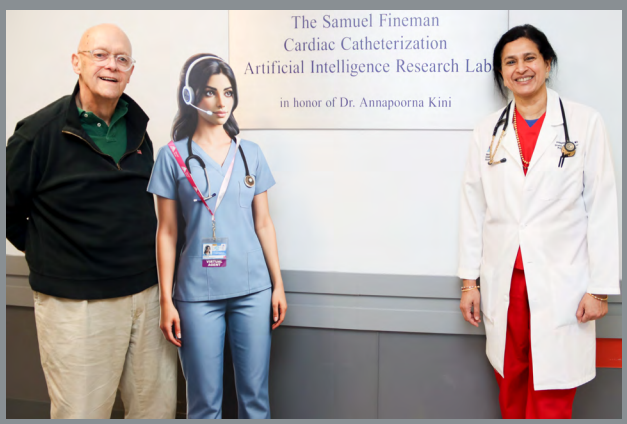

References

1. Genereux P, Schwartz A, Oldermeyer B, Pibarot P, Cohen DJ et al., Transcatheter Aortic-Vavle Replacement for Asymptomatic Severe Aortic Stenosis EARLY TAVR. *N Engl J Med* 2025;392:217-22
2. Leon MB, Mack MJ, Pibarot P, Hahn RT, Thourani VH et al. Transcatheter or Surgical Aortic-Valve Replacement in Low-Risk Patients at 7 Years PARTNER 3. *N Engl J Med* 2025 Oct.7, Epub ahead of print.
3. Beerkens F, Tang G, Kini A, Lerakis S, Dangas G, Mehran R, et al. Transcatheter aortic valve replacement beyond severe aortic stenosis. *JACC* 2025;85:944-64.
4. Karbanda R, EuroPCR 2025

# Paul B. Sharon

**Diagnosis:** Severe calcific aortic stenosis

**Treatment:** Successful TAVR using 29mm SAPIEN-3 Ultra resilia valve in 2024




"We love Mount Sinai. That's all I can say.

"I've had a history of heart problems. Not only did Mount Sinai save my life from a tumor in my colon, I've been fortunate to be under the care of my cardiologist Jonathan Halperin, MD, for more than 35 years. He's kept a close watch on my heart.

"About eight or nine years ago, he noticed an issue with with my aortic valve, which was stiffening and becoming less effective. At first, I wasn't feeling any symptoms, but after a few years, I started to have some trouble breathing. I'd get tired after walking just five or six blocks. It got progressively worse, where if I walked a half a block, I'd have to stop and catch my breath.

"Dr. Halperin connected me with Dr. Sharma. I was quickly brought in for an evaluation, and the multidisciplinary team agreed—it was just a question of how to approach the problem. We agreed because of my age and other health history that it would not be ideal to do open surgery to repair my valve. They told me there was a procedure called TAVR where they could replace my valve through a catheter, much like they had placed my stents. Within two weeks I was scheduled.

"The experience was excellent. Everywhere you look there are talented and professional people, and the whole time I was in the hospital they were checking on me constantly. They even have an AI-powered assistant called Sofiya that made sure leading up to and after the procedure I could get my questions answered at any time.

"Even though it was a minimally invasive procedure, it took a little while to get back to 100 percent. But after a few weeks, I was back to normal, and today I have no symptoms at all. Dr. Sharma and The Mount Sinai team are simply amazing."

# Growing Mitral Transcatheter Edge-to-Edge Repair Procedures Using MitraClip and PASCAL

ANNAPOORNA S KINI, MD, STAMATIOS LERAKIS, MD, PHD, GILBERT H.L. TANG, MD

Among all valvular heart diseases, mitral regurgitation (MR) is the most common valvular abnormality, affecting 10 percent of individuals aged >75 years. Mitral regurgitation can be classified into primary or secondary MR. Structural abnormalities of mitral valve lead to primary MR. Secondary mitral regurgitation can be due to pathology in the left ventricle and is called ventricular secondary MR. Or, it can be due to left atrial pathology like dilatation of the left atrium, and is called atrial secondary MR. When a mitral valve is determined to have a severe backflow of blood across the valve, the patient's cardiologist will refer them to a structural heart program, where they will have a consult with the structural heart team and several noninvasive studies to determine procedural eligibility and formulate patient specific plan. Candidacy for mitral transcatheter edge-to-edge repair (M-TEER) with the MitraClip or the PASCAL device procedure is determined by multi-disciplinary heart team evaluation and based on a number of factors and tests performed at The Mount Sinai Hospital. The tests required are transthoracic echocardiogram (TTE), transesophageal echocardiogram (TEE), and consults with an interventional cardiologist, a cardiothoracic surgeon, and a heart failure specialist. Surgical repair would typically restore the mitral valve function and minimize the mitral regurgitation. Transcatheter edge-to-edge repair (TEER) by MitraClip or PASCAL device is currently indicated in patients with primary MR who are at high or prohibitive risk for mitral valve surgery and life expectancy of more than a year. M-TEER with the MitraClip is also indicated for symptomatic patients with secondary MR despite being on optimal guideline directed medical therapy (GDMT).

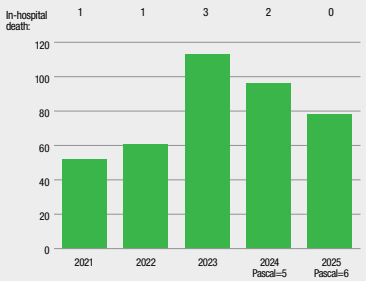
The MitraClip device is a small metal alloy clip covered with a polyester fabric that is implanted on the mitral valve. The MitraClip works by bringing the two leaflets of mitral valve together, which allows the valve to close more effectively and reduce the amount of blood that flows backwards. With TEE and the patient under general anesthesia, the device is implanted using a catheter inserted through the leg vein to the heart. The mitral clip procedure takes about one to two hours. Usually one to two clips are implanted in the mitral valve during the procedure, until a favorable result is obtained. MitraClip is an extremely safe procedure, but there is a very small, less than 1 percent risk of death, stroke, heart attack, bleeding, vascular injury, clip detachment, and infection. Usually one to two days of hospital stay is required. Patients should begin to feel relief of their symptoms within a few weeks after their procedure. MitraClip, in addition to the current medical therapy, will help improve the management of patients with heart failure. In the COAPT and RESHAPE-HF2 trials, MitraClip has been shown to improve the survival of patients with heart failure with reduced ejection fraction (HFrEF) and reduce their hospitalization due to heart failure. Also, GDMT patients who received MitraClip after completion of the trial had similar favorable outcomes as of the original MitraClip patients.

The Mount Sinai Hospital experience with the MitraClip TEER procedure is illustrated in Figure 1, with a very low complication rate compared to the national average. Strict adherence to our highly safe and efficient protocol, appropriately complemented by post-procedural management, has helped us optimize our outcomes. Figure 2 shows site-specific metrics at The Mount Sinai Hospital in comparison to the national metrics. The main difference between the PASCAL device

and the MitraClip is a spacer in the center of the device that improves the opening mitral valve orifice area, with broader paddles and more flexible nitinol clasps to help distribute the stress on the leaflets. We have used PASCAL in primary MR cases with small mitral valve areas with good results, and our experience with the PASCAL device is growing. Recent literature suggests that M-TEER with both MitraClip and PASCAL systems have been safe and effective in targeting more complex anatomies.

During the latter part of 2026, the new American College of Cardiology/American Heart Association valve guidelines are expected to be published and we will see if M-TEER will become a Class I indication in secondary MR as in the European valve guidelines published in 2025. The treatment of mitral TEER in patients with symptomatic moderate secondary MR will soon be investigated in the COAPT II randomized controlled trial. The M-TEER procedure, because of the excellent safety data since the first implant in 2003, alongside the technological evolution of the MitraClip device, now in its fifth generation, and significant innovations in echocardiographic imaging, will continue to be an effective alternative to surgery in appropriate patients evaluated by the Heart Team, for the treatment of MR in the years to come.

**FIGURE 1: M-TEER (MITRACLIP/PASCAL) PROCEDURES AT THE MOUNT SINAI HOSPITAL 2021–2025**




**MITRACLIP DEVICE**

**TO VIEW A RECORDED M-TEER CASE FEATURING MITRACLIP G4 SYSTEM FOR P3 PROLAPSE,** SCAN THE CODE

**FIGURE 2: SITE-SPECIFIC METRICS – AVERAGES OVER THE PAST 12 MONTHS — THE MOUNT SINAI HOSPITAL VS NATIONAL DATA 2022-24Q1**

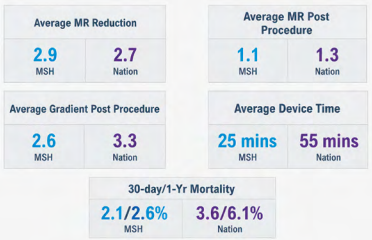



**FIGURE 3: COAPT TRIAL ANNUALIZED HF HOSPITALIZATION THROUGH THREE-YEAR FOLLOW-UP**

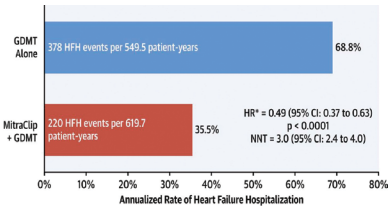
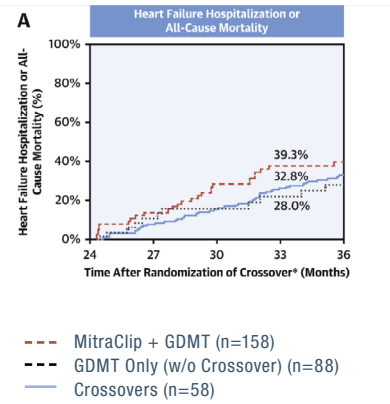



**FIGURE 4: COAPT TRIAL OUTCOMES OF PATIENTS IN THE GDMT GROUP WHO CROSSED OVER TO MITRACLIP VS. WITH THOSE CONTINUED IN GDMT ALONE VS. THOSE WITH ORIGINAL MITRACLIP PROCEDURE**





References

1. Stone GW, Abraham WT, Lindenfeld J, et al., Five-Year Follow-up after Transcatheter Repair of Secondary Mitral Regurgitation. *N Engl J Med* 2023;388:2037-48.
2. Anker SD Friede T, von Bardeleben RS et al. Transcatheter Valve Repair in Heart Failure with Moderate to Severe Mitral Regurgitation. *N Engl J Med* 2024;391:1799-809.
3. Kar S, Price MJ, Morse MA, et al. Transcatheter Repair in Posterior, Anterior and Bileaflet Mitral Valve Disease: 1-year Results from EXPANDed. *J Am Coll Cardiol Intv* 2025;18:898-908.
4. Praz F, Borger MA, Lanz J et al., 2025 ESC/EACTS Guidelines for the management of valvular disease. *Eur Heart J* 2025;46:4635-736.

# Indications for Tricuspid Transcatheter Edge-to Edge Repair and Evoque Tricuspid Transcatheter Valve Replacement

SAHIL KHERA MD, GILBERT H.L. TANG, MD, LUCY M. SAFI, DO

Symptomatic tricuspid regurgitation (TR) remains one of the most challenging valvular heart diseases to manage, driven by the complex tricuspid valve anatomy, heterogeneous etiologies (10 percent primary, 80 percent functional, and 10 percent lead-related), the interplay of right ventricular hemodynamics, and uncertainty regarding optimal timing of intervention. Treatment is often delayed due to the persistent belief that correction of left-sided valvular disease will result in improvement of TR. However, the incidence and prevalence of moderate-to-severe TR increases with age and is associated with significant morbidity and reduced survival.

The Mount Sinai Structural Heart Program has been at the forefront of percutaneous therapies for symptomatic severe TR. As a pivotal site for the TRILUMINATE TriClip (Abbott Structural Heart, USA) T-TEER trial and an early adopter of commercial transcatheter tricuspid valve replacement (TTVR), we utilize a multidisciplinary, heart-team–based approach involving advanced imagers, interventional cardiologists, cardiac surgeons, and electrophysiologists to determine the most appropriate strategy for each patient.

The commercial approval of the EVOQUE (Edwards Lifesciences LLC, USA) transcatheter tricuspid valve replacement system, based on results from the TRISCEND II trial, represents a major advancement in the non-surgical management of severe symptomatic TR, offering the potential for complete elimination of regurgitation. In this trial, TTVR was superior to medical therapy alone for the primary composite outcome, largely driven by improvements in symptoms and quality of life.[1]

The EVOQUE valve is a self-expanding bovine pericardial prosthesis mounted on a nitinol frame and available in four sizes (44 mm, 48 mm, 52 mm, and 56 mm) to accommodate a wide range of anatomies. Its atraumatic anchoring system allows conformity to native tricuspid structures while minimizing the risk of paravalvular leak. The device is delivered via femoral or jugular venous access under fluoroscopic and echocardiographic guidance using 3D transesophageal or intracardiac echocardiography. Its self-expanding design enables adaptation to complex anatomies, including prior T-TEER devices or existing cardiac implantable electronic device leads. Patients are typically admitted two days prior to the procedure for optimization and remain hospitalized for approximately two days post-procedure. Long-term anticoagulation and guideline-directed medical therapy are recommended following implantation. (Figure 1a and 1b).

Tricuspid transcatheter edge-to-edge repair (T-TEER) using the Abbott TriClip system has emerged as an important therapy for carefully selected patients with symptomatic severe TR who are at prohibitive or high surgical risk and have favorable leaflet anatomy. (Figure 2a and 2b). The TRILUMINATE pivotal trial demonstrated that T-TEER is safe and effective, producing significant and sustained reductions in TR severity, with most patients achieving moderate or less TR.[2] These improvements were accompanied by meaningful gains in functional status, quality of life, and heart failure symptoms compared with medical therapy alone, with low procedural mortality and an acceptable safety profile. Importantly, unlike

TTVR, T-TEER does not require routine long-term anticoagulation, making it particularly attractive for patients with bleeding risk or contraindications to anticoagulation. The procedure is performed under general anesthesia with fluoroscopic and echocardiographic guidance and has become an integral component of the contemporary treatment algorithm, particularly when valve replacement is not initially feasible or desirable.

In contemporary practice, transcatheter tricuspid interventions encompass two complementary strategies—repair with T-TEER and replacement with TTVR—each tailored to specific anatomic and clinical profiles. T-TEER is best suited for patients with favorable leaflet anatomy, preserved mobility, and adequate coaptation targets, where reduction of TR without lifelong anticoagulation is preferred. In contrast, TTVR is indicated for patients with severe or torrential TR who are unlikely to benefit from repair due to large coaptation gaps, extensive leaflet tethering, annular dilation, prior failed repair, or complex anatomy. While T-TEER offers a lower-risk, repair-first approach focused on symptom improvement, TTVR provides a more definitive solution capable of eliminating TR, albeit with the requirement for post-procedural anticoagulation. Careful, multidisciplinary, anatomy-driven patient selection is essential, positioning these therapies as complementary tools within an evolving, patient-centered treatment algorithm for tricuspid valve disease.

**FIGURE 1A. EVOQUE TTVR: VALVE DESIGN AND ANCHORS**

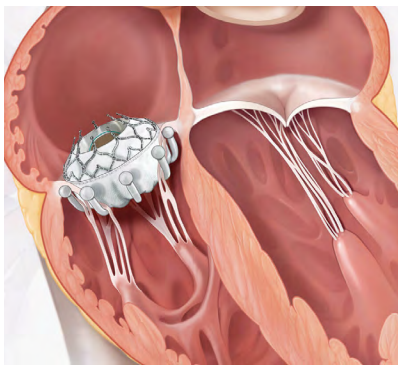


**FIGURE 1B. TRICUSPID TRANSCATHETER EDGE-TO-EDGE REPAIR (TEER) USING THE ABBOTT TRICLIP DEVICE**

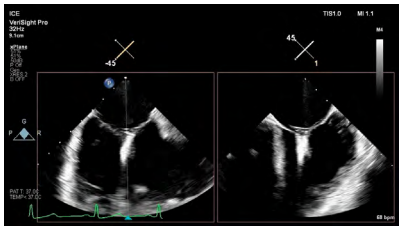


**FIGURE 2A. ABBOTT TRICLIP – DEVICE DESIGN**

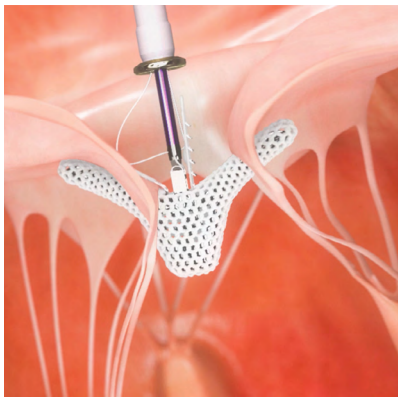
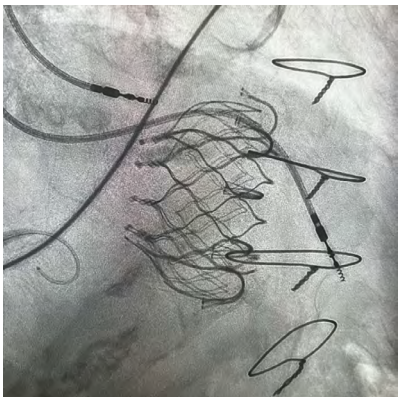


**FIGURE 2B. EVOQUE TTVR IN A PATIENT WITH PRIOR PACEMAKER LEAD**



**TO VIEW A RECORDED TTVR CASE FEATURING THE EVOQUE VALVE,** SCAN THE CODE


References

1. Hahn RT, Kodali S, et al. Transcatheter Valve Replacement in Severe Tricuspid Regurgitation. *N Engl J Med* 2025; 392: 115-126.
2. Tang GHL, Hahn RT, Whisenant BK, Hamid N, Naik H, Makkar RR, Tadros P, Price MJ, Singh GD, Fam NP, Kar S, Mehta SR, Bae R, Sekaran NK, Warner T, Makar M, Zorn G, Benza R, Jorde UP, McCarthy PM, Thourani VH, Ren Q, Trusty PM, Sorajja P, Adams DH; TRILUMINATE Pivotal Investigators. Tricuspid Transcatheter Edge-to-Edge Repair for Severe Tricuspid Regurgitation: 1-Year Outcomes From the TRILUMINATE Randomized Cohort. *J Am Coll Cardiol.* 2025 Jan 28;85(3):235-246
3. Safi L, Lerakis S, Tang GHL, Khera S, et al. Intraprocedural guidance for transcatheter tricuspid valve replacement in challenging scenarios. JACC Cardiovascular Imaging. 2025. Mar;18(3):382-388.

# Increasing Success of Chronic Total Occlusion (CTO) PCI

ANNAPOORNA S. KINI, MD, AND AMIT HOODA, MD

Chronic total occlusion (CTO) represents a 100 percent blockage of the coronary artery with evidence of occlusion duration exceeding three months. CTOs are identified in approximately 20 percent of all patients undergoing diagnostic angiography in everyday practice in the Cardiac Catheterization Laboratory.

Significant advancements in dedicated equipment and techniques have resulted in a leap in CTO percutaneous coronary intervention (PCI) success rates from 50–70 percent to 85–94 percent over the past decade at centers with specialized expertise, including The Mount Sinai Hospital.

Patients with CTOs often experience atypical symptoms, such as shortness of breath and exercise limitations, rather than the typical angina pain that occurs in patients with less severe blockages. The EUROCTO randomized trial has recently highlighted the superiority of CTO-PCI over medical therapy in improving patients' quality of life and physical function following high successful rates of recanalization of CTOs.

The adoption of seven fundamental principles for CTO-PCI, based on recent global expert consensus, ensures best practices:

1. Ischemic symptom improvement as the primary indication.
2. Essential dual coronary angiography for planning and safe execution.
3. The necessity of a microcatheter for optimal guidewire manipulation and exchanges.
4. Antegrade wiring as the initial technique, and application of retrograde approaches for more complex CTOs.
5. Prompt technique modification to improve the likelihood of success and efficiency.
6. Dedicated training and expertise to increase success rates and manage complications.
7. Intracoronary imaging, often with intravascular ultrasound (IVUS), to ensure optimal stent expansion and minimize risk.

IVUS plays a specific role in CTO-PCI, such as facilitating the puncturing of the proximal cap in ostial CTO and aiding in antegrade re-entry, contributing to the precision and safety of the procedure.

We at The Mount Sinai Hospital employ these globally recognized techniques and principles for our CTO-PCI, achieving high success rates in revascularizing CTO with both antegrade and retrograde approaches.

**FIGURE 1**: RETROGRADE RECANALIZATION OF CTO

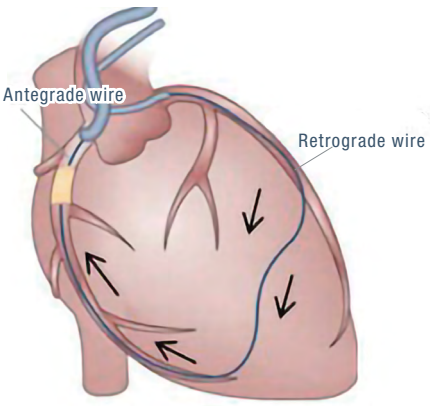



**FIGURE 2**: THE HYBRID ALGORITHM OF CTO CROSSING STRATEGIES

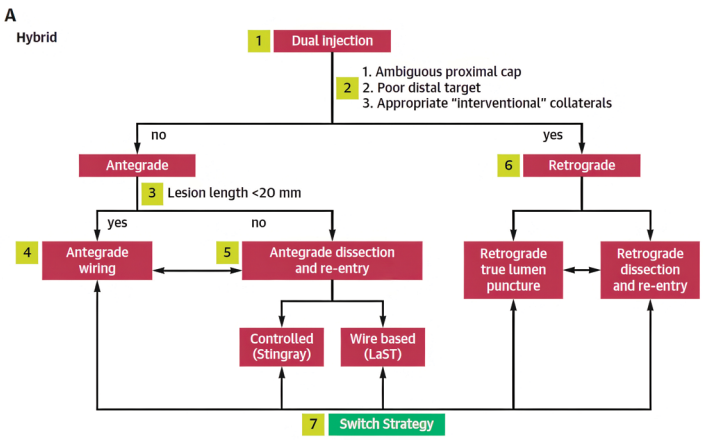
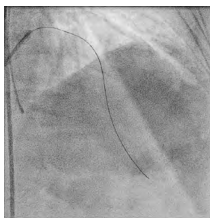


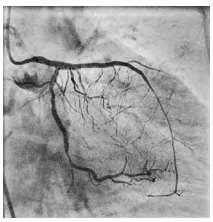
**FIGURE 3**: A REPRESENTATIVE CASE OF ANTEGRADE LAD CTO-PCI

a. Mid LAD CTO with collateral flow from RCA
b. Recanalization of CTO with antegrade wire escalation
c. Post-two DES implantation of Proximal to mid LAD

A

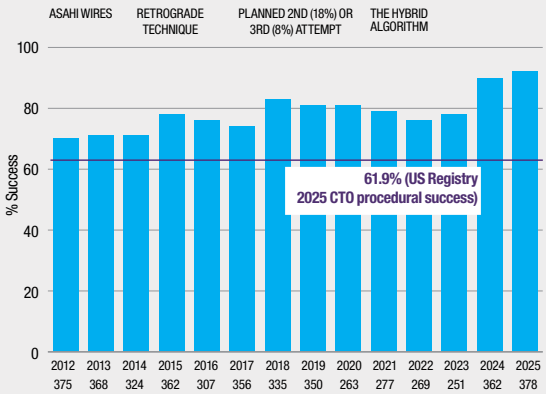


B



C

**FIGURE 4**: PROCEDURAL SUCCESS OF PCI FOR CTO AT THE MOUNT SINAI HOSPITAL




**TO VIEW A RECORDED PCI CASE FEATURING A LONG LAD CTO USING ANTEGRADE APPROACH,** SCAN THE CODE


References

1. Wu EB, Brilakis ES, Mashayekhi K, et al. Global Chronic Total Occlusion Crossing Algorithm: JACC State-of-the-Art Review. *J Am Coll Cardiol.* 2021;78(8):840-853.
2. Werner GS, Martin-Yuste V, Hildick-Smith D, et al. A randomized multicentre trial to compare revascularization with optimal medical therapy for the treatment of chronic total coronary occlusions. *Eur Heart J.* 2018;39(26):2484-2493.


# John Garahan

**Diagnosis:** Crescendo angina from right coronary artery CTO

**Treatment:** Successful atherectomy and 3 DES to RCA

"I have no shortness of breath when I'm in the ring showing our dogs."

"I refereed soccer games for 30 years, so I have always been active and in good health. While I don't ref games anymore, my wife and I breed and show Kerry Blue terriers at shows like Westminster Kennel Club. I started to notice I was having shortness of breath while in the ring at shows running around with the dogs. At first, I thought maybe it was just being caused by old age. The more I thought about it, the more it didn't sit right with me because I was only 60 years old. I wasn't old enough to be getting winded like that, so I went to a cardiologist in North Carolina, where I live, who did a catheterization. During the catheterization, they were only able to go in so far and ultimately stopped and told me they couldn't do anything for me. From there, I was told I needed to talk to a surgeon about having bypass surgery, which surprised me. After seeing the surgeon they recommended, he told me it would need to be a triple bypass surgery, but hearing the news, I wanted to get a second opinion.

"My friend's wife is an anesthesiologist and she recommended Dr. Sharma to me. She had worked with him in India before and said that he is the best in the world, so that's who I went to see. After sending my images to Mount Sinai, Dr. Sharma's PA called me one evening and handed the phone to him. Dr. Sharma gets on the phone and just says, 'I can fix you.' My appointment was scheduled for that Friday; I couldn't believe it. It truly is the greatest place—I love Dr. Sharma and Mount Sinai Heart, they did so wonderful and got me right in. Everyone in the Cardiac Catheterization Laboratory I met before and after my procedure was fabulous. Before all of this I knew nothing about the condition of my heart. Since then, I've now had several stents put in by Dr. Sharma and now I have no shortness of breath when I'm in the ring showing our dogs, or doing anything. I even recommended my son-in-law to him, who at only 40 years old had a blockage. Like me, they were able to see him right away. "

# Artificial Intelligence in the Cath Lab

ANNAPOORNA S. KINI, MD, AND ANDRIY VENGRENYUK, MS

Artificial intelligence adoption is growing in cardiology[1,2] but at the same time, medicine is increasingly attentive to how AI is evaluated, regulated, implemented, and monitored to ensure it delivers real benefit without unintended harm.[3] The Mount Sinai Heart Hospital has launched the Samuel Fineman Cardiac Catheterization Artificial Intelligence (AI) Research Lab, embedded within the Cardiac Catheterization Laboratory, to accelerate practical, workflow-ready innovation in interventional cardiology. Directed by Dr. Annapoorna Kini, the lab is grounded in a realistic view of AI's role, not viewing it as a "magic solution."


Our approach is deliberately translational. We aim to develop, evaluate, and refine AI-enabled capabilities in the environments where they must ultimately perform: at the bedside, in the emergency department, during transfers, and in the cardiac catheterization laboratory, all while keeping clinicians "in the loop" for safety, interpretability, and adoption. Rather than locking into narrow technical specifications, the lab's program is organized around durable, clinically meaningful domains.

**AI in medical education.** We are exploring AI-enabled enhancements to digital teaching and case-based learning supporting continuous refinement of educational apps (CardiologyApps.com) and live cases (CCCLiveCases.org) through improved content organization, contextual explanations, and feedback loops that help identify pain points.

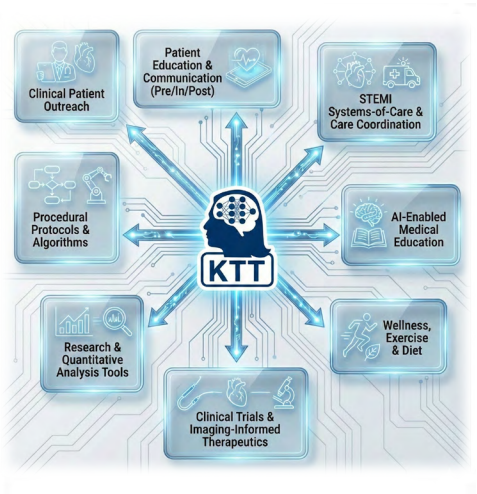
**AI to strengthen STEMI systems of care.** Building on prior work with the STEMIcathAID mobile application,[4] we are advancing tools that support care coordination and structured timestamp capture across activation, transfer, cardiac catheterization laboratory readiness, and reperfusion, aiming to reduce delays while preserving clinician judgment and accountability.

**Patient access to education across their care journey.** We are developing patient-centered approaches to procedural education that can adapt to language and health literacy and improve access to information. Targeting pre-procedure preparation, in-hospital reinforcement, and post-procedure follow-up, this includes careful attention to evaluation frameworks for conversational AI in health care, where reliability, safety, bias, and reporting quality matter as much as user experience.

**Clinical patient outreach.** First of its kind, our use of conversational AI through Sofiya has reached thousands of patients, focusing nurse time on direct bedside care instead of administrative work.

**Procedural protocols and algorithms.** We are creating a structured "protocol layer" that translates evidence-based pathways into consistent, updateable clinical workflows (such as checklists, escalation criteria, and decision-support frameworks) so that best practices are easier to execute and audit.

**Research and quantitative analysis tools.** Revamping the analytical pipeline to enable faster, more reliable quality improvement and research across cardiac catheterization laboratory




domains, including operations, outcomes, and patient experience.

**Clinical trials and imaging-informed therapeutics.** We continue our investigator-initiated trials, including lipid-focused plaque studies such as the Yellow trials (YellowTrials.com), and we are exploring how AI can accelerate trial operations and derive richer insights from imaging and outcomes data.

**Wellness, exercise, and diet.** We view procedural excellence and secondary prevention as inseparable. We are exploring scalable, evidence-aligned digital supports that promote sustainable lifestyle change and long-term cardiovascular health like our CardyFit.com website.


References

1. Elias P, Jain SS, Poterucha T, et al. Artificial Intelligence for Cardiovascular Care—Part 1: Advances. *J Am Coll Cardiol.* 2024;83(24):2472-2486. doi:10.1016/j.jacc.2024.03.400
2. Jain SS, Elias P, Poterucha T, et al. Artificial Intelligence in Cardiovascular Care—Part 2: Applications. *J Am Coll Cardiol.* 2024;83(24):2487-2496. doi:10.1016/j.jacc.2024.03.401
3. Angus DC, Khera R, Lieu T, et al. AI, Health, and Health Care Today and Tomorrow: The JAMA Summit Report on Artificial Intelligence. *JAMA.* 2025;334(18):1650. doi:10.1001/jama.2025.18490
4. Kini AS, Garcia H, Springer B, et al. A mobile application for STEMI care optimization: Pilot implementation project report. *Int J Cardiol.* 2024;415:132447. doi:10.1016/j.ijcard.2024.132447


## John Reeder

**Diagnosis:** Post MI angina from right coronary artery (RCA) in-stent restenosis

**Treatment:** Successful CB PTCA and DES of RCA

"I felt extremely fortunate to have ended up at The Mount Sinai Hospital with Dr. Kini, she and her staff were awesome."

"I've been playing tennis for a few years and like to stay pretty active. It's always gone pretty smoothly for me until an incident with chest pain in a recent game when I was subbing in a tennis group playing doubles. My chest pain began feeling like heart burn, but my condition worsened, and within only 45 minutes, I was in the back of an ambulance heading to the nearest hospital, which happened to be The Mount Sinai Hospital.

"I was in so much pain while in the back of the ambulance and was lucky that The Mount Sinai Hospital was only five minutes away. In the ER they had to cut off my shirt and shorts. Luckily for me, Dr. Kini and her team were working together like an F1 team, everyone knew what they were doing and did it well. Everything happened so quickly and before I knew it, I was out. When I woke up the next day, that's when it was explained to me that I had experienced a massive heart attack, even though when I came to I had absolutely no pain, I felt amazing. It surprised me to learn that there had been a full blockage in one artery and partial blockages in two others. Two procedures later, all of the blockages were cleared.

"I don't know how long those blockages were there before my heart attack, but it feels like I got my life back. I am one of the lucky ones.

"I am back to playing tennis a couple times a week as well as swimming with my wife. I felt extremely fortunate to have ended up at Mount Sinai with Dr. Kini, she and her staff were awesome. One of the things that amazed me was the detail they all go into when briefing each other into my condition. The care I received was very thorough which made me feel well taken care of. I tell people that living in the city as you get older isn't all bad because you could end up like me, unexpectedly getting a great doctor like Dr. Kini."

# Drug-Eluting Resorbable Scaffolds in Chronic Limb-Threatening Ischemia: Clarity from the LIFE-BTK Three-Year Trial

PRAKASH KRISHNAN, MD, AND DAVID SONG, MD

Chronic limb-threatening ischemia (CLTI) represents the most severe form of peripheral artery disease. Patients present with ischemic rest pain, nonhealing wounds, or gangrene, and face a high risk of infection, hospitalization, limb loss, and death. Most CLTI cases involve disease below the knee (BTK), affecting the tibial arteries—small, fragile vessels that are critical for wound healing but notoriously difficult to treat durably.

For decades, plain balloon angioplasty (PTA) was the primary endovascular option for BTK disease. While effective in restoring short-term blood flow, PTA is limited by elastic recoil, vessel dissection, and high restenosis rates, often leading to repeat procedures and delayed wound healing. Metallic drug-eluting stents improved patency in some settings, but concerns remained about leaving permanent metal implants in small tibial arteries, potentially complicating future interventions in a population that frequently requires repeat revascularization.

This created a central controversy in CLTI care: Could drug delivery and vessel scaffolding improve durability without the long-term consequences of permanent implants?

## The LIFE-BTK Trial: A New Approach for BTK Disease

The LIFE-BTK trial was designed to address this question using a drug-eluting resorbable scaffold, the Esprit™ BTK everolimus-eluting scaffold. This device provides temporary mechanical support and controlled drug delivery, then gradually resorbs over time, leaving no permanent implant behind.

LIFE-BTK was a prospective, randomized trial enrolling patients with CLTI and infrapopliteal disease, comparing the Esprit BTK scaffold with standard balloon angioplasty. The primary endpoint focused on freedom from major limb-related failure, a clinically meaningful outcome that reflects real-world patient priorities: limb preservation and avoidance of repeat procedures.

## What Made LIFE-BTK a Turning Point

At one year, LIFE-BTK demonstrated clear superiority of the drug-eluting resorbable scaffold over balloon angioplasty. Patients treated with the scaffold experienced significantly fewer limb-related failures and required fewer repeat interventions.

The key question, however, was durability. Because the scaffold dissolves, many clinicians asked whether benefit would persist once the device was no longer present.

Three-year follow-up data answered that question decisively. Even after scaffold resorption, patients treated with the drug-eluting resorbable scaffold continued to demonstrate sustained clinical benefit, with fewer repeat procedures compared with angioplasty alone. This finding confirmed that the therapy delivers more than temporary mechanical support—it produces lasting biological benefit through effective drug delivery and vessel remodeling.

These results established the first durable, randomized evidence that drug-eluting resorbable scaffolds outperform angioplasty in BTK disease for CLTI.

## Who Should Be Considered for Drug-Eluting Resorbable Scaffolds?

This therapy is most appropriate for patients with:

- CLTI manifested by ischemic rest pain, nonhealing ulcers, or gangrene
- Infrapopliteal (BTK) arterial disease limiting wound healing or limb salvage

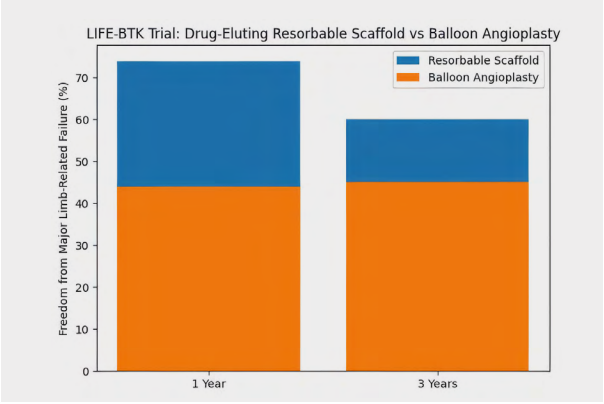
- Lesions where balloon angioplasty alone is likely to fail due to recoil or dissection
- Suitable vessel size and anatomy based on device labeling

The goal is to provide durable blood flow restoration while preserving future treatment options.

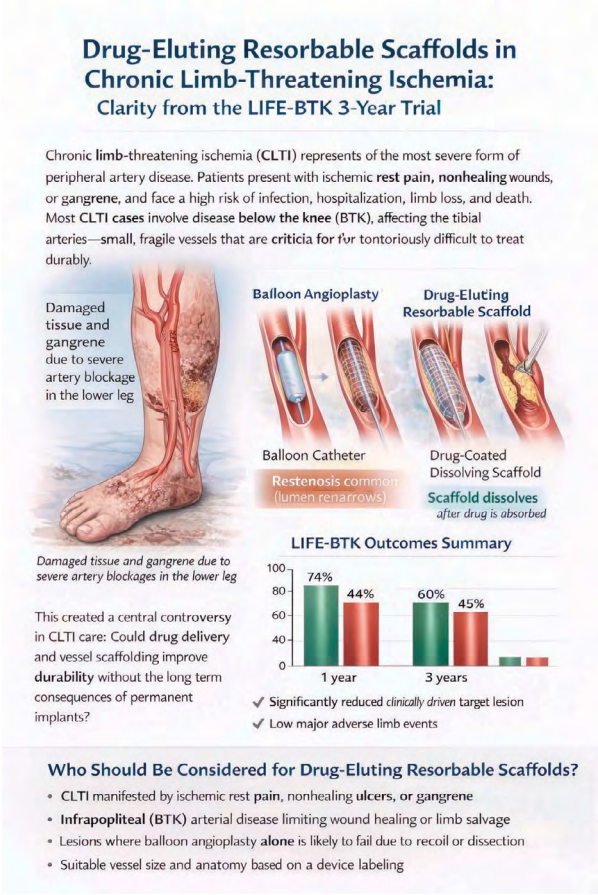
## Why This Matters in CLTI Today

CLTI remains a condition with high morbidity and mortality, and BTK disease has historically lacked durable endovascular solutions. The LIFE-BTK three-year data provides long-awaited clarity: a drug-eluting resorbable scaffold can improve limb-related outcomes without leaving permanent metal behind.

For patients and clinicians, this represents a meaningful advance—combining the durability of drug-eluting technology with the long-term flexibility of a dissolving scaffold. As a result, drug-eluting resorbable scaffolds now play a clearly defined and evidence-based role in the modern treatment of CLTI, offering new hope for limb preservation and durable wound healing.




| | DRUG-ELUTING RESORBABLE SCAFFOLD | BALLOON ANGIOPLASTY |
|---|---|---|
| Freedom from major limb-related failure at one year | ~74% | ~44% |
| Freedom from major limb-related failure at three years | ~60% | ~45% |
| Clinically driven target lesion revascularization | Significantly reduced | Higher |
| Major adverse limb events (early safety) | Low | Low |




References

1. Varcoe, R. L., DeRubertis, B. G., Kolluri, R., Krishnan, P., Metzger, D. C., Bonaca, M. P., Shishehbor, M. H., et al. (2024). Drug-eluting resorbable scaffold versus angioplasty for infrapopliteal artery disease. *New England Journal of Medicine*, 390(1), 9–19. https://doi.org/10.1056/NEJMoa2305637

**TO VIEW A RECORDED CLTI CASE FEATURING BTK EVEROLIMUS ELUTING RESORBABLE SCAFFOLD SYSTEM,** SCAN THE CODE

# Renal Denervation for Uncontrolled Hypertension: Approved Indications and Who Should Be Considered

PRAKASH KRISHNAN, MD, AND RAMAN SHARMA, MD

Hypertension (high blood pressure) affects nearly half of adults and remains one of the leading causes of stroke, heart attack, heart failure, kidney disease, and premature death. Despite effective medications, a significant number of patients continue to have uncontrolled blood pressure, placing them at ongoing cardiovascular risk.

For decades, treatment relied exclusively on lifestyle changes and medications. However, challenges such as medication side effects, inconsistent adherence, and biologically resistant hypertension led to the development of renal denervation (RDN)—a catheter-based device therapy designed to provide sustained blood pressure reduction.

## Why Renal Denervation Works

The kidneys play a central role in blood pressure regulation through the renal sympathetic nervous system, which affects blood vessel tone, salt handling, and hormonal signaling. In many patients with hypertension, these nerves are overactive.

Renal denervation targets these nerves using radiofrequency or ultrasound energy delivered through a catheter placed in the renal arteries. The goal is to achieve durable, medication-independent blood pressure lowering while preserving kidney function.

## From Controversy to Clarity

Early RDN studies showed promise, but an initial sham-controlled trial failed to demonstrate benefit, creating significant controversy. Rather than abandoning the therapy, investigators refined trial design, device technology, procedural technique, and patient selection.

Subsequent modern, sham-controlled clinical trials demonstrated consistent and clinically meaningful blood pressure reductions with RDN, both in patients taking medications and in those not on therapy. These results led to FDA approval, establishing RDN as an evidence-based treatment option.

## Who Should Be Considered for Renal Denervation?

Renal denervation is approved and most appropriate for selected adults with uncontrolled hypertension, particularly those who meet one or more of the following criteria:

- Persistently elevated blood pressure above guideline targets despite lifestyle measures
- Inadequate blood pressure control on one or more antihypertensive medications
- Difficulty tolerating medications due to side effects
- Inconsistent medication adherence, whether due to complexity, cost, or preference
- Desire to reduce long-term reliance on medications while improving blood pressure stability

RDN is intended as an adjunct to medical therapy, not a replacement. Most patients continue some medications, but often at lower doses or fewer agents.

## Who Is Not a Candidate?

RDN is generally not recommended for patients with:

- Significant narrowing of the renal arteries
- Advanced chronic kidney disease
- Secondary causes of hypertension requiring specific treatment
- Renal artery anatomy unsuitable for catheter-based therapy

Careful evaluation by a hypertension specialist or interventional team is essential.

## Expected Blood Pressure Reduction

Across contemporary trials, renal denervation has demonstrated average reductions of:

| Measurement Type | Average Reduction |
|---|---|
| Office systolic blood pressure | ~10–15 mmHg |
| 24-hour ambulatory systolic blood pressure | ~6–10 mmHg |

Even reductions of this magnitude are associated with substantial decreases in stroke, heart attack, and cardiovascular death.

## Safety and Recovery

Renal denervation is minimally invasive and typically performed through a small catheter inserted in the groin or wrist. Modern trials demonstrate:

- Low procedural complication rates
- No increase in kidney injury
- No long-term damage to renal arteries
- Same-day or next-day discharge for most patients

## What This Means for Patients

Renal denervation represents a new chapter in hypertension care. For the first time, patients with uncontrolled blood pressure have access to a one-time, FDA-approved, device-based therapy that provides durable blood pressure reduction independent of daily medication adherence.

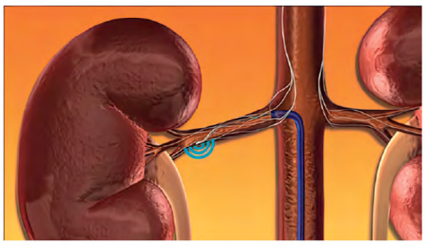
For appropriately selected patients, RDN offers an effective and safe way to improve blood pressure control and reduce long-term cardiovascular risk. The decision to pursue renal denervation should be individualized and made through shared discussion between patient and physician, focusing on blood pressure goals, overall risk, and long-term health.

**TO VIEW A RECORDED PERIPHERAL CASE FEATURING RENAL DENERVATION, SCAN THE CODE**

8MM MEAN reduction in office SBP at two months in patients treated with paradise ultrasound RDN system

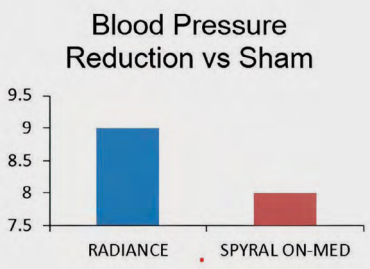
Symplicity Spyral™ renal denervation system

Recor Paradise™ renal denervation system



Renal denervation system

RENAL DENERVATION: KEY OUTCOMES FROM RADIANCE AND SPYRAL ON-MED TRIALS




**RADIANCE Trials (Ultrasound RDN - ReCor Paradise)**

Sham-controlled, randomized trials in uncontrolled hypertension

- Demonstrated significant reduction in daytime ambulatory systolic BP
- Average reduction: ~8-10 mmHg vs sham
- Sustained BP lowering with favorable safety profile

**SPYRAL ON-MED Trial (RF RDN - Symplicity Spyral)**

- Patients with hypertension on medications
- 24-hour systolic BP reduction ~7-9 mmHg vs sham
- Demonstrated additive benefit to antihypertensive therapy


References

1. Townsend RR, Mahfoud F, Kandzari DE, et al. Catheter-based renal denervation in patients with uncontrolled hypertension in the absence of antihypertensive medications (SPYRAL HTN-OFF MED): a randomised, sham-controlled trial. *Lancet.* 2017;390(10108):2160–2170.
2. Azizi M, Schmieder RE, Mahfoud F, et al. Endovascular ultrasound renal denervation to treat hypertension (RADIANCE-HTN SOLO): a multicentre, international, single-blind, randomised, sham-controlled trial. *Lancet.* 2018;391(10137):2335–2345.

# Post-PCI Care to Improve Outcomes

GEORGE DANGAS, MD, PHD

Recent advances in post-PCI care have shifted the field from "one-size-fits-all" secondary prevention toward risk-adapted antithrombotic strategies, earlier and deeper lipid lowering, and cardiometabolic therapies with proven event reduction.

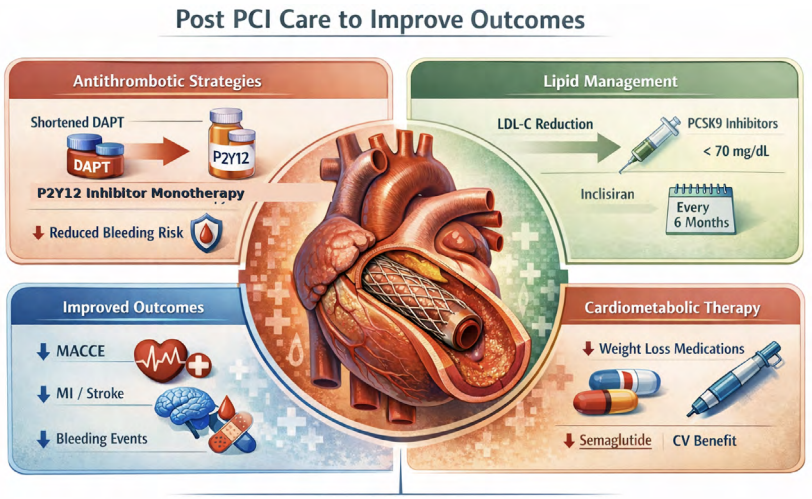
On the antiplatelet side, an important change is the growing acceptance of shorter dual antiplatelet therapy (DAPT) followed by single antiplatelet therapy in appropriately selected patients, particularly those at high bleeding risk, without sacrificing ischemic protection.

Published in 2025, the TARGET-FIRST trial randomized 1,942 low-risk STEMI/NSTEMI patients who achieved early complete revascularization and completed one month of uneventful DAPT to either continue DAPT or stop aspirin and continue potent P2Y12 inhibitor monotherapy for 11 months. P2Y12 monotherapy was noninferior for the primary net composite endpoint (2.10 percent vs 2.18 percent; difference –0.09 percentage points; 95 percent CI –1.39 to 1.20; p=0.021 for noninferiority).[1] Monotherapy also reduced clinically relevant bleeding (BARC 2/3/5) compared with continued DAPT (2.65 percent vs 5.57 percent; HR 0.46; 95 percent CI 0.29–0.75), supporting early aspirin discontinuation as a feasible de-escalation strategy in carefully selected, low-risk MI patients after a complication-free first month.

An individual-participant-data meta-analysis of five randomized trials (n=16,117) found that, after completion of DAPT following PCI, P2Y12 inhibitor monotherapy (ticagrelor or clopidogrel) reduced major adverse cardiac and cerebrovascular events versus aspirin over median 3.7 years (HR 0.77, 95 percent CI 0.67–0.89; NNT ≈ 46), driven largely by fewer MI and stroke.[2] Taken together, these data underpin a modern post-PCI paradigm: optimize ischemic protection early, then de-intensify aspirin exposure when bleeding risk dominates, and individualize long-term monotherapy based on patient risk and tolerance rather than habit.

In parallel, post-PCI care has moved toward faster and more intensive lipid lowering and broader cardiometabolic risk modification. Contemporary guidance emphasizes escalation when LDL-C remains above threshold despite maximally tolerated statins (often using an LDL-C threshold such as ≥70 mg/dL to trigger add-on therapy in chronic coronary disease), with sequential addition of ezetimibe and injectable therapies when needed. The "what's new" is both the armamentarium and the expectation of goal attainment. In VESALIUS-CV, 12,257 high-risk patients with atherosclerosis or diabetes without prior MI or stroke, including many with significant CAD and prior coronary revascularization such as multivessel PCI, were randomized to evolocumab 140 mg every two weeks versus placebo, and evolocumab reduced first cardiovascular events (3-point MACE [death from coronary heart disease, myocardial infarction, or ischemic stroke] 6.2 percent vs 8.0 percent; HR 0.75) over a median 4.6 years with no excess safety signals.

Finally, the most consequential recent cardiometabolic development for post-PCI patients with obesity is the emergence of anti-obesity



pharmacotherapy with definitive cardiovascular outcomes benefits. In the SELECT trial, semaglutide 2.4 mg weekly reduced MACE from 8.0 percent to 6.5 percent (HR 0.80) in patients with established cardiovascular disease and overweight/obesity but without diabetes, supporting incorporation of weight-loss therapy into secondary prevention rather than treating obesity as a purely lifestyle domain.[4]

In practical terms, "modern post-PCI care" increasingly means building standardized pathways that (i) tailor DAPT duration and aspirin continuation, (ii) mandate early LDL-C reassessment with rapid intensification to achieve guideline thresholds, and (iii) deploy evidence-based weight-loss pharmacotherapy in eligible patients to address residual cardiometabolic risk.


References

1. Tarantini G, Honton B, Paradies V, et al; TARGET-FIRST Investigators. Early Discontinuation of Aspirin after PCI in Low-Risk Acute Myocardial Infarction. N Engl J Med. 2025 Nov 27;393(21):2083-2094.
2. Giacoppo D, Gragnano F, Watanabe H, et al; P2Y12 inhibitor or aspirin after percutaneous coronary intervention: individual patient data meta-analysis of randomised clinical trials. *BMJ.* 2025 Jun 4;389:e082561. doi: 10.1136/bmj-2024-082561.
3. Bohula EA, Marston NA, Bhatia AK, et al; VESALIUS-CV Investigators. Evolocumab in Patients without a Previous Myocardial Infarction or Stroke. *N Engl J Med.* 2026 Jan 8;394(2):117-127.
4. Lincoff AM, Brown-Frandsen K, Colhoun HM, et al; SELECT Trial Investigators. Semaglutide and Cardiovascular Outcomes in Obesity without Diabetes. *N Engl J Med.* 2023 Dec 14;389(24):2221-2232.


## Stelios "Steve" Zervoudis

**Diagnosis:** Severe calcific aortic stenosis

**Treatment:** Successful TAVR using 29mm SAPIEN-3 valve in 2022

"Thanks to Dr. Dangas, I never had to stop my annual visits to Greece, and still go swimming every time that I am back."

"I go to Greece every year, typically two to three times each year. On one of these trips in September of 2021, I was swimming with some friends for about an hour. I have always been a strong swimmer and never had any issues swimming out deep into the ocean before, but after finishing our swim, I went to go find my wife, who was lying in a lounge chair, and couldn't stop coughing as soon as I sat down next to her. Someone ran to grab me a seltzer water which helped to calm the coughing fit that had come on suddenly.

"The whole thing seemed weird to me, so I went to see a local doctor there on the island, who told me to see my doctor when I got home to the United States. After I returned , my general practitioner suggested I see someone in cardiology and recommended The Mount Sinai Hospital. It was there I met George Dangas, MD, PhD, and was told I had stenosis of the main artery in my heart that would require surgery to fix.

"The day I was supposed to have the operation I ended up getting COVID-19 and had to wait two more weeks. When I was finally able to go in for the procedure, everyone at The Mount Sinai Hospital was very helpful and it was a nice environment to be in. Leading up to the surgery, and even after, Dr. Dangas and his team have always been great about responding to any questions or concerns I have. The day of the surgery I went in in the morning and was able to leave the very next day, I even walked out on my own without a wheelchair like most hospitals make you do.

"A few days later I was able to go back to work like nothing happened. I am a builder but luckily don't do any of the heavy lifting, which is probably why I didn't notice any symptoms until I was swimming. Thanks to Dr. Dangas I never had to stop my annual visits to Greece and still go swimming every time that I am back."

# Coronary Function Testing in the Catheterization Laboratory for Patients With Chest Pain

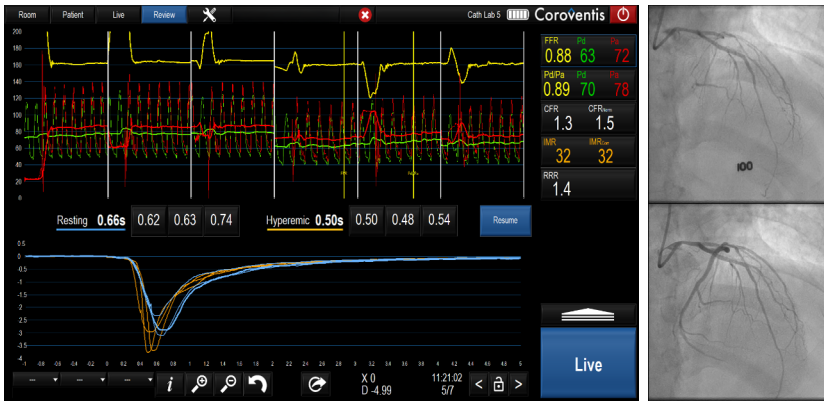
JOSEPH SWEENY, MD

Angina with non-obstructive coronary artery disease (ANOCA) challenges cardiovascular clinicians from both a diagnostic and therapeutic perspective. Up to 50 percent of patients undergoing invasive coronary angiography for angina symptoms have no significant coronary artery disease defined by coronary artery stenosis ≥ 50 percent.[1] A substantial number of these select patients without obstructive CAD have coronary function abnormalities including microvascular dysfunction (CMD), vasospastic angina (VSA) or myocardial bridging (MB) and are at a higher risk of adverse clinical outcomes compared to the general population without CAD.[2]

By performing a specialized procedure called Coronary Function Testing (CFT) in the catheterization lab, we are able provide a comprehensive evaluation for microvascular function, coronary vasospasm, coronary flow reserve, and myocardial bridging when evaluating a patient with ANOCA (Figure 1). In doing so, we are able to identify specific etiologies of chest pain that go beyond just blocked arteries, and more importantly, prescribe tailored pharmacological therapy to help treat the symptoms.[3]

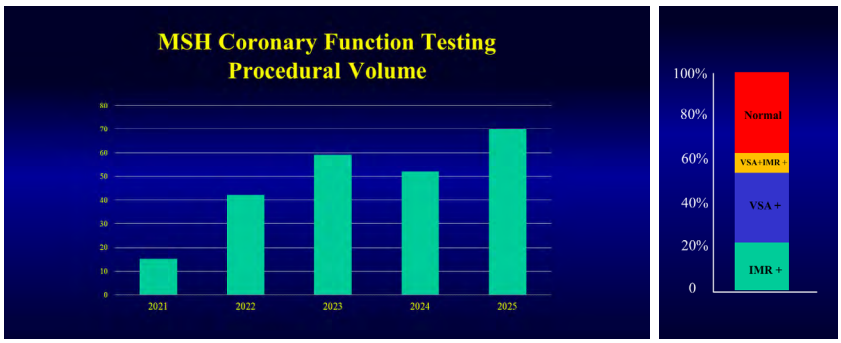
To date, at the Mount Sinai Cardiac Catheterization Lab, we have studied approximately 240 patients referred to us with persistent chest pain symptoms and no coronary blockages since

FIGURE 1. CORONARY FUNCTION TESTING WITH MICROVASCULAR (A) AND VASOSPASTIC ANGINA (B) EVALUATIONS




A. B.

FIGURE 2. CORONARY FUNCTION TESTING AT MOUNT SINAI CARDIAC CATHETERIZATION LAB



starting this testing protocol in 2021 (Figure 2). In this group, 53 percent of patients had abnormal coronary function testing (22 percent had isolated microvascular dysfunction, 32 percent had vasospastic angina, 9 percent with both microvascular and vasospastic angina) and 37 percent of patients had normal findings (Figure 2). Having this vital information allows us to prescribe specific treatments to help alleviate the anginal symptoms.

While a comprehensive invasive coronary functional assessment requires time and dedication, it is important and frequently used at the Mount Sinai Cardiac Catheterization Laboratory at The Mount Sinai Hospital as part of the work up for patients with chest pain without obstructive coronary artery disease, which translates into better therapeutic options for our patients.

**TO VIEW A RECORDED CASE FEATURING CORONARY FUNCTION TESTING,** SCAN THE CODE

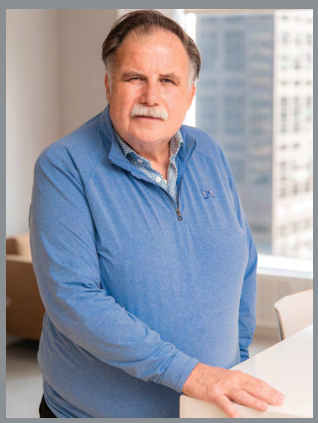

References

1. Patel, MR et al. Low Diagnostic yield of elective coronary artery angiography. *N Eng J Med.* 2010; 362:886-895.
2. Reis SE, et al. Coronary flow velocity response to adenosine characterizes coronary microvascular function in women with chest pain and no obstructive coronary artery disease. Results from the pilot phase of the Women's Ischemia Syndrome Evaluation (WISE). *J Am Coll Cardiol.* 1999;33:1469
3. Smilowitz NR, et al. *J Am Coll Cardiol.* 2023;82(12):1264-1279


## John Coyne

**Diagnosis:** Angina equivalent from LAD-D1

**Treatment:** Successful PTCA and DES of LAD-D1 branch



"I'm very lucky I found Dr. Sweeny. I had heard great things about him, and in my opinion, he lived up to them."

"Even though I wasn't experiencing any symptoms, I thought I would do my due diligence and have my heart checked out simply because of my age. I went to a local medical center for an evaluation. Afterward, the cardiologist suggested there might be some issues and I should go to The Mount Sinai Hospital for a diagnostic catheterization.

"After my initial appointment, I got a referral to see Joseph Sweeny, MD, who did some testing for me and found I had a valve blockage. He attempted to clear the blockage with some medication first, but after a couple weeks he checked again and the blockage was still present, so we scheduled a procedure. It was a major operation, but they made the experience phenomenal. It was a quick turnaround, I believe I went in on a Monday when he told me I would need a procedure and was scheduled for that Friday. I was there for a couple hours, and my son picked me up that same evening. I was glad to be able to go home the same day.

"I'm very lucky I found Dr. Joseph Sweeny. Previously, I had heard great things about him, and in my opinion, he lived up to them.

"Dr. Sweeny is a great doctor, and it was impressive to see how much his staff look up to him. It's good to see people who care about what they do and like what they do and that's the impression I got from everyone at The Mount Sinai Hospital. As for me, I'm living a healthier lifestyle now and am able to walk four to five miles every day without any problems."

# Strategies to Reduce Vulnerable Plaques

PEDRO MORENO, MD

Despite impressive advances in pharmacologic and percutaneous therapies, death from heart disease is increasing (Figure 1). Coronary lesions responsible for myocardial infarction are defined as vulnerable plaques. Also known as Thin-Cap Fibroatheroma (TCFA), their composition is characterized by a large lipid pool, thin fibrous cap, and abundant macrophage infiltration at the shoulders of the cap (Figure 2).

Macrophage-secreting metalloproteinases are responsible for collagen lysis of the fibrous cap, leading to plaque rupture and thrombosis (Figure 3). Most importantly, guideline-directed medical therapy (GDMT) can stabilize vulnerable plaques. Aggressive reductions of LDL-cholesterol are associated with fibrous cap thickening and significant reductions of lipid and macrophage content. However, even with PCSK-9 protein inhibitors, GDMT will be refractory in 24-26 percent of patients.[1] As a result, a more aggressive approach restructuring the morphology of TCFA to thicken the fibrous cap is of essence. This can be done with drug-eluting stents (DES).

## Experimental Data Supporting Drug-Eluting Stents in Vulnerable Plaques

The neointima formation after DES will thicken the fibrous cap as a biologic response to injury. This hypothesis was confirmed using the New Zealand rabbit hypercholesterolemic model, which can reproduce vulnerable atherosclerotic plaques very similar to humans, as shown in Figure 4. The new fibrous cap thickness will protect the lipid core and reduce the risk for plaque rupture and thrombosis. These seminal studies supported the concept that stenting vulnerable plaque may be associated with a reduction in clinical events.

## Clinical Data Supporting Drug-Eluting Stents in Vulnerable Plaques

The hypothesis that stenting non-obstructive TCFA may reduce major adverse cardiovascular events when compared to GDMT alone was tested by Park SJ, et al., in the PREVENT Trial. A total of 1,606 patients were equally randomized to aggressive (PCI+GDMT) Vs. conservative GDMT alone. Thin cap fibroatheroma was identified by intravascular imaging. All lesions were non-obstructive using fractional flow reserve. The primary outcome was a composite of death, target vessel myocardial infarction, ischemia-driven target vessel revascularization, or hospitalization for progressive angina. At two years, the primary outcome occurred in three (0.4 percent) patients in the aggressive arm vs. 27 (3.4 percent) in the conservative arm (P<0.0003). At seven years, this difference was maintained with 6.5 percent vs 9.4 percent in the aggressive vs. conservative arms, respectively (p=0.0097), as seen in Figure 5. However, death and myocardial infarction were similar in both groups.[2]

## Conclusion

Aggressive therapy with coronary stenting in vulnerable plaques reduces coronary events. This is definitively a step forward in the continuous fight against heart disease. However, this approach did not reduce death or myocardial infarction. Therefore, more studies are needed before considering stenting as a clinical strategy to treat vulnerable plaque.

References

1. Kini A, Yasumura K, Vengrenyuk Y, et al. Intracoronary imaging and transcriptomic characteristics before and after lipid lowering therapy: Yellow III study. JACC Cardiov Imaging 2026 (In-Press).
2. Park SJ, Ahn JM, Kang DY, et al. Preventive percutaneous intervention versus optimal medical therapy alone for the treatment of vulnerable atherosclerotic coronary plaques (PREVENT): a multicenter, open-label, randomized trial. Lancet 2024: 403; 1753-65

FIGURE 1

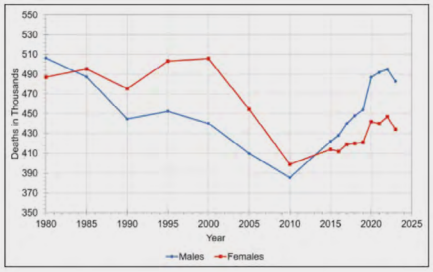



Figure 1. CARDIAC MORTALITY 1980-2025

FIGURE 2

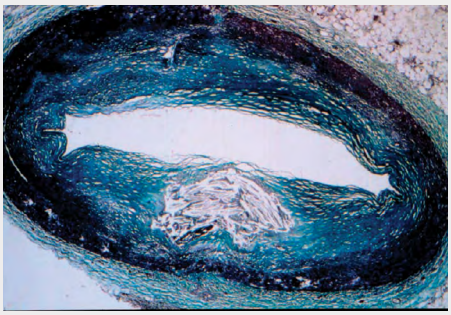


FIGURE 3

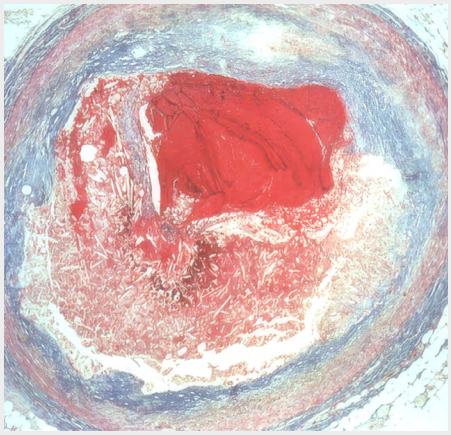


FIGURE 4

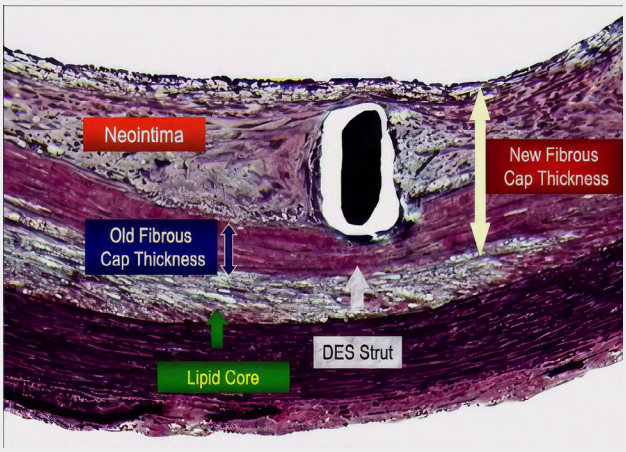
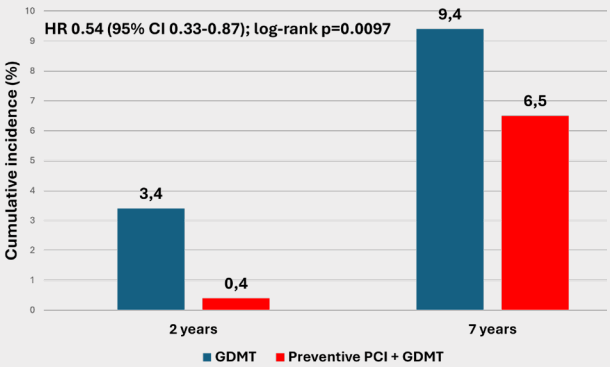



FIGURE 5



# Efforts for the American College of Cardiology to Improve Cardiovascular Care

ROXANA MEHRAN, MD

Roxana Mehran, MD, FACC, Director of Interventional Cardiovascular Research and Clinical Trials at Mount Sinai Fuster Heart Hospital and incoming President of the American College of Cardiology (ACC) for the 2026 term, brings a uniquely integrated physician–scientist perspective to the organization's mission of advancing cardiovascular care worldwide. With more than two decades of leadership in interventional cardiology, global clinical trials, and outcomes research, Dr. Mehran's presidency is poised to further align scientific innovation with real-world clinical practice, particularly in high-acuity and procedural settings such as the cardiac catheterization laboratory.

Throughout her career, Dr. Mehran has been a leading advocate for evidence generation that is rigorous, inclusive, and directly applicable to everyday care. Within the ACC, she has consistently emphasized the need for modernized research frameworks that reflect the complexity of contemporary cardiovascular patients. As President, she is prioritizing initiatives aiming to close the gap between clinical trials and practice, ensuring that guideline-directed therapies are informed by data that truly represent the patients treated in catheterization laboratories worldwide.

A central pillar of Dr. Mehran's agenda is the responsible integration of innovation into clinical workflows. This includes advancing the development and validation of data-driven tools—such as national registries, artificial intelligence–enabled analytics, and predictive risk models—to support procedural planning, optimize patient selection, and improve longitudinal outcomes assessment. By leveraging high-quality data and standardized methodologies, the ACC seeks to enhance procedural safety, reduce unwarranted variation in care, and support continuous quality improvement across institutions and health systems.

Equity remains foundational to Dr. Mehran's leadership vision. A globally recognized leader in women's cardiovascular health, she has underscored the importance of addressing persistent disparities between scientific discovery and bedside implementation. Through ACC-led initiatives, she is championing equitable access to evidence-based therapies, sex-specific research, and quality improvement programs designed to reduce variation in outcomes across sex, age, geography, and socioeconomic status.

Importantly, Dr. Mehran's presidency reinforces the ACC's role as a global convener of innovation. By fostering collaboration among cardiovascular societies, academic centers, industry partners, and health systems, she aims to accelerate the translation of scientific advances into clinical impact. These coordinated efforts reflect a shared commitment to delivering safer, more effective, and more equitable cardiovascular care—ensuring that innovation in the cardiac catheterization laboratory ultimately translates into better outcomes for patients worldwide.

References

1. https://www.acc.org/Latest-in-Cardiology/Articles/2025/07/23/14/34/New-Faces-Shared-Mission.

**FIGURE 1. ACC STRATEGIC PLAN (2024–2028): STRATEGIC PILLARS SUPPORTING CARE DELIVERY, KNOWLEDGE TRANSLATION, AND HEALTH EQUITY**


**FIGURE 2. ROXANA MEHRAN, MD, FACC, PRESIDENT OF THE AMERICAN COLLEGE OF CARDIOLOGY (2026), WITH CHRISTOPHER M. KRAMER, MD, FACC, PRESIDENT OF THE AMERICAN COLLEGE OF CARDIOLOGY (2025)**


**FIGURE 3. ROXANA MEHRAN, MD, FACC,** FIRST FROM LEFT, IS THE SEVENTH WOMAN TO SERVE AS PRESIDENT OF THE AMERICAN COLLEGE OF CARDIOLOGY (ACC). SHE FOLLOWS A DISTINGUISHED LINEAGE OF WOMEN LEADERS, INCLUDING SUZANNE B. KNOEBEL, MD, MACC (DECEASED, 2014); PAMELA S. DOUGLAS, MD, MACC (FIRST FROM THE RIGHT); MARY NORINE WALSH, MD, MACC (SECOND FROM THE RIGHT); ATHENA POPPAS, MD, MACC (THIRD FROM THE RIGHT); DIPTI ITCHHAPORIA, MD, FACC (THIRD FROM THE LEFT); AND CATHLEEN BIGA, MSN, RN (SECOND FROM THE LEFT).

# Establishing a Peripheral Arterial Disease Evaluation Program

VISHAL KAPUR, MD

Peripheral arterial disease (PAD) is a common yet underdiagnosed condition associated with significant morbidity, mortality, and health care costs. Affecting millions worldwide, PAD is a manifestation of systemic atherosclerosis and is strongly linked to cardiovascular events such as myocardial infarction and stroke. Despite its prevalence, PAD often remains unrecognized until advanced stages, when patients present with critical limb ischemia, non-healing wounds, or limb-threatening complications. Establishing a structured PAD evaluation program is therefore essential to improve early detection, optimize management, and enhance patient outcomes.

A successful PAD evaluation program begins with awareness and identification of at-risk populations. Patients over the age of 50 with diabetes, smoking history, hypertension, hyperlipidemia, or known cardiovascular disease should be routinely screened for PAD. Education of primary care providers, nurses, podiatrists, and allied health professionals is a critical first step. Incorporating PAD screening questions—such as exertional leg pain, rest pain, or history of poor wound healing—into routine clinical encounters can significantly increase case detection.

Standardized non-invasive testing forms the backbone of a PAD evaluation program. The ankle-brachial index (ABI) is a simple, cost-effective, and widely validated tool that should be readily available in outpatient clinics. For patients with non-compressible vessels, particularly those with long-standing diabetes or chronic kidney disease, toe-brachial index (TBI) and pulse volume recordings provide valuable additional information. Duplex ultrasound further helps define disease severity and anatomical distribution, guiding both medical and interventional decision-making. Establishing clear protocols for when and how these tests are performed ensures consistency and reliability across the program.

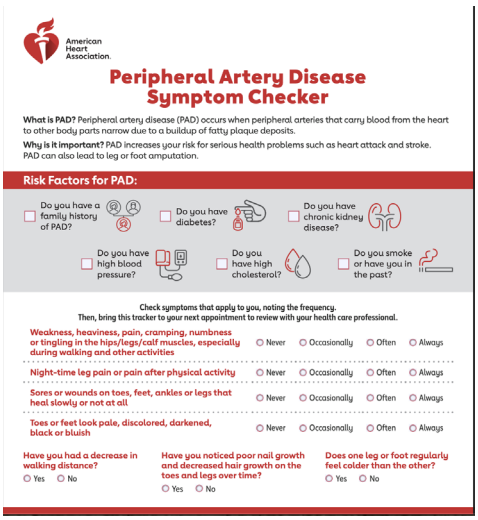
Multidisciplinary collaboration is another cornerstone of an effective PAD program. PAD care intersects cardiology, vascular medicine, interventional radiology, vascular surgery, endocrinology, wound care, and podiatry. A coordinated referral pathway allows patients to move seamlessly from diagnosis to risk factor modification, wound management, and revascularization when needed. Regular multidisciplinary conferences to review complex cases promote shared decision-making and ensure that treatment plans are individualized and evidence-based.

Medical optimization must be emphasized as a primary goal of PAD evaluation. Every diagnosed patient should undergo aggressive cardiovascular risk reduction, including antiplatelet therapy, statins, blood pressure control, glycemic optimization, smoking cessation, and structured exercise therapy. A PAD evaluation program should include patient education materials and access to smoking cessation programs and supervised exercise therapy, which has been shown to significantly improve functional status and quality of life.

Equally important is the identification of patients at risk for limb-threatening ischemia. Early recognition of tissue loss, infection, or rest pain allows for timely referral for advanced imaging and potential revascularization. Clear escalation pathways reduce delays in care and can be limb- and life-saving. Tracking metrics such as time to diagnosis, wound healing rates, hospitalization, amputation rates, and cardiovascular events helps measure program effectiveness and identify areas for improvement.

Finally, patient engagement and longitudinal follow-up are critical for sustainability. PAD is a chronic condition requiring ongoing surveillance and management. Establishing a registry or structured follow-up schedule ensures continuity of care and reinforces adherence to therapy. By combining early detection, standardized evaluation, multidisciplinary care, and continuous quality improvement, a PAD evaluation

program can significantly reduce disease burden, prevent complications, and improve both limb-related and cardiovascular outcomes.



American Heart Association.

**Peripheral Artery Disease Symptom Checker**

**What is PAD?** Peripheral artery disease (PAD) occurs when peripheral arteries that carry blood from the heart to other body parts narrow due to a buildup of fatty plaque deposits.

**Why is it important?** PAD increases your risk for serious health problems such as heart attack and stroke. PAD can also lead to leg or foot amputation.

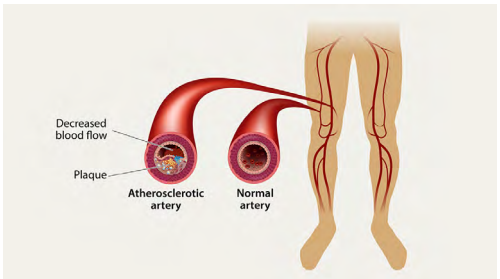
**Risk Factors for PAD:**

- ☐ Do you have a family history of PAD?
- ☐ Do you have diabetes?
- ☐ Do you have chronic kidney disease?
- ☐ Do you have high blood pressure?
- ☐ Do you have high cholesterol?
- ☐ Do you smoke or have you in the past?

Check symptoms that apply to you, noting the frequency.
Then, bring this tracker to your next appointment to review with your health care professional.

| | Never | Occasionally | Often | Always |
|---|---|---|---|---|
| Weakness, heaviness, pain, cramping, numbness or tingling in the hips/legs/calf muscles, especially during walking and other activities | ○ | ○ | ○ | ○ |
| Night-time leg pain or pain after physical activity | ○ | ○ | ○ | ○ |
| Sores or wounds on toes, feet, ankles or legs that heal slowly or not at all | ○ | ○ | ○ | ○ |
| Toes or feet look pale, discolored, darkened, black or bluish | ○ | ○ | ○ | ○ |

- Have you had a decrease in walking distance? ○ Yes ○ No
- Have you noticed poor nail growth and decreased hair growth on the toes and legs over time? ○ Yes ○ No
- Does one leg or foot regularly feel colder than the other? ○ Yes ○ No



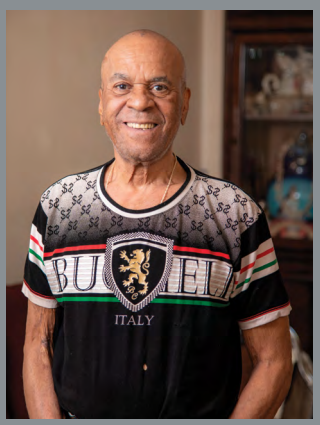

References

1. https://www.cdc.gov/heart-disease/about/peripheral-arterial-disease.html
2. https://www.heart.org/en/health-topics/peripheral-artery-disease/symptoms-of-pad

# Francisco Benitez

**Diagnosis:** Significant claudication from extensive disease of leg arteries

**Treatment:** Successful atherectomy, PTA and DES of right superficial femoral artery




"Dr. Kapur was incredible. Thanks to him, and all the nurses and everyone who works with him, my husband is much, much better."

When Francisco began experiencing blood clots in both legs, daily life became difficult. At first he would become tired after walking just one or two blocks. Eventually, his condition got so bad he could barely stand and had trouble walking at all. At times, even getting to the bathroom was a challenge.

"It was very hard," says his wife, Gladys. "He couldn't go anywhere. When I had to go out, I had to put the walker in front of him so he could at least get to the bathroom."

Francisco's condition had become serious. At one point, there was concern that four toes on his right foot might need to be amputated.

Francisco's cardiologist referred him to Vishal Kapur, MD, at The Mount Sinai Hospital. Francisco underwent a series of tests to better understand what was happening in his legs.

After further testing, Dr. Kapur determined that the issue was related to blood flow and they would be able to move forward with treatment without amputating his toes. After intervention, Gladys reports Francisco is on the road to a strong recovery.

Gladys says the care they received at Mount Sinai made a lasting impression. "They treat you like family," she says. "They take very good care of you."

"Dr. Kapur was incredible. Thanks to him, and all the nurses and everyone who works with him, my husband is much, much better."

# Carotid Artery Stenting in Asymptomatic Stenosis

PRAKASH KRISHNAN, MD, AND RAMAN SHARMA, MD

Asymptomatic carotid artery stenosis refers to narrowing of the carotid arteries—the major blood vessels supplying the brain—without a prior stroke or transient ischemic attack (TIA). This condition is common, particularly with advancing age. Studies estimate that 2–4 percent of individuals over 65 years old have moderate to severe carotid artery narrowing, often discovered incidentally during imaging or routine medical examinations. Although patients typically feel well, carotid plaque remains a potential source of future stroke.

## Stroke Risk by Severity of Carotid Stenosis

In patients receiving contemporary medical therapy, average estimated stroke risks are:

- <50 percent stenosis (mild): less than 1 percent per year
- 50–69 percent stenosis (moderate): approximately 1–2 percent per year
- ≥70 percent stenosis (severe): approximately 2–3 percent per year
- ≥80–90 percent stenosis (very severe): up to 3–4 percent per year

Stroke risk in asymptomatic carotid disease is closely related to the degree of arterial narrowing. Mild stenosis carries a very low risk, while more severe narrowing is associated with progressively higher stroke risk, particularly over time and in the presence of unstable plaque features.

While these annual risks may appear modest, stroke risk accumulates over time. For patients with severe asymptomatic stenosis and reasonable life expectancy, this translates into a meaningful long-term stroke risk—prompting decades of debate about whether intervention offers benefit beyond medication alone.

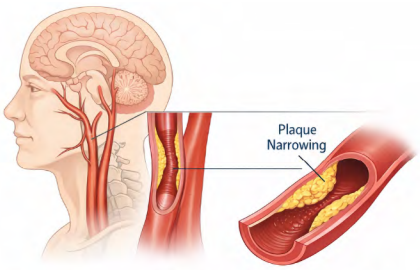
## The Controversy That Shaped Modern Care

Earlier clinical trials suggested that carotid surgery reduced stroke risk in asymptomatic patients. However, those studies were conducted before the widespread use of statins, modern blood pressure control, and aggressive risk-factor modification. As medical therapy improved, many experts questioned whether procedures still provided benefit—or whether they exposed patients to unnecessary procedural risk.

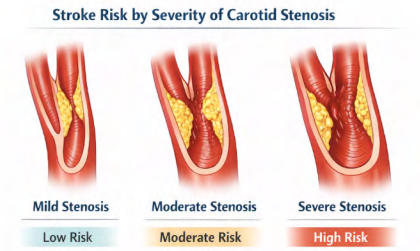
This unresolved controversy persisted for years and led directly to the design of the CREST-2 clinical trial, one of the most important modern studies in stroke prevention.

## CREST-2: A Trial Designed for Today's Patients

CREST-2 enrolled patients with high-grade (≥70 percent) asymptomatic carotid stenosis and compared intensive medical therapy alone with intensive medical therapy plus carotid intervention. All participating patients received state-of-the-art care, including antiplatelet therapy, high-intensity cholesterol lowering, blood pressure control, diabetes management when appropriate, and lifestyle modification.




The carotid arteries supply blood to the brain. Plaque buildup can narrow the artery and increase stroke risk, even without symptoms.

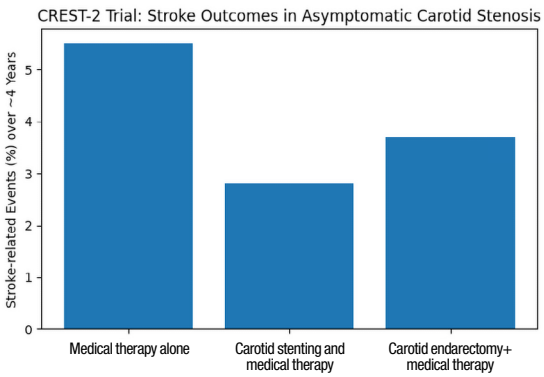



*Stroke risk increases as carotid artery narrowing becomes more severe.*

Two parallel randomized trials were conducted:

- Transfemoral carotid artery stenting (CAS) plus medical therapy vs medical therapy alone
- Carotid endarterectomy (CEA) plus medical therapy vs medical therapy alone

The primary outcome combined early procedural risk with long-term stroke prevention over approximately four years of follow-up.




## Key Findings: Clarity at Last

CREST-2 provided answers where uncertainty had existed for decades. For the first time in the modern medical era, carotid stenting combined with intensive medical therapy demonstrated a significant reduction in long-term stroke risk compared with medical therapy alone in patients with severe asymptomatic carotid stenosis. Although stenting carried a small early procedural risk, this was outweighed by fewer strokes during long-term follow-up.

In contrast, carotid endarterectomy did not demonstrate a clear additional benefit over contemporary medical therapy alone and was associated with a higher early stroke risk.

Outcome includes stroke or death within 44 days and long-term stroke on the treated side.

**TO VIEW A RECORDED PERIPHERAL CASE FEATURING CAROTID STENTING WITH THE NEUROGUARD CAROTID STENT SYSTEM,** SCAN THE CODE

References

1. Brott TG, et al. Medical Management and Revascularization for Asymptomatic Carotid Stenosis. *New England Journal of Medicine*. 2026. doi:10.1056/NEJMoa250880.

# Michael Salvatore

**Diagnosis:** Cerebrovascular accident (CVA) from left carotid artery stenosis

**Treatment:** Successful filter-assisted stenting of left carotid artery

"I love the whole team at Mount Sinai. The team was all so caring and the nurses had a great sense of humor."

"I'm going on 83 years old, but I still have an active social life. I am partially retired, but still involved with the family roofing business that's now more than 100 years old, and also have interests in real estate and commercial construction.

"I had cancer around 20 years ago, and due to the aggressive treatment and heavy radiation, I have a lot of stiffness in my neck to this day.

"I also have a history of heart problems, and received a transcatheter aortic valve replacement (TAVR) a few years back. Last fall, I was having some shortness of breath, so I made an appointment with my cardiologist. He did a stress test and was concerned about what he found. He immediately sent me for a diagnostic catheterization. I was referred to Raman Sharma, MD, at the Mount Sinai Cardiac Catheterization Laboratory at The Mount Sinai Hospital, who performed the procedure.

"The angiogram revealed two blockages in my carotid arteries—95 percent in one artery, and 75 percent in another. He said it was important that we addressed it right away. He got me in for a procedure not long after and was able to clear the blockage in about two and a half hours. After about 48 hours, I was up and running again.

"I love the whole team at The Mount Sinai Hospital. The team were all so caring and the nurses had a great sense of humor. I am grateful to have Dr. Sharma as an interventionalist, he is such a nice, talented fellow and so thorough. I'll tell you how grateful I am—I actually invited him to come to the Hamptons to visit with the family this summer."

# Left Arterial Appendage Occlusion

SAHIL KHERA, MD

Atrial fibrillation (AF) affects millions of adults and is associated with a five-fold increased risk of ischemic stroke and systemic arterial embolism. Stroke remains the fifth leading cause of death in the United States, and nearly one in four strokes is attributed to AF. Thrombi in patients with AF most commonly originate within the left atrial appendage (LAA), a small outpouching of the left atrium, making it a critical target for stroke prevention strategies.

Systemic oral anticoagulation—including warfarin and direct oral anticoagulants such as apixaban, rivaroxaban, edoxaban, and dabigatran—remains the cornerstone of pharmacologic stroke prevention. However, many patients are unable to tolerate long-term anticoagulation due to comorbidities or systemic barriers. Chronic anticoagulation is also associated with significant bleeding risk, particularly in elderly patients and those with uncontrolled hypertension, renal or hepatic dysfunction, or alcohol misuse.

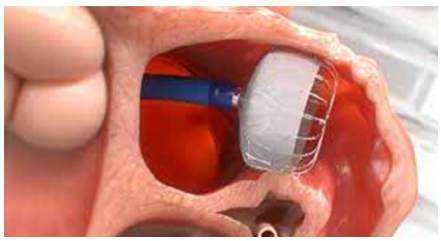
Left atrial appendage occlusion (LAAO) has emerged as an established and effective alternative strategy, especially in patients where anti-coagulation is difficult. Two commercially available devices are currently approved in the United States: the Watchman FLX (Boston Scientific) and the Amulet device (Abbott). (Figure 1) Since FDA approval in 2015, more than 100,000 patients have undergone LAAO with the Watchman platform. The Amulet device, approved in 2021, has demonstrated similarly strong safety and efficacy outcomes in clinical trials and registry data.

The Watchman FLX is a single-lobe occluder, whereas the Amulet features a self-expanding disk-and-lobe design. Despite differences in device architecture, implantation techniques are similar. Procedures are performed via femoral venous access under general anesthesia with transesophageal echocardiographic guidance for transseptal puncture, device sizing, and confirmation of implant stability. Typical procedure time is 30–45 minutes, with most patients discharged the following day. Follow-up imaging at 45 days evaluates for peridevice leak and device position.

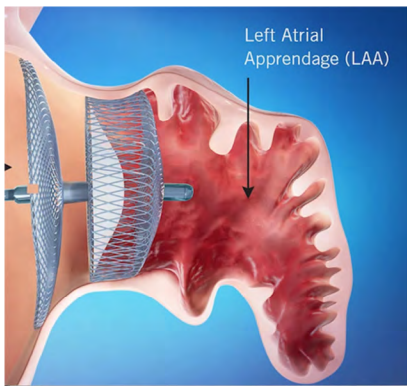
Anticoagulation can often be discontinued immediately after implantation. Patients are generally maintained on antiplatelet therapy for three-to-six months to allow endothelialization, with shorter courses considered for those at very high bleeding risk. The Amulet device has been associated with high rates of complete appendage closure, minimal peridevice leak, and low risk of device-related thrombosis. In a three-year follow-up from the AMULET IDE trial, 96 percent of patients were free from chronic anticoagulation.

LAAO should be considered in patients with 1) contraindications to oral anticoagulation, 2) prior major bleeding events, 3) high fall risk, 4) significant drug–drug interactions, or 5) anticipated difficulty with lifelong anticoagulation adherence. Our high-volume structural heart program is among the few centers nationwide offering the full spectrum of LAAO technologies, including the Amulet device, enabling individualized therapy tailored to each patient's risk profile.

BOSTON SCIENTIFIC WATCHMAN FLX



ABBOTT AMULET LAA CLOSURE DEVICE




References

1. Lakkireddy D, et al. Amplatzer Amulet LAA occluder versus Watchman device for stroke prophylaxis. *J Am Coll Cardiol.* 2021;77(25):2927–2940. DOI: 10.1016/j.jacc.2021.04.020

# Balancing Demanding Learning With Physical Fitness and Relaxation

RANBIR SINGH, MD, AKASH PATEL, MD, AND SABINA KUMAR, MD

The Mount Sinai Hospital's Interventional Cardiology Laboratory is one of the nation's busiest and prestigious laboratories. Each day, numerous patients are referred from around the world to undergo high-risk interventions led by some of the most dedicated educators and operators, Drs. Samin Sharma and Annapoorna Kini. Each year, a group of meticulously chosen fellows join the laboratory and are guided with progressive responsibility to learn how to perform these complex interventions. The attendings, nurses, technicians, and administration are dedicated to our development as interventionalists. Each case and each day presents its own challenges, and we must learn to adapt and trouble-shoot to provide the best patient outcomes. For example, our fellows have a robust exposure to mechanical circulatory support-assisted catheterizations and those that utilize Rotational Atherectomy. These procedures are inherently high-risk, and appropriate preparation is key. Learning these techniques from a conceptual and technical standpoint requires time, dedication, and hours of personal study to master. In addition, fellows undoubtedly have personal responsibilities to family, home, and personal fitness.

Balancing demanding learning with physical fitness and relaxation is important for any operator who works in a high-stakes environment. Our program is dedicated to our wellness. In between cases, for example, we try to incorporate movement where we can such as short walks, brief workouts, and stretching. This helps us maintain energy and stay focused. Attendings regularly ask about and promote our wellbeing through walks, Yoga sessions, and regularly scheduled mentorship sessions. Our rotations are well-structured, allowing us ample time to relax or meditate. Practices like yoga and meditation help us reduce stress in a busy catheterization lab environment and, when done consistently, may improve attention, support emotional resilience, ease muscle tension, and prevent burnout.

From a cognitive perspective, we are provided with valuable daily lectures from experts and leaders in our field to expand our knowledge base. We are consistently supported and uplifted when we show gradual improvement. Together, consistent movement and mindful relaxation create a sustainable foundation for long-term performance and well-being. Lastly, the bonds we fellows form with one another as we progress and improve become a valuable part of our daily life. In our fellows' room we laugh together, eat together, and learn together. This creates a de-stressing and fun environment. We are always available to communicate and support one another.

# Research and Clinical Trials

| Study Title | Study Details | Sponsor | Principal Investigator(s) at The Mount Sinai Hospital | Target Enrollment and Study Sites | Current Status/ Enrollment at The Mount Sinai Hospital |
|---|---|---|---|---|---|
| PROTECT-IV Trial | Impella®- Supported PCI in High-Risk Patients With Complex Coronary Artery Disease and Reduced Left Ventricular Function: The PROTECT IV Trial | Johnson & Johnson | S. Sharma | 1,252 (Global) 120 centers | Completed / Top 88 randomized |
| Fracture IDE | Modification of Coronary Calcium With Laser Based Intravascular Lithotripsy for Coronary Artery Disease | Bolt Medical Inc./BSC | S. Sharma | 420 (Global) 42 Centers | 42 subjects enrolled |
| SELUTION 4 DeNovo | Randomized Single-Blind Multicenter Study to Assess the Safety and Effectiveness of the SELUTION DEB in De Novo Coronary Lesions in Small Vessels | Cordis Inc. | S. Sharma | 470 (Global) 52 Centers | Ongoing/ 51 subjects enrolled |
| MAGICAL ISR | Randomized Clinical Trial: MagicTouch Sirolimus-Coated Balloon for Treatment of Coronary Artery Lesions With In-Stent Restenosis | Concept Medical | A. Kini | 450 (USA) 48 Centers | Ongoing/ 22 subjects enrolled |
| ENVISION IDE | Evaluation of the Navitor Transcatheter Heart Valve in Low and Intermediate Risk With symptomatic, severe native aortic stenosis | Abbott Vascular Inc. | S. Khera | 750 (Global) 70 Centers | Ongoing/ 10 subjects enrolled |

| Study Title | Study Details | Sponsor | Principal Investigator(s) at The Mount Sinai Hospital | Target Enrollment and Study Sites | Current Status/ Enrollment at The Mount Sinai Hospital |
|---|---|---|---|---|---|
| NODULE-SHOCK | Intravascular Lithotripsy With or Without Rotational Atherectomy for Coronary Calcified Nodule Treatment (NODULE-SHOCK) | Johnson & Johnson | A. Kini | 120 MSH | Ongoing/ 14 subjects enrolled |
| Complete TAVR | The COMPLETE TAVR Study: A Randomized Study of Staged Complete Revascularization vs Medical Management Alone in Patients With Symptomatic AS undergoing TAVR | The University of British Columbia | S. Sharma | 4,000 120 Centers | Ongoing/ 11 subjects enrolled |
| ELEVATE III TRIAL | The Magenta Elevate High-Risk PCI Pivotal Study (ELEVATE III) | Magenta Medical Ltd. | A. Hooda | 290 40 centers | Ongoing/ 22 subjects enrolled |
| MAGICAL BTK | Randomized Controlled Trial of MAGIcTouch - Sirolimus Coated BaLloon Versus Standard Balloon Angioplasty in the Treatment of Below the Knee Arterial Disease | Concept Medical Inc. | P. Krishnan | 220 (Global) 65 Centers | Completed/ 7 subjects enrolled |
| GORE VBX | A Comparison of the GORE VIABAHN VBX Balloon Expandable Endoprosthesis to Bare Metal Stenting for Patients With Complex Iliac Occlusive Disease | Gore VBX | P. Krishnan | 450 (USA) 52 centers | Ongoing/ 15 subjects enrolled |

# Top 10 Major Publications of 2025 from the Cardiac Catheterization Laboratory

IMPACT FACTOR: 35.7

## 1. Residual Cholesterol And Inflammatory Risk In Statin-Treated Patients Undergoing Percutaneous Coronary Intervention

Bay B, Tanner R, Gao M, Oliva A, Sartori S, Vogel B, Gitto M, Smith KF, Di Muro FM, Hooda A, Sweeny J, Krishnamoorthy P, Moreno P, Krishnan P, Dangas G, Kini A, Sharma SK, Mehran R. Residual cholesterol and inflammatory risk in statin-treated patients undergoing percutaneous coronary intervention†. *Eur Heart J.* 2025 Aug 21;46(32):3167-3177. doi: 10.1093/eurheartj/ehaf196. PMID: 40208236.

Elevated LDL-cholesterol levels and inflammation, as assessed by high-sensitivity C-reactive protein, correlate with cardiovascular risk. However, data on the relative impact of residual LDL-cholesterol and inflammatory risk among statin-treated patients undergoing PCI is lacking. Hence, this study aimed to investigate the impact of residual cholesterol/inflammatory risk in patients on statin therapy undergoing PCI. Among statin-treated patients, residual inflammation but not cholesterol risk was associated with an increased risk of MACE.

IMPACT FACTOR: 22.3

## 2. Transcather Aortic Valve Replacement Beyond Severe Aortic Stenosis

Beerkens FJ, Tang GHL, Kini AS, Lerakis S, Dangas GD, Mehran R, Khera S, Goldman M, Fuster V, Bhatt DL, Webb JG, Sharma SK. Transcatheter Aortic Valve Replacement Beyond Severe Aortic Stenosis: JACC State-of-the-Art Review. *J Am Coll Cardiol.* 2025 Mar 11;85(9):944-964. doi: 10.1016/j.jacc.2024.11.051. Erratum in: *J Am Coll Cardiol.* 2025 Jul 1;85(25):2539. doi: 10.1016/j.jacc.2025.05.001. PMID: 40044299.

With the progress of TAVR in low-risk populations, investigations have expanded beyond older patients with severe AS. Given advances in device development, multimodality imaging, and optimal medical therapy under the heart team at specialized heart valve centers, the future for TAVR in such populations is bright. Regardless, knowledge gaps remain for a younger TAVR population regarding valve durability, long-term complications, and the repeatability of valve intervention, which will require caution and close follow-up. Lifetime planning should start during preprocedural planning of the first aortic replacement, ensuring success in the years to come.

IMPACT FACTOR: 11.4

## 3. Development of a Novel BifurcAID Risk Score to Predict MACE Following Coronary True Bifurcation Intervention

Minatoguchi S, Koshy AN, Vengrenyuk Y, Vinayak M, Yasumura K, Sharma R, Krishnamoorthy P, Suleman J, Sweeny J, Hooda A, Kapur V, Mehran R, Sharma SK, Kini AS. Development of a Novel BifurcAID Risk Score to Predict MACE Following Coronary True Bifurcation Intervention. *JACC Cardiovasc Interv.* 2025 Mar 24;18(6):705-716. doi: 10.1016/j.jcin.2024.11.034. PMID: 40139848.

The BifurcAID risk score may facilitate risk stratification among patients undergoing true bifurcation PCI and guide patient-tailored treatment strategies.

IMPACT FACTOR: 11.4

## 4. Rotational Atherectomy in Older Patients: Balancing Risk and Benefit

Kaplan JG, Kalaba F, Oliva A, Sartori S, Smith KF, Vasudev I, Hooda A, Sweeny J, Mehran R, Kini A, Sharma SK. Rotational Atherectomy in Older Patients: Balancing Risk and Benefit. *JACC Cardiovasc Interv.* 2026 Jan 26;19(2):259-261. doi: 10.1016/j.jcin.2025.10.029. Epub 2025 Oct 25. PMID: 41146480.

Rotational atherectomy (RA) remains the mainstay of calcium modification, although its use in older patients may be limited because of a perceived imbalance in safety. However, modern techniques have been shown to reduce complications. In this study, we aimed to evaluate clinical outcomes in an older population undergoing PCI with RA. We included all patients 65 years or older who underwent PCI with the use of RA between 2012 and 2023 at Mount Sinai Hospital, New York (USA).

IMPACT FACTOR: 11.4

## 5. Intraprocedural Guidance for Transcatheter Tricuspid Valve Replacement in Challenging Scenarios

Safi LM, Lerakis S, Tang GHL, Kini AS, Krishnamoorthy P, Sharma SK, Khera S. Intraprocedural Guidance for Transcatheter Tricuspid Valve Replacement in Challenging Scenarios. *JACC Cardiovasc Imaging.* 2025 Mar;18(3):382-388. doi: 10.1016/j.jcmg.2025.01.002. Erratum in: JACC Cardiovasc Imaging. 2025 Apr;18(4):524. doi: 10.1016/j.jcmg.2025.03.002. PMID: 40044323.

Transcatheter tricuspid valve replacement (TTVR) is a therapeutic option for patients with symptomatic severe tricuspid regurgitation. Currently, transesophageal echocardiography (TEE) and fluoroscopy are the primary imaging modalities used during TTVR. TEE offers real-time visualization of the valve leaflets and fluoroscopy provides a complementary perspective enabling precise catheter manipulation, device positioning and deployment.

## 6. Transesophageal Echocardiography Guidance Is Useful for Valve-in-Valve Transcatheter Aortic Valve Replacement

Fortis LH, Khurana A, Niv Granot Y, Croft LB, Hooda A, Khera S, Prandi FR, Tang GHL, Sharma SK, Kini A, Lerakis S. Transesophageal Echocardiography Guidance Is Useful for Valve-in-Valve Transcatheter Aortic Valve Replacement. *JACC Cardiovasc Interv*. 2025 Apr 28;18(8):1067-1069. doi: 10.1016/j.jcin.2025.01.443. Epub 2025 Mar 19. PMID: 40117413.

Redo transcatheter aortic valve replacement (TAVR) in a degenerated transcatheter aortic valve (TAV) is becoming more frequent, as TAVR is increasingly performed in younger patients with longer life expectancies.1, 2, 3 We present a case of redo-TAVR showing how transesophageal echocardiography (TEE) avoided a potential catastrophe.

**IMPACT FACTOR: 11.4**

## 7. Long-Term Clinical Outcomes Of Intravascular Brachytherapy For Multilayer Drug-Eluting In-Stent Restenosis

Tanner R, Dhulipala V, Joshi U, Vinayak M, Farhan S, Leone PP, Sartori S, Smith K, Buckstein M, Hooda A, Sharma R, Sweeny JM, Mehran R, Kini AS, Sharma SK. Long-term clinical outcomes of intravascular brachytherapy for multilayer drug-eluting in-stent restenosis. *EuroIntervention*. 2025 Apr 7;21(7):e356-e365. doi: 10.4244/EIJ-D-24-00807. PMID: 40191881; PMCID: PMC11956027.

Multilayer DES-ISR is associated with a high rate of adverse outcomes at 3-year follow-up. Treatment with IVBT was associated with a lower rate of MACE compared to treatment with a non-IVBT strategy at long-term follow-up.

**IMPACT FACTOR: 9.5**

## 8. Predictors Of Postprocedural Troponin Increase In Patients Undergoing Elective Percutaneous Coronary Intervention

Gilhooley S, Gitto M, Spirito A, Sartori S, Oliva A, Vogel B, Krishnan P, Kamaledin K, Di Muro FM, Moreno P, Bay B, Sweeny J, Melarcode Krishnamoorthy P, Kini A, Dangas GD, Sharma SK, Mehran R. Predictors of postprocedural troponin increase in patients undergoing elective percutaneous coronary intervention. *Heart*. 2025 Dec 24;112(2):111-113. doi: 10.1136/heartjnl-2025-325990. PMID: 40759469.

Elevation in serum troponin following elective PCI is indicative of post-PCI troponin increase (pTI) and is associated with higher mortality rates. In this analysis, we sought to identify clinical and angiographic risk factors for pTI. In conclusion, there are patient-specific angiographic and clinical risk factors that can predict pTI. These risk factors should be considered in formulating more individualised risk assessment for those undergoing elective PCI.

**IMPACT FACTOR: 5.1**

## 9. Edoxaban Dose Adjustment and Age-Associated Outcomes in Patients With Atrial Fibrillation Post-Transcatheter Aortic Valve Replacement

Van Mieghem NM, Chen C, Hengstenberg C, Van Zyl J, Kimura T, Lang I, Mehran R, Nicolas J, Unverdorben M, Zamorano JL, Dangas GD. Edoxaban Dose Adjustment and Age-Associated Outcomes in Patients With Atrial Fibrillation Post-Transcatheter Aortic Valve Replacement. *JACC Adv*. 2025 Nov 19;4(12):102329. doi: 10.1016/j.jacadv.2025.102329. Epub ahead of print. PMID: 41263742; PMCID: PMC12805168.

Patients aged ≥80 years without eDAC were at a higher risk of major bleeding and MGIB events with edoxaban 60 mg vs VKA. An optimized edoxaban dose for octogenarians with AF post-TAVR, regardless of eDAC, may help improve outcomes. (Edoxaban Compared to Standard Care After Heart Valve Replacement Using a Catheter in Patients With Atrial Fibrillation.

**IMPACT FACTOR: 2.7**

## 10. Drug Eluting Stents as a Management for Patients with Below the Knee Peripheral Artery Disease: A Systematic Review and Meta-Analysis

Krishnan P, Tarricone A, Gee A, Lee DW, Mehta J, Lavery LA, Sharma S. Drug Eluting Stents as a Management for Patients with Below the Knee Peripheral Artery Disease: A Systematic Review and Meta-Analysis. *Vasc Endovascular Surg*. 2025 Jul 7:15385744251358129. doi: 10.1177/15385744251358129. Epub ahead of print. PMID: 40621783.

The purpose of this study was to compare the effectiveness and safety of drug eluting stents with percutaneous transluminal angioplasty and bare-metal stents in below the knee peripheral artery disease. Methods: The systematic review was registered in Research Registry. The primary outcomes examined were mortality, major amputation (above the ankle), minor amputation (below the ankle), and clinically driven target lesion revascularization (CD-TLR).

**IMPACT FACTOR: 0.7**

# Samin K. Sharma, MD, FACC, MSCAI

Director SP and Seema Lohia Cardiovascular Clinical Institute
Director, Interventional Cardiology, Mount Sinai Health System
President, Mount Sinai Fuster Heart Hospital Network
Anandi Lal Sharma Professor of Medicine in Cardiology

## Clinical Interests:

Interventional Cardiology

Atherectomy

Valvular Intervention

212-241-4021
samin.sharma@mountsinai.org

Samin K. Sharma, MD, FACC, MSCAI, is a nationally and internationally renowned interventional cardiologist, well known for performing the highest simple and complex high-risk complex coronary interventions in the United States with an extremely high success rate (greater than 99 percent), while achieving an extremely low rate of major complications of <0.5%.

Under Dr. Sharma's leadership, The Mount Sinai Fuster Heart Hospital Cardiac Catheterization Laboratory has become one of the safest and busiest centers in New York, providing state-of-the-art cardiac and interventional care for all patients, including those with both simple and complex cases.

As the director of the cardiovascular clinical institute, Dr Sharma has been responsible for all clinical and operational aspects of Mount Sinai Fuster Heart Hospital since 2012. Under his leadership, Mount Sinai Heart cardiology faculty has tremendously improved its clinical, financial and academic productivity. Dr. Sharma is also responsible for streamlining all quality and operational aspects of cardiology in the health system. He has organized the uniform reporting of the cardiac procedures data for the entire health system.

He has received the prestigious two-star designation (denoting significantly lower than expected mortality) numerous times from the New York State Department of Health, as well as the Governor's Award of Excellence in Medicine in 1996. He served on New York State's Cardiac Advisory Board from 2004–2016.

Dr. Sharma has been dubbed the "master of the Rotablator" and is regularly featured on national and local television, including CBS and TV Asia, as well as in newspapers and magazines, including *Newsday*, *Newsweek*, *The New York Times*, *The New York Post*, *Forbes*, *The Wall Street Journal*, *New York Daily News*, *The Washington Post*, *New York* Magazine, *India Abroad*, and *India Today*.

He has received numerous honors and awards, some significant examples: 2024 Master operator by India Live Conference; 2015 Honorary Master of Science PhD Degree by Rajasthan University; 2011 Ellis Island Medal of Honor; 2011 American Heart Association Achievement in Cardiovascular Science & Medicine Award; 2003–2026 Best Doctors by *New York* Magazine; 2008–2026 Super Doctors; 2007 Jacobi Medallion Award by The Mount Sinai Hospital; 2007 Physician of the Year by The Mount Sinai Hospital; and 2000 Simon Deck Award for Outstanding Teacher of the Year

Dr. Sharma has authored more than 450 papers and 16 book chapters in the fields of coronary interventions, structural heart disease, and the safety of percutaneous interventions. Dr Sharma has been the associate editor of several cardiology journals and is an invited reviewer for major cardiac journals and scientific meetings.

He is also a philanthropist, and The Mount Sinai Hospital Cardiac Catheterization Laboratory is named the Dr. Samin K. Sharma Family Foundation Cardiac Catheterization Laboratory. Dr. Sharma has also built a 250-bed heart hospital, the Eternal Heart Care Center (EHCC) in his native Jaipur, India, to provide the highest quality care to all patients regardless of financial or social status.

The live monthly webcast series, CCC Live Cases (www.ccclivecases.org), started by Dr. Sharma in 2009, reaches an audience of more than 29,000 viewers each month across 179 countries.

Dr. Sharma is also deeply committed to physician education and improving patient outcomes through his annual Complex Coronary Cases (CCC) Symposium and numerous other major scientific meetings, conferences, and live case demonstrations worldwide.

Dr Sharma's efforts have resulted in The Mount Sinai Hospital receiving a #2 ranking in 2025-26 from *U.S. News and World Report*.®

VIEW MOUNT SINAI PROFILE

# Annapoorna S. Kini, MD, MRCP, FACC

Director, Cardiac Catheterization Laboratory
Interventional Director, Structural Heart Program, Mount Sinai Health System
Director, Interventional Cardiology Fellowship Program
Zena and Michael A. Weiner Professor of Medicine

## Clinical Interests:

Intravascular Imaging

Interventional Cardiology: CTO

Valvular Intervention

212-241-4181
annapoorna.kini@mountsinai.org
@DoctorKini
@DoctorKini

Annapoorna S. Kini, MD, is internationally acclaimed for her expertise in performing complex coronary interventions, particularly chronic total occlusion procedures for patients with advanced coronary artery disease, high-risk interventional cases, and alcohol septal ablation for the treatment of obstructive hypertrophic cardiomyopathy. Dr. Kini has served as the principal or co-investigator in numerous randomized clinical trials. She has extensive experience with mitral and aortic balloon valvuloplasty and was among the first interventional cardiologists in the United States to perform transcatheter aortic valve implantation for inoperable patients with critical aortic stenosis. She also made history by performing the first live case conducted entirely by women during the CRT meeting on March 5, 2018.

Dr. Kini performs more than 1,000 coronary interventions annually—the highest number performed by a female interventional cardiologist in the United States—with an exceptionally low complication rate of less than 0.3 percent. Reports from the New York State Department of Health have repeatedly recognized her as the safest operator among more than 350 physicians in New York State. She received the Dean's Award for Excellence in Clinical Medicine at The Mount Sinai Hospital in 2011 and was named Physician of the Year in 2014 by Mount Sinai nurses. She also received the Excellence in Medicine Award from the National Association of Physicians of India and the Ellis Island Medal of Honor in 2017, one of the highest civilian honors given to immigrants. In 2018, she received the American Heart Association's Heart of Gold Award.

Dr. Kini led the landmark YELLOW I, II, and III trials, which used advanced imaging modalities and transcriptomic analysis to better understand the impact of aggressive lipid-lowering therapy on coronary plaque composition and stability, significantly advancing knowledge of atherosclerosis progression.

In addition to her clinical and research leadership, Dr. Kini founded **Kini Think Tank (KTT)** and serves as the head of the **Samuel Fineman Cardiac Catheterization Artificial Intelligence Research Lab**, an initiative focused on advancing interventional cardiology through procedural innovation, education, and the development of responsible AI tools designed to support physician decision-making and improve patient outcomes.

Dr. Kini has also led the development of numerous widely used educational and clinical cardiology applications through **CardiologyApps**, a platform designed to help clinicians better understand and perform complex procedures. These resources provide step-by-step procedural guidance, device information, case libraries, and imaging interpretation tools to assist physicians in managing complex coronary and structural interventions. Many of these apps are freely available and are used by cardiologists, fellows, and health care professionals worldwide as educational tools for procedural planning and training.

Dr. Kini is also an outstanding educator dedicated to training cardiology and interventional cardiology fellows. The 2012 graduating class of Mount Sinai interventional fellows established **The Annapoorna S. Kini Fellows' Choice Award** in her honor for excellence in teaching. In addition, she serves as Director of the Annual Live Symposium of Complex Coronary Cases at The Mount Sinai Hospital and directs the monthly CCC Live Cases webcast, which reaches more than 29,000 physicians in more than 179 countries.

VIEW MOUNT SINAI PROFILE

# Prakash Krishnan, MD, FACC

Director of Endovascular Interventions, Cardiac Catheterization Laboratory, The Mount Sinai Hospital

Professor of Medicine (Cardiology), and Diagnostic, Molecular and Interventional Radiology, Icahn School of Medicine at Mount Sinai

## Clinical Interests:

Interventional Cardiology

Endovascular Intervention

Carotid Stenting

212-241-5407
prakash.krishnan@mountsinai.org
@PK_MountSinai

Prakash Krishnan, MD, is a world-renowned expert in peripheral vascular disease and is internationally recognized as a leader in the catheter-based treatment of peripheral arterial disease. Dr. Krishnan's expertise includes nonsurgical treatment of coronary and peripheral vascular diseases, including coronary stents, peripheral vascular angioplasty and stents, atherectomy, carotid stents, renal stents, renal denervation, and complex venous disease intervention. Dr. Krishnan is a patient advocate and an educator. He has built a robust community-based outreach program that serves a vast population of patients with complex coronary and peripheral arterial disease.

He also serves as the Director of Endovascular Services for the Mount Sinai Health System. Dr. Krishnan has been educating interventionalists globally via live satellite transmissions at national and international meetings, and with his live monthly webcast program showcased on www.ccclivecases.org. He served as the co-primary investigator in the ILLUMENATE Trial and is a leading authority in the performance of nonsurgical interventions for peripheral arterial disease. He has received numerous awards and honors, including, in 2018, The Reverend Dr. Martin Luther King Legacy Award for Physician Services from Clergy With a Purpose. In 2022, he was also recognized for his contributions in community service and honored by the Association of Indian Americans (AIA) at their annual gala event in September 2022, and this year at the House of Commons, British Parliament in London, he will be receiving the Bharat Gaurav Award, given to people with extraordinary excellence in their fields.

He has also served as editor of numerous textbooks on endovascular interventions and has authored numerous peer-reviewed articles and book chapters. He is co-director of the annual NY Endovascular Summit (NYEVS) and The Mount Sinai Endovascular Fellows Course.

Dr. Krishnan is an internationally established leader in education. He has been both innovative and progressive, and recognized the opportunity to reach thousands of physicians to help advance the understanding of techniques in the interventional treatment of peripheral arterial disease.

In 2012, Dr. Krishnan began to broadcast monthly Peripheral Interventions Live via CCC Live Cases, which has more than 25,000 views per month in 179 countries.

As a master educator, Dr. Krishnan started the Endovascular Fellowship program at Mount Sinai Fuster Heart Hospital in 2013. He was recognized with the Distinguished Teaching Award by the Interventional Fellows in June 2017, providing incomparable education in the field of peripheral arterial disease. The following year, he received the Mentorship in Endovascular Interventions Award by the Mount Sinai Interventional Cardiology Fellows. In 2018, he was nationally recognized by being named Co-Director of the annual Endovascular Fellows Course by SCAI (Society of Angiography and Interventions). He is currently working as the Program Director for the Women as One Foundation's Peripheral Vascular Disease Clinical Program to promote, educate, and support young women cardiologists to become leaders in the field of vascular disease and endovascular intervention.

VIEW MOUNT SINAI PROFILE

## George D. Dangas, MD, PhD, MACC, MSCAI

Director, Cardiovascular Innovation, The Mount Sinai Hospital

Professor, Medicine (Cardiology), and Surgery, Icahn School of Medicine

Chief, Cardiology, Mount Sinai Queens

**Clinical Interests:**

Interventional Cardiology

Valvular Heart Disease

Endovascular Intervention

George D. Dangas, MD, PhD, is Director, Cardiovascular Innovation, at The Mount Sinai Hospital, Professor of Medicine (Cardiology), and Surgery at the Icahn School of Medicine at Mount Sinai; and Chief of Cardiology at Mount Sinai Queens; Director of the Transcatheter Cardiovascular Therapeutics; Editor, *Interventional Cardiology: Principles and Practice* (Wiley Publishers, U.K.); and President of the Society for Cardiovascular Angiography & Interventions (SCAI) 2023–24. He is Immediate Past-Chair of the American Heart Association Laennec Society and AHA Invasive Cardiology Committee.

Dr. Dangas is a leading authority in the performance of minimally invasive heart (coronary and valve disease) and vascular interventions, such as stent, angioplasty, atherectomy, and heart valve repair/replacement with both established and novel techniques.

After studies at the National Kapodistrian University of Athens, he served as Medical Officer, Hellenic Navy (including Hyperbaric/Diving Medicine) and then trained in internal medicine at Brown University/The Miriam Hospital; subsequently he was a Fellow in Cardiology and Interventional Cardiology at Mount Sinai. Among the five founding physicians of the Cardiovascular Research Foundation in New York, he was key a faculty member at Lenox Hill Hospital and Columbia University Irving Medical Center and led the establishment of interventional fellowship programs in both. He is board certified in all the disciplines he practices.

He is designated a Master of the American College of Cardiology (ACC) and Master of SCAI, ACC Distinguished Fellow 2019, and ACC Distinguished Teacher 2017, and included in many Top/Super Doctors and Who's Who lists for more than 10 years.

VIEW MOUNT SINAI PROFILE

**212-241-7014**
**george.dangas@mountsinai.org**

## Joseph M. Sweeny, MD, FACC

Medical Director, The Lauder Family Cardiovascular Ambulatory Center, The Mount Sinai Hospital

Associate Professor of Medicine (Cardiology), Icahn School of Medicine

**Clinical Interests:**

Coronary Microvascular Dysfunction

Fellows Education

Coronary Intervention

Joseph M. Sweeny, MD, performs both diagnostic cardiac catheterization and coronary interventions. He is the principal investigator of multiple national clinical trials and is actively involved in the Interventional Cardiology Fellowship Training Program as the Associate Program Director. In 2014, he became the Medical Director of the Lauder Ambulatory Cardiology Center, which provides comprehensive ambulatory care with all modalities of noninvasive cardiac testing in one central location.

With a special interest in treating post-heart transplant patients, Dr. Sweeny works closely with the Heart Transplant Team for coronary artery vasculopathy surveillance and endomyocardial biopsies in the Cardiac Catheterization Laboratory. In addition, he has a clinical interest in coronary microvascular disease and coronary physiology testing in the catheterization laboratory.

His research interests include coronary microvascular disease. Dr. Sweeny served as an assistant editor/reviewer for the *Journal of the American College of Cardiology* and was the Site Principal Investigator for the NIH-sponsored Ischemia Trial. As the Associate Program Director for the Interventional Cardiology Fellowship program, he is actively involved in the selection, education, and mentoring of our interventional fellows.
Dr. Sweeny also serves as the Radiation Safety Officer for the Cardiac Catheterization Laboratory. In this role, he has developed protocols and processes for tracking and monitoring patient radiation dose during interventional procedures.

**212-241-7016**
**joseph.sweeny@mountsinai.org**

VIEW MOUNT SINAI PROFILE

## Pedro R. Moreno, MD, FACC

Director of Quality Assurance in Cardiology, The Mount Sinai Hospital

Director of Credentials and Promotions for Cardiology

Director of the Brooklyn Medical Center Cardiology Fellowship Program

Professor of Medicine (Cardiology), Icahn School of Medicine

**Clinical Interests:**

Coronary Artery Disease

Interventional Cardiology

Plaque Imaging

Pedro R. Moreno, MD, is currently Director of Quality Assurance in Cardiology, at The Mount Sinai Hospital, and Professor of Medicine (Cardiology), at the Icahn School of Medicine. Dr. Moreno is Director for Academic Promotions in Cardiology for The Mount Sinai Hospital and Director of the Cardiology Fellowship Program at The Brooklyn Hospital Center in New York.

Trained at Harvard Medical School at Massachusetts General Hospital and Brigham and Women's Hospital, Dr. Moreno is board certified in Cardiology and Interventional Cardiology. He is a world-renowned expert in atherosclerosis and a pioneer in inflammation and acute coronary syndromes (ACS). Dr. Moreno described for the first time the role of macrophages in living patients with ACS. He also identified the role of macrophages and tissue factor, a membrane-bound protein responsible for the activation of coagulation *in vivo*, linking plaque rupture and coronary thrombosis. Furthermore, his work in restenosis established the link between inflammation and smooth muscle cell proliferation *in vivo*, allowing for the development of drug-eluting stents.

Dr. Moreno's is also original inventor of near-infrared spectroscopy in the quantification of coronary lipid content *in vivo*. His pioneer work in animal models set the standards for coronary stenting in the treatment of vulnerable plaques.

Dr. Moreno received the prestigious Double Star Award from the New York State Health Department for Best Interventionalist in the State of New York in 2012, 2019, and 2020. He is a section editor for the *Journal of the American College of Cardiology* and *Circulation: Cardiovascular Interventions*. He is an excellent teacher and mentor to clinical and research fellows at the Mount Sinai Fuster Heart Hospital in New York City.

212-523-2672
pedro.moreno@mountsinai.org

VIEW MOUNT SINAI PROFILE

## Roxana Mehran, MD, FACC, FESC, FAHA, MSCAI

Director, Women's Heart and Vascular Center at Mount Sinai Fuster Heart Hospital

Director, Center of Interventional Cardiovascular Research and Clinical Trials

Mount Sinai Professor in Cardiovascular Clinical Research and Outcomes

Professor of Medicine in Cardiology and Population Health Science and Policy, Icahn School of Medicine

**Clinical Interests:**

Cardiovascular Disease in Women

Antithrombotic Therapy

Cardiometabolic Health

Roxana Mehran, MD, FACC, is an internationally renowned interventional cardiologist, clinical research expert, and trialist. She is among the most prolific researchers in the United States and has built a globally respected academic center focused on randomized clinical trials, outcomes research, and high-impact publications. Her work focuses on personalized medicine, including development of individual risk scores for bleeding and acute kidney injury, and she contributes to clinical guidelines. With more than 3,000 publications, she has been repeatedly included in Clarivate Analytics "Most Cited Researchers – Top 1 percent" and "The World's Most Influential Scientific Minds" (Thomson Reuters). Dr. Mehran currently serves as the 2026–2027 President of the American College of Cardiology and leads The Lancet Commission on Women's Cardiovascular Diseases, an international initiative aimed at reducing the burden of cardiovascular disease in women. She is Director of the Women's Heart and Vascular Center at Mount Sinai Fuster Heart Hospital, leading a program dedicated to women's cardiovascular health. She also founded Women as One, a not-for-profit organization advancing opportunities for women in medicine.

Dr. Mehran is the recipient of numerous honors, including the Ellis Island Medal of Honor; the European Society of Cardiology (ESC) Silver Medal; the ESC Andreas Grüntzig Lecture Plaque; the Women in Cardiology Mentoring Award; the CRF Pulse-Setter Champion Award; the Jacobi Medallion from the Icahn School of Medicine at Mount Sinai, the ESC Gold Medal (2025), and, most recently, the AHA Laennec Master Clinician Award (2025).

212-659-9691
roxana.mehran@mountsinai.org

@drroxmehran

VIEW MOUNT SINAI PROFILE

## Vishal Kapur, MD, FACC, FSCAI, RPVI

Director of Endovascular Services, Mount Sinai Morningside

Associate Director, Endovascular Services, The Mount Sinai Hospital

Assistant Director, Cardiac Catheterization Laboratory, The Mount Sinai Hospital

Associate Professor of Medicine (Cardiology), Icahn School of Medicine

**Clinical Interests:**

Coronary Interventions

Peripheral Interventions

Non-Invasive Vascular Medicine

Vishal Kapur, MD, is an accomplished Interventional Cardiologist and Endovascular Specialist with expertise in complex coronary and peripheral vascular interventions. He serves as an Associate Professor of Medicine (Cardiology) at the Icahn School of Medicine in New York City. He is also Director of Endovascular Interventions at Mount Sinai Morningside, Associate Director of Endovascular Services at Mount Sinai Hospital, and Assistant Director of the Cardiac Catheterization Laboratory at The Mount Sinai Hospital.

Dr. Kapur is board certified in Internal Medicine, Cardiovascular Disease, Interventional Cardiology, Vascular Medicine, and Endovascular Medicine. He also holds certification in Adult Comprehensive Echocardiography and from the American Registry for Diagnostic Medical Sonography. He is licensed to practice in New York, New Jersey, Connecticut, and Texas.

A Fellow of the American College of Cardiology and the Society for Cardiovascular Angiography and Interventions, he has received multiple honors, including Castle Connolly Top Doctors, *New York* Best Doctors, the Marquis Who's Who Award, and the AIA Endovascular Specialist Award. He has also been invited to the NYC Mayor's residence for physician community engagement events.

An active academician, Dr. Kapur has authored numerous peer-reviewed publications and book chapters in leading journals such as *JACC, JACC: Cardiovascular Interventions*, *Journal of Vascular Surgery*, and *Circulation: Cardiovascular Interventions*. He has served as a Principal Investigator and co-investigator in multiple clinical trials.

He has been invited faculty at major international conferences, including TCT, VIVA, SCAI, NYEVS, AMP, ARCH, CCC, and Heart2Heart. He remains committed to advancing cardiology through innovation, research, education, and patient-centered care.

**212-241-0898/ 646-629-2211**
**vishal.kapur@mountsinai.org**

VIEW MOUNT SINAI PROFILE

## Jeffrey Bander, MD, FACC

Chief of Cardiology, Mount Sinai West

Medical Director, Network Development, The Mount Sinai Hospital Network

Associate Professor of Medicine (Cardiology), Icahn School of Medicine

**Clinical Interests:**

Clinical Cardiology

Cardiac Catheterization

Coronary Interventions

Jeffrey Bander, MD, is a leader and innovator in health care and business, known for his expertise in building and scaling large health care projects and companies. As the Associate Director of Mount Sinai Fuster Heart Hospital and Chief of Cardiology at Mount Sinai West, he leads system-wide initiatives that integrate advanced technology, operational strategy, and clinical excellence across the Health System.

His initiatives include real-world implementation of AI in medicine, such as automated echocardiography interpretation and AI-enabled imaging platforms, bringing scalable, intelligent diagnostics into everyday cardiovascular care. Dr. Bander's entrepreneurial acumen is evidenced by his founding of two successful health care companies, Referwell and Providerloop. He is also an active mentor and educator and serves as an advisor to emerging health technology startups, helping translate novel ideas into scalable clinical solutions.

As a principal investigator, Dr. Bander's research focuses on the intersection of cardiovascular medicine, machine learning, and emerging technologies, with a consistent focus on translating innovation into measurable clinical and operational impact. Building on this, he also leads an advanced AI laboratory developing agentic platforms that actively support clinical workflows.

Through his leadership of Mount Sinai's First Responders Hypertension Program, cardiovascular screening and prevention are brought directly to New York City firefighters, expanding access to care. His work has earned recognition from leading community organizations, including being named a 2025 American Heart Association NYC Leaders of Impact award winner. Dr. Bander continues to drive innovation, improve patient outcomes, and advance technology-enabled care.

**212-381-0918**
**jeffrey.bander@mountsinai.org**

VIEW MOUNT SINAI PROFILE

## Sahil Khera, MD, MPH, FACP, FACC, FSCAI

Interventional Director, Structural Heart Disease Program, and Physician Lead, ADS Cardiology Inpatient Service, The Mount Sinai Hospital

Associate Professor, Medicine (Cardiology, Icahn School of Medicine

**Clinical Interests:**

Transcatheter Aortic Valve Replacement

Transcatheter Mitral Valve Repair/Replacement

Transcatheter Tricuspid Valve Repair/ Replacement

Left Atrial Appendage Occlusion (LAAO)

Sahil Khera, MD, joined Mount Sinai in 2019 after completing fellowships in Interventional Cardiology at Massachusetts General Hospital, Harvard Medical School (Boston) and Structural Heart Disease Interventions at NewYork-Presbyterian/Columbia Irving University Medical Center (New York). He is actively involved in cardiovascular outcomes research with a focus on transcatheter valve therapies. Dr. Khera serves as a principal investigator or co-investigator in multiple coronary and structural heart clinical trials and has authored or co-authored more than 160 peer-reviewed publications. He frequently presents at scientific meetings and has served as a global proctor for transcatheter aortic, tricuspid, and mitral procedures, training physicians in best practices for valve implantation and procedural efficiency.

Dr. Khera has received several teaching and research honors, including selection to the American College of Cardiology (ACC) Emerging Faculty Leadership Program, the SCAI 30 in Their 30s recognition, and the Mount Sinai Faculty Council Award. His clinical expertise spans structural heart interventions, including transcatheter mitral and tricuspid therapies, transcatheter aortic valve replacement (TAVR), ASD/PFO closure, paravalvular leak closure, left atrial appendage closure, and complex coronary interventions. He has performed more than 2,000 structural heart procedures.

His administrative and research interests focus on cost-effectiveness and programmatic efficiency of transcatheter therapies, with the goal of optimizing outcomes while improving patient experience and satisfaction.

212-241-7250 (O) / 914-564-7587 (C)
sahil.khera@mountsinai.org
@KHERA_MD

VIEW MOUNT SINAI PROFILE

## Gregory Serrao, MD, MSE

Director, Mechanical Circulatory Support, Cardiac Catheterization Laboratory, The Mount Sinai Hospital

Assistant Program Director, Cardiovascular Disease Academic Track

Associate Professor, Medicine (Cardiology), Icahn School of Medicine

**Clinical Interests:**

Cardiogenic Shock

Mechanical Circulatory Support

Cardiac Catheterization

Gregory Serrao, MD, serves as Director of Mechanical Circulatory Support for the Cardiac Catheterization Laboratory.

He is an Associate Professor of Medicine (Cardiology) and an interventional cardiologist at The Mount Sinai Fuster Heart Hospital.

Dr. Serrao earned a Bachelor of Science in Engineering from The Cooper Union for the Advancement of Science and Art and a Master of Science in Biomedical Engineering from the Columbia FU Foundation School of Engineering. He completed medical school at the Icahn School of Medicine at Mount Sinai, graduating with Distinction in Research for his work in cardiac tissue engineering. During medical school, he was elected to both the Alpha Omega Alpha and Gold Humanism honor societies.

He completed his internal medicine residency at New York-Presbyterian Hospital/Columbia, followed by cardiology and interventional cardiology fellowships at The Mount Sinai Hospital, where he served as chief fellow in both programs.

Dr. Serrao is an expert in the management of critically ill patients and specializes in the implantation and management of percutaneous mechanical circulatory support for cardiac arrest, cardiogenic shock, pulmonary embolism, and respiratory failure.

He is also deeply committed to education and has received numerous awards for his work as a teacher. Dr. Serrao serves as Director of the Inpatient Cardiology Teaching Service.

917-756-6852
gregory.serrao@mountsinai.org

VIEW MOUNT SINAI PROFILE

## Gilbert Tang, MD, MS, MBA, FACC, FESC

Surgical and Academic Director, Structural Heart Program, Mount Sinai Health System

Director, Mitral and Tricuspid Structural Intervention

Professor and Vice Chair of Innovation, Cardiovascular Surgery

Professor of Medicine (Cardiology), and and Cardiovascular Surgery, Icahn School of Medicine

**Clinical Interests:**

Transcatheter Aortic and Mitral Valve Therapy

Transcatheter Tricuspid Repair and Replacement

Gilbert Tang, MD, MS, MBA, is an interventional surgeon who specializes in structural heart disease and has performed thousands of transcatheter aortic valve replacement (TAVR), transcatheter mitral and tricuspid valve repair (transcatheter edge-to-edge repair, TEER), and transcatheter mitral and tricuspid valve replacement procedures (TMVR, TTVR). His 24/7 "concierge" model of care has been well received and recognized in the New York area.

Dr. Tang has achieved many "first" successes and lectures regularly in national and international meetings. He pioneered the concept of commissural alignment to better orient a transcatheter heart valve during TAVR. He serves on multiple steering and screening committees of international clinical trials, is on the Program Planning Committee of Society of Thoracic Surgeons, New York Valves and Transcatheter Cardiovascular Therapeutics annual meetings, and has led workshops on multivalve disease and redo-TAVR with the Heart Valve Collaboratory. He is an elected member of the American Association for Thoracic Surgery and the first surgeon elected to SCAI (Society for Cardiovascular Angiography and Interventions). He is currently the Editor-in-Chief of the *Journal of American College of Cardiology* Case Reports.

Dr. Tang received his bachelor's degree at Harvard University and completed his MD and cardiac surgery residency training at the University of Toronto. He earned a Master of Science in tissue engineering at the University of Toronto and an MBA at the Harvard Business School. He has a structural heart YouTube channel to promote education and training.

646-761-0391 | gilbert.tang@mountsinai.org

@GilbertTangMD

VIEW MOUNT SINAI PROFILE

## Stamatios Lerakis, MD, PhD, FACC, FSCAI, FSCCT

Director, Cardiovascular Imaging Program, and Imaging for Structural and Valve Interventions, Mount Sinai Health System, and the Structural Heart Interventions Imaging Fellowship at Mount Sinai Fuster Heart Hospital

Professor of Medicine (Cardiology) and Diagnostic, Molecular and Interventional Radiology, Icahn School of Medicine at Mount Sinai

**Clinical Interests:**

Cardiovascular Multimodality Imaging

Imaging for Structural Heart Interventions

TTE, TEE, CCT, CMR, 4D ICE, PET

Stamatios Lerakis, MD is the Director of the Cardiovascular Imaging Program and Imaging for Structural and Valve Interventions for the Mount Sinai Health System, Director of the Advanced Structural Echocardiography Fellowship Program and Acting Director for the CCT and CMR Program for the Mount Sinai Fuster Heart Hospital. He is a recognized multimodality cardiac imager and a national and international expert in imaging for Structural and Valve Interventions. Dr Lerakis, in collaboration with the NIH, has guided the first in humans transcatheter mitral valve replacement after transcatheter electrosurgical laceration of alfieri stitch (ELASTIC), the first in humans intentional percutaneous laceration of the anterior mitral leaflet to prevent outflow obstruction during transcatheter mitral valve replacement (LAMPOON) and the first in humans single and double bioprosthetic aortic scallop intentional laceration to prevent iatrogenic coronary artery obstruction (BASILICA) during transcatheter aortic valve replacement. Dr. Lerakis has been in the forefront of Imaging for Structural and Valve Interventions since the beginning and his contributions have been instrumental in the development of this field. Dr. Lerakis is Level 3 trained and certified in all the Cardiovascular Imaging Modalities. He is regularly invited faculty and guest lecturer in multiple national and international conferences, has been the PI and Co-PI in multiple Structural and Valve trials, has received multiple Excellence in Teaching Awards, and has more than four hundred publications.

212-241-1002
stamatios.lerakis@mountsinai.org

VIEW MOUNT SINAI PROFILE

## Nitin Barman, MD, FACC, FSCAI

Director, Cardiac Catheterization Laboratory, Mount Sinai Morningside

Assistant Professor of Medicine (Cardiology), Icahn School of Medicine

**Clinical interests:** Clinical Cardiology, Transradial Intervention, AMI Intervention, Complex Coronary Interventions

212-523-1094 | nitin.barman@mountsinai.org

## Sunny Goel, MD, FACC, FSCAI

Director, Structural Heart Disease
Mount Sinai South Nassau

Assistant Professor of Medicine (Cardiology), Icahn School of Medicine

**Clinical interests:** Complex Coronary Interventions, Transcatheter Aortic Valve Replacement, Transcatheter Mitral Valve Repair, ASD/PFO Closure

917-280-6832 | 516-632-3672 (Mount Sinai South Nassau)
sunny.goel@mountsinai.org | sunny.goel@snch.org

## Srinivas Duvvuri, MD, FACC

Clinical Associate Professor of Medicine (Cardiology), Icahn School of Medicine

Network Senior Medical Director, Staten Island

Director, Coronary Intervention at Richmond University Medical Center

**Clinical interests:** General Cardiology, Cardiac Catheterization, Interventional Cardiology, Trans-radial Intervention

718-981-2684 | srinivas.duvvuri@mountsinai.org

## Yoav Niv Granot, MD

Assistant Professor of Medicine (Cardiology), Icahn School of Medicine

**Clinical Interests:** Cardiovascular Imaging (echocardiography), Imaging for Structural Heart Interventions

917-227-4197 | yoav.nivgranot@mountsinai.org

## Lynne Glasser, MD

Director, Interventional Inpatient Service

Assistant Professor of Medicine (Cardiology), Icahn School of Medicine

**Clinical interests:** Clinical Cardiology, Preventive Cardiology, Inpatient Cardiology

Since joining The Mount Sinai Hospital in November 2008, Dr. Glasser has been playing an important role in the treatment and management of interventional patients, before and after the procedure.

212-241-4521 | lynne.glasser@mountsinai.org

## Amit Hooda, MD, FACC, FSCAI

Assistant Professor of Medicine (Cardiology), Icahn School of Medicine

Assistant Director, Interventional Cardiology Fellowship Program

**Clinical interests:** Complex Coronary Interventions, AMI Intervention, Intravsacular Imaging, Transcatheter Aortic Valve Replacement, Drug-Eluting Balloons

212-241-9802 | amit.hooda@mountsinai.org

### Bhavanadhar Penta, MBBS, FACC, FSCAI

Associate Director, Structural Heart Disease Program, The Mount Sinai Hospital

Assistant Professor of Medicine (Cardiology), Icahn School of Medicine

**Clinical interests:** Complex Coronary Interventions, Transcatheter Aortic Valve Replacement, Paravalvular Leak Closure, ASD/PFO Closure

212-241-2363 | bhavanadhar.penta@mountsinai.org

### Raman Sharma, MD, FACC, RPVI

Assistant Director, Endovascular Interventions Program, The Mount Sinai Hospital

Assistant Professor of Medicine (Cardiology), Icahn School of Medicine

**Clinical interests:** Peripheral Arterial Disease, Endovascular Intervention, Complex Coronary Interventions, Venous Disease and Intervention, Carotid Artery Stenting

212-241-0932 | raman.sharma@mountsinai.org

### Isha Ranadive, MD, MPH

Assistant Professor of Medicine (Cardiology), Icahn School of Medicine

**Clinical interests:** Clinical Cardiology, Complex Coronary Interventions, Primary PCI

321-946-2464 | isha.ranadive@mountsinai.org

### Joshua Shatzkes, MD, MS

Director of Ambulatory Care, Cardiovascular Institute at Mount Sinai West

Medical Director of Community Outreach, Mount Sinai Network

Associate Professor of Medicine (Cardiology), Icahn School of Medicine

**Clinical interests:** Cardiovascular Disease Prevention, Noninvasive Cardiovascular Imaging, Hypertension, Hyperlipidemia, Peripheral Arterial Disease and Venous Insufficiency

212-241-9457 | joshua.shatzkes@mssm.edu

### Lucy M. Safi, DO, FACC, FASE, FSCAI

Associate Professor of Medicine (Cardiology), Icahn School of Medicine

Imager for Structural Heart Interventions

**Clinical interests:** Structural Heart Disease, Imaging for Transcatheter Interventions, and AI in Echocardiography

212-241-6846 | lucy.safi@mountsinai.org

@LucySafi

### Michael Alan G. Sicat, MD

Assistant Professor of Medicine (Cardiology), Icahn School of Medicine

**Clinical interests:** Clinical Cardiology, Echocardiography, Cardiac Catheterization

718-273-9080 | michael.sicat@mountsinai.org

## David D. Song, MD

Assistant Professor of Medicine (Cardiology), Icahn School of Medicine

**Clinical interests:** Interventional Cardiology, Endovascular Intervention (Arterial and Venous), Renal Denervation, Carotid Artery Stenting

212-241-9802 | david.song@mountsinai.org

## Javed Suleman, MBBS, FACC

Associate Professor of Medicine (Cardiology), Icahn School of Medicine

**Clinical interests:** Clinical Cardiology, Coronary Intervention, Primary PCI

718-297-0440 | javed.suleman@mountsinai.org

## Karthik Gujja, MD, MPH

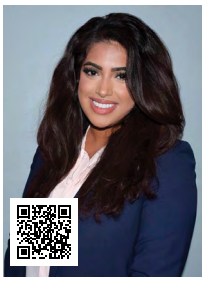
Director, Endovascular Services at Mount Sinai South Nassau

Clinical Instructor (Cardiology), Icahn School of Medicine

**Clinical interests:** Peripheral Artery Disease, Critical Limb Ischemia, Venous Insufficiency, Aortic Aneurysm, Carotid Artery Disease, Coronary Artery Disease

516-833-5505 | karthik.gujja@mountsinai.org

## Cynthia Balasanmugam, MD



Clinical Instructor, Icahn School of Medicine

**Clinical interests:** Clinical Cardiology, Preventive Cardiology, Coronary Artery Disease, Peripheral Arterial Disease, Women's Cardiovascular Health

516-833-5505 | cbala@lihvs.net

## Choudhury M. Hasan, MD, FACC, FSCAI

Associate Clinical Professor of Medicine (Cardiology), Icahn School of Medicine

**Clinical interests:** Cardiac Catheterization, Coronary Interventions, Echocardiography

718-657-8001 | cmmhasan03@gmail.com

## José Meller, MD

Clinical Professor of Medicine (Cardiology), Icahn School of Medicine

**Clinical interests:** Clinical Cardiology, Fellows Education, Cardiac Catheterization

212-988-3772 | josemeller44@gmail.com

## Beth Oliver, DNP, RN, FAAN

Chief Nurse Executive
Senior Vice President,
Cardiac Services
Mount Sinai Health System
Edgar M. Cullman, Sr., Chair
Department of Nursing
Icahn School of Medicine
Mount Sinai

Beth Oliver was recognized as one of *Modern Healthcare*'s 50 Most Influential Clinical Executives in 2024. She is a transformational health care leader with more than 30 years of experience. As Senior Vice President of Cardiac Services and Chief Nurse Executive for the Mount Sinai Health System, she advances evidence-based, patient-centered care and seamless health care transitions.

Dr. Oliver aligns nursing excellence with strategic goals to optimize clinical outcomes, enhance engagement, and elevate patient experience. A former President of the American Heart Association's New York City Board of Directors, she has expanded cardiovascular health initiatives citywide. Honored by Becker's and the American Academy of Nursing, she was appointed to the New York Academy of Medicine's Board of Trustees in 2023. A respected speaker and author, she continues to drive health care innovation, improving patient outcomes and strengthening the nursing profession.

**212-241-0796**
**beth.oliver@mountsinai.org**

## Thomas Geramita, PA-C

Associate Director, Clinical
Operations of Cardiac
Catheterization Laboratory and
Advanced Practice Providers

Thomas Geramita began his career at The Mount Sinai Fuster Heart Hospital as a Senior Physician Assistant (PA) in the Department of Electrophysiology in October 2019. During his time as a Senior PA, he began to develop process improvements and initiatives, which led to an interest in leadership and an eventual promotion as the Advanced Practice Provider (APP) supervisor at Mount Sinai Fuster Heart Hospital. As the APP supervisor, he led quality initiatives, standardized orientation, and initiated an APP focused cardiac educational lecture series which resulted in a promotion to an Associate Director. As Associate Director, he directs, oversees, and coordinates all administrative and clinical operations for the Cardiac Catheterization Laboratory and APPs of Mount Sinai Fuster Heart Hospital.

**212-241-7114**
**thomas.geramita@mountsinai.org**

## Neethu James, MSN,RN

Clinical Nurse Manager,
Catheterization Laboratory

Neethu James joined The Mount Sinai Fuster Heart Hospital Cardiac Catheterization Laboratory in September 2023 as Assistant Nurse Manager. She transitioned to Nurse Manager in January 2024. She continues to work as a nurse leader with dedication, resilience, and unwavering commitment to improve the unit and patient experience.

**929-687-2871**
**neethu.james@mountsinai.org**

## NURSE PRACTITIONER TEAM

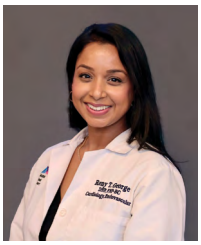
The Mount Sinai Hospital's dedicated staff of nurse practitioners and physician assistants work closely with the physicians in planning and implementing care from the time of intake to discharge, ensuring a quality experience at all points of the patient's visit.


Maryam Akhtar, NP

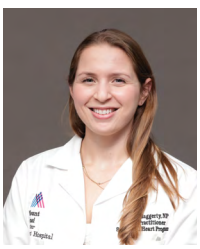

Norwin Bunal, NP

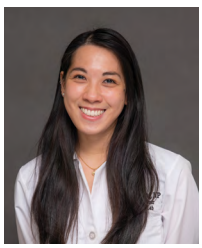

Melissa Chang, NP


Marichu Edimallo, NP


Reny George, NP


Aira Fides Gonzales, NP


Melissa Haggerty, NP

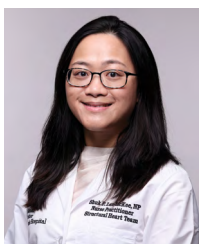

Michelle Hang, NP

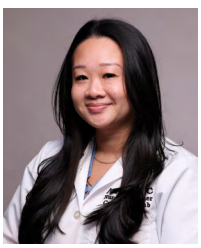

Kristina Hartig, NP


Leslie Joo, NP


Hyo Jin Kang, NP
Clinical Director,
Structural Heart Program


Rheoneil Lascano, NP


Shuk Fan Lau-Mckee, NP


Angela Li, NP


Jessica Lim, NP


Nelya Lozynska, NP


Derek Pineda, NP


Supawadee Pitakmongkolkul, DNP


Catherine Popik, PA


Daneille Rhule, NP


Indra Sinanan, DNP


Elizabeth Spears, NP


Richard Ternemille, DNP


Shira Wender, NP


Kevin Williams, NP

## INTERVENTIONAL CARDIOLOGY FELLOWS

Mount Sinai Fuster Heart Hospital's Interventional Cardiology Fellowship Program is the largest in the country, educating the next generation of clinical cardiology and interventional cardiology specialists. This well-regarded program, which combines academic and hands-on experience, has graduated physicians who are serving as noted leaders in community and academic medical centers.

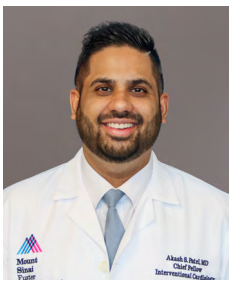
Gaurav Arora, MD
Interventional Fellow

Khushal Choudhary, MD
Interventional Fellow

Monika Karki, MD
Interventional Fellow

Bharath Raj Kidambi, MD
Interventional Fellow

Sabina Kumar, MD
Interventional Fellow



Akash Patel, MD
Chief Fellow

Neel Patel, MD
Interventional Fellow

Pruthvi Revaiah, MD
Interventional Fellow

Ranbir Singh, MD
Chief Fellow

Sophia Thang, MD
Interventional Fellow

Maria Eleni Drosou, MD
Structural Fellow

Pratheesh George, MD
Structural Fellow

Takayuki Onishi, MD
Structural Fellow

Krishna Santosh Vemuri, MD
Structural Fellow

Michael Arustamyan, MD
Endovascular Fellow

Awad Javaid, MD
Endovascular Fellow

Michael Sola, MD
Endovascular Fellow

Swathi Rao, MD
Advanced Hemodynamic Care and Complex High-Risk Interventions Fellow

Leila Alizadeh, MD
Advanced Structural Echocardiography Imaging Fellow

## Research Team

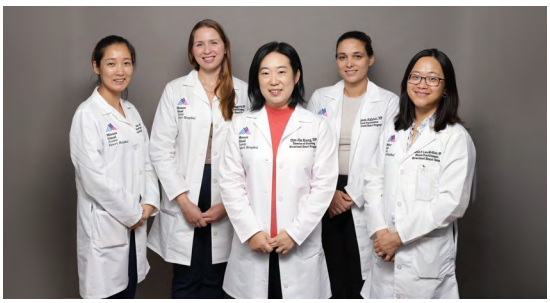
Mariglen Jahaj, Chivelle Mendoza, Andriy Vengrenyuk, Keisuke Yasumura, MD, Nicole Saint Vrestil, Yulia Vengrenyuk, PhD, Isha Kohil, Miguel Vasquez, Nimisha Baruah, Mercedes Morales, and Harleen Kaur.

## Supporting Staff

Maria Directo, Celeste Caro, Ana Cielis Osborne, Andrew Emmanuel, Era Zuberko, Jovic Cruz, and Carol Henry.

## Interventional Database Team

Pavan Gadhe, Lakshmi SV Gujjarllamudi, Elena Ramos, Kevin Dellner, Michelle Lin, and Carolina Vieira.



## Structural Heart Team

Leslie Joo, NP, Melissa Haggerty, NP, Hyo Jin Kang, NP, Maryam Akhtar, NP, and Shuk Fan Lau-Mckee, NP.

## Kini Think Tank

Keisuke Yasumura, MD, Mariglen Jahaj, Yulia Vengrenyuk, PhD, Annapoorna S. Kini, MD, Andriy Vengrenyuk, and Derek Pineda, NP.

CCC LIVE CASES

## A FREE EDUCATIONAL RESOURCE TO VIEW LIVE COMPLEX CASES AND INTERACT WITH EXPERTS

Viewers can watch live procedures on this interactive learning platform and ask questions in real time. This approach aims to create active learning and an informative experience, enabling participants to observe and learn the best practices for achieving safe and successful outcomes for patients.

- **16,000+ Cath Procedures**
- **5,200+ Interventions**
- **Moderated by World-Renowned Experts**

**Where to Watch:**

**FOLLOW US**
**@CCCLiveCases**

**More than 2M Views**

### Intravascular Imaging

**First Friday of February, April, June, August, October, December at 8 am ET**

Annapoorna S. Kini, MD, Amit Hooda, MD, Keisuke Yasumura, MD, Nitin Barman, MD

### Coronary Function Testing

**First Wednesday of January, March, May, July, September, November at 8 am ET**

Joseph Sweeny, MD, and Pedro Moreno, MD

### Structural Heart

**Second Tuesday of every month at 9 am ET**

Annapoorna S. Kini, MD, Samin K. Sharma, MD, Gilbert Tang, MD, Sahil Khera, MD, Stamatios Lerakis, MD, Lucy Safi, MD, and Pedro Moreno, MD

### Complex Coronary

**Third Tuesday of every month at 8 am ET**

Samin K. Sharma, MD, Annapoorna S. Kini, MD, and Sameer Mehta, MD

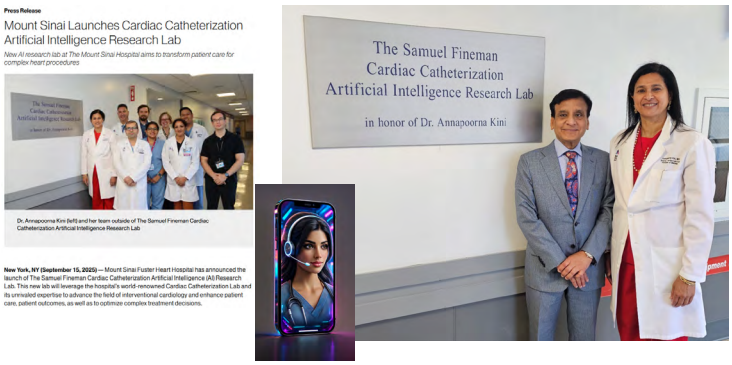
### Peripheral Interventions

**Fourth Wednesday at 8 am ET**

Prakash Krishnan, MD, Vishal Kapur, MD, Karthik Gujja, MD, Raman Sharma, MD, and David Song, MD

# Achievements

## 1 The Mount Sinai Hospital Launches Cardiac Catheterization AI Research Lab




## 2 *New York* Castle Connolly Top Doctors

NEW YORK

CASTLE CONNOLLY 2025 TOP DOCTORS

Samin K. Sharma, MD (16 times in 20 years)

Annapoorna S. Kini, MD (8 times in 9 years)

Prakash Krishnan, MD (Fifth year in a row)

Pedro Moreno, MD (Ninth year in a row)

Roxana Mehran, MD (10 times in 12 years)

George Dangas, MD (11 times in 12 years)

Joseph Sweeny, MD (Fifth year in a row)

Jeffrey Bander, MD (Third year in a row)

## 3 TCT 2025 Mount Sinai Fuster Heart Hospital Ranked № 1 Leading Institution in Global, USA and Coronary


## 4 New CCC Live Webcast Series

"Intravascular Imaging" with Annapoorna Kini, MD, and "Coronary Function Testing" with Joseph Sweeny, MD

CCC LIVE CASES



## 5 Roxana Mehran, MD, FACC

- Appointed 2025–2025 Incoming VP of ACC
- ESC Gold Medal
- TCTAP Master of the Masters Award






AMERICAN COLLEGE of CARDIOLOGY

Dr Mehran was appointed as 2025-2026 incoming **Vice President** and 2026-2027 **President** of the **American College of Cardiology (ACC)**

**August 29, 2025**
**Dr. Roxana Mehran** received the ESC Gold Medal at ESC Congress in Madrid, Spain

## 6 First-in-Man Procedures



Tampa, Florida, August 1, 2025 — Concept Medical Inc., a global pioneer in drug-delivery technologies, today announced the enrollment of the first patient in the MAGICAL-SV (MAGICTouch™ Sirolimus-Coated Balloon for Treatment of Coronary Artery Lesions in Small Vessels) trial, a U.S. Investigational Device Exemption (IDE) study evaluating its MagicTouch™ sirolimus-coated balloon (SCB) for the treatment of small coronary vessels. This first enrollment marks a major milestone in the company's mission to revolutionize coronary artery disease (CAD) treatment and expands Concept Medical's clinical program into the United States and Europe.

The first patient was enrolled at Mount Sinai Hospital in New York by Dr. Samin Sharma, Director of Interventional Cardiology, marking a crucial step in advancing treatment options for patients with small-vessel coronary artery disease.

"Today marks a great feat for us and for the MAGICAL-SV trial," said Dr. Samin Sharma. "My team at Mount Sinai is privileged to be the first to begin this study. This is a proud moment for all of us, especially knowing what the trial signifies and aims to achieve by evaluating MagicTouchas a potential alternative for treating small vessels in the U.S."

## 7 Prakash Krishnan, MD, on CBS News Discussing President Trump's Diagnosis


## 8 Sahil Khera, MD, selected for the ACC Emerging Faculty Leadership Academy


## 9 Gregory Serrao, MD, received ELSO Gold Award for the The Mount Sinai Hospital ECMO Program



## 10 Samin K. Sharma, MD

- LT Excellence in Healthcare International Awards
- AIA medical council award
- Global health congress

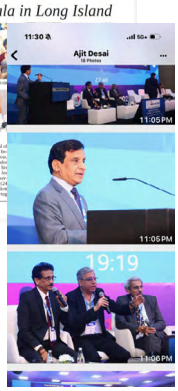

Dr Samin Sharma, Dr Singhal to be honoured with LT Excellence in Healthcare International Awards

विश्व प्रसिद्ध डॉ. समीन शर्मा, डॉ. पराग सिंघल को एक्सीलेंस इन हेल्थकेयर इंटरनेशनल अवार्ड


AIA Medical Council Awards held on May 3, 2025, at Cipriani

Published: May 15, 2025 - TIE Staff






# Cardiac Catheterization Laboratory Educational Events

The Mount Sinai Fuster Heart Hospital holds several important educational events throughout the year, focusing on complex coronary, peripheral, and structural heart interventions, cutting-edge research, emerging clinical evidence, and hands-on learning led by world-renowned experts in cardiovascular care.

## SAVE THE DATE:

CCC 2026
COMPLEX CORONARY CASES

**CCC: Complex Coronary Cases Symposium**

Tuesday, June 16–
Thursday, June 18, 2026

The Mount Sinai Hospital and
New York Marriott Marquis

NYEVS
NEW YORK ENDOVASCULAR SUMMIT

**NYEVS: NY Endovascular Summit and Fellows Course**

Thursday, September 24–
Saturday, September 26, 2026

New York
Marriott Marquis

TOP TEN TOPICS IN CARDIOLOGY
PATIENT FOCUSED, EVIDENCE-BASED APPROACH

**Top Ten Topics in Clinical Cardiology Conference**

Friday, October 16, 2026

The Mount Sinai Hospital:
Stern Auditorium

NYTVS
NEW YORK
TRANSCATHETER VALVES
SYMPOSIUM

**NYTVS: NY Transcatheter Valves**

Friday, February 5, 2027

The Mount Sinai Hospital:
Stern Auditorium

# Mount Sinai Fuster Heart Hospital Directory

| Area | Telephone |
|---|---|
| Mount Sinai Heart Director | 212-241-7911 |
| Adult Congenital Heart Disease Center | 212-241-1382 |
| Cardiac Rehab Program | 212-241-8597 |
| Cardiology Administration | 212-241-4030 |
| Cardiology Appointments | 212-427-1540 |
| Cardiology Privileges | 212-241-4029 |
| Cardiothoracic Surgery | 212-659-6800 |
| Cardiovascular MRI and CT Imaging | 855-MSHEART |
| Catheterization Laboratories | 212-241-5881 |
| **Cardiac Catheterization Laboratory Assistance (any issues)** | **212-241-0935** |
| Catheterization Laboratory Events | 212-241-0592 |
| Catheterization Laboratory Office | 212-241-4021 |
| Catheterization Laboratory Research | 212-241-0229 |
| Catheterization Laboratory Scheduling | 212-241-5136 |
| Coronary Care Unit | 212-241-7222 |
| Electrophysiology/Pacemakers | 212-241-7272 |
| Genetic Disorders | 212-241-3303 |
| Heart Failure/Transplantation | 212-241-7300 |
| Lipid Management | 212-241-7651 |
| Mount Sinai Heart Information Technology | 212-241-4026 |
| Noninvasive Cardiology | 855-MSHEART |
| Pediatric Cardiology | 212-241-8662 |
| Pulmonary Hypertension | 212-241-7300 |
| To Transfer a Patient | 212-241-6467 |
| Vascular Laboratory | 212-241-6773 |

**To refer a patient:**
**Phone**: 212-241-5136

**To make an appointment:**
**Phone**: 212-241-0884 or scan the code

Publication of the *2025 Clinical Outcomes and Innovations Report* was made possible through generous gifts from the:

- Dr. Samin K. Sharma Family Foundation
- SP and Seema Lohia Cardiovascular Clinical Institute

Designed and Produced by:
Onward Publishing Inc.
631-757-8300
www.onwardpublishing.com

**“A real team is more than collaboration; it’s a foundation of trust, respect, and shared purpose.”**

**Cardiac Catheterization Laboratory Mission:**
**To improve outcomes and safety of interventional patients by delivering clinical innovations, unrivaled research, and the latest personalized interventional care as a team concept.**

Mount Sinai Fuster Heart Hospital