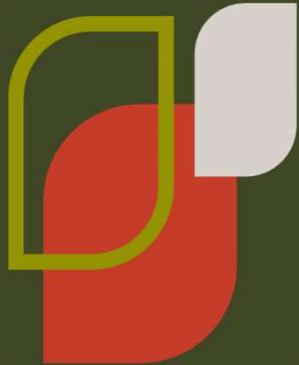


# *Beyond the Mitral Valve: Expanding Indications for Robotic Cardiac Surgery*

T. Sloane Guy, MD, MBA  
Director of Minimally Invasive &  
Robotic Cardiac Surgery  
[roboticheartsurgeon.com](http://roboticheartsurgeon.com)  
✕ [@sloaneguy](https://twitter.com/sloaneguy)



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# Disclaimers

## DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIP(S) WITH INELIGIBLE COMPANIES

- Consultant, MAB member, EnableCV
- Consultant, Proctor & Case Observations, Intuitive Surgical

## REFERENCES TO OFF-LABEL USAGE(S) OF PHARMACEUTICALS OR INSTRUMENTS

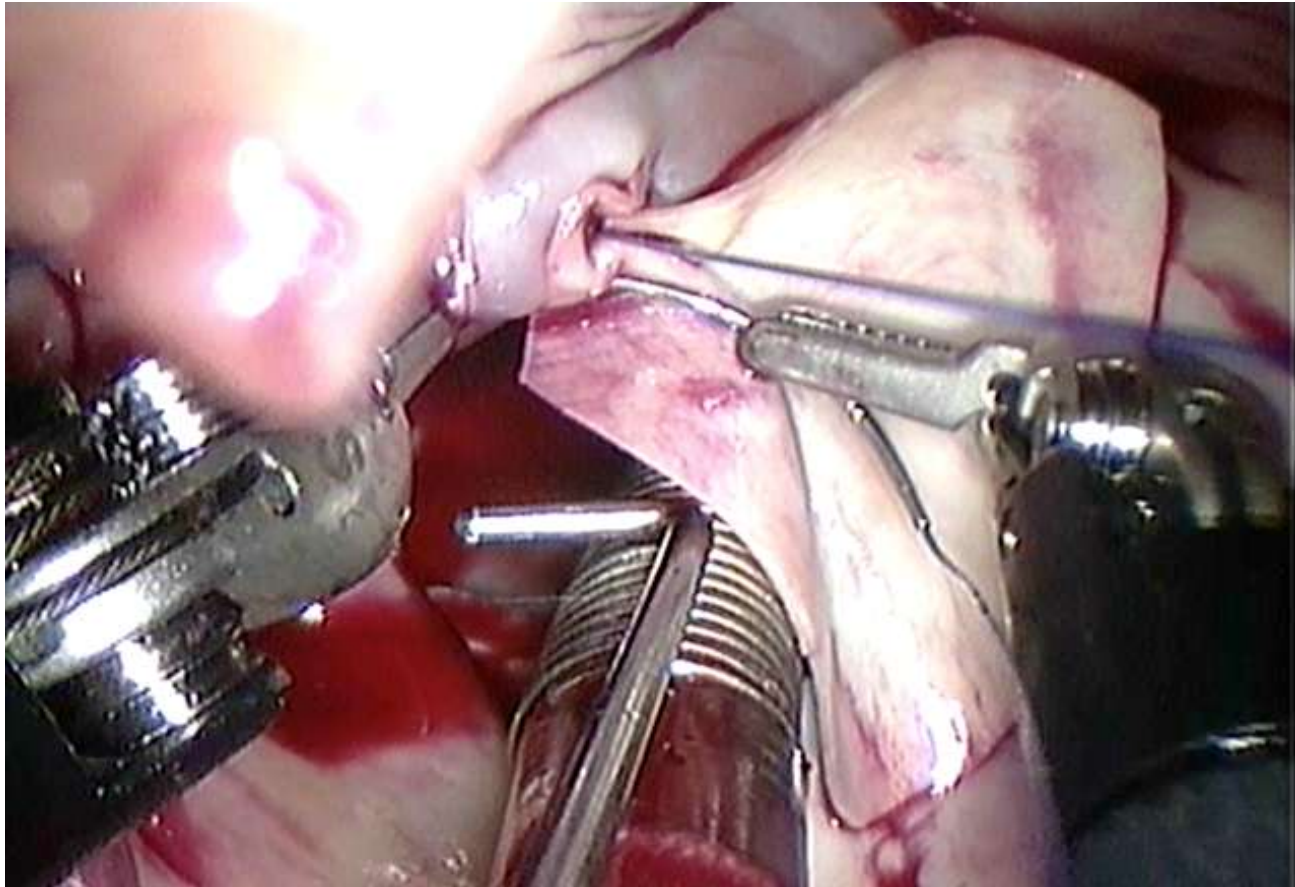
- Nothing to disclose

*All relevant financial relationships have been mitigated.*



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## **My first robotic operation: ASD Closure 2002**



## **“Traditional” Robotic Cardiac Operations**

- **Mitral Valve Repair/Replacement**
- **Tricuspid Valve Repair/Replacement**
- **Atrial Myxoma**
- **ASD**
- **MAZE**
- **Left Atrial Appendage Closure**
- **Robotic MIDCAB**
- **Robotic TECAB**
- **Pacemaker Lead Placement**
- **Foreign Body Removal**



## **“Evolving” Robotic Cardiac Operations**

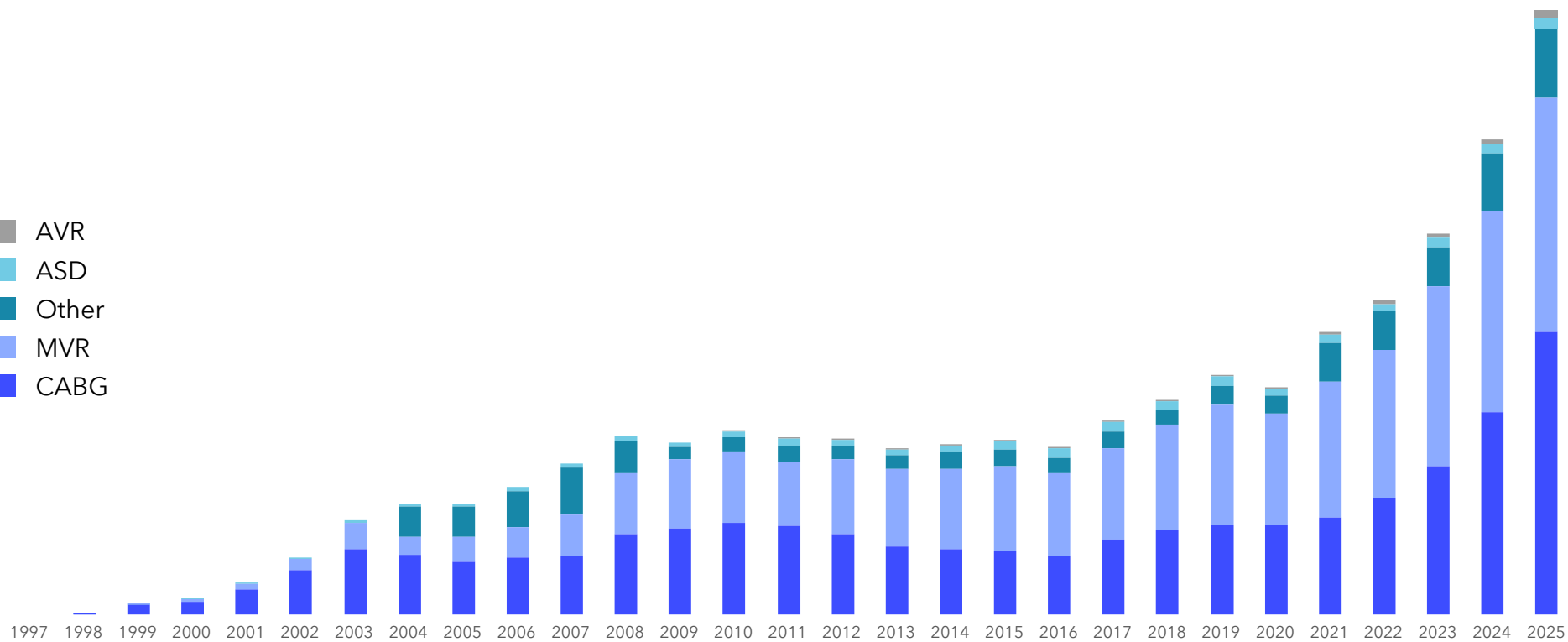
- **Aortic Valve Replacement and Repair**
- **AVR with Root Enlargement**
- **Septal Myectomy (trans-mitral or trans-aortic)**
- **LVAD Implantation**
- **Heart & Lung Transplant**
- **Multivalve Operations (AVR/MVR/TVR)**
- **Robotic Endovascular Mitral Replacement (Capstain Medical)**
- **Multivessel TECAB**
- **Coronary Unroofing for Myocardial Bridge**



# Global da Vinci Cardiac Procedures

1997 - 2025

- AVR
- ASD
- Other
- MVR
- CABG

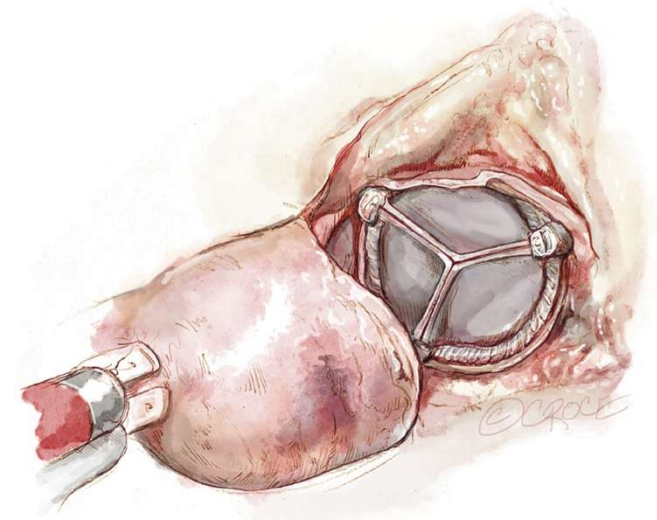
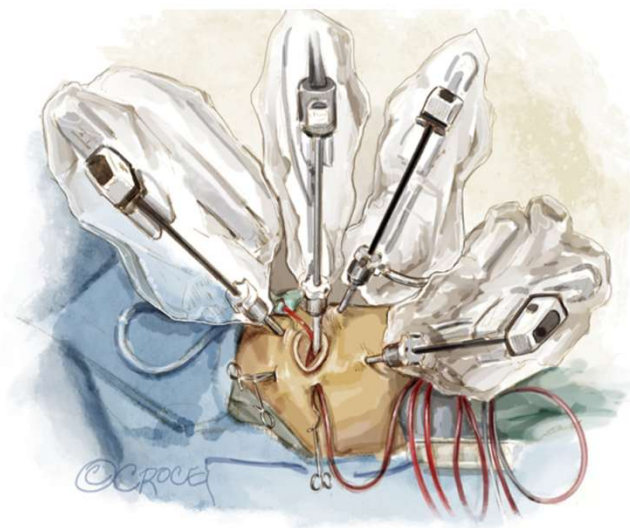
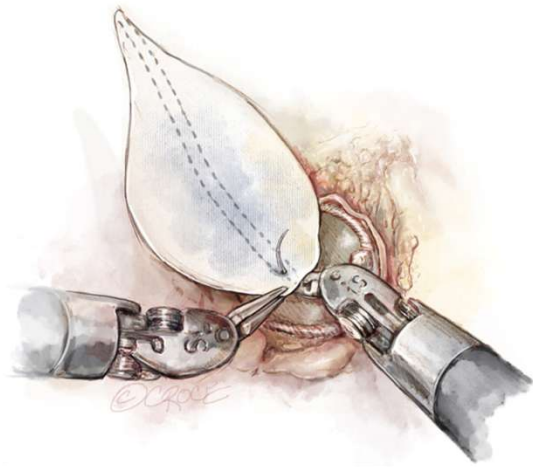


## Advancing robotic aortic valve replacement beyond isolated therapy: a platform for multivalve therapy

Lawrence M. Wei, Vinay Badhwar

Department of Cardiovascular and Thoracic Surgery, West Virginia University, Morgantown, WV, USA

Correspondence to: Vinay Badhwar, MD. Department of Cardiovascular and Thoracic Surgery, West Virginia University, 1 Medical Center Drive, Morgantown, WV 26506, USA. Email: vinay.badhwar@wvumedicine.org.



*Ann Cardiothorac Surg* 2025;14(3):228-234 | <https://dx.doi.org/10.21037/acs-2025-ravr-12>

## Surgeons make history, perform world's first fully robotic heart transplant

Michael Walter | September 13, 2024 | [Cardiovascular Business](#) | [Cardiac Surgery](#)



Image courtesy of King Faisal Specialist H

July 24, 2025 / [Heart, Vascular and Thoracic](#) / [Heart Valve Disease](#)

### World's First Transcervical Robotic AVR Procedures Successfully Performed in 4 Cleveland Clinic Patients

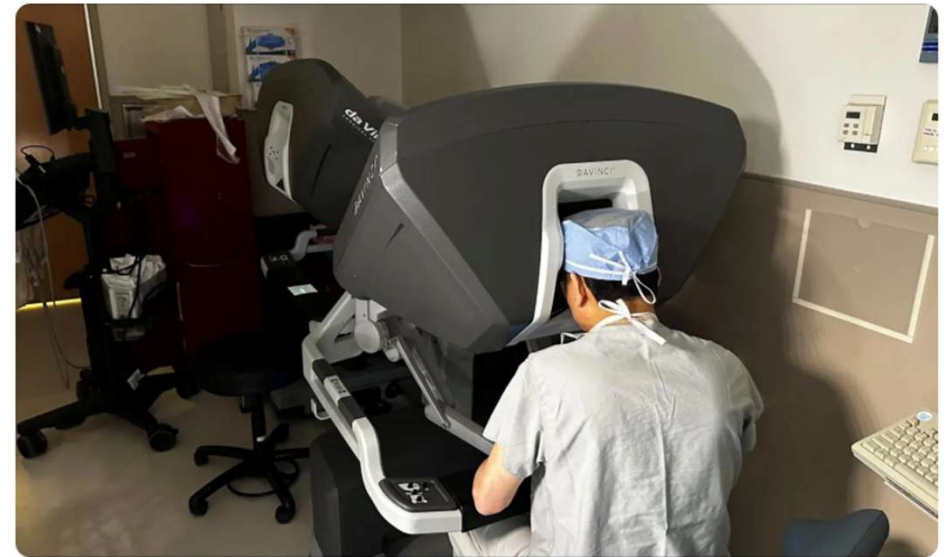
Least-invasive open-heart AVR option to date yielded rapid recovery in all cases



## Texas Surgeons Perform First Fully Robotic Heart Transplant in US

July 1, 2025

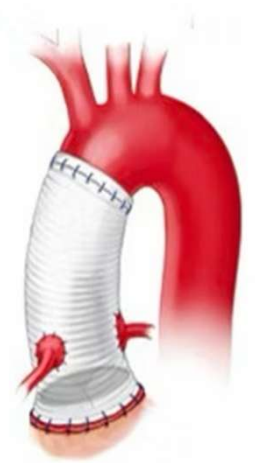
🕒 1 Min | 🖨️ Print | ➦ Share | 🌟 Bookmark



Dr. Liao using the same surgical robot used in the successful fully robotic heart transplant. Image courtesy of Baylor St. Luke's Medical Center.

# **“Future” Robotic Cardiac Operations**

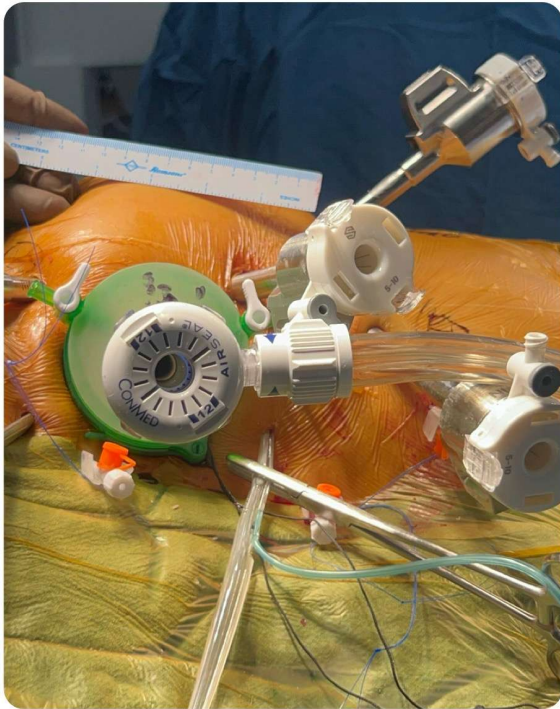
- **Aortic Root/Ascending Replacement**
- **Aortic Arch Replacement**
- **Robotic Endovascular Mitral & Tricuspid Repair/Replacement (Capstain Medical)**



# Robotic Surgery “Universe”



Copyrights apply



First Robotic Mitral  
with Mantra 3  
System!  
March 7, 2025

Fortis Escorts  
Hospital Delhi India

Dr. Raj Ritwick

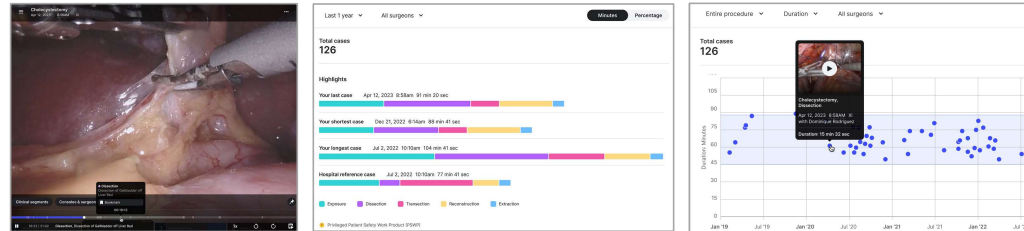


# Da Vinci 5

- US approval 2024
- US Cardiac approval January 2026
- Most advanced and integrated system to date
- 10,000x computing power as Xi



## Case Insights



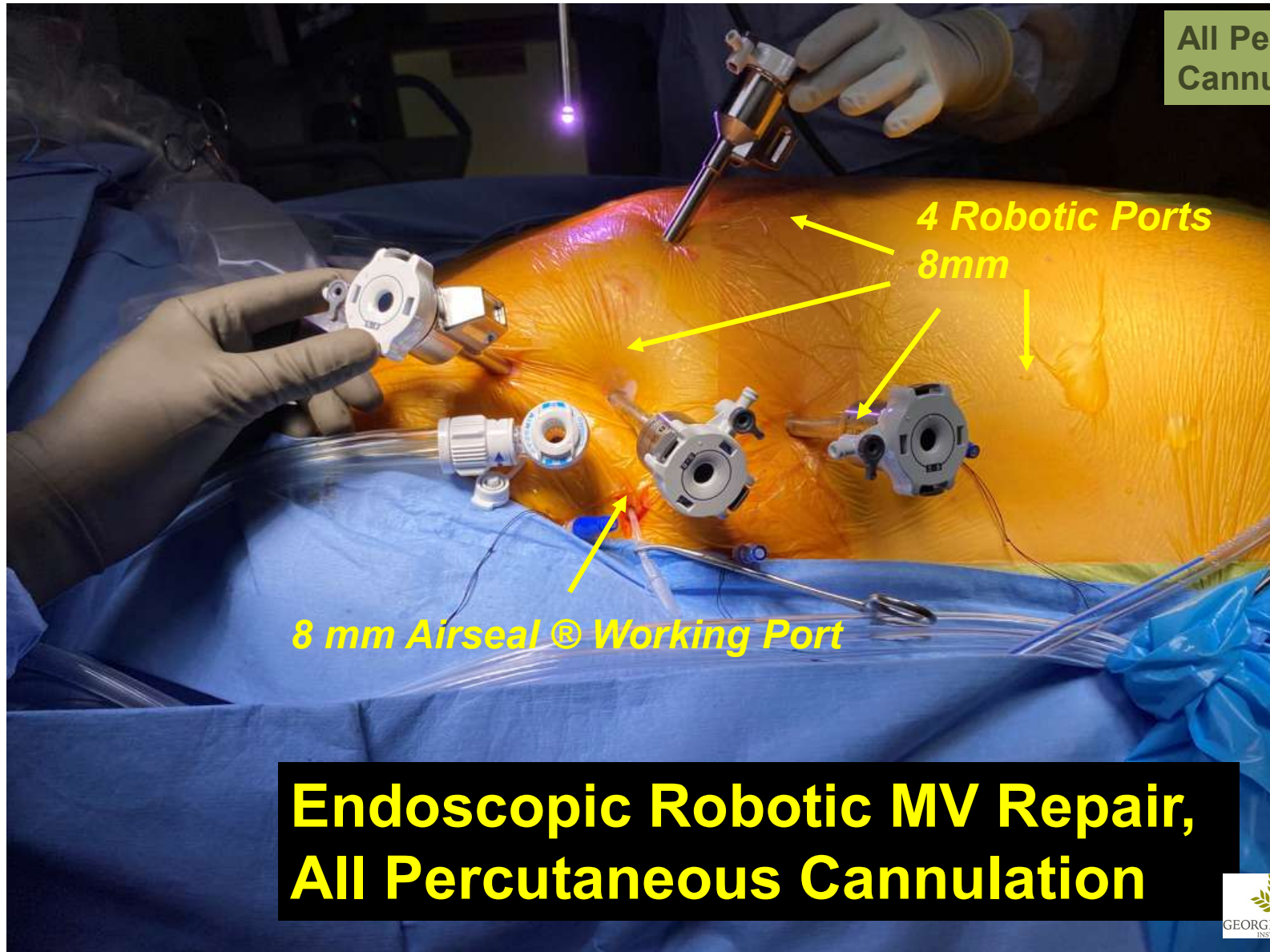
## Telepresence



## SimNow2



All Percutaneous  
Cannulation

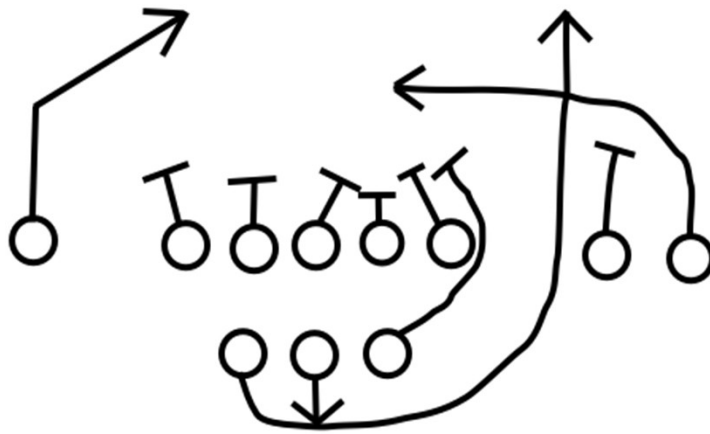


**Endoscopic Robotic MV Repair,  
All Percutaneous Cannulation**



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# DEDICATED ROBOTIC HEART TEAM

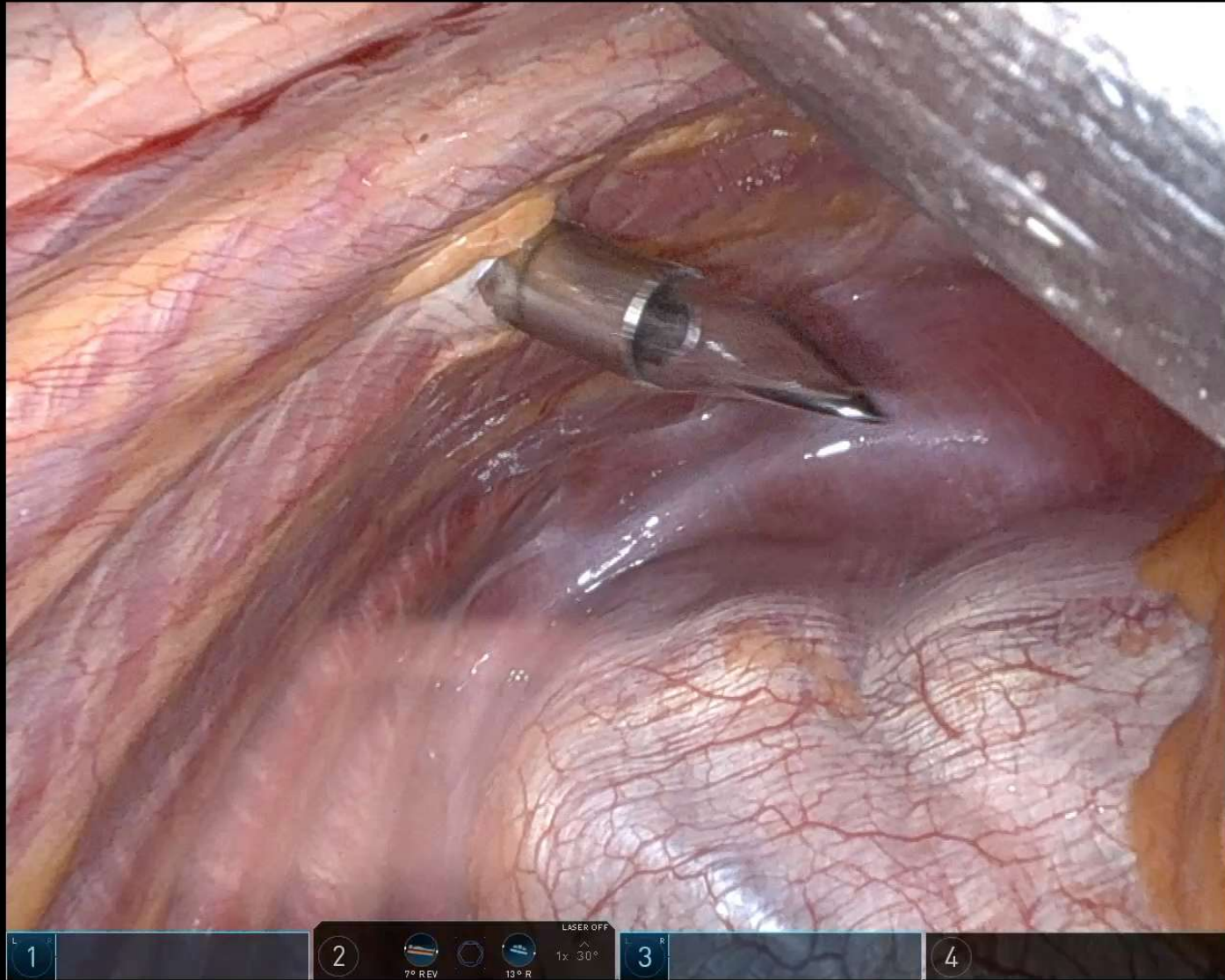


*The complex teamwork required for these procedures will generally improve cardiac surgery teamwork overall*

**Anesthesiologist**  
**Surgeon**  
**Bedside Assistant**  
**Scrub tech or RN**  
**Circulator**  
**Perfusionist**



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1

2

7° REV

13° R

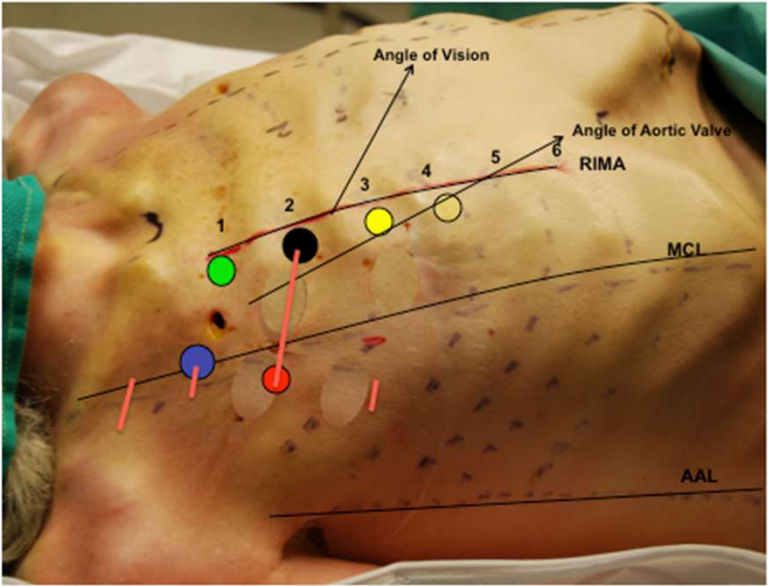
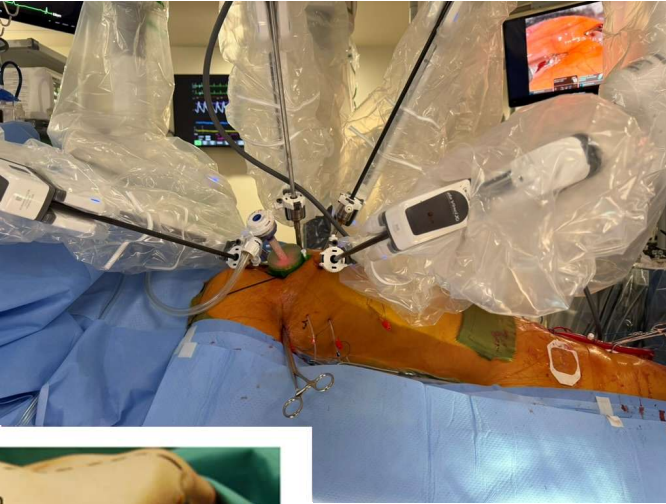
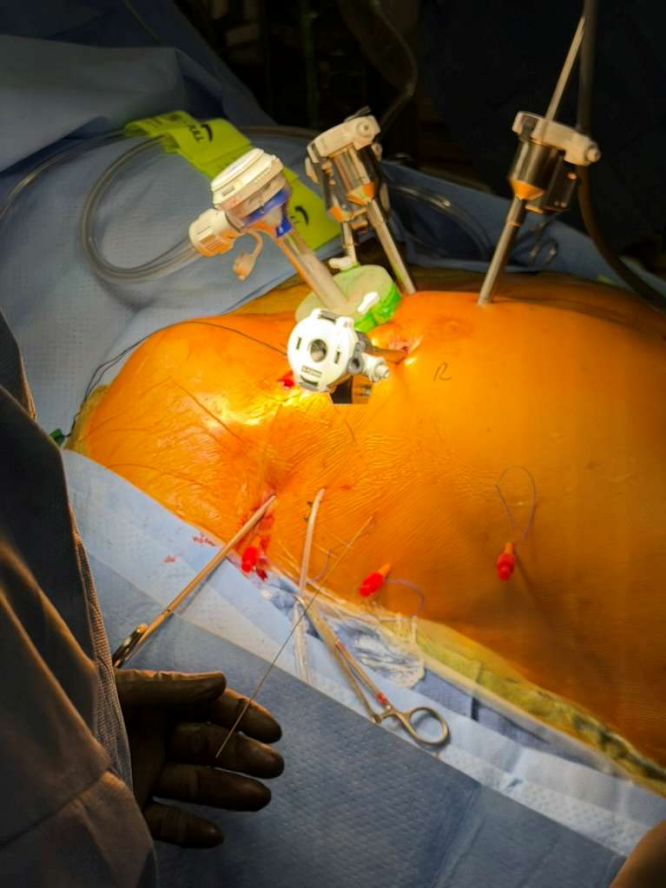
1x 30°

LASER OFF

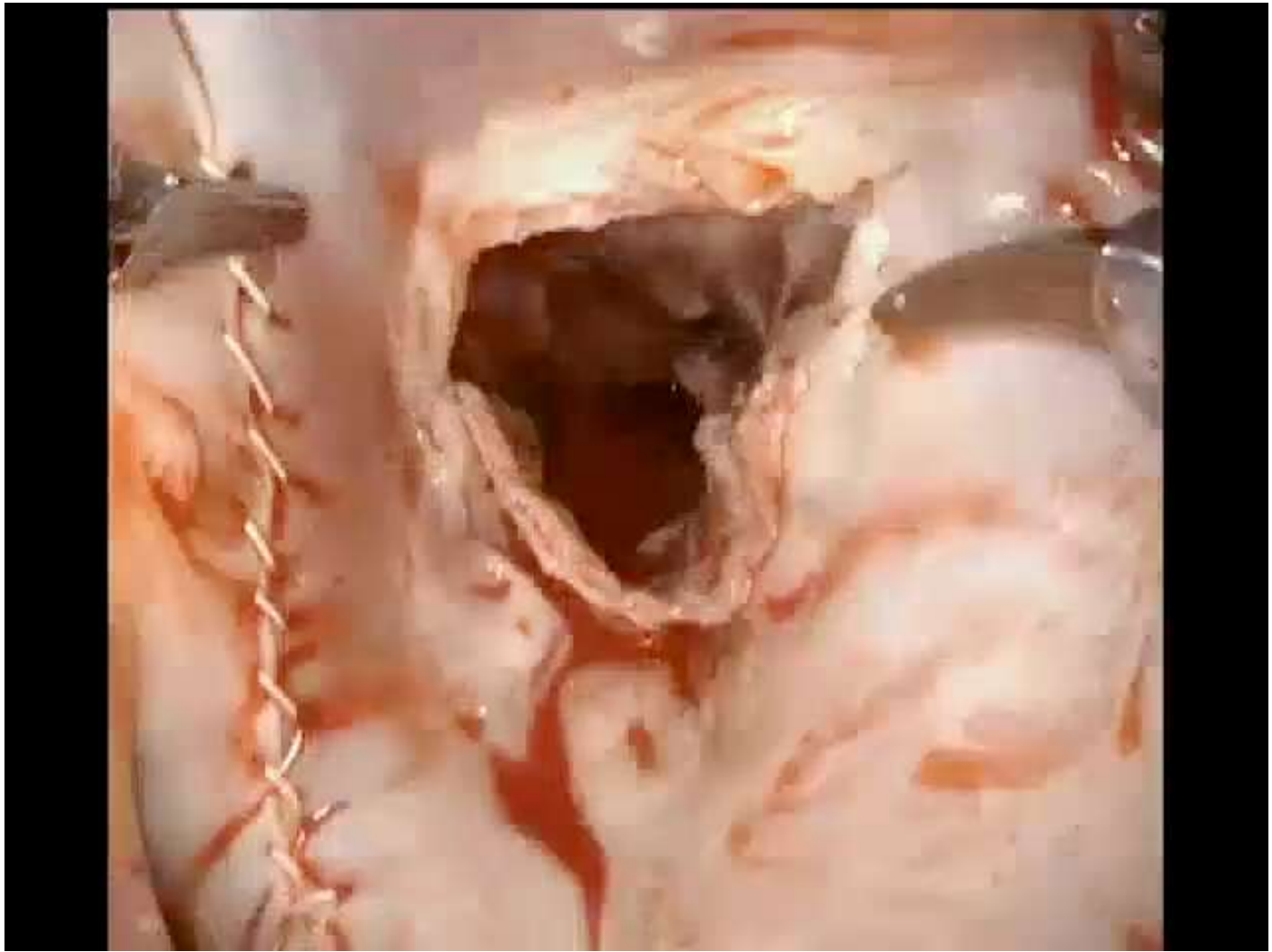
3

4

# Robotic Endoscopic AVR Port Placement







## Future of Robotic Cardiac Surgery

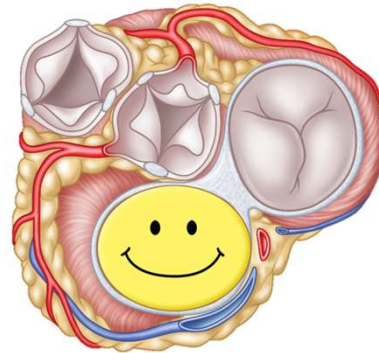
- Improved Training Paradigms
- New generation surgeons more open to it
- Older oppositional surgeons going away
- Centers of excellence
- Many more programs (growing 15% per year since 2016)
- New robotic systems available
- Tool/end-effector innovation



**Thank  
you!**



*T. Sloane Guy, MD, MBA*  
*Mobile: 404-695-5229*  
*Office: 707-219-7099*  
*[sloane.guy@nghs.com](mailto:sloane.guy@nghs.com)*  
*[roboticheartsurgeon.com](http://roboticheartsurgeon.com)*



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