

New Paradigms in Thoracic Surgical Training to Accommodate Advances in Cardiovascular Surgical Therapy

A.J. Carpenter, MD, PhD
Professor of Thoracic Surgery
University of Texas Health Science
Center, San Antonio

Historic Perspective: Thoracic Surgery

- Open operative procedures
- Cardiac
 - Revascularization
 - Valve Replacements
 - Correction of congenital lesions
- Thoracic
 - Lung and pleural procedures
 - Esophageal procedures

Training: Thoracic Surgical skill set

- Fundamental operative technique
 - General Surgery Residency
- Refined operative technique
 - Thoracic Surgery Residency
- Critical Care
- ABTS certification
 - 5-7 years general surgery
 - 2-4 years thoracic surgery

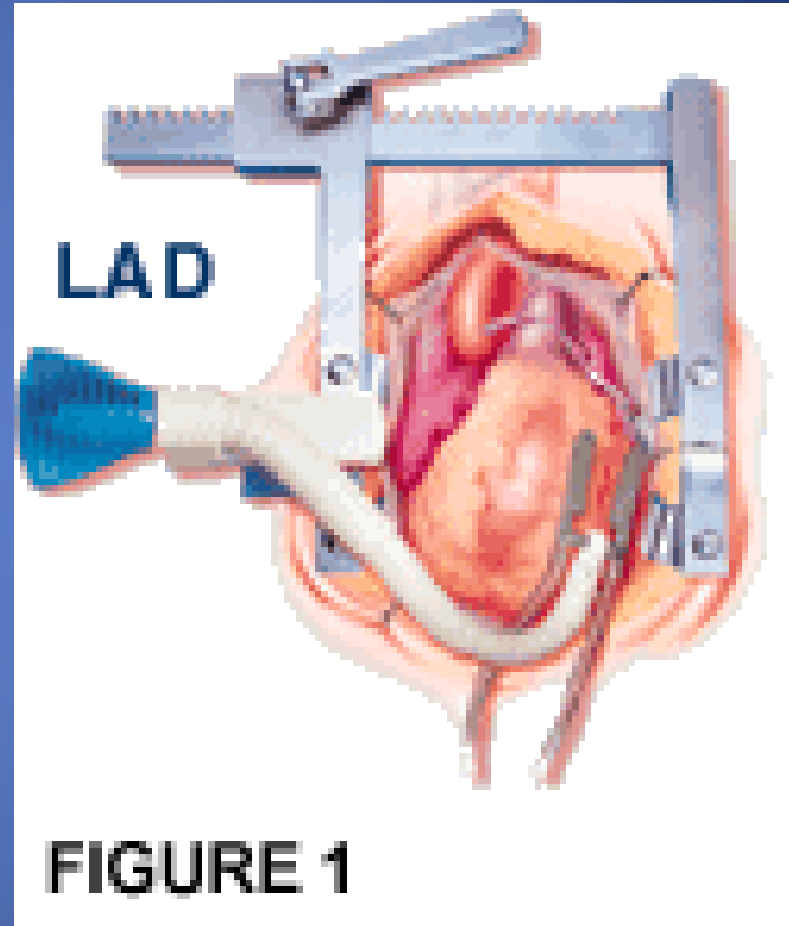
Advances in Surgical Therapy

- Rapid Growth of Procedures
- Development of Devices / Technology
- Improved imaging and diagnostics

Traditional training paradigms no longer sufficient

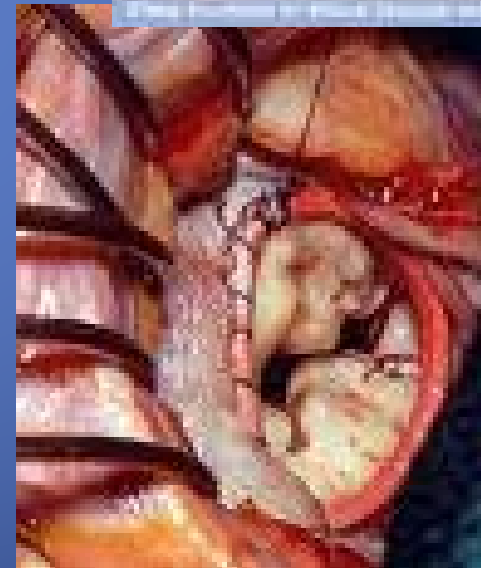
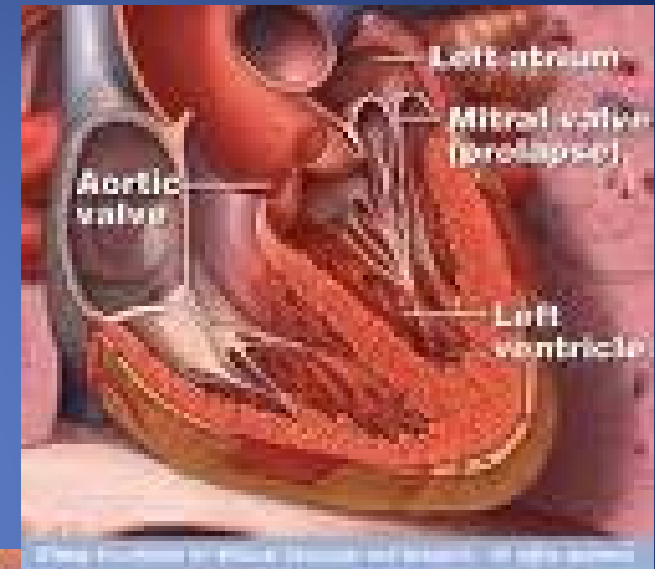
Off Pump CABG

- Stabilizing Devices
- Improved anesthesia
- Technical challenge



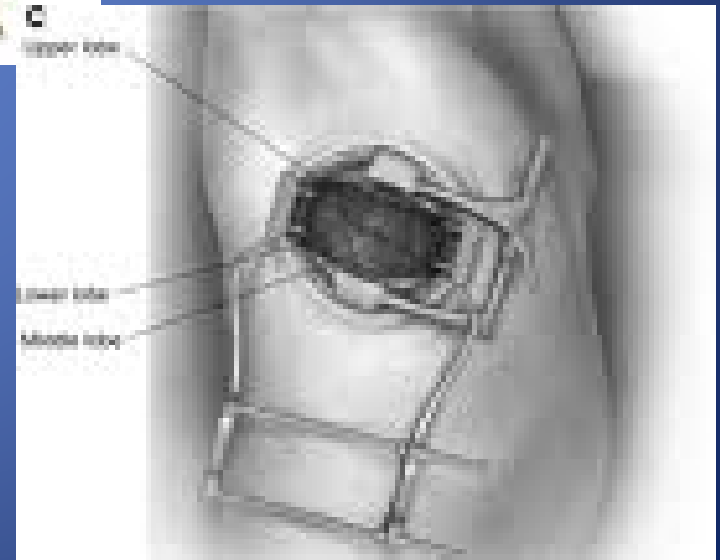
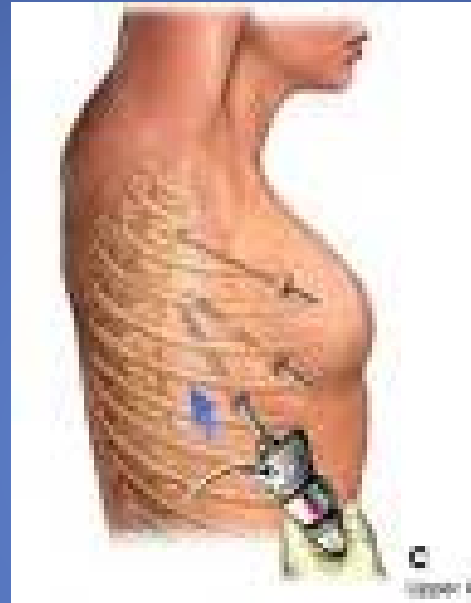
Mitral valve repair

- Preserve valve and ventricular function
- Avoid lifelong anticoagulation
- Alternative approaches
 - Mini sternotomy
 - Right thoracotomy
 - Video assisted
 - Robotics



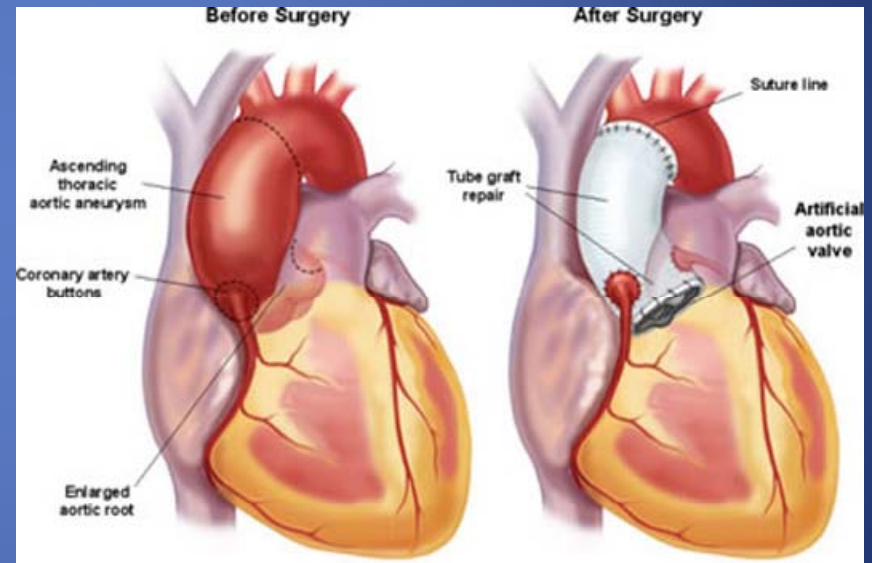
Video Assisted Thoracic Surgery

- Lung Resection
- Emphysema treatment
- Esophagus
 - Achalasia
 - Perforation
 - Cancer



Aortic Root and Arch Surgery

- Endocarditis
 - debridement
- Aneurysms
 - Prevention of complications
- Dissections
 - Restore critical blood flow
 - Preserve coronary blood flow



Endovascular stent grafting

Aneurysm or dissection

Extends treatment to high risk

Reduced risk

Stroke

Paralysis

Death

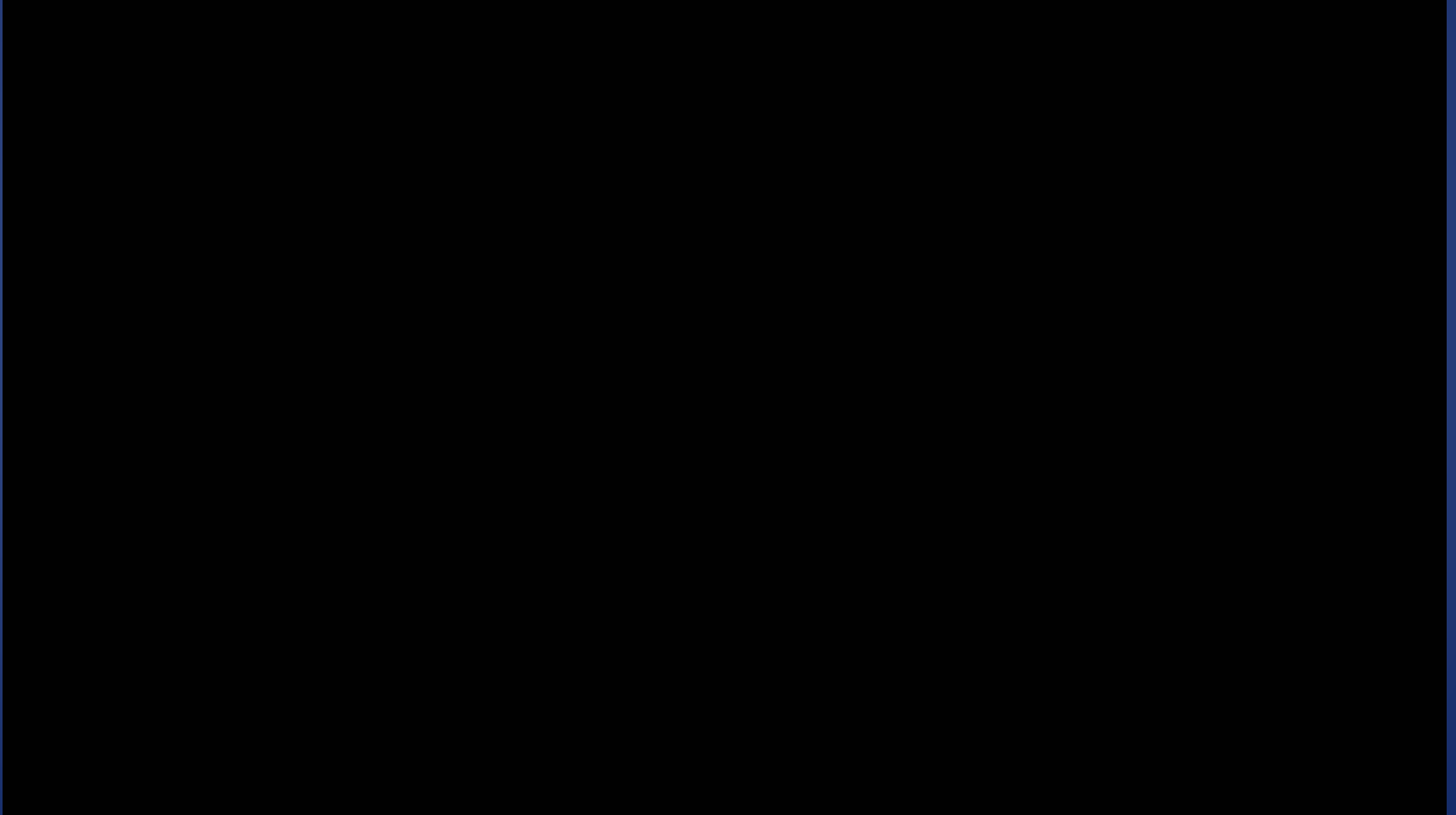
Hybrid procedure

Operative repair

Endovascular stent



Percutaneous / transapical heart valve replacement



Today's Thoracic Surgeon needs a new skill set

- All the traditional skills
 - Anatomy
 - Operative technique
 - Endoscopy
 - Critical Care
 - Imaging interpretation

Additional skills

- Much expanded understanding of imaging
 - CT with 3D reconstruction
 - Magnetic Resonance Imaging (MRI)
 - Positron Emission Tomography (PET)
 - Ultrasound
 - Fluoroscopy

Additional skills

- Endoscopic technique
 - Working in 3D with 2D images
 - Extended instruments
- Robotic skills
 - Remote surgeon
- Wire based skills
 - Endovascular procedures
- Currency for the future



Integrated Thoracic Residency

- Entry into Thoracic training immediately after medical school graduation
- Anticipated 6 year program
 - Progression based on knowledge and skill development
- Graduate fully capable surgeons with skill sets to grow into the future

Integrated Thoracic Residency

- ACGME approved program by the Thoracic Surgery Residency Review Committee
 - First 4 programs approved
 - Stanford
 - UTHSCSA
 - MUSC
 - UNC
- First resident entered training July 2009

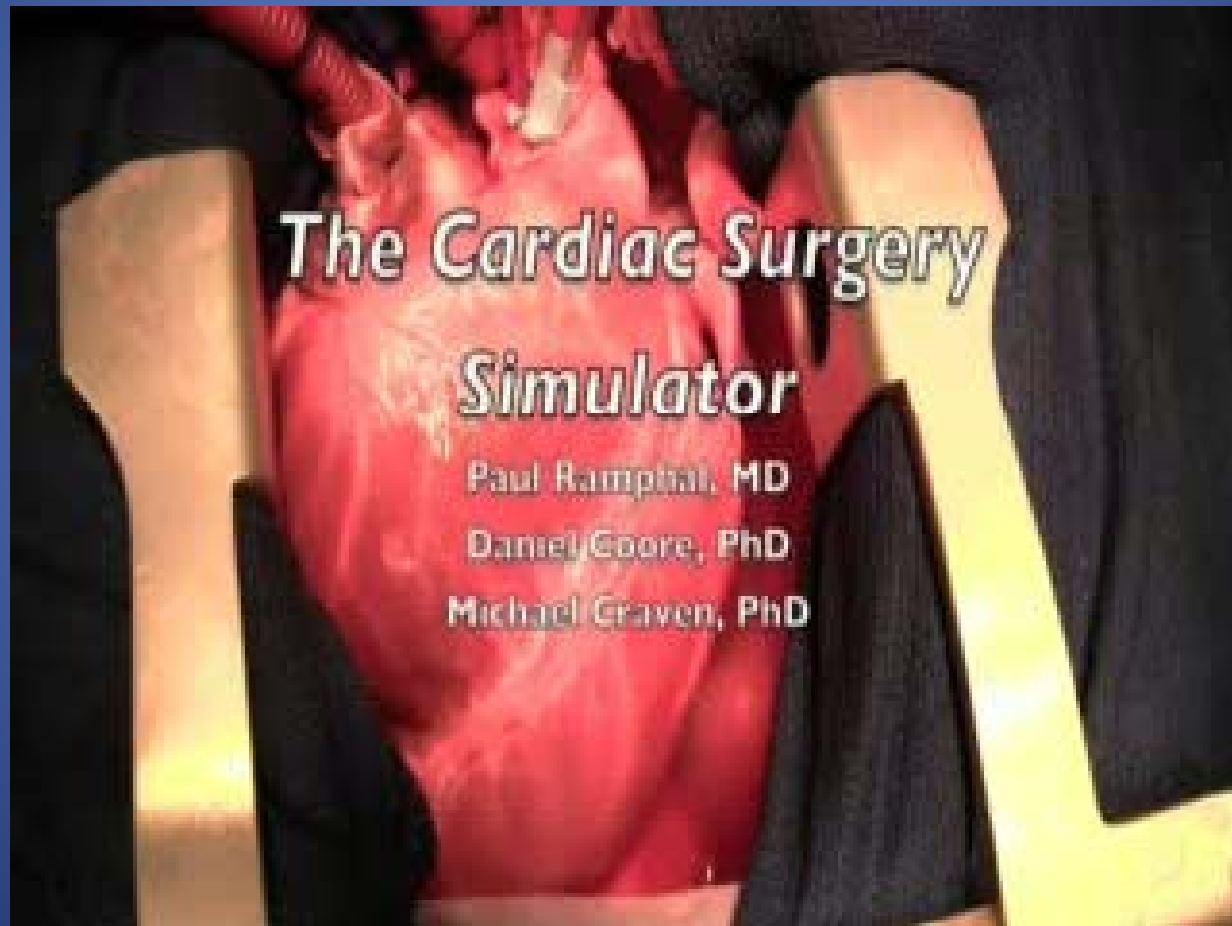
Curriculum Years 1 & 2

- Prerequisite Rotations
 - General Surgery
 - Critical Care
 - Cardiology
 - Pulmonary medicine
 - Radiology
 - Diagnostic and Intervention
 - Anesthesiology

Curriculum Years 1 & 2

- Simulation lab
 - Basic skills: knot tying, suturing
 - OR orientation: instruments, sterile technique
 - Hemodynamic monitoring
 - ICU skills: tubes, lines
 - Crisis management
 - Team building

Beating Heart Simulator



The Cardiac Surgery Simulator

Paul Rampthal, MD

Daniel Coore, PhD

Michael Craven, PhD

Curriculum Years 1 & 2

- Didactic education
 - Weekly readings, discussion with faculty
 - Prerequisite material
 - Weekly Conferences
 - Grand Rounds
 - M&M
 - Monthly literature conference
 - Research

Curriculum Years 3 – 6....

- Specialty rotations
 - Adult Cardiac
 - General Thoracic
 - Congenital
 - Transplant
 - Percutaneous procedures
- Emphasis on resident education, not service
 - Expanded role of mid-level providers

Total Thoracic Surgeon

- Six- year program
- Eligible for American Board of Thoracic Surgery certification
- Competency in all aspects of adult thoracic surgery
- Fellowship opportunities to sub-specialize
 - Congenital, Transplant and Cardiac Assist Devices

What does the future hold?

