Background

- Trained in New York at Columbia
- 21 years in MKE
  - Mostly valve work
  - 65 cardiologists and 10 surgeons
  - Healthcare system 15 hospitals and 120 clinics
  - Case experience U.S. and International >6000
- Boulder Heart October 2018
  - Director Cardiac Surgery
  - Chairman Operating Committee, BCH/BH
  - Cardiac Robotics Team

What’s new?

- **Boulder Heart:**
  - Structural Heart Clinic – catheter based solutions, mitral aortic
  - Atrial Fibrillation Clinic- multidisciplinary team
  - Most Experienced Robotic Surgery team in CO
  - Most experienced TAVR team in CO

Outline of Discussion

- Why are we here to discuss mitral?
- What is it and what can be done?
- How does it work?
- When is the right time?
- Where do I go?
Why are we here?

a tale of two patients

Identical demographics

➔ Women, 70’s, living independently, distant smoking history and now have cough, shortness of breath

➔ Both have image evidence of life threatening disease

proper and timely access

1. Patient complains of mild shortness of breath to Primary doctor
2. Imaging shows potentially life threatening disease
3. Patient has timely referral, testing and treatment
4. Procedural length of stay 48 hours; **Outcome:** Alive, well and living independently

**Total Cost:** $50,000

Edith Johnson
72 years old
Minimal symptoms

improper access

1. Patient complains of shortness of breath during ED visit
2. Imaging shows potentially life threatening disease
3. Follow up delayed – multifactorial causation
4. 6 months later - Patient is admitted to the ICU and develops multisystem organ failure
5. Length of stay 14 days; **Outcome:** Death

**Total Cost:** $500,000

Verna Smith
70 years old
Minimal Symptoms
Quantitative Determinants of the Outcome of Asymptomatic Mitral Regurgitation

Maurice Enriquez-Sarano, M.D., Jean-François Avierinos, M.D., David Messika-Zeitoun, M.D., Delphine Detaint, M.D., Maryann Capps, R.D.C.S., Yojiro Ikomo, M.D., Christopher Scott, M.S., Hartzell V. Schaff, M.D., and A. Jami Tajik, M.D.

Kaplan–Meier Estimates of the Mean (±SE) Rates of Overall Survival among Patients with Asymptomatic Mitral Regurgitation under Medical Management, According to the Effective Regurgitant Orifice (ERO).


Clinical Care Impact

Detection

Identified patients with varying degrees of Aortic Stenosis and Mitral Regurgitation in a population.

Cardiac Intelligence drastically increases appropriate referrals.

Execution

Severe Aortic Stenosis Referral Rates

18.2% of patients with a severe disease (MR or AS) and no followup scheduled
Data Science Prediction Impact

Clinical Care
- Precision medicine and real-time data analysis
- Progression of disease and best time of intervention
- Confirms care path compliance
- Operational improvements
- Access to device performance and patient outcomes

Clinical Trials
- Pre-trial analysis to assess trial viability
- Decrease number of sites necessary to complete study, therefore reducing cost and freeing up other hospital sites to fulfill other studies
- Substantially reducing time to completion and expenditure
- Simulate clinical trials

What is Mitral Valve Disease?

Alain Carpentier

Functional classification
- Normal motion
- Excess motion
- Restricted motion

How can it be remedied?
Understanding Surgical Approach
- Standard
  - Translation “sternotomy”
- Mini Mitral
  - Translation “thoracotomy”
- Robotic
  - Translation “endoscopic”

Clinical Case 1. History
- Moderate/severe MR 2017
- No follow up appointment
- 2019 went to elevation
- SOB profound
  - CHF admission
Careful Planning

Ports for Scope and Instruments

P2 Segment, posterior mitral leaflet

10 days post op
**Outcomes**

- Robotics Cases 700/6000.
- Mitral, tricuspid, pfo, epicardial pacing, CABG
- Mitral 150, 0.6% mortality
- Mitral Boulder 10 cases, 0 mortality

**Boulder Endoscopic Mitral Program**

- First 10 cases, largest robotic program in the state.
- 2-2.5hrs with robot
- Hospital stay 2.5 days
- Repair rate 100%
- Stroke 0
- Mortality 0
- Return to work 10 days
- Patients from Colorado, Kansas, Wyoming, Florida, Germany

**Conclusion**

“Patients...have a significantly *increased risk of death* and of *cardiac events* and should promptly be considered for cardiac surgery, *since surgery considerably reduces the rate of death from cardiac causes, decreases the risk of heart failure, and normalizes life expectancy.*”
Latest Treatments for Mitral Valve Disease

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