Latest Treatments for Mitral Valve Disease

Daniel P. O'Hair, MD

Boulder Heart, 303-622-5336

Boulder Community Health

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

CRT19

proper and timely access

Edith Johnson
72 years old
Minimal symptoms

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

CRT19

improper access

Verna Smith
70 years old
Minimal Symptoms

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

CRT19

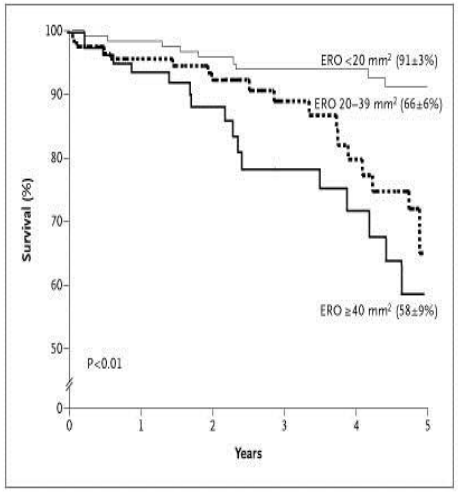
Why?
Mitral valve disease; Natural History

ORIGINAL ARTICLE

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., Vuyisile Nkomo, M.D., Christopher Scott, M.S., Hartzell V. Schaff, M.D., and A. Jamil Tajik, M.D.

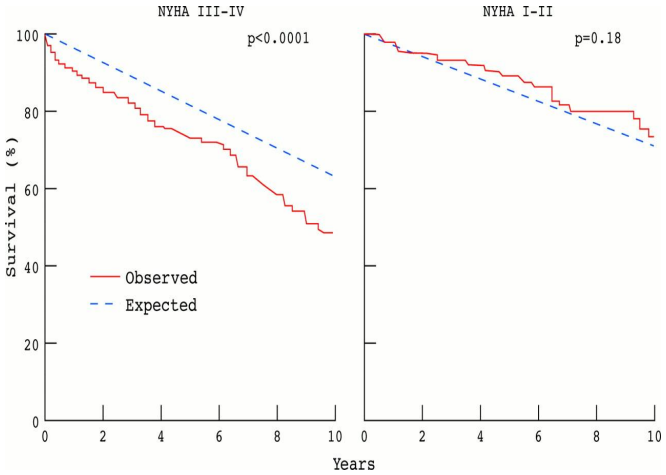
Why? Survival



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).

Enriquez-Sarano M et al. N Engl J Med 2005;352:875-883.

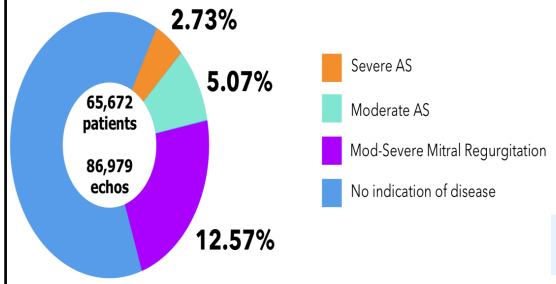
Why - Mitral valve disease properly treated



Clinical Care Impact

Detection

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



Execution

Severe Aortic Stenosis Referral Rates

18.2%

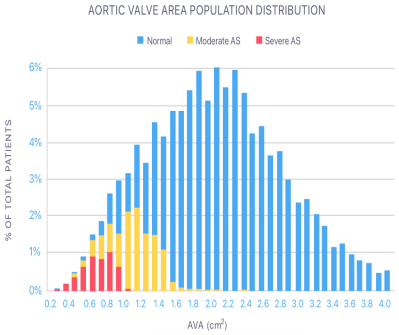
Patients with a severe disease (MR or AS) and no followup scheduled

Cardiac Intelligence drastically increases appropriate referrals.

Data Science **Prediction** Impact

Clinical Care

- Precision medicine and real time data analyzation
- 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

Aggregate Data published in the Hahn study compared to data collected by mpirik

		DVI	EOA	MG
Medtronic	mpirik	0.52 ± 0.17 (604)	1.90 ± 0.53 (531)	6.56 ± 4.89 (604)
	Hahn*	0.55 ± 0.13 (866)	1.88 ± 0.56 (835)	8.85 ± 4.14 (890)
Edwards	mpirik	0.46 ± 0.17 (261)	1.66 ± 0.62 (221)	10.90 ± 5.87 (262)
	Hahn*	0.43 ± 0.09 (1470)	1.66 ± 0.38 (1470)	11.18 ± 4.35 (1470)

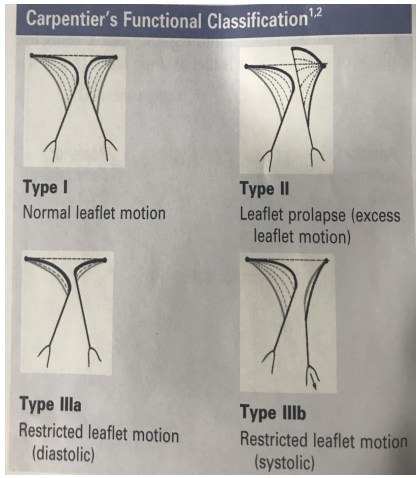
Figure 1. **Conclusion: The mpirik dataset shows similar results to the Rebecca Hahn, MD study *Comprehensive Echocardiographic Assessment of Normal Transcatheter Valve Function.*** Hemodynamics of Evolut (all sizes) vs. S3 (all sizes) after implant - the mpirik data does accounts for all-time rather than the first 30 day restriction within the Hahn study.

What is Mitral Valve Disease?

Alain Carpentier

Functional classification

- Normal motion
- Excess motion
- Restricted motion



How can it be remedied?

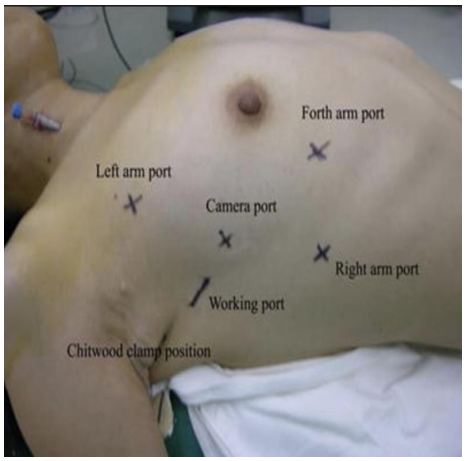
Understanding Surgical Approach

- 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

When?

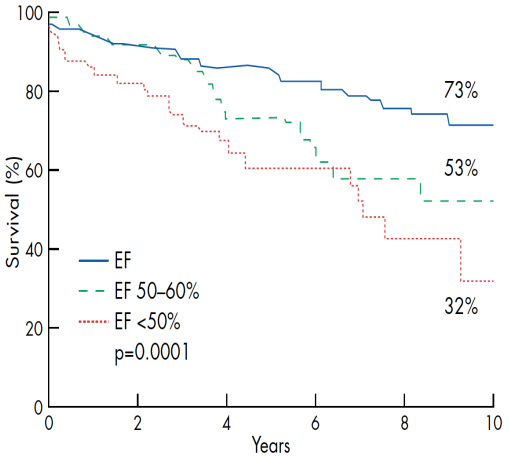


Figure 2 Long term postoperative survival according to the preoperative echocardiographic ejection fraction. Note the excess mortality in patients with ejection fraction < 50% but also with "low normal" ejection fraction 50–59%. Reproduced with the authorisation of the American Heart Association.

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

Daniel P. O'Hair, MD

Boulder Heart, 303-622-5336

Boulder Community Health