What to do with a Patient with Recurrent MR after Intervention

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Conflicts of interest: GE, Abbott, Edwards (honoraria)
Limited Data on Clip after Surgery and Vice Versa

Mitral Valve Repair with the MitraClip Device After Prior Surgical Mitral Annuloplasty

2 pts post MVr treated successfully with MC

D. Scott Lim,1 MD, Binu J. Kunjummen,2 MD, and Richard Smalling,2 MD

Catheterization and Cardiovascular Interventions 76:455–459 (2010)

INTERVENTIONAL MITRAL VALVE REPAIR USING THE MITRACLIP SYSTEM AFTER PRIOR SURGICAL MITRAL ANNULOPLASTY

6 pts post MVr, 4 treated successfully with MC

Oral Contributions
West, Room 2022
Sunday, March 10, 2013, 9:15 a.m.-9:25 a.m.

Abstract 13699: A True World Picture - Surgical Revision After Percutaneous Mitral Valve Repair With the Mitraclip Device

Grzegorz Hirnle, Joerg Seeburger, Michael A Borger, Jens Garbade, Martin Misfeld, Freidrich W Mohr

18 pts w/ MR post MC: 13 MVR, 2 MVr, 3 LVAD
Case 1: 84F w/ Recurrent MR After MVr

- Remote LCx occlusion → severe functional MR
- 2007: MVr w/ #27 Duran annuloplasty
- 2013: Recurrent MR and Class III sx persist despite GDMT, BNP 431
Severe Functional MR w/ Annuloplasty

Large LCx scar

Multicomponent complex jet
No Wonder She’s Short of Breath!

RVSP = 98 mmHg

Marked PV sys reversal

Mean MV gradient 6 mmHg

ROA = 0.8 cm²

MRV ~ 100 mL
Severe Functional MR w/ Annuloplasty

Broadly arising, anteriorly directed jet without flail or prolapse

MVA = 5.34 cm$^2$
What to Do?

1. Redo surgery
2. Med management
3. MitraClip
4. Valve-in-valve TMVR
What’s the Impact of MitraClip on MVA?

Reduces valve area by half, but should be OK

27 mm annuloplasty ring
5.7 cm²

2 inscribed circles
2.9 cm²
What to Do?

1. **Redo surgery:** Pretty high risk
2. **Med management:** Already doing it
3. **MitraClip:** Hmmm…maybe
4. **Valve-in-valve TMVR:** Consider if clip not feasible
MitraClip Intervention in COAPT

Poor leaflet coaptation

46 mmHg V-wave

Steering clip into position
Grasping Leaflets

Clip advanced into LV

Grasping leaflets

23 mmHg V-wave

Post clip release
Dual Orifice Valve Partly Obscured by Ring
Excellent Result at F/U

ROA = 0.12 cm²
MRV ~ 15 mL

RVSP = 45 mmHg
PV S>D
Case #2
60ish yo Man with Dyspnea

- **History:** Born with Tetralogy of Fallot
  1954: Systemic-pulmonary shunt
  1962: VSD closure/PV repair
  2002: SCD⇒ICD
  2006: Bioprosthetic PVR
  2012: Transcatheter valve-in-valve PVR for PR
  5/2015: Sensed a “pop” in chest, then severe DOE
  COPD from smoking (FEV1 1.2 L), PAF

- **Meds:** Bumetidine, spironolactone, coumadin, metoprolol, home O₂

- **PE:** BP 108/60, HR 92 reg, CVP~7, clear lungs, 3/6 HSM
Transthoracic Echo

60ish yo Man with Dyspnea

Flail posterior leaflet, worst medially
Severe MR, P2-3 flail

RVSP > 70 mmHg

Tall E
Transesophageal Echo
Proximal Convergence Analysis

ROA > 1.0 cm²
Transesophageal Echo
3D Rendering

P2 and P3 flail
Clinical Course
Summary of MitraClip Procedure

- High risk for surgery so referred for percutaneous clip
  Baseline: ROA >1 cm², mean Δp = 4 mmHg
  Clip 1 (lateral A2-P2): ROA 0.3 cm², mean Δp = 4mmHg
  Clip 2 (medial A2-P2): ROA 0.15 cm², mean Δp = 5mmHg
  Clip 3 (lateral A3-P3): ROA 0.06 cm², mean Δp = 9mmHg
  Gradient unacceptable, Clip 3 removed
  Final: ROA 0.1 cm², mean Δp = 5mmHg
One Month Follow-up

Echocardiogram

“I feel great. I went dancing last weekend!”
3 Days Later
“I can’t breath”

- Clip dislodged, severe MR
- Clip lodged in posteromedial LV
What to do??

A. Redo MitraClip
B. Redo-redo-redo-redo-redo surgery
C. Just a bit more bumex, he’ll be fine
What to do??

A. Redo MitraClip
B. Redo-redo-redo-redo surgery
C. Just a bit more bumex, he’ll be fine
To the OR

Mitral Leaflet Too Mascerated to Repair

- s/p MVR
- Good LV function
Case 3: 71M w/ Recurrent MR After MVr

- 1989: RCA occlusion
- 2001: CABG x 3, VT→ICD placed
- 2007: Functional MR noted but Asx
- 2012: ?subtle symptoms, ring annuloplasty at “another” Midwestern heart center
- 2013: Recurrent MR
- 2016: Referred back for redo surgery. States he “feels pretty good, able to go hunting.” Outside cath with patent grafts.
Severe Functional MR w/ Annuloplasty

Large IPMI

Very eccentric jet

ROA 0.3 cm$^2$

RVSP 30 mmHg
What to Do?

1. Redo redo surgery
2. Med management
3. MitraClip
4. Stress echo
What to Do?

1. Redo redo sugery
2. Med management
3. MitraClip
4. Stress echo
10.1 METs, RCA Scar, No Ischemia
10.1 METs, RCA Scar, No Ischemia
10.1 METs, Stopped for Fatigue

MR similar

RVSP 45 mmHg
What to Do?

1. Redo redo sugery
2. Med management
3. MitraClip
4. MRI
What to Do?

1. Redo redo surgery
2. Med management
3. MitraClip
4. MRI
71M w/ Recurrent MR After MVr
One Year Later

- A little tougher hunting this season, not feeling quite himself
- Echo suggests worsening MR
- Repeat exercise echo to assess functional capacity
- Cruising through stage III without difficulty when...
71M w/ Recurrent MR After MVr
VT on ETT

- Cath negative
- It was determined SOMETHING needed to be done
- But what?
- TEE to better assess anatomy
EF~30% w/ IPMI, Ring Dehiscence

ROA 0.4 cm²
Using X-Plane to Define MV Anatomically

Main pathology A1 & A2
Pretty Small PML, 6 mm
OK, **Now What to Do?**

1. *Redo redo surgery*
2. *Med management*
3. *MitraClip*
4. *Just keep echoing him*
5. *Plug the dehisced ring*
OK, Now What to Do?

1. Redo redo surgery
2. Med management
3. MitraClip
4. Just keep echoing him
5. Plug the dehisced ring
Intraoperative Echo, Bioprosthetic MVR
Post-Op Echo, Doing Well
Case 4: 80M w/ Recurrent MR After Alfieri

- **1997:** Severe AS → Ross procedure
- **2011:** Severe PS → Melody valve
- **2014:** Severe AR/MR → consideration for surgery
• Pat McCarthy: “This was one of my toughest cases.”
• #25 CE AVR and (quick!) Alfieri stitch on circulatory arrest
3 Years Later: Recurrent Class III dyspnea

- Well-functioning AVR (1.2 m/sec)
- Mild prosthetic PS (2.8 m/sec)
- Moderately severe, very eccentric MR arising medially with ROA 0.4 cm²
What to Do?

1. *Redo redo sugery*
2. *Med management*
3. *MitraClip*
4. *TMVR*
What to Do?

1. Redo redo surgery: No way!!!
2. Med management: Already doing it
3. MitraClip: Hmmm…maybe
4. TMVR: Unproven with prior Alfieri
MitraClip Undertaken

A3 Flail w/ Flow Reversal

Severe MR

Flow reversal

Medial clip placement

Normalized
Post-Procedure Echo

Truly Mild MR