




Mitral Valve Operations STS Coding Implications

Richard L. Prager, M.D.
MSTCVS Quality Collaborative
Project Director

MSTCVS Quality Collaborative
Cardiac Data Manager Meeting
July 27, 2017
Grand Traverse Resort, Acme, MI

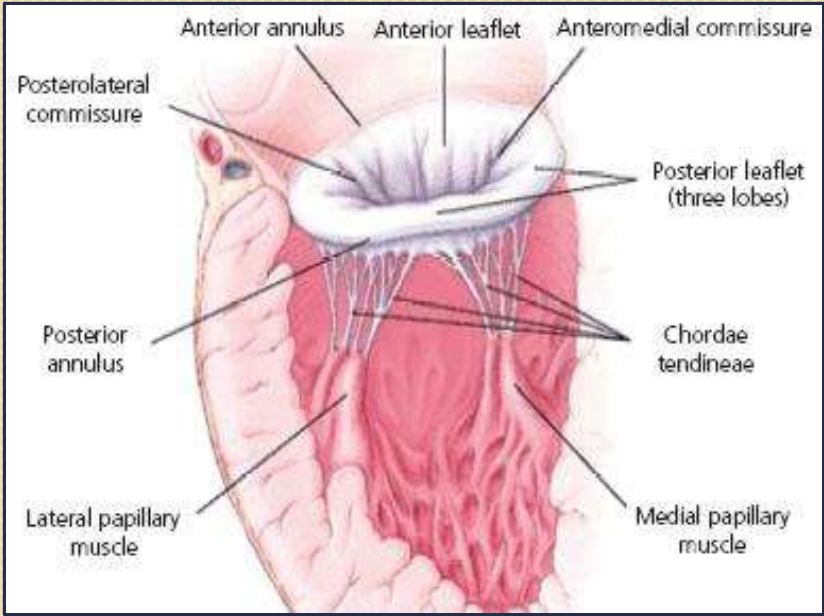
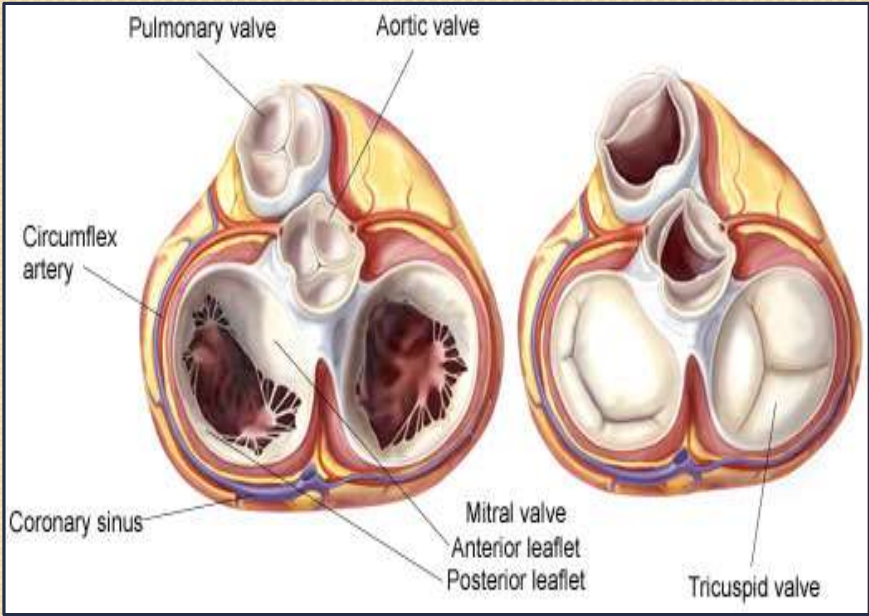
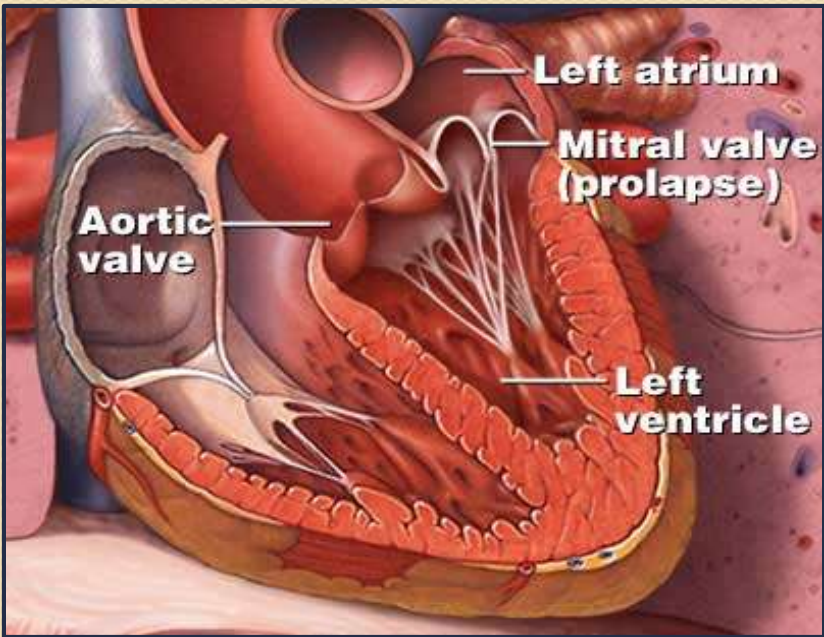


These slides are to be used for quality improvement by the MSTCVS member surgeon champions and data managers. Each slide includes the MSTCVS confidentiality statement.

Disclosures:

- I have nothing pertinent to disclose

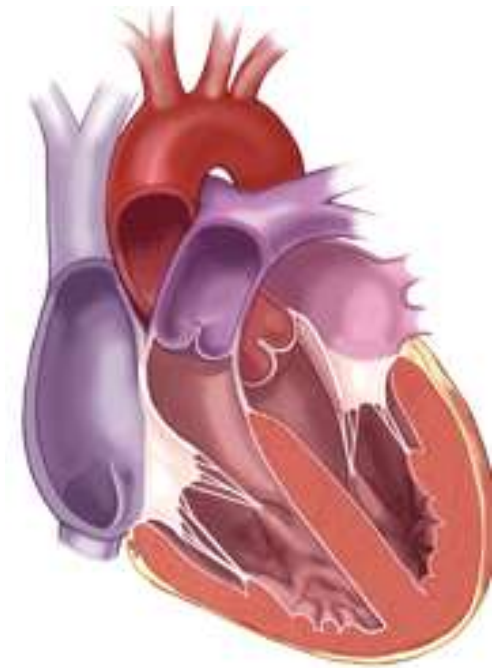
First, The Basics....



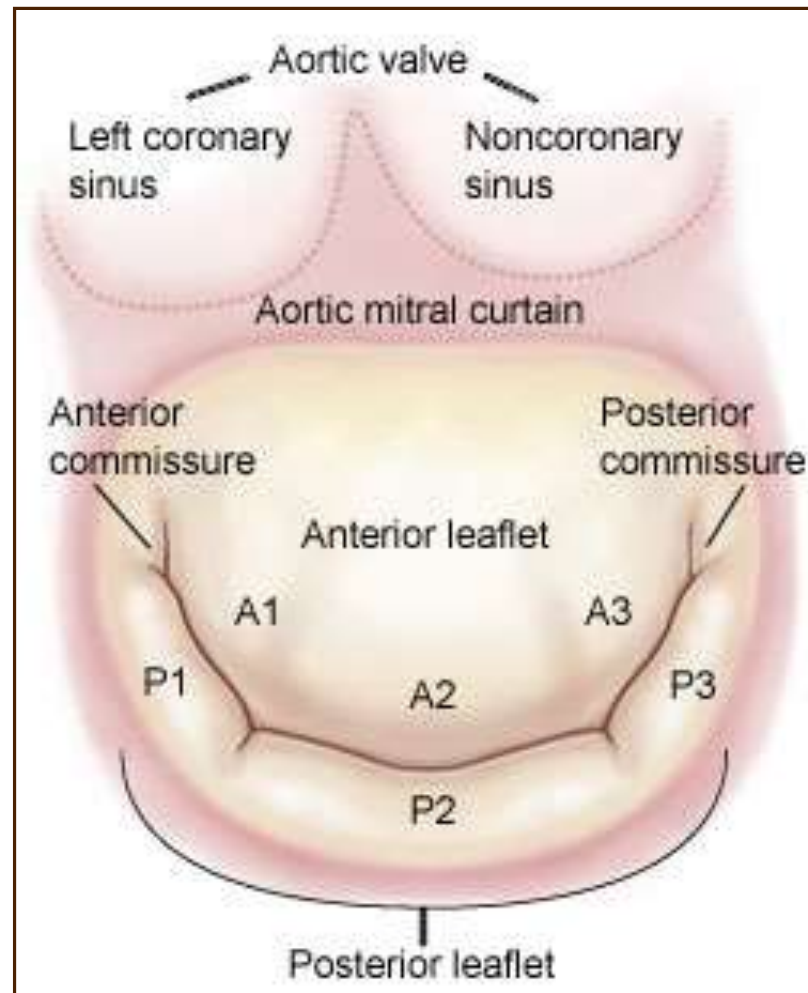
This is a confidential professional peer review and quality assurance document of the MSTCVS Quality Collaborative. Unauthorized disclosure or duplication is absolutely prohibited. It is protected from disclosure pursuant to the provisions of Michigan Statutes MCL 333.20175; MCL 333.21513; MCL 333.21515; MCL 331.531; MCL 331.532; MCL.331.533 or such other statutes as may be applicable.

Mitral Valve Overview

- Mitral Valve is part of the Left Ventricle
- Composed of:
 - Leaflets
 - Annulus
 - Chordae
 - Papillary Muscles
 - Ventricular Wall
 - Left Atrium



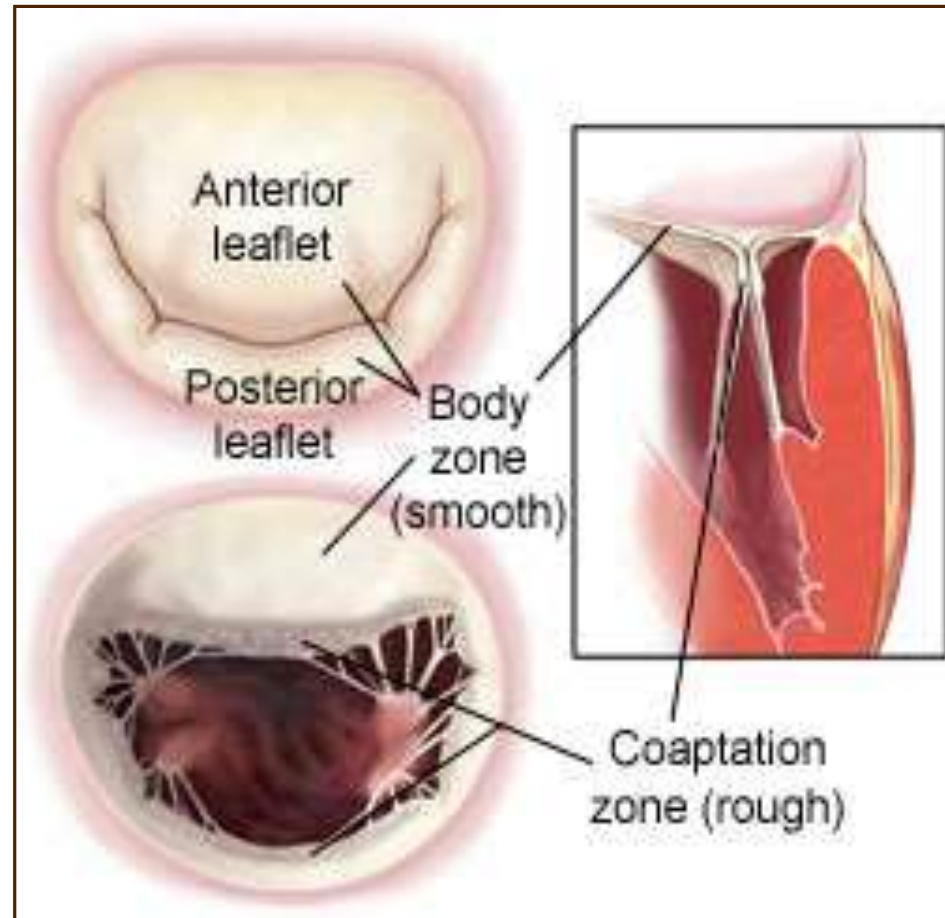
2 Mitral Valve Leaflets



www.mitralvalverepair.org

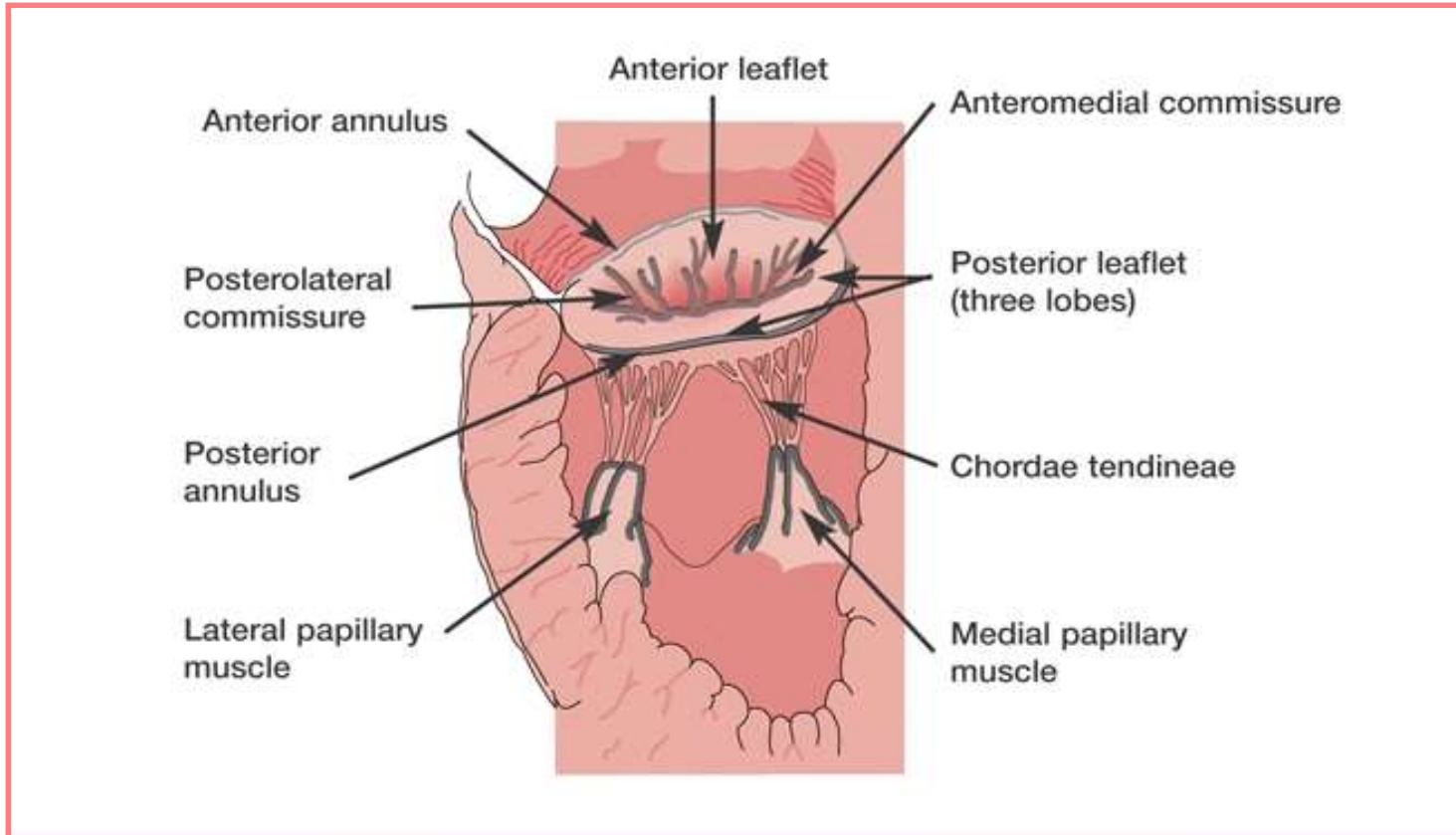
This is a confidential professional peer review and quality assurance document of the MSTCVS Quality Collaborative. Unauthorized disclosure or duplication is absolutely prohibited. It is protected from disclosure pursuant to the provisions of Michigan Statutes MCL 333.20175; MCL 333.21513; MCL 333.21515; MCL 331.531; MCL 331.532; MCL.331.533 or such other statutes as may be applicable.

Coaptation



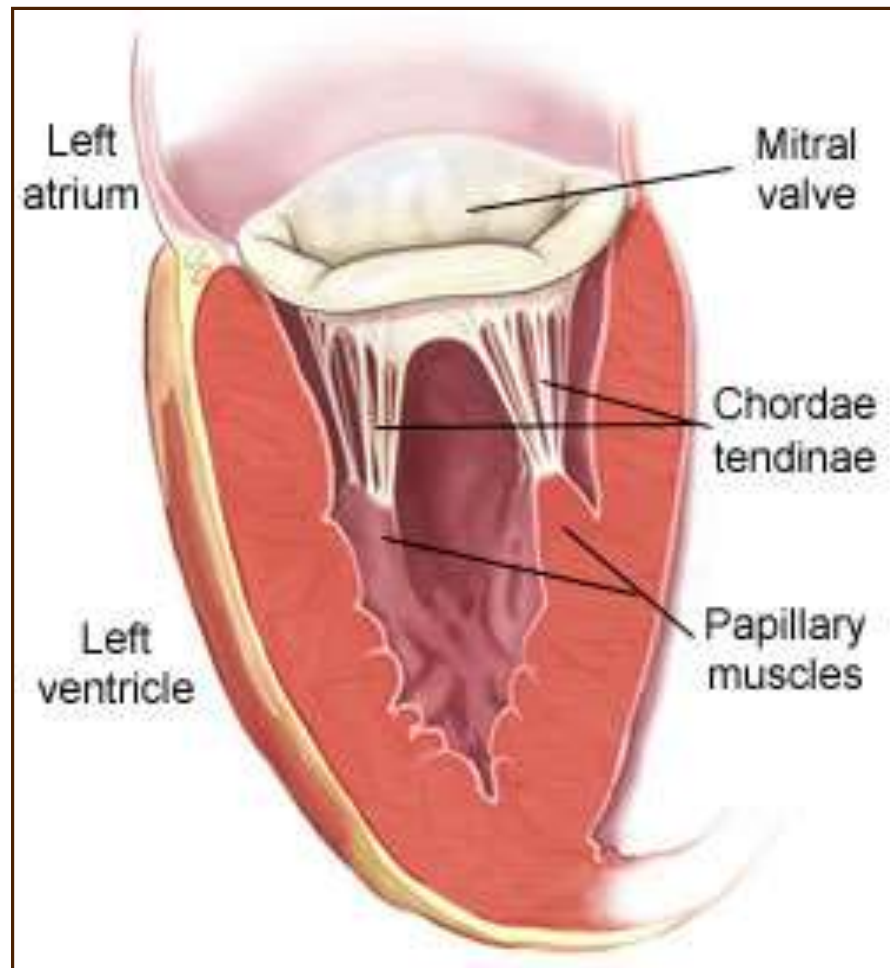
Google Images: <http://www.mitralvalverepair.org/content/view/53/>

Mitral Valve Structures



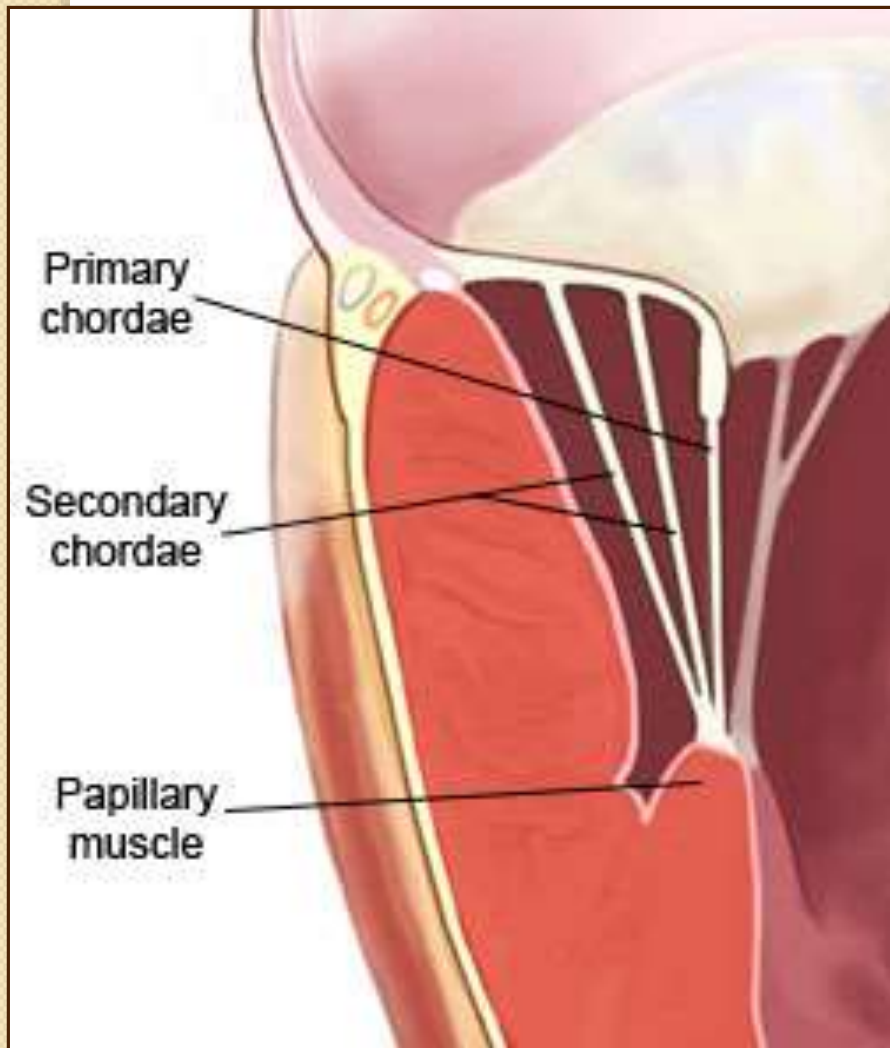
This is a confidential professional peer review and quality assurance document of the MSTCVS Quality Collaborative. Unauthorized disclosure or duplication is absolutely prohibited. It is protected from disclosure pursuant to the provisions of Michigan Statutes MCL 333.20175; MCL 333.21513; MCL 333.21515; MCL 331.531; MCL 331.532; MCL.331.533 or such other statutes as may be applicable.

Papillary Muscles



Google Images: <http://www.mitralvalverepair.org/content/view/56/>

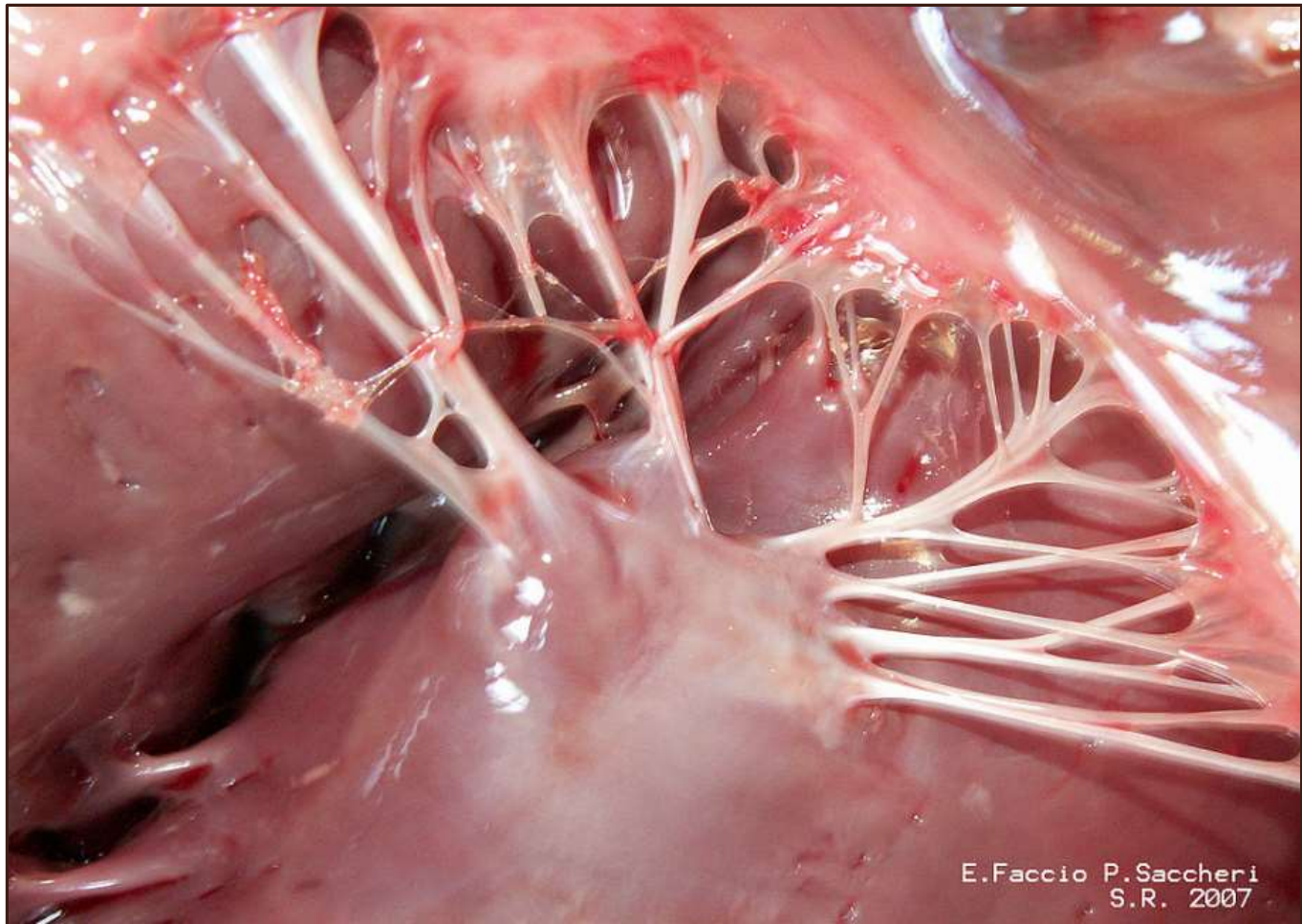
Chordae Tendinae



- Arise from Papillary Muscles
- Classified by Leaflet Insertion Site
 - Primary Chordae: Free Margin of Leaflets
 - Secondary Chordae: Ventricular surface of Leaflets
 - Tertiary Chordae: Posterior Leaflet only & connect to Mitral Annulus

Google Images: <http://www.mitralvalverepair.org/content/view/56/>

Chordae Tendinae

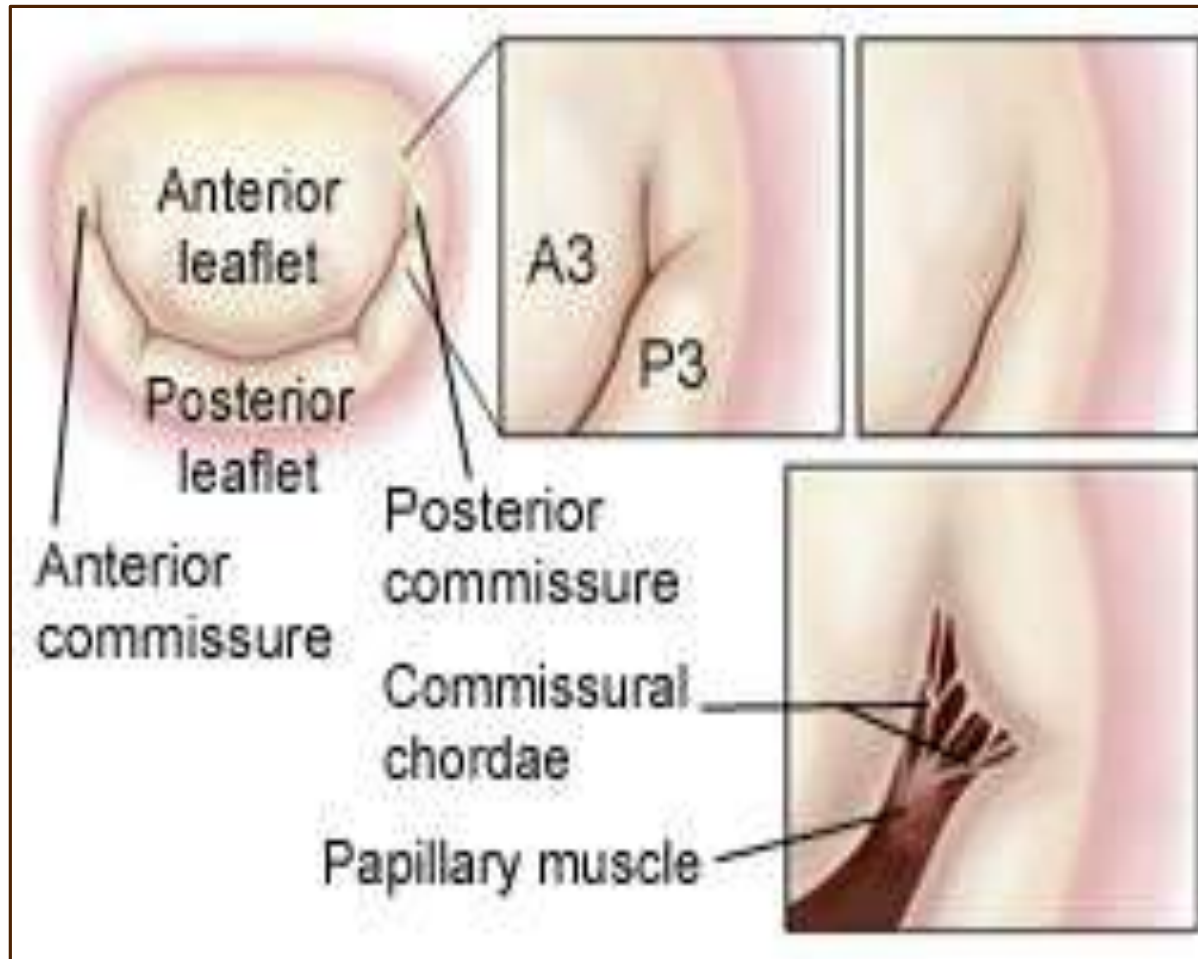


E.Faccio P.Saccheri
S.R. 2007

https://en.wikipedia.org/wiki/Chordae_tendineae

This is a confidential professional peer review and quality assurance document of the MSTCVS Quality Collaborative. Unauthorized disclosure or duplication is absolutely prohibited. It is protected from disclosure pursuant to the provisions of Michigan Statutes MCL 333.20175; MCL 333.21513; MCL 333.21515; MCL 331.531; MCL 331.532; MCL.331.533 or such other statutes as may be applicable.

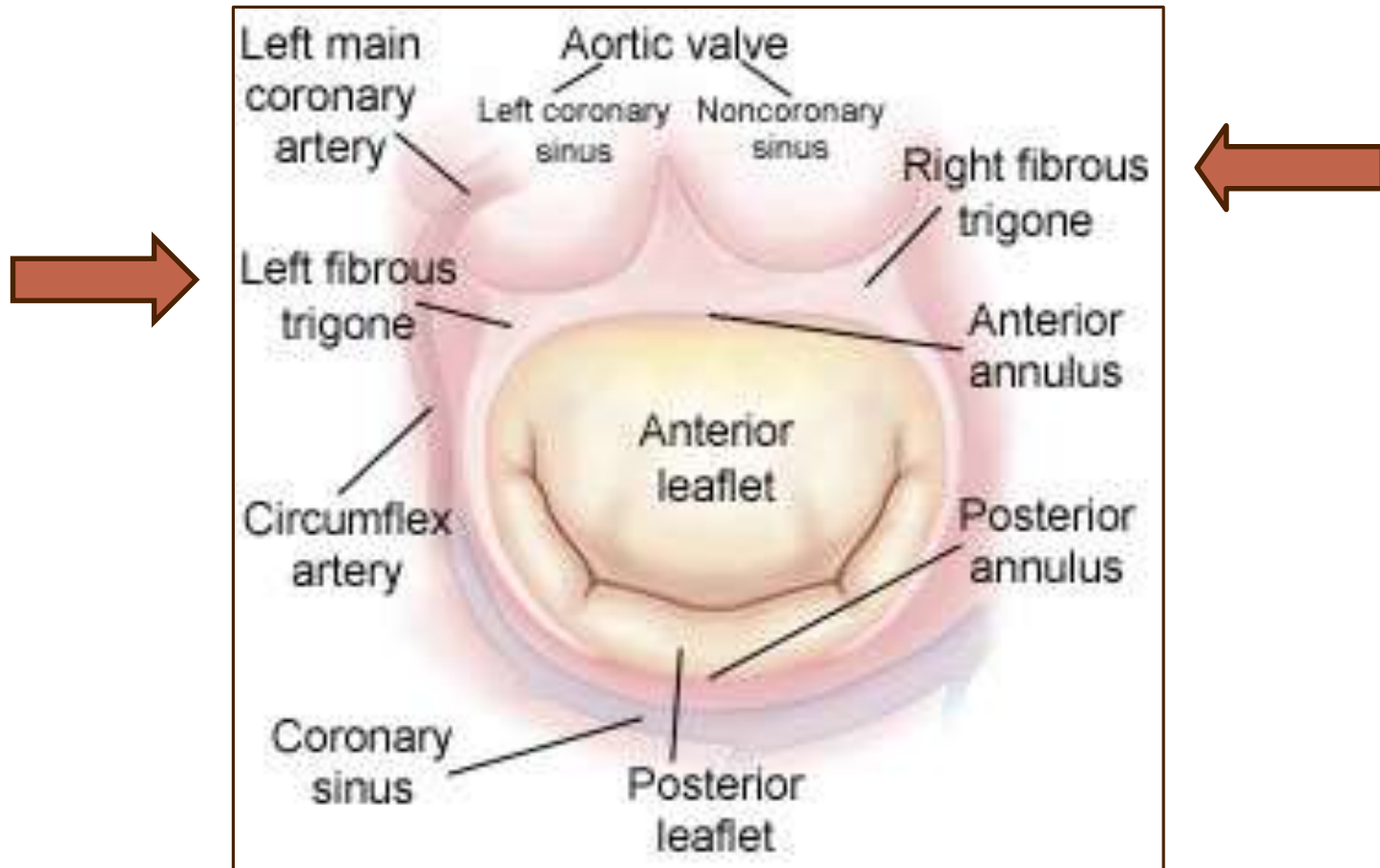
Commissures, Chordae, Papillary Muscles



www.mitralvalverepair.org

This is a confidential professional peer review and quality assurance document of the MSTCVS Quality Collaborative. Unauthorized disclosure or duplication is absolutely prohibited. It is protected from disclosure pursuant to the provisions of Michigan Statutes MCL 333.20175; MCL 333.21513; MCL 333.21515; MCL 331.531; MCL 331.532; MCL.331.533 or such other statutes as may be applicable.

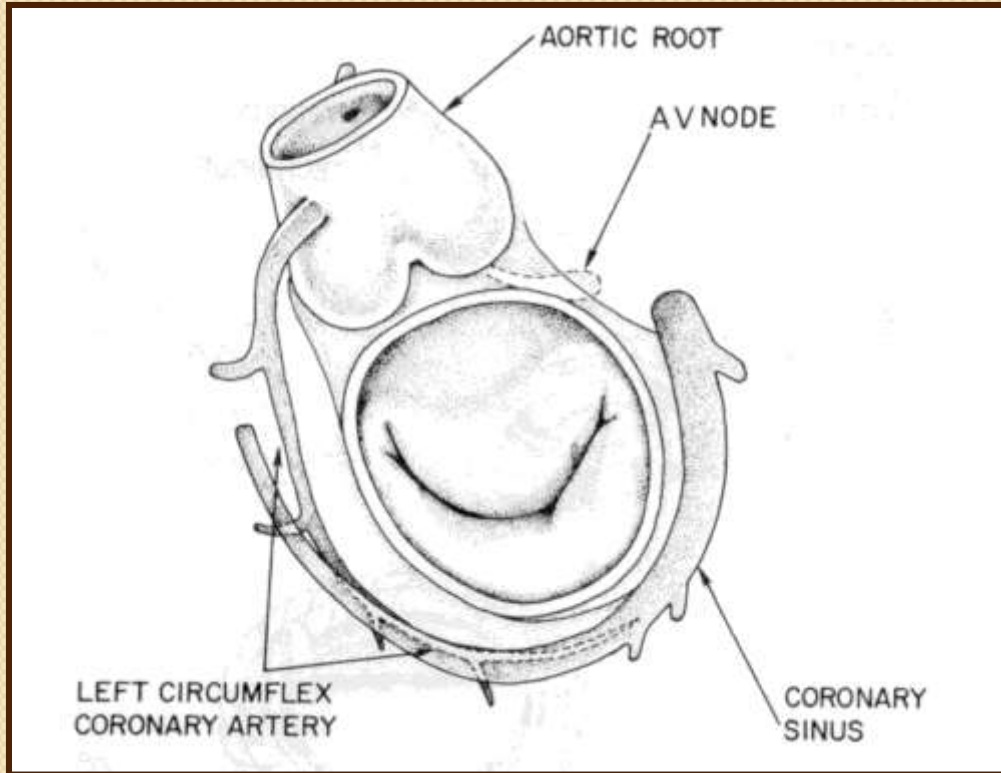
Trigone: Fibrous Support Structures



www.mitralvalverepair.org

This is a confidential professional peer review and quality assurance document of the MSTCVS Quality Collaborative. Unauthorized disclosure or duplication is absolutely prohibited. It is protected from disclosure pursuant to the provisions of Michigan Statutes MCL 333.20175; MCL 333.21513; MCL 333.21515; MCL 331.531; MCL 331.532; MCL.331.533 or such other statutes as may be applicable.

Mitral Anatomy



- ◆ Subaortic curtain
- ◆ Aortic leaflets
- ◆ AV node position
- ◆ Coronary Sinus
- ◆ Circumflex Artery

***Preservation of “surrounding” anatomic integrity
essential for a successful mitral repair***

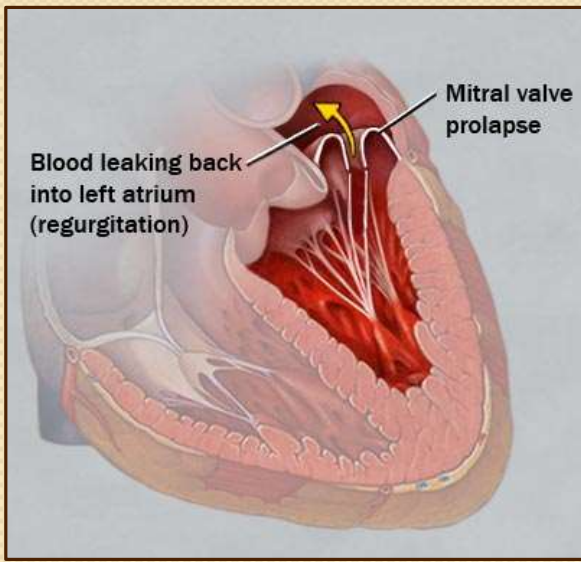
Read It, See It, Code It: Prager, RL, Geltz, A. MSTCVS DM Meeting: May 2006

This is a confidential professional peer review and quality assurance document of the MSTCVS Quality Collaborative. Unauthorized disclosure or duplication is absolutely prohibited. It is protected from disclosure pursuant to the provisions of Michigan Statutes MCL 333.20175; MCL 333.21513; MCL 333.21515; MCL 331.531; MCL 331.532; MCL.331.533 or such other statutes as may be applicable.



Normal Mitral Anatomy

This is a confidential professional peer review and quality assurance document of the MSTCVS Quality Collaborative. Unauthorized disclosure or duplication is absolutely prohibited. It is protected from disclosure pursuant to the provisions of Michigan Statutes MCL 333.20175; MCL 333.21513; MCL 333.21515; MCL 331.531; MCL 331.532; MCL.331.533 or such other statutes as may be applicable.



Mitral Regurgitation

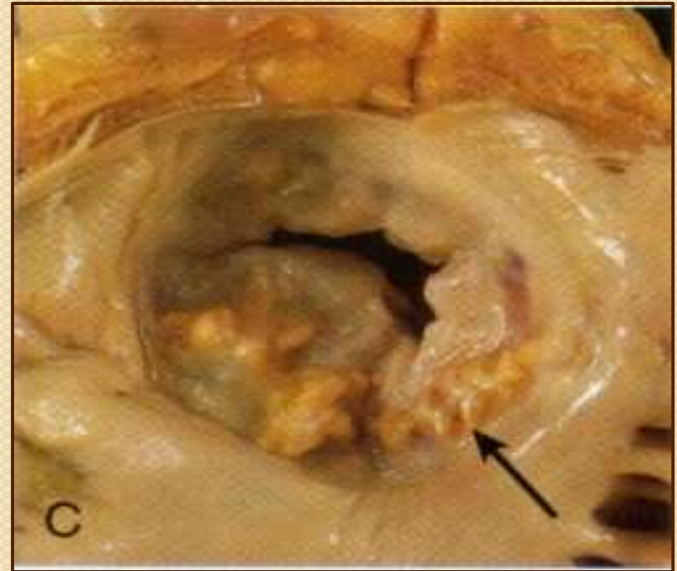


Floppy Valve

Mitral Valve Disease

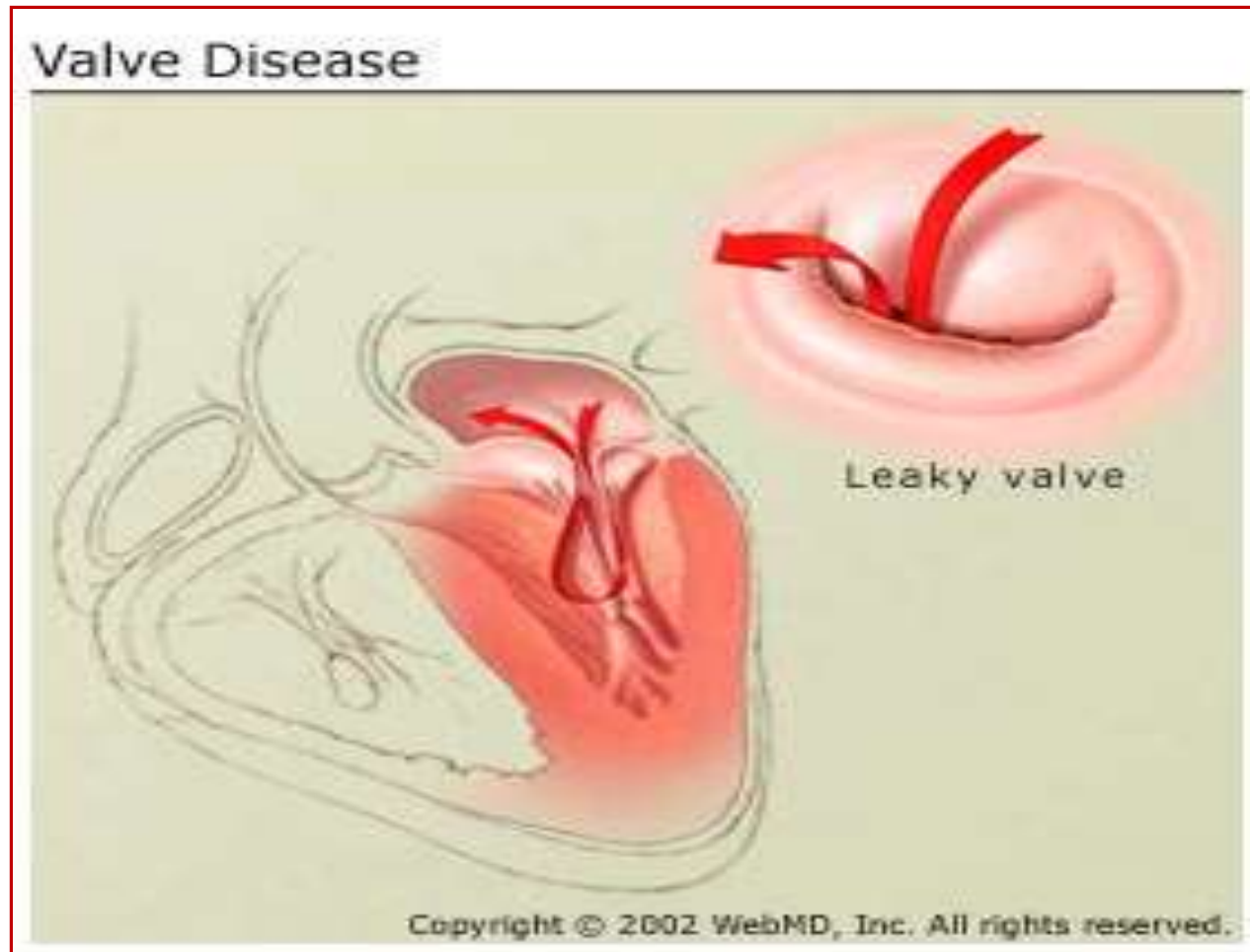


Mitral Stenosis



www.heart-valve-surgery.com

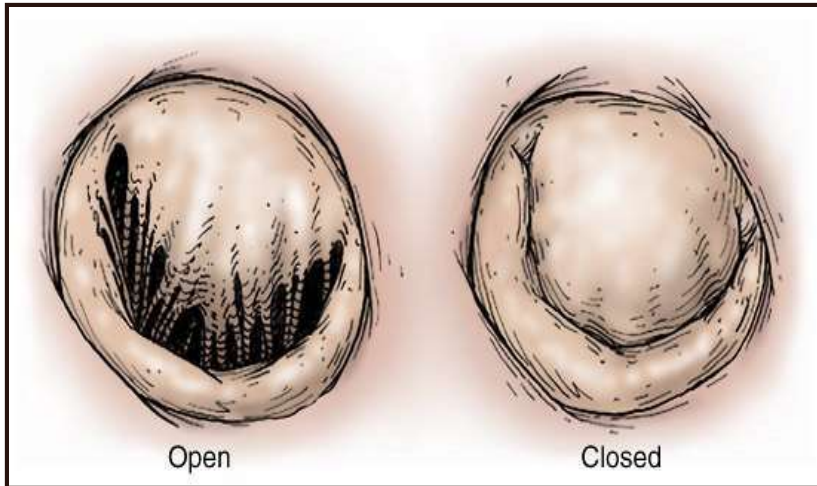
Mitral Regurgitation



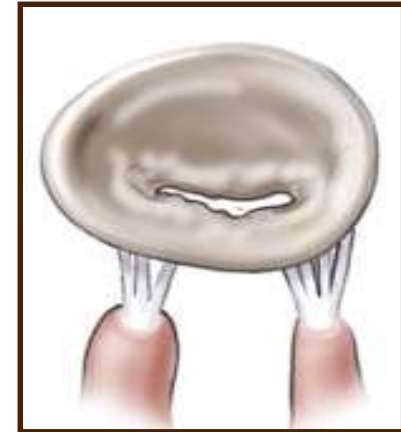
This is a confidential professional peer review and quality assurance document of the MSTCVS Quality Collaborative. Unauthorized disclosure or duplication is absolutely prohibited. It is protected from disclosure pursuant to the provisions of Michigan Statutes MCL 333.20175; MCL 333.21513; MCL 333.21515; MCL 331.531; MCL 331.532; MCL.331.533 or such other statutes as may be applicable.

Mitral Stenosis

Normal MV



Mitral Stenosis



This is a confidential professional peer review and quality assurance document of the MSTCVS Quality Collaborative. Unauthorized disclosure or duplication is absolutely prohibited. It is protected from disclosure pursuant to the provisions of Michigan Statutes MCL 333.20175; MCL 333.21513; MCL 333.21515; MCL 331.531; MCL 331.532; MCL.331.533 or such other statutes as may be applicable.



MOVING INTO DATA ABSTRACTION!

Surgeon Worksheets Available: STS Website

Mitral Valve Worksheet

- Includes:
- Etiology
- Lesion Type
- Operative Procedures
 - Checklist
- Surgeon or Mid-Level:
 - Complete in the OR



STS Mitral Valve Surgeon Worksheet V2.9	
Mitral Stenosis:	<input type="checkbox"/> Yes <input type="checkbox"/> No (If Yes →) Smallest Mitral Valve Area: _____ cm ² Highest Mean Gradient: _____ mmHg
Mitral Insufficiency:	<input type="checkbox"/> None <input type="checkbox"/> Trace/Trivial <input type="checkbox"/> Mild <input type="checkbox"/> Moderate <input type="checkbox"/> Severe
Mitral Disease Etiology	
<input type="checkbox"/> Myxomatous degeneration/Prolapse <input type="checkbox"/> Endocarditis <input type="checkbox"/> Rheumatic <input type="checkbox"/> Ischemic: <input type="checkbox"/> Acute (MI < 21 days) <input type="checkbox"/> Chronic (MI > 21 days) <input type="checkbox"/> Cardiomyopathy: <input type="checkbox"/> Non-ischemic <input type="checkbox"/> Hypertrophic obstructive <input type="checkbox"/> Tumor: <input type="checkbox"/> Carcinoid <input type="checkbox"/> Myxoma <input type="checkbox"/> Papillary fibroelastoma <input type="checkbox"/> Other	<input type="checkbox"/> Trauma <input type="checkbox"/> Carcinoid <input type="checkbox"/> Congenital <input type="checkbox"/> Pure annular dilatation <input type="checkbox"/> Reoperation for failure of previous MV repair/replacement <input type="checkbox"/> Mixed etiology
Mitral Lesion	
<input type="checkbox"/> Leaflet prolapse: <input type="checkbox"/> Posterior <input type="checkbox"/> Bi-leaflet <input type="checkbox"/> Anterior <input type="checkbox"/> Papillary muscle: <input type="checkbox"/> Elongation <input type="checkbox"/> Rupture <input type="checkbox"/> Mixed lesion	<input type="checkbox"/> Leaflet: <input type="checkbox"/> Calcification <input type="checkbox"/> Perforation/Hole <input type="checkbox"/> Thickening <input type="checkbox"/> Retraction <input type="checkbox"/> Annular dilatation <input type="checkbox"/> Commissural fusion
<input type="checkbox"/> Chordal: <input type="checkbox"/> Elongation/Rupture/Failure <input type="checkbox"/> Tethering <input type="checkbox"/> Thickening/Retraction/Fusion	
Procedure Performed	
Repair (If Repair:)	
Repair approach: <input type="checkbox"/> Surgical (If Surgical select all that apply:) <input type="checkbox"/> Transcatheter	
<input type="checkbox"/> Annuloplasty: <input type="checkbox"/> Annular decalcification/debridement <input type="checkbox"/> Folding/plasty: <input type="checkbox"/> Sliding/plasty	
<input type="checkbox"/> Leaflet resection:	
Resection type: <input type="checkbox"/> Triangular <input type="checkbox"/> Quadrangular <input type="checkbox"/> Other	
<input type="checkbox"/> Anterior resection: Location: <input type="checkbox"/> A1 <input type="checkbox"/> A2 <input type="checkbox"/> A3	
<input type="checkbox"/> Posterior resection: Location: <input type="checkbox"/> P1 <input type="checkbox"/> P2 <input type="checkbox"/> P3	
<input type="checkbox"/> Commissure resection: Location: <input type="checkbox"/> Medial (C2) <input type="checkbox"/> Lateral (C1) <input type="checkbox"/> Both	
<input type="checkbox"/> Leaflet extension/replacement patch: Patch location: <input type="checkbox"/> Anterior <input type="checkbox"/> Posterior <input type="checkbox"/> Both	
<input type="checkbox"/> Neochords (PTFE):	
<input type="checkbox"/> Anterior Neochords: Location: <input type="checkbox"/> A1 <input type="checkbox"/> A2 <input type="checkbox"/> A3	
<input type="checkbox"/> Posterior Neochords: Location: <input type="checkbox"/> P1 <input type="checkbox"/> P2 <input type="checkbox"/> P3	
<input type="checkbox"/> Commissure Neochords: Location: <input type="checkbox"/> Medial (C2) <input type="checkbox"/> Lateral (C1) <input type="checkbox"/> Both	
<input type="checkbox"/> Chordal/Leaflet transfer	
<input type="checkbox"/> Anterior Chordal/Leaflet transfer: Location: <input type="checkbox"/> A1 <input type="checkbox"/> A2 <input type="checkbox"/> A3	
<input type="checkbox"/> Posterior Chordal/Leaflet transfer: Location: <input type="checkbox"/> P1 <input type="checkbox"/> P2 <input type="checkbox"/> P3	
<input type="checkbox"/> Commissure Chordal/Leaflet transfer: Location: <input type="checkbox"/> Medial (C2) <input type="checkbox"/> Lateral (C1) <input type="checkbox"/> Both	
<input type="checkbox"/> Edge to edge repair	<input type="checkbox"/> Mitral cleft repair
<input type="checkbox"/> Mitral commissurotomy	<input type="checkbox"/> Mitral paranasal leak repair
<input type="checkbox"/> Mitral commissuroplasty	
Replacement (If Replacement:)	
<input type="checkbox"/> Mitral repair attempted prior to replacement	
<input type="checkbox"/> Mitral chordal preservation: <input type="checkbox"/> Anterior <input type="checkbox"/> Posterior <input type="checkbox"/> Both	
<input type="checkbox"/> Transcatheter replacement	
Implant: (If Yes →) Implant type: <input type="checkbox"/> Mechanical valve <input type="checkbox"/> Bioprosthetic valve <input type="checkbox"/> Annuloplasty device <input type="checkbox"/> Mitral Leaflet clip	
<input type="checkbox"/> Transcatheter device <input type="checkbox"/> Surgically implanted transcatheter device <input type="checkbox"/> Other	
Implant Model:	
Implant Size:	



Section H. Hemodynamics/Cath/Echo

H. Hemodynamics/Cath/Echo

Mitral Valve Disease Data Elements:



Mitral Valve

Mitral Insufficiency: None Trivial/Trace Mild Moderate Severe Not Documented

VDInsufM (1680)

(If not "None" ↓)

Eccentric Jet: Yes No Not Documented

VDMVEcclet (1681)

Mitral Valve Disease: Yes No

VDMit (1685)

(If Yes ↓→) Mitral Stenosis: Yes No (If Yes→)

VDStenM (1690)

Hemodynamic/ Echo data available: Yes No (If Yes ↓)

MiHemoDatAvail (1695)

Smallest Valve Area: _____ cm²

Highest Mean Gradient:

VDMVA (1700)

_____ mmHg

VDGradM (1705)

Section H. Hemodynamics/Cath/Echo

H. Hemodynamics/Cath/Echo

Mitral Valve Disease Data Elements:



Mitral Valve
Mitral Insufficiency: None Trivial/Trace Mild Moderate Severe Not Documented
VDInsufM (1680)
(If not "None" ↓)
Eccentric Jet: Yes No Not Documented
VDMVEcclt (1681)

Mitral Valve Disease: Yes No
VDMit (1685)

(If Yes ↓ →) Mitral Stenosis: Yes No (If Yes → →)
VDStenM (1690)

Hemodynamic/ Echo data available: Yes No (If Yes ↓)
MiHemoDatAvail (1695)

Smallest Valve Area: _____ cm²
Highest Mean Gradient:
VDMVA (1700)
_____ mmHg
VDGradM (1705)

New for 2.9 Version

Thomas Binder, MD “Jet Direction & Mechanism of Mitral Regurgitation”
April, 2010

Thomas Binder, MD Cardiologist and Director of Echo Lab at the Medical University of Vienna

<http://123sonography.com>

This is a confidential professional peer review and quality assurance document of the MSTCVS Quality Collaborative. Unauthorized disclosure or duplication is absolutely prohibited. It is protected from disclosure pursuant to the provisions of Michigan Statutes MCL 333.20175; MCL 333.21513; MCL 333.21515; MCL 331.531; MCL 331.532; MCL.331.533 or such other statutes as may be applicable.

Section H.

Hemodynamics/Cath/Echo

H. Hemodynamics/Cath/Echo

Mitral Valve Disease Data Elements:

Mitral Valve

Mitral Insufficiency: None Trivial/Trace Mild Moderate Severe Not Documented

VDInsufM (1680)

(If not "None" ↓)

Eccentric Jet: Yes No Not Documented

VDMVEccJet (1681)

Mitral Valve Disease: Yes No

VDMit (1685)

(If Yes ↓→) Mitral Stenosis: Yes No (If Yes→→)

VDStenM (1690)

What is This?

Hemodynamic/ Echo data available: Yes No (If Yes ↓)

MiHemoDatAvail (1695)

Smallest Valve Area: _____ cm²

Highest Mean Gradient:

VDMVA (1700)

_____ mmHg

VDGradM (1705)

Coding Valve Area & Gradients

- Smallest Valve Area (#1700)
 - Cardiac Cath, TEE, Echo, CT Scan
 - Definition: Document **Smallest in cm²** from all Tests:
 - Normal: 4.0 – 5.0 cm²
 - Severe: <1.0 cm²
- Highest Mean Gradient mmHg: (#1705)
 - Cardiac Cath, TEE, Echo CT Scan
 - Definition: Document **Highest mmHg** from all Tests:
 - Normal: “0”
 - Severe: <5mmHg

Use Data within 6 months of Cardiac Operation for both Data Fields


Etiology and Lesions of:

MITRAL VALVE DISEASE

Mitral Valve Etiology (Choose 1 Primary Only!)

Highlighted Etiologies are New for 2.9

MV Disease Etiology Choose PRIMARY Etiology (one):	
<input type="checkbox"/> Myxomatous degeneration/prolapse	<input type="checkbox"/> Tumor, Papillary fibroelastoma
<input type="checkbox"/> Rheumatic	<input type="checkbox"/> Tumor, Other
<input type="checkbox"/> Ischemic- acute, post infarction (MI \leq 21 days)	<input type="checkbox"/> Carcinoid
<input type="checkbox"/> Ischemic- chronic (MI $>$ 21 days)	<input type="checkbox"/> Trauma
<input type="checkbox"/> Non-ischemic Cardiomyopathy	<input type="checkbox"/> Congenital
<input type="checkbox"/> Endocarditis	<input type="checkbox"/> Pure annular dilatation
<input type="checkbox"/> Hypertrophic Obstructive Cardiomyopathy (HOCM)	<input type="checkbox"/> Reoperation-Failure of previous MV repair or replacement
<input type="checkbox"/> Tumor, Carcinoid	<input type="checkbox"/> Mixed Etiology
<input type="checkbox"/> Tumor, Myxoma	<input type="checkbox"/> Not Documented



Think of these causes as Why the valve is diseased

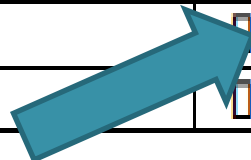
“Mixed Etiology”

- The cause (MV Pathology) is not Isolated, but a combination of issues.
- Not a Default Answer when Surgeon is not helping ☹️ !!
- Examples:
 - Rheumatic Heart Disease & Endocarditis
 - Myxoma on a Rheumatically Diseased Mitral Valve

Mitral Valve Lesion (Choose I Primary Only!)

Highlighted Lesions are New for 2.9

MV Lesion Choose PRIMARY Lesion (one)	
<input type="checkbox"/> Leaflet prolapse, posterior	<input type="checkbox"/> Papillary muscle elongation
<input type="checkbox"/> Leaflet prolapse, bileaflet	<input type="checkbox"/> Papillary muscle rupture
<input type="checkbox"/> Leaflet prolapse, anterior	<input type="checkbox"/> Leaflet thickening
<input type="checkbox"/> Leaflet prolapse, unspecified	<input type="checkbox"/> Leaflet retraction
<input type="checkbox"/> Elongated/ruptured chord(s)/Flail	<input type="checkbox"/> Chordal tethering
<input type="checkbox"/> Annular dilatation	<input type="checkbox"/> Chordal thickening/retraction/fusion
<input type="checkbox"/> Leaflet calcification	<input type="checkbox"/> Commissural fusion
<input type="checkbox"/> Leaflet perforation/hole	<input type="checkbox"/> Mixed lesion
<input type="checkbox"/> Mitral annular calcification	<input type="checkbox"/> Not Documented



-Think of causes as Where (Anatomic Area) valve is diseased

Examples:

- Dilated annulus and Ruptured papillary muscle
- Leaflet Perforation and Calcification

MITRAL VALVE OPERATIVE PROCEDURES NEXT



University of Michigan Hospital Cardiovascular Center Operating Room

This is a confidential professional peer review and quality assurance document of the MSTCVS Quality Collaborative. Unauthorized disclosure or duplication is absolutely prohibited. It is protected from disclosure pursuant to the provisions of Michigan Statutes MCL 333.20175; MCL 333.21513; MCL 333.21515; MCL 331.531; MCL 331.532; MCL.331.533 or such other statutes as may be applicable.

2.9 Mitral Valve Procedures Data Collection Form

Mitral Valve Procedure Performed:

VSMV (3495)

Procedure Performed:

VSMVPr (3500)

Yes, planned Yes, unplanned due to surgical complication

Yes, unplanned due to unsuspected disease or anatomy No (If Yes ↓)



#1 Step: Answer How the MV Procedure was Planned

Mitral Valve Procedure = Yes?

- Your Choices:
- 1. Yes Planned
 - MV Operation was Planned by Surgeon, Patient & Family.
 - Operative Consent Signed for this Operation
- 2. Yes, Unplanned due to Unsuspected Disease or Anatomy
 - Something Unexpected found in the OR requiring additional Operative intervention.
 - Code this additional Procedure(s) on the DCF
 - (data collection form)

Mitral Valve Procedure = Yes?



- Your Choices:
- 3. Yes, Unplanned due to Surgical Complication
- **BEWARE** & Understand What this Means!
 - Original Case Is the Procedure Type
 - **No Added Procedures are Included**
 - Example: CAB Case with Injury to the Mitral Valve Leaflet..... is an **Isolated CAB Case**!

If Unsure, contact MSTCVS Coordinating Center
To Double Check!!

BE CAREFUL

STAY ALERT
DON'T GET HURT

By your Surgeons!



“You Broke It, You Fix It”!

2.9 Mitral Valve Procedures Data Collection Form

Mitral Valve Procedure Performed: Yes, planned Yes, unplanned due to surgical complication
VSMV (3495) Yes, unplanned due to unsuspected disease or anatomy No (If Yes ↓)

Procedure Performed:
VSMVPr (3500) Repair (If Repair ↓)

Repair Approach: Transcatheter Surgical
VSMVrepApp (3501)

If Surgical (Select all that apply ↓)

#2 Step: Answer Repair Approach: Transcatheter or Surgical and Continue

2.9 Mitral Valve Procedures

Data Collection Form

Mitral Valve Procedure Performed: Yes, planned Yes, unplanned due to surgical complication
VSMV (3495) Yes, unplanned due to unsuspected disease or anatomy No (If Yes ↓)

Procedure Performed:

VSMVPr (3500)

Repair (If Repair ↓)

Repair Approach: Transcatheter Surgical

VSMVRepApp (3501)

(If Surgical (check all that apply ↓))

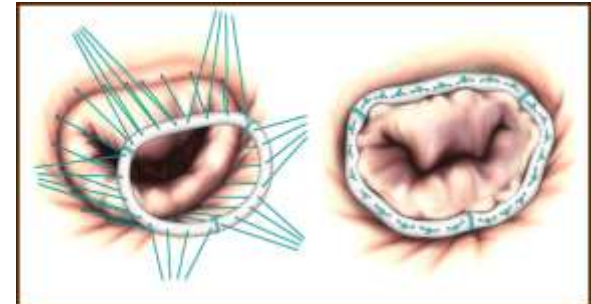
Annuloplasty: Yes No

VSMitRAnnulo (3505)

Step #3: Did this Case have an Annuloplasty Done?

Mitral Annuloplasty: Operation to Annulus Only

- Procedure on Annulus = Area Around the Valve
- Does not include Leaflets, Chordae or Papillary Muscle Structures



2.9 Mitral Valve Procedures Data Collection Form:

Mitral Valve Procedure Performed: Yes, planned Yes, unplanned due to surgical complication
VSMV (3495) Yes, unplanned due to unsuspected disease or anatomy No (If Yes ↓)

Procedure Performed:

VSMVPr (3500)

Repair (If Repair ↓)

Repair Approach: Transcatheter Surgical

VSMVRepApp (3501)

If Surgical (Select all that apply ↓)

Annuloplasty: Yes No

VSMitRAnnulo (3505)

**Step #4: Starts
with Repair Types**

Leaflet resection: Yes No (If Yes ↓)

VSMitRLeafRes (3510)

Resection Type: Triangular Quadrangular Other

VSLeafResTyp (3515)

Anterior resection: Yes No

VSLeafAntRes (3517)

(If Yes →) Location documented: Yes No (If Yes ↓)

VSLeafAntResLocD (3518)

Anterior leaflet resection location: A1 Yes No A2 Yes No A3 Yes No
VSLeafAntResA1 (3519) VSLeafAntResA2 (3520) VSLeafAntResA3 (3521)

Posterior Resection: Yes No

VSLeafPostRes (3522)

Resection
Location(s):

(If Yes →) Location documented: Yes No (If Yes ↓)

VSLeafPostResLocD (3523)

Posterior leaflet resection location: P1 Yes No P2 Yes No P3 Yes No
VSLeafPostResP1 (3524) VSLeafPostResP2 (3525) VSLeafPostResP3 (3526)

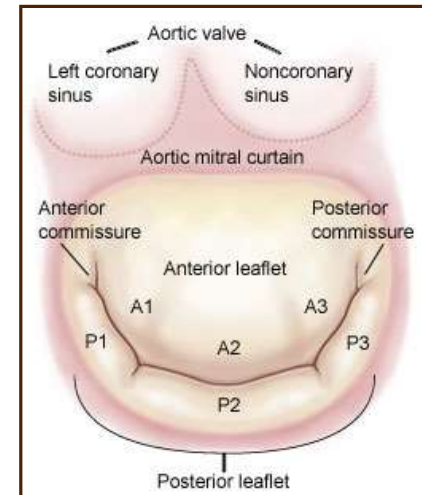
Commissure Resection: Yes No (If Yes ↓)

VSLeafComRes (3527)

Commissural resection location: Medial (C2) Lateral (C1) Both Not Documented
VSLeafComResLoc (3528)

2.9 MV Repair Types

- Annuloplasty
- Leaflet Resection
 - Types: Triangular, Quadrangular, Other
 - Leaflet Location: Anterior, Posterior, Both
 - Anterior Resection & Location: A1, A2, A3
 - Posterior Resection & Location: P1, P2, P3
 - Commissure Resection & Location: Medial, Lateral or Both
- Neochords (PTFE) & Location
 - Anterior Neochords Location (A1, A2, A3)
 - Posterior Neochords Location (P1, P2, P3)
 - Commissure Neochords Location
 - Neochord Location: Medial (C2) , Lateral (C1) Both



2.9 MV Repair Types Con't.

- Chordal/Leaflet Transfer Y/N
 - Posterior? Y/N
 - Posterior Chordal Leaflet Transfer
 - Commissure Chordal/Leaflet transfer
 - Medial,Lateral both
- Folding Plasty
- Sliding Plasty
- Annular Decalcification/Debridement
- Leaflet Extension/Replacement Patch
 - Patch Location: Anterior, Posterior, Both
- Edge to Edge Repair
- Mitral Commissurotomy
- Mitral Commissuroplasty

2.9 MV Repair Types Con't.

- Mitral Cleft Repair (Scallop closure)
- Mitral Paraprosthetic leak repair? Y/N
 - Then complete info below:
- Model # _____
- Implant Size _____
- Unique Device Identifier (UDI) _____

2.9 Mitral Valve Replacement

- Replacement Y/N
 - If Replacement:
 - Mitral Repair Attempted prior to Replacement ? Y/N
- Mitral Chords Preserved?
 - Anterior, Posterior, Both, None
- Transcatheter Replacement?
- Implant? Y/N
 - Type: Mechanical, Bioprosthetic, Annuloplasty Device, Mitral Leaflet Clip, Transcatheter Device, Surgically implanted transcatheter device, Other
- Model # _____ Implant Size _____

Why Are Mitral Chords Preserved in a Mitral Valve Replacement?

Complete chordal preservation advantages.

- It preserves LV geometry and function,
- reduces the operative mortality,
- improves early and long-term survival

- reduces the risk of ventricular rupture.

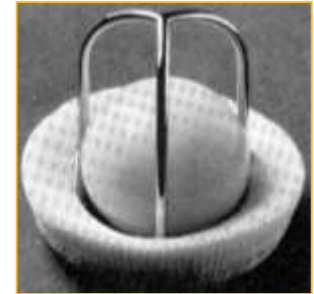
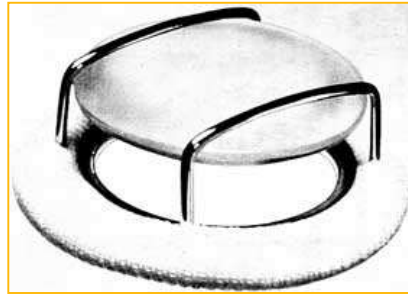
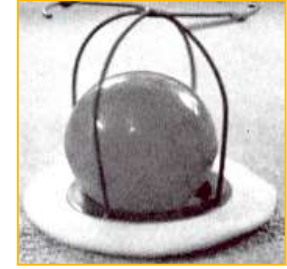
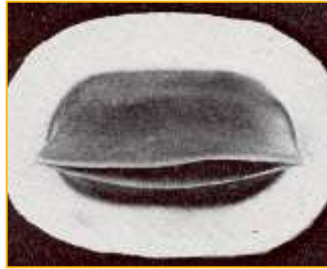
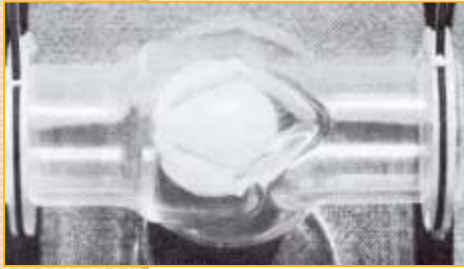
- With appropriate surgical technique even large size prosthetic valves can be implanted and the risk of prosthetic valve dysfunction and LV outflow tract obstruction can be eliminated.

- There is emerging evidence which suggests that RV function may improve significantly after LV chordal preservation.

Mitral Valve Surgery Chordal Preservation: Dr. Jyotindra Singh, MS, MBBS, Cleveland Clinic May 9, 2016

This is a confidential professional peer review and quality assurance document of the MSTCVS Quality Collaborative. Unauthorized disclosure or duplication is absolutely prohibited. It is protected from disclosure pursuant to the provisions of Michigan Statutes MCL 333.20175; MCL 333.21513; MCL 333.21515; MCL 331.531; MCL 331.532; MCL.331.533 or such other statutes as may be applicable.

Mechanical Prosthetic Valve Types



AVR & Treatment Options Lecture: A.Pruitt, MD St. Joseph Mercy Hospital, Ann Arbor September, 2009

This is a confidential professional peer review and quality assurance document of the MSTCVS Quality Collaborative. Unauthorized disclosure or duplication is absolutely prohibited. It is protected from disclosure pursuant to the provisions of Michigan Statutes MCL 333.20175; MCL 333.21513; MCL 333.21515; MCL 331.531; MCL 331.532; MCL.331.533 or such other statutes as may be applicable.

Bioprosthetic Tissue Valve Types



Hancock Modified II Porcine Medtronic



Mosaic Mitral Medtronic



Carpentier-Edwards Duraflex Porcine Mitral: Edwards Lifesciences



Carpentier-Edwards Perimount Magna Mitral Ease
Pericardial-Edwards Lifesciences



Epic Mitral St. Jude Medical

This is a confidential professional peer review and quality assurance document of the MSTCVS Quality Collaborative. Unauthorized disclosure or duplication is absolutely prohibited. It is protected from disclosure pursuant to the provisions of Michigan Statutes MCL 333.20175; MCL 333.21513; MCL 333.21515; MCL 331.531; MCL 331.532; MCL.331.533 or such other statutes as may be applicable.

DIFFERENCES BETWEEN MECHANICAL AND BIOPROSTHETIC VALVE

	MECHANICAL	BIOPROSTHETIC
LIFESPAN	30 YEARS OR MORE	10-15 YEARS
THROMBOGENICITY	MORE	LESS
NOISE	MORE	NEGLIGIBLE
PATIENT-PROSTHESIS MISMATCH	MORE	LESS
VALVE DETERIORATION	DURABLE	HIGHLY SUSCEPTIBLE
HEMODYNAMICS	IMPROVING	CLOSE TO NATURAL
ANTICOAGULATION	LIFELONG	3 MONTHS
RISK OF REOPERATION	LESS	MORE

www.slideshare.net

This is a confidential professional peer review and quality assurance document of the MSTCVS Quality Collaborative. Unauthorized disclosure or duplication is absolutely prohibited. It is protected from disclosure pursuant to the provisions of Michigan Statutes MCL 333.20175; MCL 333.21513; MCL 333.21515; MCL 331.531; MCL 331.532; MCL.331.533 or such other statutes as may be applicable.

Code Operative Cases (4)

- Read Operative Notes
- See Operative Videos
- Code It



Audience Response “Clicker Use”

ONLY push the numbers corresponding to the Question Answers
1= A, 2= B, 3=C etc.



- ✓ There is No On/Off Button.
- ✓ Channel is Already Set.
- ✓ Nothing to Figure Out 😊!!

I. Mr.A.B.

- 70 yr. old obese male
- Increasing SOB and LE edema
- Hx of ETOH abuse
- No CAD
- Echo
 - 4+ MR
 - EF 35%
- Preop DX-CHF, MR, Cardiomyopathy
- Procedure Performed-Mitral valve repair with a 30mm C-E Physio annuloplasty ring

Op Note Text

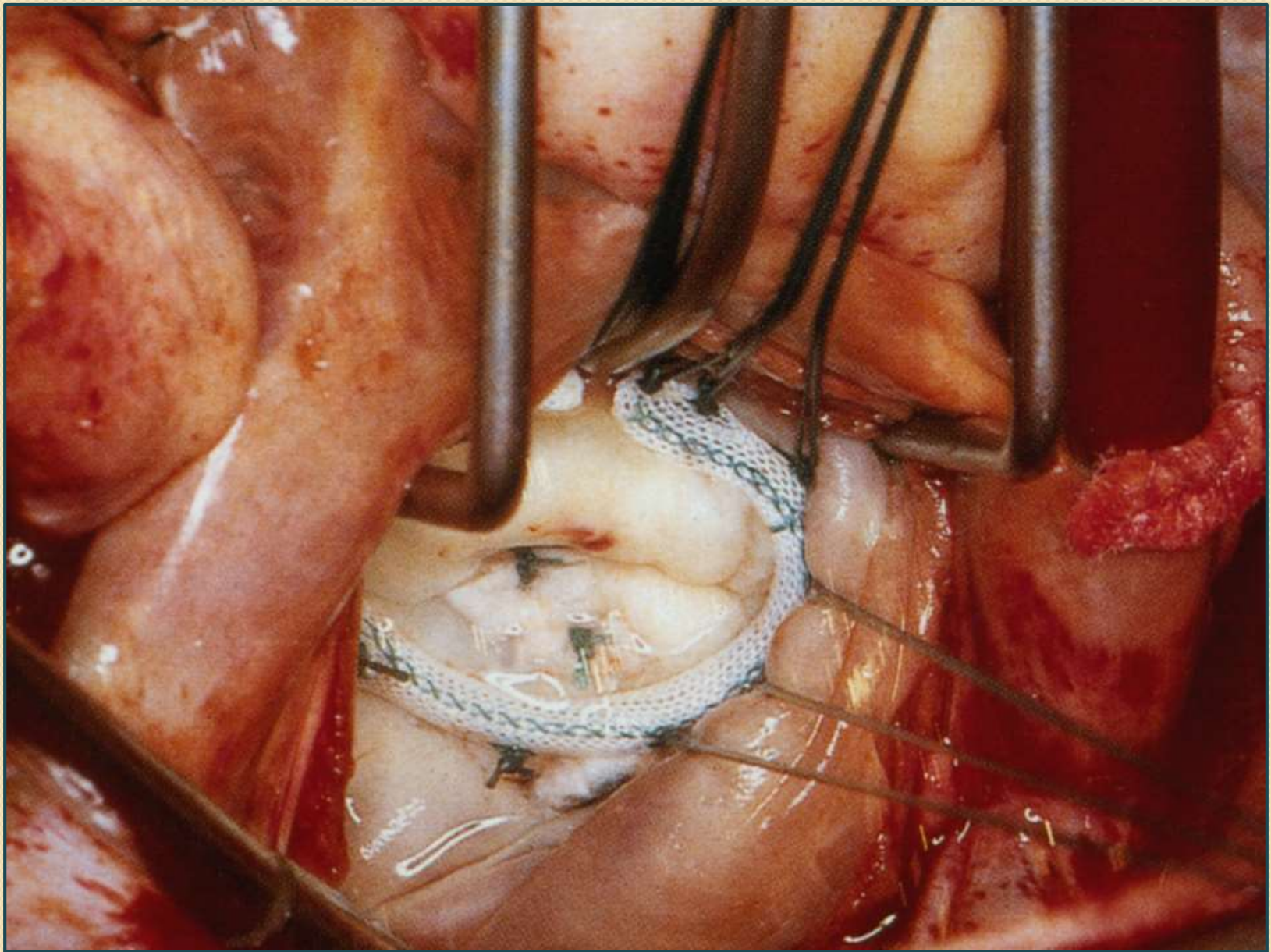
- Inspection of the MV revealed there was no organic disease in either leaflet. The annulus was dilated causing Mitral Insufficiency. Sutures were placed around the MV annulus and the CE ring was seated. The valve was injected and shown to have good competency.

All Video Clips: Steven Bolling, MD University of Michigan, 2005

This is a confidential professional peer review and quality assurance document of the MSTCVS Quality Collaborative. Unauthorized disclosure or duplication is absolutely prohibited. It is protected from disclosure pursuant to the provisions of Michigan Statutes MCL 333.20175; MCL 333.21513; MCL 333.21515; MCL 331.531; MCL 331.532; MCL.331.533 or such other statutes as may be applicable.

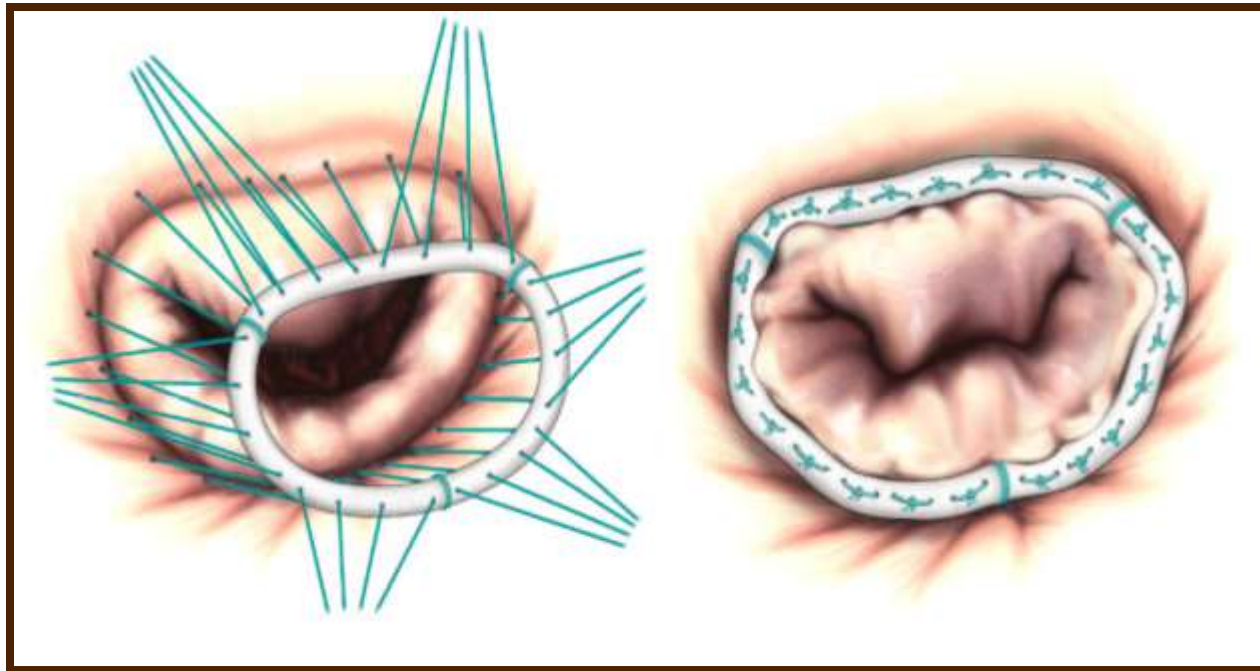
This is a confidential professional peer review and quality assurance document of the MSTCVS Quality Collaborative. Unauthorized disclosure or duplication is absolutely prohibited. It is protected from disclosure pursuant to the provisions of Michigan Statutes MCL 333.20175; MCL 333.21513; MCL 333.21515; MCL 331.531; MCL 331.532; MCL.331.533 or such other statutes as may be applicable.

This is a confidential professional peer review and quality assurance document of the MSTCVS Quality Collaborative. Unauthorized disclosure or duplication is absolutely prohibited. It is protected from disclosure pursuant to the provisions of Michigan Statutes MCL 333.20175; MCL 333.21513; MCL 333.21515; MCL 331.531; MCL 331.532; MCL.331.533 or such other statutes as may be applicable.



This is a confidential professional peer review and quality assurance document of the MSTCVS Quality Collaborative. Unauthorized disclosure or duplication is absolutely prohibited. It is protected from disclosure pursuant to the provisions of Michigan Statutes MCL 333.20175; MCL 333.21513; MCL 333.21515; MCL 331.531; MCL 331.532; MCL.331.533 or such other statutes as may be applicable.

Mitral Valve Repair

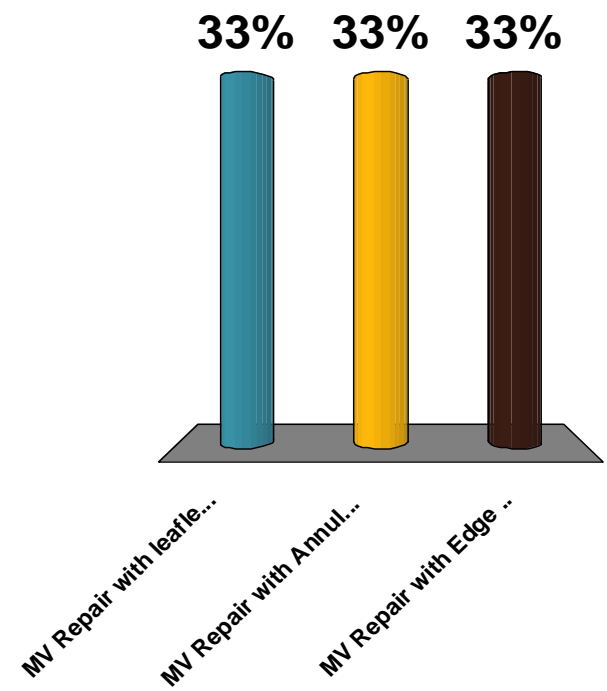


You would code this case as:

1. MV Repair with Leaflet Resection
2. MV Repair with Annuloplasty
3. MV Repair with Edge to Edge Repair

Inspection of the MV revealed there was no organic disease in either leaflet. The annulus was dilated causing Mitral Insufficiency. Sutures were placed around the MV annulus and the CE ring was seated. The valve was injected and shown to have good competency.

- A. MV Repair with leaflet Resection.
- B. MV Repair with Annuloplasty.
- C. MV Repair with Edge to Edge Repair.



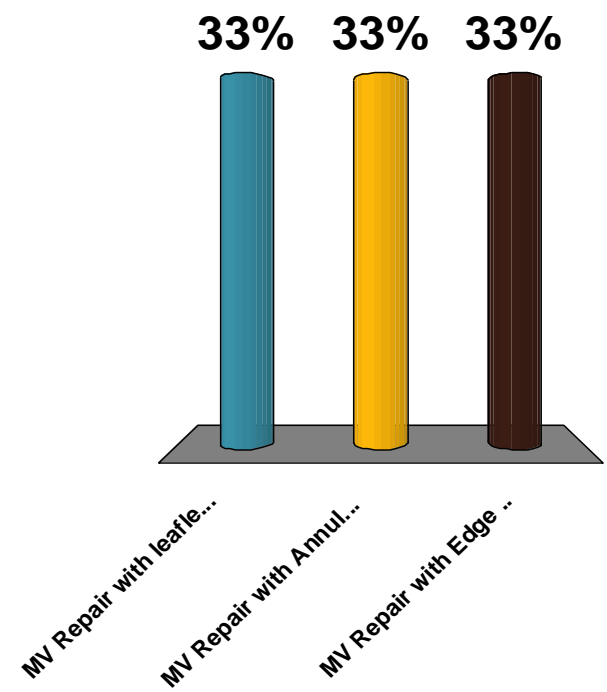
Inspection of the MV revealed there was no organic disease in either leaflet. The annulus was dilated causing Mitral Insufficiency. Sutures were placed around the MV annulus and the CE ring was seated. The valve was injected and shown to have good competency.

A. MV Repair with leaflet Resection.



B. MV Repair with Annuloplasty.

C. MV Repair with Edge to Edge Repair.



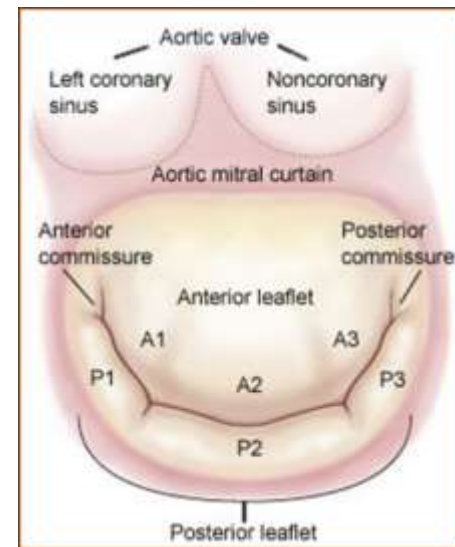
Code Operative Mitral Repair Procedure 2.9 (#1)

Mitral Valve Procedure Performed: Yes, planned Yes, unplanned due to surgical complication
VSMV (3495) Yes, unplanned due to unsuspected disease or anatomy No (If Yes)

Procedure Performed:
VSMVR (3500) Repair (If Repair)
Repair Approach: Transcatheter Surgical
VSMVRepApp (3501)
If Surgical (Select all that apply)
Annuloplasty: Yes No
VSMitRAnnulo (3502)
Leaflet resection: Yes No (If Yes)
VSMitRLeafRes (3510)
Resection Type: Triangular Quadrangular Other
VSLeafResTyp (3515)
Anterior resection: Yes No
VSLeafAntRes (3517)
(If Yes→) Location documented: Yes No (If Yes)
VSLeafAntResLocD (3518)
Anterior leaflet resection location: A1 Yes No A2 Yes No A3 Yes No
VSLeafAntResA1 (3519) VSLeafAntResA2 (3520) VSLeafAntResA3 (3521)
Posterior Resection: Yes No
VSLeafPostRes (3522)
Resection Location(s): (If Yes→) Location documented: Yes No (If Yes)
VSLeafPostResLocD (3523)
Posterior leaflet resection location: P1 Yes No P2 Yes No P3 Yes No
VSLeafPostResP1 (3524) VSLeafPostResP2 (3525) VSLeafPostResP3 (3526)

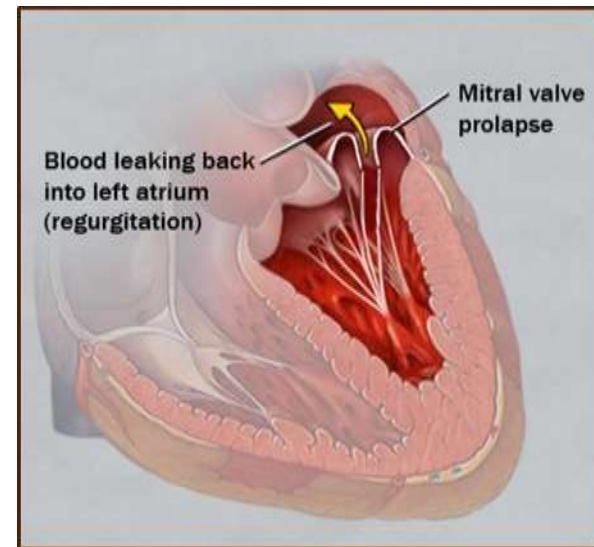
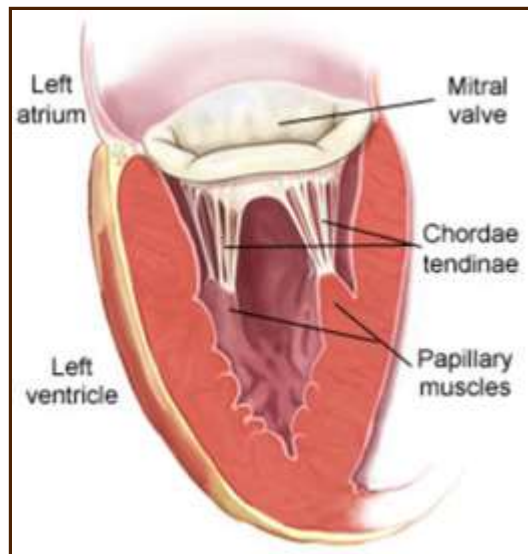
2. Mrs. C.D.

- 41 yr. old female with history of MV prolapse
- 4+ MR
- EF 60%
- No CAD
- Progressive SOB over the last year
- Pre-op Dx- MR, MVP
- Procedure Performed
Complex mitral valve repair



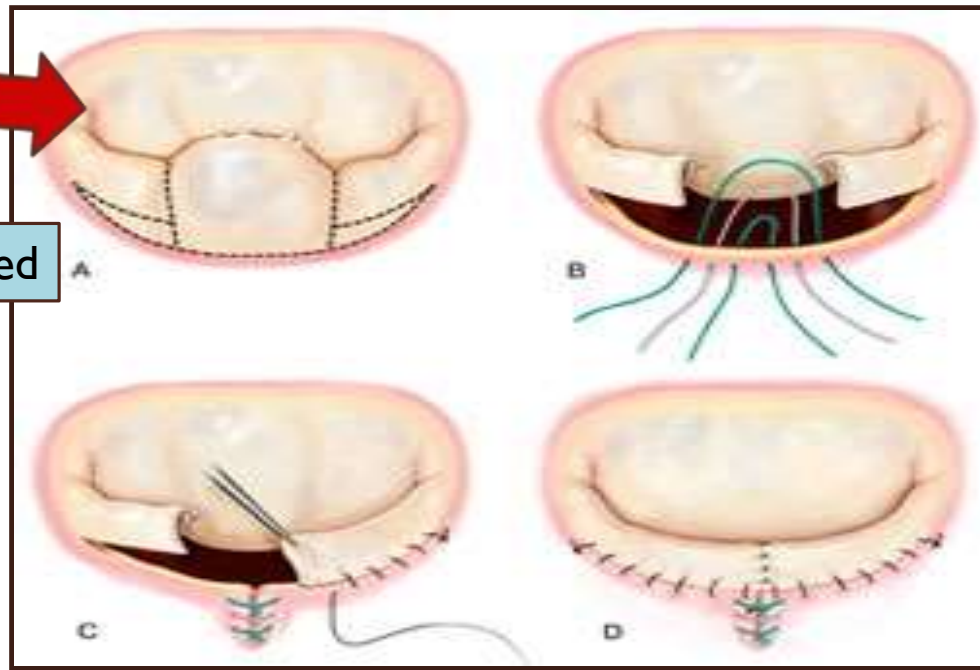
Op Note Text

- Inspection of the mitral valve revealed severe posterior leaflet prolapse and two ruptured chords of P2 with degenerative changes. The valve was repaired by excising redundant P2 tissue & performing leaflet resection. P1 and P3 were re-attached to the annulus. A 30 mm C-E annuloplasty ring was sutured and tied into place.



This is a confidential professional peer review and quality assurance document of the MSTCVS Quality Collaborative. Unauthorized disclosure or duplication is absolutely prohibited. It is protected from disclosure pursuant to the provisions of Michigan Statutes MCL 333.20175; MCL 333.21513; MCL 333.21515; MCL 331.531; MCL 331.532; MCL.331.533 or such other statutes as may be applicable.

Annuloplasty & Leaflet Resection

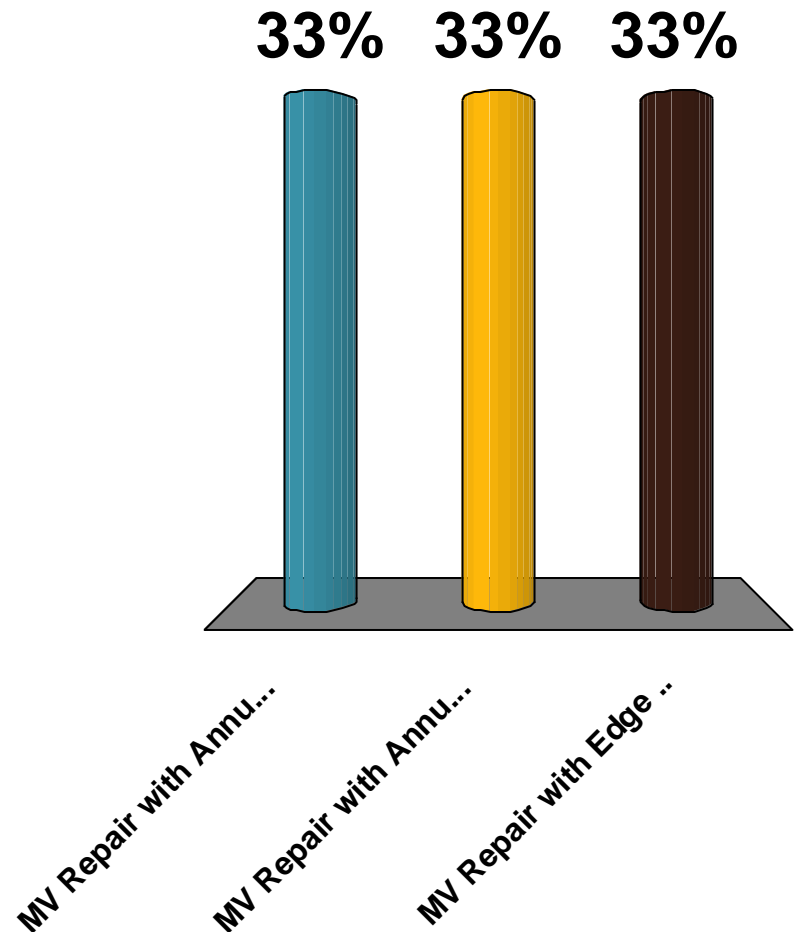


“Quad” Piece Removed

Choose the correct coding for this operative procedure (next slide).

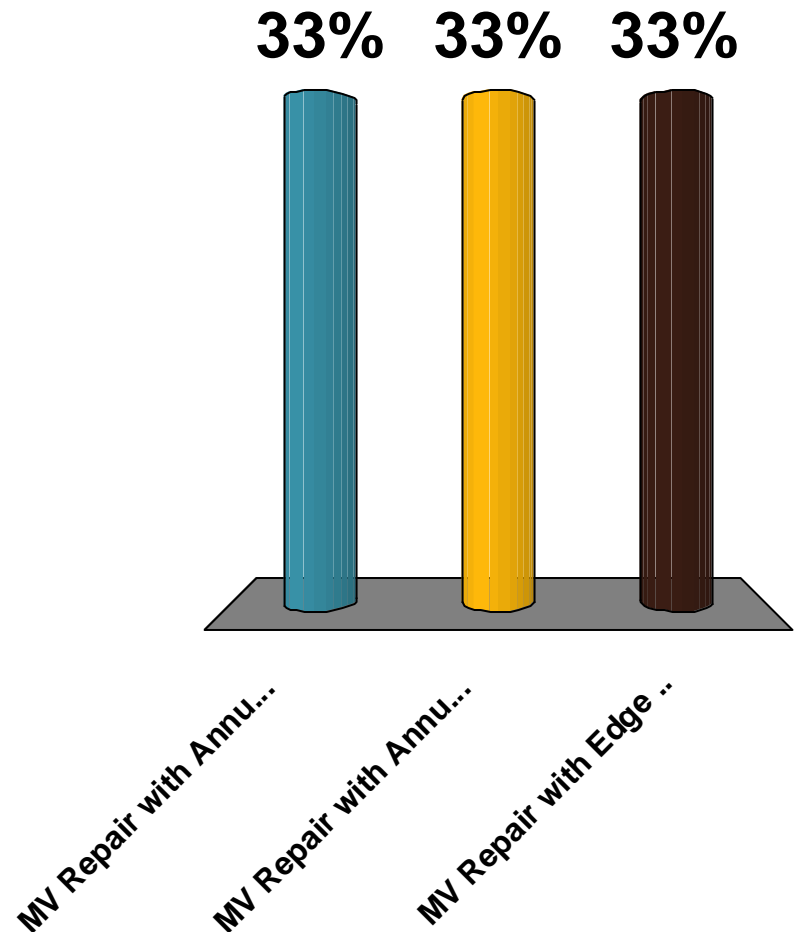
The valve was repaired by excising redundant P2 tissue & performing leaflet resection. Code this Case:

- A. MV Repair with Annuloplasty.
- B. MV Repair with Edge to Edge Repair
- C. MV Repair with Annuloplasty & Quadrangular Resection, Posterior P2 Resection.



The valve was repaired by excising redundant P2 tissue & performing leaflet resection. Code this Case:

- A. MV Repair with Annuloplasty.
- B. MV Repair with Edge to Edge Repair
- C. MV Repair with Annuloplasty & Quadrangular Resection, Posterior P2 Resection.



Code Operative Mitral Repair Procedure 2.9 (#2)

Mitral Valve Procedure Performed: Yes, planned Yes, unplanned due to surgical complication
 VSMV (3495) Yes, unplanned due to unsuspected disease or anatomy No (If Yes ↓)

Procedure Performed:
 VSMVR (3500) Repair (If Repair ↓)

Repair Approach: Transcatheter Surgical
 VSMVRepApp (3501)

If Surgical (Select all that apply ↓)
 Annuloplasty: Yes No
 VSMitRAnnulo (3503)

Leaflet resection: Yes No (If Yes ↓)
 VSMitRLeafRes (3511)

Resection Type: Triangular Quadrangular Other
 VSLeafResTyp (3515)

Anterior resection: Yes No
 VSLeafAntRes (3517)

(If Yes →) Location documented: Yes No (If Yes ↓)
 VSLeafAntResLocD (3518)

Anterior leaflet resection location: A1 Yes No A2 Yes No A3 Yes No
 VSLeafAntResA1 (3519) VSLeafAntResA2 (3520) VSLeafAntResA3 (3521)

Posterior Resection: Yes No
 VSLeafPostRes (3522)

Resection Location(s): (If Yes →) Location documented: Yes No (If Yes ↓)
 VSLeafPostResLocD (3523)

Posterior leaflet resection location: P1 Yes No P2 Yes No P3 Yes No
 VSLeafPostResP1 (3524) VSLeafPostResP2 (3525) VSLeafPostResP3 (3526)

Folding Plasty: Yes No
 VSMitRFold (3565)

Sliding Plasty: Yes No
 VSMitRSlidP (3566)

Annular decalcification/ debridement: Yes No
 VSMitRADecalc (3567)

Leaflet extension/replacement patch: Yes No
 VSMitRLeafERP (3568)

(If Yes →) Patch Location: Anterior Posterior Both Not Documented
 VSMitRLeafERPLoc (3569)

Edge to edge repair: Yes No
 VSMitREdge (3570)

Mitral commissurotomy: Yes No
 VSMitRMitComm (3580)

Mitral commissuroplasty: Yes No
 VSMitRMitCplasty (3585)

Mitral cleft repair: (scallop closure): Yes No
 VSMitRMitCleft (3590)

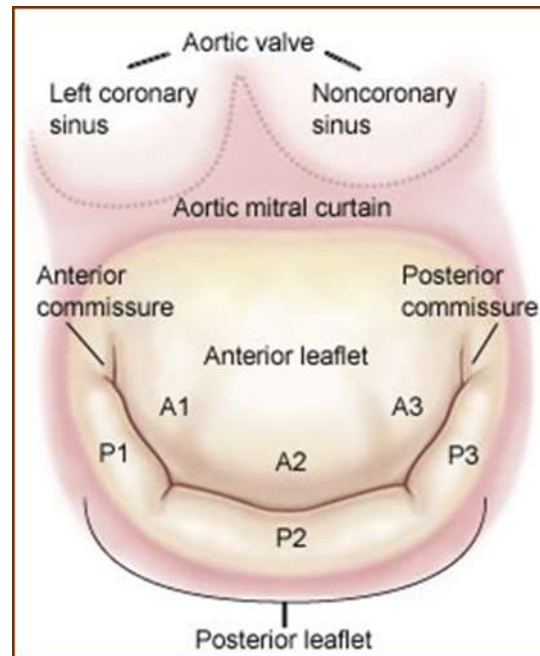
Mitral paraprosthetic leak repair: Yes No
 VSMitParaprosLeak (3591)

3. Mrs. E.F.

- 72 yr. old female with history of Afib
- No CAD
- 4+ MR
- Bileaflet prolapse
- Preop DX- Afib, MR
- Procedure Performed Complex mitral valve repair with 30 mm CE annuloplasty ring and MAZE.

Op Note Text

- The left atrium was opened and the valve inspected. Both leaflets prolapsed significantly, and the posterior leaflet was rolled upon itself with significant foreshortening of the subvalvular apparatus. The A2 area of the anterior leaflet had 2 ruptured cords.

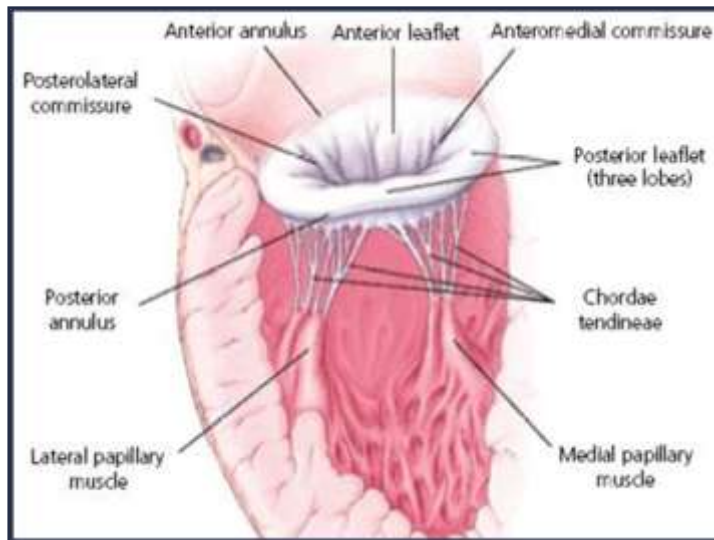


Op Note Text

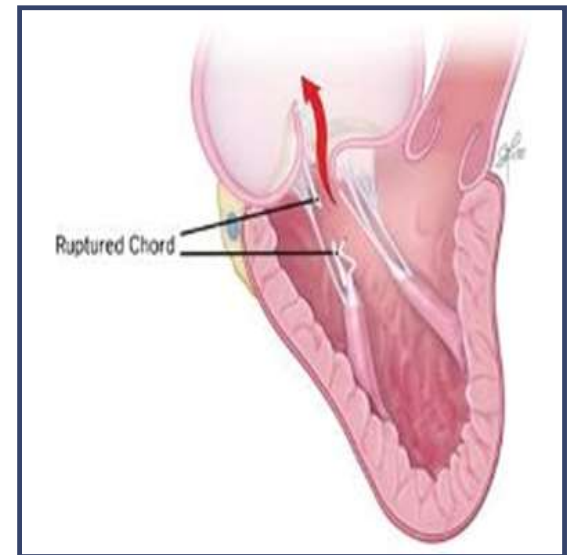
- The most protuberant portion of P2 was resected, and a limited slide of both P1 and P3 were carried out. Using 4-0 Prolene sutures, P1 and P3 were re-attached to the annulus and 4-0 interrupted Ethibonds were used to approximate P1 to P3. The A2/A3 area was prolapsing and Gortex neo-chordae were attached to the area and brought in line with the free edge of P2/P3. Following this, twelve 2-0 Ethibond sutures were placed posteriorly from trigone to trigone and sizing the anterior leaflet and 30-millimeter Edwards annuloplasty band was sutured and tied in place.

Op Note Text

- The most protuberant portion of **P2** was resected, and a limited **slide** of both **P1** and **P3** were carried out. Using 4-0 Prolene sutures, P1 and P3 were re-attached to the annulus and 4-0 interrupted Ethibonds were used to approximate P1 to P3. The A2/A3 area was prolapsing and **Gore-Tex neo-chordae were attached to the area** and brought in line with the free edge of P2/P3. Following this, twelve 2-0 Ethibond sutures were placed posteriorly **from trigone to trigone** and sizing the anterior leaflet and 30-millimeter **Edwards annuloplasty band** was sutured and tied in place.



www.cavalierhealth.org



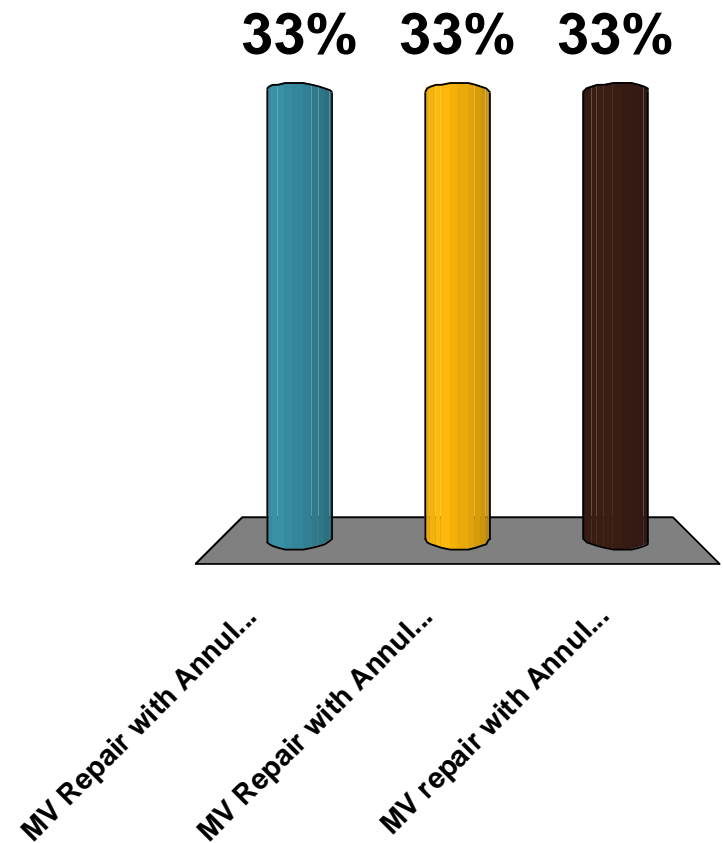
MyClevelandclinic.org

This is a confidential professional peer review and quality assurance document of the MSTCVS Quality Collaborative. Unauthorized disclosure or duplication is absolutely prohibited. It is protected from disclosure pursuant to the provisions of Michigan Statutes MCL 333.20175; MCL 333.21513; MCL 333.21515; MCL 331.531; MCL 331.532; MCL.331.533 or such other statutes as may be applicable.

This is a confidential professional peer review and quality assurance document of the MSTCVS Quality Collaborative. Unauthorized disclosure or duplication is absolutely prohibited. It is protected from disclosure pursuant to the provisions of Michigan Statutes MCL 333.20175; MCL 333.21513; MCL 333.21515; MCL 331.531; MCL 331.532; MCL.331.533 or such other statutes as may be applicable.

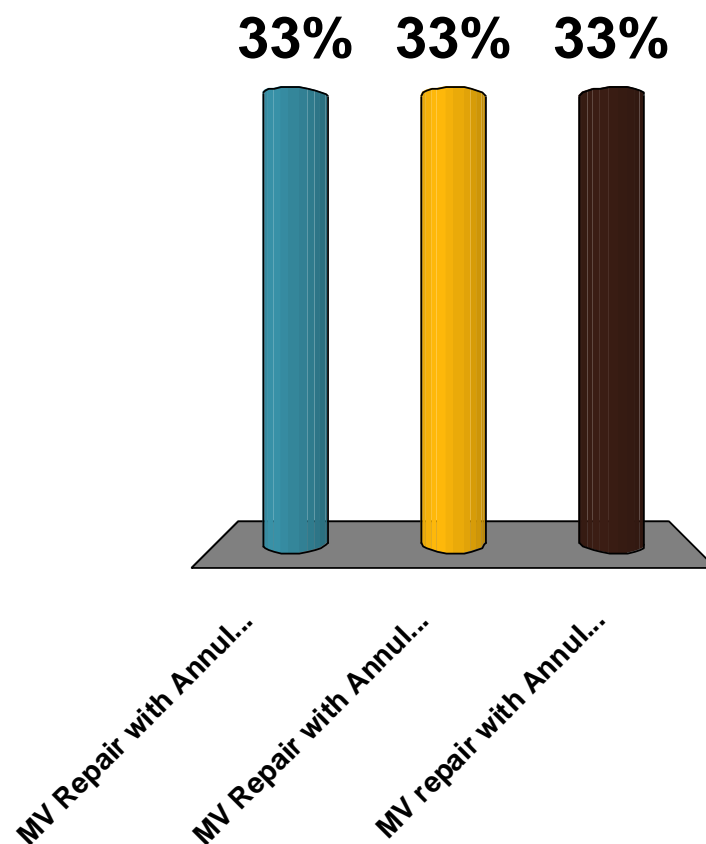
P2 was resected, and a limited slide of both P1 and P3 to P3 done. The A2/A3 area was prolapsing and neo-chordae were attached to the area. 30-millimeter Edwards annuloplasty band was sutured and tied in place. Code this Case:

- A. MV Repair with Annuloplasty
- B. MV Repair with Annuloplasty, Posterior Leaflet Resection P2, sliding plasty & Neochords Anterior A1 & A2 location
- C. MV repair with Annuloplasty, leaflet resection, & Chordal Transfer.



P2 was resected, and a limited slide of both P1 and P3 to P3 done. The A2/A3 area was prolapsing and neo-chordae were attached to the area. 30-millimeter Edwards annuloplasty band was sutured and tied in place.

- A. MV Repair with Annuloplasty
- B. MV Repair with Annuloplasty, Posterior Leaflet Resection P2, sliding plasty & Neochords Anterior A1 & A2 location
- C. MV repair with Annuloplasty, leaflet resection, & Chordal Transfer.

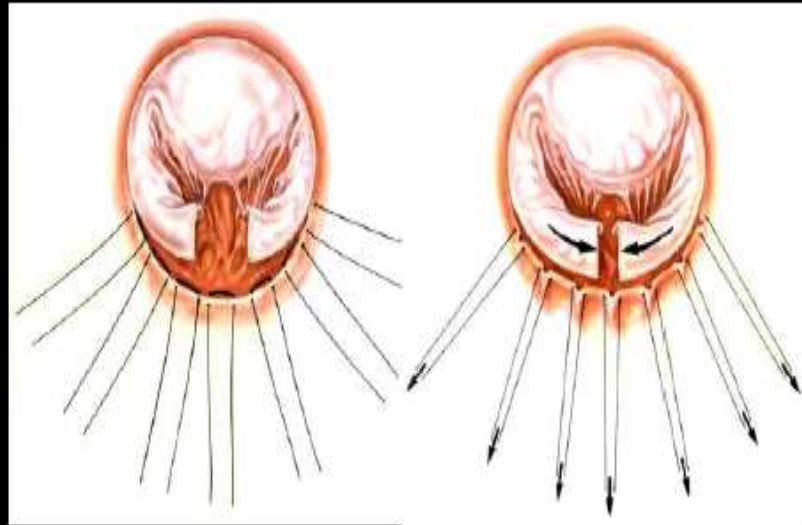


Sliding Plasty Example

STS Adult Cardiac Surgery Database Training Manual, v2.73

Techniques

Sliding Plasty



This is a confidential professional peer review and quality assurance document of the MSTCVS Quality Collaborative. Unauthorized disclosure or duplication is absolutely prohibited. It is protected from disclosure pursuant to the provisions of Michigan Statutes MCL 333.20175; MCL 333.21513; MCL 333.21515; MCL 331.531; MCL 331.532; MCL.331.533 or such other statutes as may be applicable.

Code Operative Mitral Repair Procedure 2.9 (#3)

Mitral Valve Procedure Performed: Yes, planned Yes, unplanned due to surgical complication
 VSMV (3495) Yes, unplanned due to unsuspected disease or anatomy No (If Yes ↓)

Procedure Performed:
 VSMVR (3500) Repair (If Repair ↓)

Repair Approach: Transcatheter Surgical
 VSMVRepApp (3501)
 If Surgical (Select all that apply):
 Annuloplasty: Yes No
 VSMitRAnnulo (3504)
 Leaflet resection: Yes No (If Yes ↓)
 VSMitRLeafRes (3507)

Resection Type: Triangular Quadrangular Other
 VSLeafResTyp (3515)

Anterior resection: Yes No
 VSLeafAntRes (3517)
 (If Yes →) Location documented: Yes No (If Yes ↓)
 VSLeafAntResLocD (3518)
 Anterior leaflet resection location: A1 Yes No VSLeafAntResA1 (3519) A2 Yes No VSLeafAntResA2 (3520) A3 Yes No VSLeafAntResA3 (3521)

Posterior Resection: Yes No
 VSLeafPostRes (3522)
 Resection Location(s): (If Yes →) Location documented: Yes No (If Yes ↓)
 VSLeafPostResLocD (3523)
 Posterior leaflet resection location: P1 Yes No VSLeafPostResP1 (3524) P2 Yes No VSLeafPostResP2 (3525) P3 Yes No VSLeafPostResP3 (3526)

Neochords (PTFE): Yes No (If Yes ↓)
 VSMitRPTFE (3532)

Anterior Neochords: Yes No
 VSNeoAnt (3534)
 (If Yes →) Location documented: Yes No (If Yes ↓)
 VSNeoAntLocD (3535)
 Anterior neochord location: A1 Yes No VSNeoAntA1 (3536) A2 Yes No VSNeoAntA2 (3537) A3 Yes No VSNeoAntA3 (3538)

Posterior Neochords: Yes No
 VSNeoPost (3539)
 Neochord Location(s): (If Yes →) Location documented: Yes No (If Yes ↓)
 VSNeoPostLocD (3540)
 Posterior Neochord location: P1 Yes No VSNeoPostP1 (3541) P2 Yes No VSNeoPostP2 (3542) P3 Yes No VSNeoPostP3 (3543)

Commissure Neochords: Yes No (If Yes ↓)
 VSNeoCom (3544)
 Commissure Neochord location: Medial (C2) Lateral (C1) Both Not Documented
 VSNeoComLoc (3545)

And 

This is a confidential professional peer review and quality assurance document of the MSTCVS Quality Collaborative. Unauthorized disclosure or duplication is absolutely prohibited. It is protected from disclosure pursuant to the provisions of Michigan Statutes MCL 333.20175; MCL 333.21513; MCL 333.21515; MCL 331.531; MCL 331.532; MCL 331.533 or such other statutes as may be applicable.

Code Operative Mitral Repair Procedure 2.9 Continued....(#3)

Folding Plasty: Yes No

VSMitRFold (3565)

Sliding Plasty: Yes No

VSMitRSlidP (3566)

Annular decalcification/ debridement: Yes No

VSMitRADecalc (3567)

Leaflet extension/replacement patch: Yes No

VSMitRLeafERP (3568)

(If Yes→) Patch Location: Anterior Posterior Both Not Documented

VSMitRLeafERPLoc (3569)

Edge to edge repair: Yes No

VSMitREdge (3570)

Mitral commissurotomy: Yes No

VSMitRMitComm (3580)

Mitral commissuroplasty: Yes No

VSMitRMitCplasty (3585)

Mitral cleft repair: (scallop closure): Yes No

VSMitRMitCleft (3590)

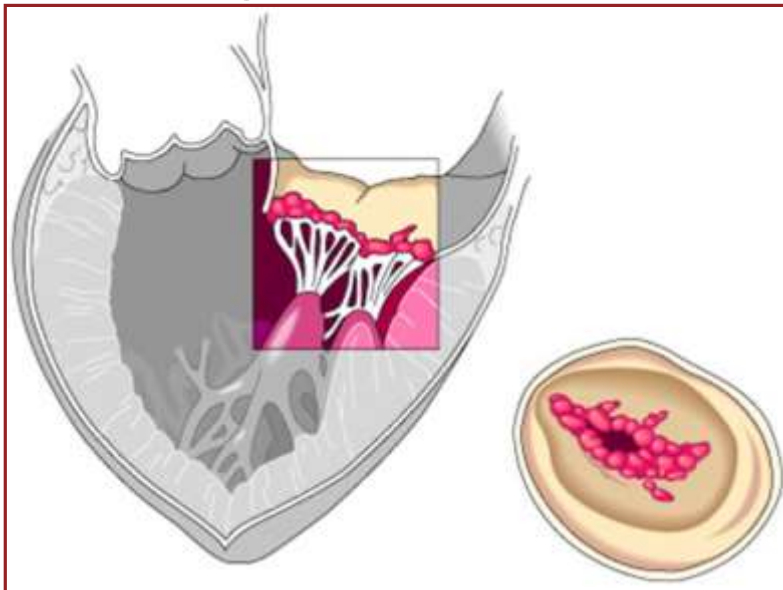
Mitral paraprosthetic leak repair: Yes No

VSMitParaprosLeak (3591)

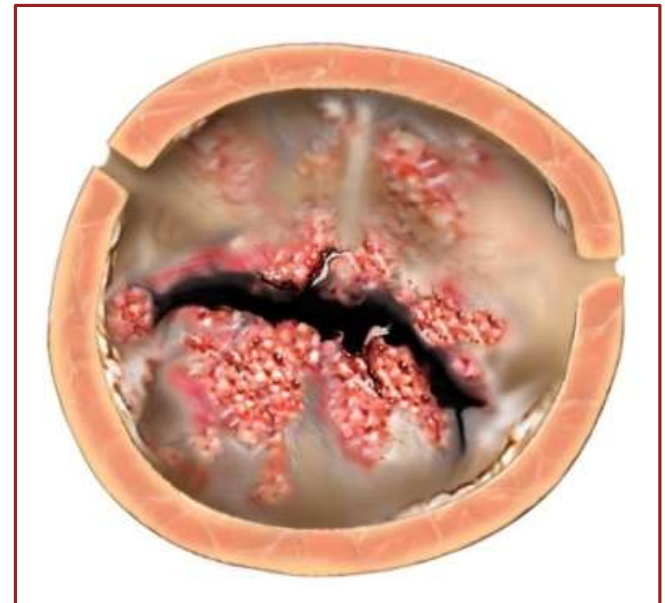
4. Mrs. G.H.

- 68 yr. old with history of Rheumatic fever
- No CAD
- 2+MR
- Mitral Stenosis mean gradient 13mmHg

- Preop Dx-MR, MS, CHF
- Procedure Performed Complex mitral valve repair



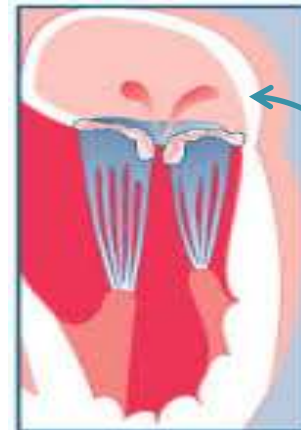
:www.heartpoint.com



www.lifescrypt.com

Op Note Text

- The valve was characterized by mitral insufficiency, rheumatic heart disease, mitral stenosis, annular calcification, leaflet calcification, subvalvar fusion, commissural fusion, and chordal shortening. Commissurotomies were performed and the valve debrided of excessive calcium to allow more mobility.



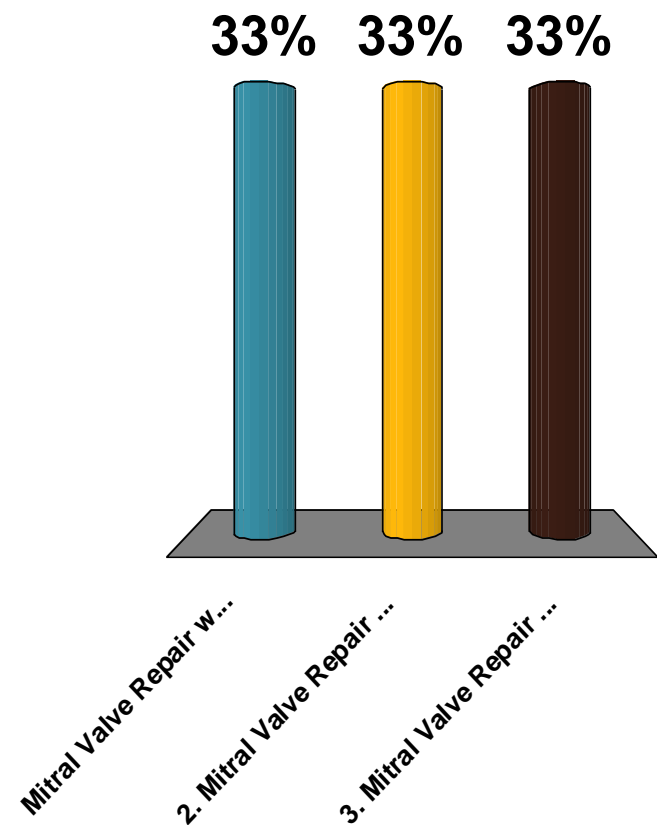
Mitral Insufficiency

This is a confidential professional peer review and quality assurance document of the MSTCVS Quality Collaborative. Unauthorized disclosure or duplication is absolutely prohibited. It is protected from disclosure pursuant to the provisions of Michigan Statutes MCL 333.20175; MCL 333.21513; MCL 333.21515; MCL 331.531; MCL 331.532; MCL.331.533 or such other statutes as may be applicable.

This is a confidential professional peer review and quality assurance document of the MSTCVS Quality Collaborative. Unauthorized disclosure or duplication is absolutely prohibited. It is protected from disclosure pursuant to the provisions of Michigan Statutes MCL 333.20175; MCL 333.21513; MCL 333.21515; MCL 331.531; MCL 331.532; MCL.331.533 or such other statutes as may be applicable.

- Commissurotomies were performed and the valve debrided of excessive calcium to allow more mobility. **You would code this case as:**

- A. Mitral Valve Repair with Mitral Valve Commissurotomy
- B. Mitral Valve Repair with Annuloplasty
- C. 3. Mitral Valve Repair with Annular Decalcification

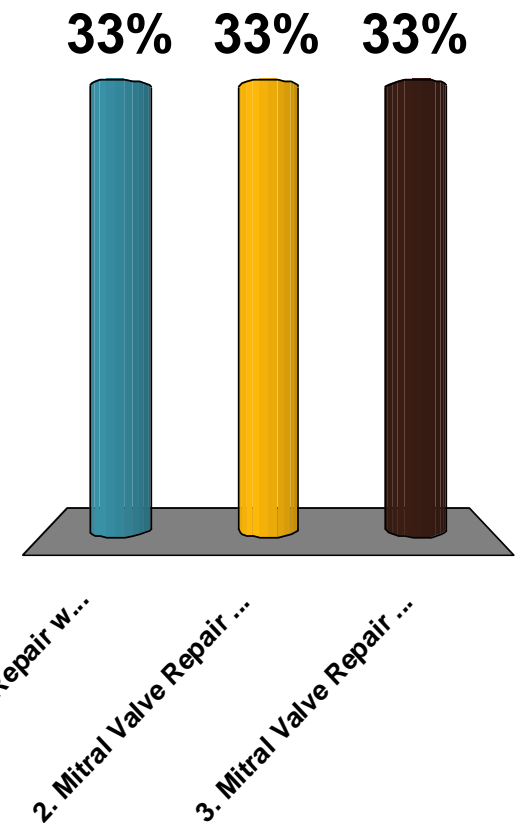


- Commissurotomies were performed and the valve debrided of excessive calcium to allow more mobility. **You would code this case as:**

A. Mitral Valve Repair with Mitral Valve Commissurotomy

B. Mitral Valve Repair with Annuloplasty

C. 3. Mitral Valve Repair with Annular Decalcification



Code Operative Mitral Repair Procedure 2.9

Mitral Valve Procedure Performed: Yes, planned Yes, unplanned due to surgical complication
 VSMV (3495) Yes, unplanned due to unsuspected disease or anatomy No (If Yes ↓)

Procedure Performed:
 VSMV (3500) Repair (If Repair ↓)

Repair Approach: Transcatheter Surgical
 VSMVRepApp (3501)

If Surgical (Select all that apply ↓)
 Annuloplasty: Yes No
 VSMitRAnnulo (3505)

Leaflet resection: Yes No (If Yes ↓)
 VSMitRLeafRes (3510)

Resection Type: Triangular Quadrangular Other
 VSLeafResTyp (3515)

Anterior resection: Yes No
 VSLeafAntRes (3517)

(If Yes →) Location documented: Yes No (If Yes ↓)
 VSLeafAntResLocD (3518)

Anterior leaflet resection location: A1 Yes No A2 Yes No A3 Yes No
 VSLeafAntResA1 (3519) VSLeafAntResA2 (3520) VSLeafAntResA3 (3521)

Posterior Resection: Yes No
 VSLeafPostRes (3522)

Resection Location(s): (If Yes →) Location documented: Yes No (If Yes ↓)
 VSLeafPostResLocD (3523)

Posterior leaflet resection location: P1 Yes No P2 Yes No P3 Yes No
 VSLeafPostResP1 (3524) VSLeafPostResP2 (3525) VSLeafPostResP3 (3526)

Folding Plasty: Yes No
 VSMitRFold (3565)

Sliding Plasty: Yes No
 VSMitRSlidP (3566)

Annular decalcification/ debridement: Yes No
 VSMitRADecalc (3567)

Leaflet extension/replacement patch: Yes No
 VSMitRLeafERP (3568)

(If Yes →) Patch Location: Anterior Posterior Both Not Documented
 VSMitRLeafERPLoc (3569)

Edge to edge repair: Yes No
 VSMitREdge (3570)

Mitral commissurotomy: Yes No
 VSMitRMitComm (3580)

Mitral commissuroplasty: Yes No
 VSMitRMitCplasty (3585)

Mitral cleft repair: (scallop closure): Yes No
 VSMitRMitCleft (3590)

Mitral paraprosthetic leak repair: Yes No
 VSMitParaprosLeak (3591)

5. Mr. H.K.

- 52 yr. old white male
- Hx of Severe Mitral Stenosis
- Percutaneous Mitral Valvuloplasty in 2012
- Progressive DOE & increase mitral insufficiency to moderate
- Chronic AFib
- Cardiomegaly
- TTE: + Pulmonary HTN (65mmHg Systolic) & Severe MR

Mr. H.K.

- Procedure performed:
- Mitral Valve Replacement with #25 Carbomedics mechanical valve.
- No Intraop complications and weaned from CPB without difficulty.

*Video Clip: Cipriano Abad, MD, PhD. University Las Palmas de Gran Spain
January 31, 2014*

Video

This is a confidential professional peer review and quality assurance document of the MSTCVS Quality Collaborative. Unauthorized disclosure or duplication is absolutely prohibited. It is protected from disclosure pursuant to the provisions of Michigan Statutes MCL 333.20175; MCL 333.21513; MCL 333.21515; MCL 331.531; MCL 331.532; MCL.331.533 or such other statutes as may be applicable.

Coding Mitral Valve Replacement (#5)

VSMitParaprosLeak (3591)
Replacement (If Replacement ↓) Yes No
Mitral repair attempted prior to replacement: Yes No

MitralIntent (3600)
Mitral chords preserved: Anterior Posterior Both None

VSChorPres (3605)
Transcatheter replacement: Yes No

VSTCVMit (3610)
Implant: Yes No (If Yes

MitralImplant (3615)
Implant type: Mechanical valve Bioprosthetic valve Annuloplasty device Mitral Leaflet clip Transcatheter device

MitralImplantTy (3620) Surgically implanted transcatheter device Other

Implant Model Number: _____ Implant Size: _____
VSMilm (3625) **VSMilmSz (3630)**

Unique Device Identifier (UDI): _____
VSMilmUDI (3635)

Complete Carbomedics Model # and Implant Size (#25)

Future of Mitral Valve Operations

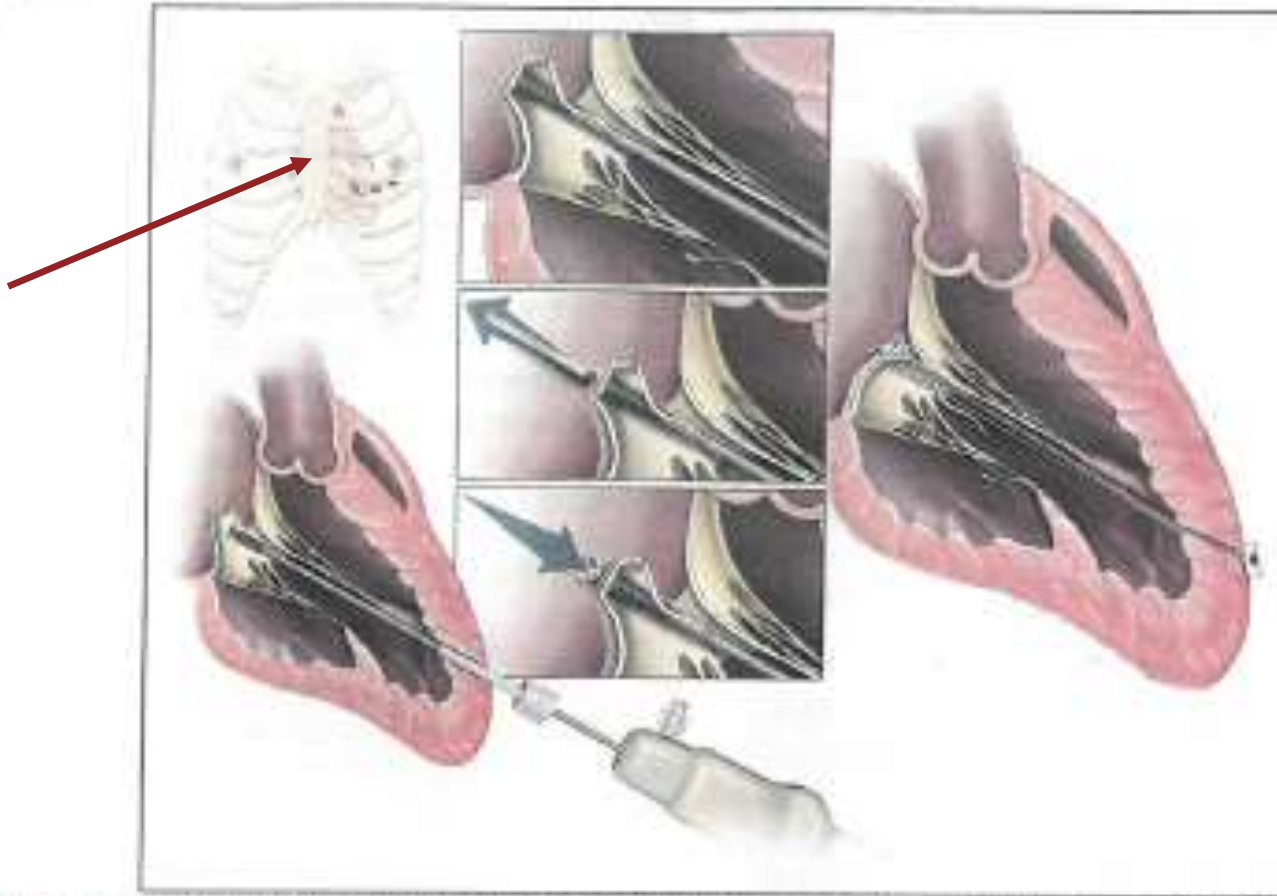


Figure 1. Mitral valve repair using the expanded polytetrafluoroethylene (ePTFE) preformed knot implantation device (TSD-5).

Circulation: 2016;134:189-197

Glossary of Mitral and Aortic Valve Operation Terms



MSTCVS Quality Collaborative Data Managers
MSTCVS Quality Collaborative Data Managers

Glossary of Mitral Valve & Mitral Valve Operation Terms

Associated Valve Word/Term	Explanation of Term
Anuloplasty	- plasty = "molding, surgically forming" – The mitral annulus (attachment ring) is formed or molded to more normal geometry maintaining as much leaflet and sub-valvular structure as possible.
Annulus	"Ring" – The ring-shaped area where valve leaflets attach to the surrounding heart.
Anterior Mitral Leaflet	When MV closed, comprises 1/2 to 2/3 of surface area. The fibrous support is fixed. The anterior leaflet is attached to the annulus and comprises 1/3 of the annulus. The anterior leaflet is close to the aortic valve.
Chorda (Chordae, plural)	"Cord or Tendon" – Tendinous tissue originating from the Papillary Muscles and attach to the MV Leaflets. Chordae are classified as primary or secondary depending on leaflet insertion site.
Chordal Transfer	Usually involves taking a Posterior Leaflet chorda and moving it to the Anterior Leaflet to replace a flail (ruptured) chorda.
Coaptation	The normal movement and function of the valve leaflets when they come together to close the mitral valve during systole.
Commissure(s)	The points of attachment of the 2 mitral valve leaflets within the mitral annulus. The area between 2 leaflets where they meet is the commissure.
Commissurotomy	- otomy = "incision, opening" – Leaflets that are fused together at the commissural area are surgically separated to widen the opening.
Degenerative Disease	Also known as Mixomatous Disease, Mitral Valve Prolapse, or floppy valve disease. Abnormal leaflet and chordal tissue make-up that allows them to stretch or elongate and prevent the leaflets from coapting .
Edge-to-Edge Repair	Sewing the Anterior Leaflet and Posterior Leaflet together. This can also be done percutaneously with the Mitral Valve Clip. Sometimes referred to as an "Alfieri Stitch" in open mitral valve repairs.
Functional Mitral Regurgitation	MR results from geometric abnormalities of the ventricle, which result in dysfunction of a morphologically normal mitral valve. The mitral annulus may or may not be dilated. Examples are ischemic cardiomyopathy or dilated cardiomyopathy.
**Gore-Tex/PTFE Chords or Neochords	Chordae made from Gore-Tex/PTFE suture that is attached to the papillary muscle and then to unsupported leaflet.
**Hypertrophic Obstructive Cardiomyopathy (HOCM)	Previously referred to as IHSS (idiopathic hypertrophic subaortic stenosis). Genetic disorder characterized by massive myocardial hypertrophy (enlargement) without dilation. Usually the ventricular septum is thickened and localized to the subaortic region. This causes LVOT obstruction. A Septal myectomy and often MV replacement are done to help correct problem.
Ischemic Mitral Regurgitation	MR that has resulted from a myocardial infarction. The MR results from LV changes and annular dilatation.
Leaflets	The mitral valve has 2 leaflets that open and close allowing blood to flow through the valve from the left atrium into the left ventricle. The leaflets are composed of strong but thin pieces of tissues.
Leaflet Cleft	The Posterior Leaflet usually has 3 indentations or scallops separated by clefts.
Leaflet Resection	Removing redundant leaflet tissue and re-approximating and suturing back together. Can be a Triangular (triangular shape) or Quadrangular Resection.
Mitral Annular Calcification	Calcium deposits on the mitral annulus seen in elderly. Causes MR by interfering with contraction.
Mitral Valve Area	The surface area of the mitral valve opening (orifice). An area of less than 1.0cm ² represents critical mitral stenosis.
Mitral Valve Gradient	The difference in pressure between the left atrium and left ventricle during diastole, or ventricular relaxation and filling phase. Indicates the measured amount of stenosis across a mitral valve. The valve can be calcified or fibrosed and not allow the leaflets to open adequately, creating a higher pressure in front of the valve (in the atrium) than after the valve (in

Created by:
Amy Geltz RN, MS
Jaelene Williams, RN, MS
August 2010 for the
MSTCVS QC Data Managers.
Updated: July 2017

This is a confidential professional peer review and quality assurance document of the MSTCVS Quality Collaborative. Unauthorized disclosure or duplication is absolutely prohibited. It is protected from disclosure pursuant to the provisions of Michigan Statutes MCL 333.20175; MCL 333.21513; MCL 333.21515; MCL 331.531; MCL 331.532; MCL.331.533 or such other statutes as may be applicable.


Online Reference: Mitral Valve Repair Overview Pictures, Simulated Operative Videos

MITRAL VALVE REPAIR CENTER
at The Mount Sinai Hospital

Home | Press | [Contact Us: 866-MITRAL5 \(648-7255\)](#)

Google™ Site Search



Learn More  Español

- The Mitral Valve
- Mitral Valve Disease
- Making the Diagnosis
- Mitral Valve Surgery
- Who Should Perform Your Mitral Valve Repair?
- Outcomes of Mitral Valve Repair
- Alternative Treatments
- Re-Operations and Re-Repairs

Minimally Invasive Heart Surgery Center

Minimally Invasive Surgery FAQ

Our Team

Patient Stories

What to Expect

A Conversation About Mitral Valve Repair

Mitral Valve Repair Reference Center

Mitral Valve Repair Reference Center at The Mount Sinai Hospital

The Mitral Valve Repair Reference Center at The Mount Sinai Hospital is one of the most advanced in the country. The superiority of mitral valve repair over mitral valve replacement with a mechanical or bioprosthetic valve is well established. The Mitral Valve Repair Reference Center at Mount Sinai offers patients the highest percentage of mitral valve repair available anywhere in the world.



Program Director
Dr. David H. Adams [Learn more about Dr. David H. Adams](#)

In patients with mitral valve prolapse, our success rate in avoiding mitral valve replacement approaches 100%. We also have mitral valve repair expertise for patients with advanced cardiomyopathy. If patients have associated atrial fibrillation, we offer the latest in concomitant arrhythmia surgery, including the MAZE procedure. We also perform mitral valve repair surgery with minimally invasive approaches, when appropriate.

- Our mitral valve repair rates (99%) and quality (<1% mortality) are national benchmarks
- We are recognized world-wide for our work with Prof.

Mitral valve replacement for degenerative disease is the standard of care in the United States. [Click here to view national presentations](#)

www.mitralvalverepair.org

This is a confidential professional peer review and quality assurance document of the MSTCVS Quality Collaborative. Unauthorized disclosure or duplication is absolutely prohibited. It is protected from disclosure pursuant to the provisions of Michigan Statutes MCL 333.20175; MCL 333.21513; MCL 333.21515; MCL 331.531; MCL 331.532; MCL.331.533 or such other statutes as may be applicable.

Good Computer Simulated Mitral Valve Anatomy & Operations “ ~ 5 minutes

The screenshot displays the NYU Langone Medical Center website. At the top, there is a navigation bar with links for NYU Langone Home, CVI Home, Site Map, and a search bar. The main header features the NYU Langone Medical Center logo and the text 'Cardiac Surgery'. Below the header is a secondary navigation menu with links for Home, About Us, Conditions We Treat, Treatments & Procedures, Patient Information, Research, Residency/Fellowship, News, and Publications. The 'Treatments & Procedures' section is active, showing a breadcrumb trail 'Home » Treatments & Procedures'. The main content area is titled 'Mitral Valve Repair' and features a video player with a play button and a label 'Mitral valve'. The video player shows a 3D anatomical model of the heart with the mitral valve highlighted in purple. To the right of the video player is a sidebar with several sections: 'ShareThis', 'Contact a Heart Care Professional' (with phone number 1-866-399-HEART and email heartsurgery@nyumc.org), 'Request Information' (with a magnifying glass icon), and 'Minimally Invasive Heart Surgery Center' (with links for 'What is Minimally Invasive Heart Surgery?', 'Are you a Candidate?', and 'Robotic Surgery'). A left sidebar contains a list of categories: Minimally Invasive Heart Surgery, Robotic Cardiac Surgery, Mitral Valve Repair (highlighted), The NYU Cardiac Surgery Difference, Benefits of Mitral Valve Repair, Robotic Assisted Mitral Valve Repair, Should your Mitral Valve be Repaired?, The CG Future Band, Coronary Artery Bypass Surgery (CABG), and Aortic Disease: Treatment.

<http://cardiac-surgery.med.nyu.edu/treatments-procedures/mitral-valve-repair>

This is a confidential professional peer review and quality assurance document of the MSTCVS Quality Collaborative. Unauthorized disclosure or duplication is absolutely prohibited. It is protected from disclosure pursuant to the provisions of Michigan Statutes MCL 333.20175; MCL 333.21513; MCL 333.21515; MCL 331.531; MCL 331.532; MCL.331.533 or such other statutes as may be applicable.

Credits & Thank You!

- R. Prager, MD Presentation: Michigan Data Mgr. Meeting
 - August 2010: Aortic & Mitral Valve Operations
- Amy Geltz RN, MS – University of Michigan
 - Access to Video Clips: Steven Bolling, MD University of Michigan
- Patty Theurer, RN, BSN
 - Several DM Previous Mitral Valve Talks
- Dr's Bobby Kong, Andrew Pruitt, Manak Sood
 - Cardiac Surgery: St. Joseph Mercy Hospital Ann Arbor Presentation
- LaWaun Hance, PA-C
 - St. Joseph Mercy Hospital Ann Arbor
 - Power Point Presentations & Graphic Designs
- STS References: STS Website www.sts.org
- R. Prager, MD AQO Presentation: Valve Disease 2.8 | Oct. 2014