

## VALVULAR STENOSIS

- STIFF/THICK LEAFLETS
- OBSTRUCTS FORWARD FLOW
- LEADS TO SYSTEMIC OR PULMONARY CONGESTION
- VALVES AFFECTED
  - MITRAL STENOSIS
  - AORTIC STENOSIS
  - PULMONARY STENOSIS
  - TRICUSPID STENOSIS

## VALVULAR REGURGITATION

- "POORLY" SEALED VALVE LEAFLETS
- BACKFLOW OF BLOOD ACROSS INCOMPETENT VALVE
- LEADS TO SYSTEMIC OR PULMONARY CONGESTION
- VALVES AFFECTED
  - MITRAL REGURGITATION/MVP
  - AORTIC REGURGITATION
  - PULMONARY REGURGITATION
  - TRICUSPID REGURGITATION

## MITRAL STENOSIS

- ↑ LAP  
PULM. VENOUS CONGESTION  
↓ LHF PULM. HTN
- ↑ LAV  
ATRIAL DILATION  
↓ AF. EMBOLI

## AORTIC STENOSIS

- ↑ LV AFTERLOAD  
↑ LVP  
↑ LVH  
SYNCOPE (EXERTION)  
DYSPNEA (EXERTION)
- ANGINA (EXERTION)  
\* SCD \*

## AORTIC REGURGITATION

- ↑ LA REFLUX → ↑ LVEDV  
PULM. VENOUS CONGESTION  
↓ LHF PULM. HTN
- ↑ LV AFTERLOAD  
↑ PRELOAD  
↓ LVSV  
↓ LVCO  
CAROTID PULSE (PARVUS)  
DELAYED CAROTID PULSE (TARDUS)

## PULMONARY STENOSIS

- ↑ LAP  
PULM. VENOUS CONGESTION  
↓ LHF PULM. HTN
- DILATE LV  
LV REFUX  
↓ AORTA FILLING IN DIASTOLE  
↑ SBP  
↓ DBP

## MURMUR MANEUVERS

- INSPIRATION**
  - ↑ L. HEART FILLING
  - ↑ INTENSITY OF R. HEART MURMURS
  - TRICUSPID STENOSIS
  - MITRAL STENOSIS
- EXPIRATION**
  - ↑ L. HEART FILLING
  - ↑ INTENSITY OF L. HEART MURMURS
  - MITRAL REGURGITATION
  - AORTIC STENOSIS
  - AORTIC REGURGITATION

## DIAGNOSTIC INVESTIGATIONS

- ECHOCARDIOGRAM**
  - BEST TEST
  - ESTIMATES VALVE DIAMETER
  - ESTIMATES VELOCITY ACROSS VALVE
  - ESTIMATES PRESSURE GRADIENTS ACROSS VALVE
  - ASSESSES EF + ANY REGURGITATION JETS
- \* CATH IS BETTER
  - INITIAL - TRANSTHORACIC (TTE)
  - CONFIRMATORY - TRANSESOFAEGEAL (TEE)
  - ↑ INVASIVE ↑

## MITRAL STENOSIS

- RHEUMATIC HEART DISEASE
- 2/2 STREPTOCOCCAL PHARYNGITIS
- AFFECTS MITRAL > AORTIC > TRICUSPID
- M/C IN DEVELOPING WORLD

## AORTIC STENOSIS

- BICUSPID AoV  
<70y/o
- CALCIFIED AoV  
>70y/o
- RHEUMATIC HEART DISEASE

## PULMONARY STENOSIS

- CARCINOID SYNDROME
- NEUROENDOCRINE TUMOR CELLS
- SECRETE ↑ 5HT

## TRICUSPID STENOSIS

- RHEUMATIC HEART DISEASE
- EXTREMELY RARE
- ORDER OF MOST AFFECTED
  - MITRAL > AORTIC > TRICUSPID
- 2/2 STREPTOCOCCAL PHARYNGITIS

## MITRAL REGURGITATION & M. VALVE PROLAPSE

- PRIMARY M.R.**
  - INFECTIVE ENDOCARDITIS
  - RHEUMATIC HEART DISEASE
  - PAPILLARY MUSCLE RUPTURE
- SECONDARY M.R.**
  - HEART FAILURE
  - DILATED CMP
- MITRAL VALVE PROLAPSE
  - MYOMATOUS DEGENERATION OF VALVE LEAFLETS
  - WEAK CHORAE TENDINEAE → MARFANS SYNDROME
  - EHlers DANLOS SYNDROME

## AORTIC REGURGITATION

- VALVE DISEASE
  - BICUSPID AoV
  - INFECTIVE ENDOCARDITIS
  - RHEUMATIC HEART DISEASE
- AORTIC ROOT DISEASE
  - AORTIC ANEURYSM
  - 2/2 HTN
  - 2/2 CT DISEASE
  - MARFANS OR E.D.S.
  - 2/2 AORTITIS
  - SYPHILIS OR RA/SLE
  - AORTIC DISSECTION

## PULMONARY REGURGITATION

- REPAIRED TETROLOGY OF FALLOT
  - YEARS LATER AFTER SURGERY
  - RARE

## TRICUSPID REGURGITATION

- PRIMARY T.R.**
  - INFECTIVE ENDOCARDITIS
  - RHEUMATIC HEART DISEASE
  - PAPILLARY MUSCLE RUPTURE
- SECONDARY**
  - HEART FAILURE → STRETCH ANNULUS

## MITRAL STENOSIS

- ↑ LAP  
PULM. VENOUS CONGESTION  
↓ LHF PULM. HTN
- ↑ LAV  
ATRIAL DILATION  
↓ AF. EMBOLI

## AORTIC STENOSIS

- ↑ LV AFTERLOAD  
↑ LVP  
↑ LVH  
SYNCOPE (EXERTION)  
DYSPNEA (EXERTION)
- ANGINA (EXERTION)  
\* SCD \*

## AORTIC REGURGITATION

- ↑ LA REFLUX → ↑ LVEDV  
PULM. VENOUS CONGESTION  
↓ LHF PULM. HTN
- ↑ LV AFTERLOAD  
↑ PRELOAD  
↓ LVSV  
↓ LVCO  
CAROTID PULSE (PARVUS)  
DELAYED CAROTID PULSE (TARDUS)

## PULMONARY STENOSIS

- ↑ LAP  
PULM. VENOUS CONGESTION  
↓ LHF PULM. HTN
- DILATE LV  
LV REFUX  
↓ AORTA FILLING IN DIASTOLE  
↑ SBP  
↓ DBP

## MURMUR MANEUVERS

- SQUAT/P.L.R.**
  - ↑ VENOUS RETURN
  - ↑ INTENSITY OF ALL MURMURS
  - 2 EXCEPTIONS - HOCM - MVP
- VALSALVA/STANDING**
  - ↑ VENOUS RETURN
  - ↓ INTENSITY OF ALL MURMURS
  - 2 EXCEPTIONS - HOCM - MVP

## TREATMENT OF V.H.D'S

- HEART FAILURE MANAGEMENT**
  - SURGERY
  - BALLOON VALVULOPLasty
  - BIOPROSTHETIC VALVE
  - OLD - BLEEDING RISK
  - MECHANICAL VALVE
  - YOUNG - BLEEDING RISK
  - STENOTIC LESIONS (PREFERRED) - M.S. - A.S.
  - DIURETICS
  - STENOTIC OR REGURGITANT LESIONS

## AORTIC STENOSIS

- SYMMPTOMATIC
  - AVA < 1.5cm<sup>2</sup>
  - + LVEF < 50%
- MVA < 1.5cm<sup>2</sup>
  - "SAD" SYMPTOMS
  - GETTING CARDIAC SURGERY (CABG)
- \* SURGICAL VS T.AVR INDICATIONS (OPEN) (CLOSED)
- \* SURGICAL INDICATIONS (OPEN)

## MITRAL STENOSIS

- SYMMPTOMATIC
  - AVA < 1.5cm<sup>2</sup>
  - + LVEF < 50%
- MVA < 1.5cm<sup>2</sup>
  - FAILED BALLOON VALVULOPLasty OR WAS CONTRAINDED
  - ↑ CALCIIFICATIONS
- \* SURGICAL INDICATIONS (OPEN)
- \* VALVE REPAIR VS REPLACEMENT INDICATIONS

## AORTIC REGURGITATION

- LVEF 30-60% OR LV DILATION (≥ 40mm)
  - GETTING CARDIAC SURGERY (CABG)
  - SYMPTOMS
- \* SURGICAL INDICATIONS (OPEN)

## MITRAL REGURGITATION

- LVEF 30-60% OR LV DILATION (≥ 40mm)
  - SYMPTOMS
- \* VALVE REPAIR VS REPLACEMENT INDICATIONS

## PROSTHETIC VALVE DYSFUNCTION

- REGURGITANT PROSTHETIC VALVE**
  - STENOTIC PROSTHETIC VALVE
- STENOTIC PROSTHETIC VALVE**
  - PARAVALVULAR LEAK
  - M/C E MECHANICAL VALVES
  - 2/2 CUP MALFUNCTION → FAIL TO OPEN
- TRANSMITRICAL LEAK**
  - M/C E BIOPROSTHETIC VALVES
  - 2/2 CUP DEHISCENCE OR VALVE THROMBOSIS THAT BLOCKS CLOSURE
- CLINICAL FEATURES**
  - NEW MURMUR
  - MAHA → HEMOLYSIS OF RBC's
  - HF SYMPTOMS
  - THROMBOEMBOLISM