

Valve Heart Diseases

Biomedical Engineering - URJC

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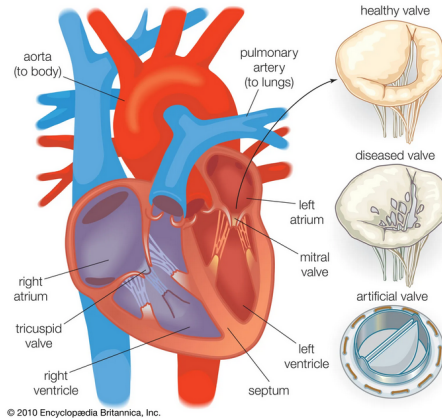
Internal Medicine Department

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Overview

- Valvular heart disease is common in primary care.
- Causes can include congenital, degenerative, infectious, traumatic, etc.
- Comprehensive understanding is crucial for diagnosis and management.

Anatomy of the heart



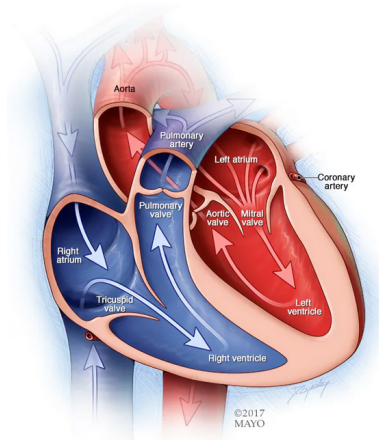
Key Points

- Disease staging based on symptoms, valve anatomy, and severity.
- Thorough physical exam crucial for diagnosis and differentiation.
- **Transthoracic echocardiography** as the initial diagnostic study.
- Referral to a cardiologist for moderate to severe, symptomatic, or rapidly progressing cases.
- Multidisciplinary approach for decision-making on interventions.

Summary

- Valvular heart disease is complex, with various causes and types.
- Diagnosis and management challenges arise from comorbidities.
- Primary care physicians need a thorough understanding for proper recognition and intervention.

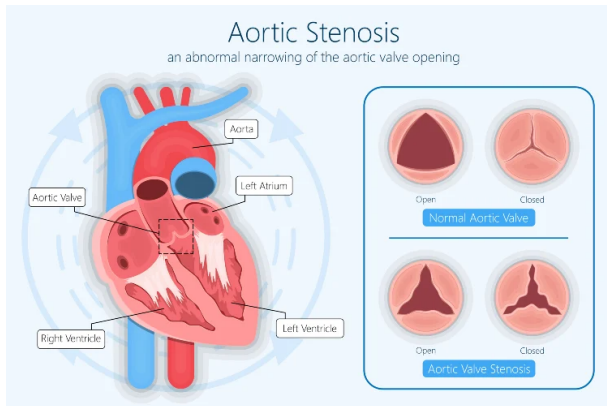
Typical Heart



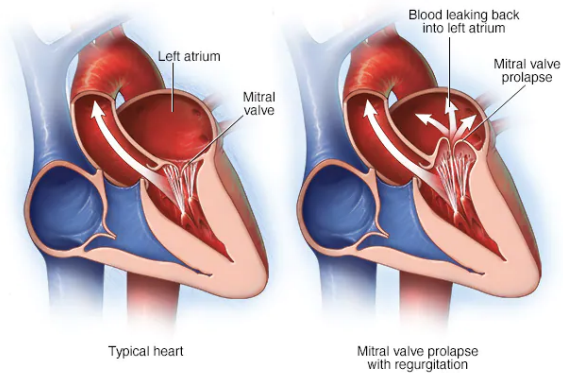
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- **Stenosis** restricts flow, often caused by congenital malformations, calcification, or rheumatic disease.
- **Regurgitation** leads to ventricle overload, remodeling, and increased myocardial work.
- **Mitral and aortic valves are most common**; pulmonary and tricuspid less frequent.

Stenosis



Regurgitation



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Etiologic Factors

- **Stenosis** causes: congenital malformations, calcification, rheumatic disease.
- **Regurgitation** causes: vessel dilation, age-related degeneration, cystic medial necrosis, syphilis, etc.
- Rheumatic heart disease is significant, especially in developing countries (**not in developed countries**).

Physical Examination

- Annual evaluation for mitral stenosis patients.
- **Murmur is a key sign**; its intensity may not directly correlate with severity.
- Specific findings for severe aortic stenosis.
- Mitral regurgitation examination findings often attributable to **atrial fibrillation** and heart failure.

Stages of Valvular Heart Disease

- At Risk: Mild to moderate valve disease.
- Severe Asymptomatic: Imaging confirms severe valve disease without symptoms.
- Severe Symptomatic: Patients with severe valve disease experiencing symptoms.
- Multidisciplinary heart valve team for intervention consideration.

Diagnosis

- **Transthoracic echocardiography:** Confirms diagnosis, assesses mechanism, ventricular function, estimates pulmonary artery pressure, and grades severity.
- Echocardiographic findings differ between rheumatic and calcific valvular heart disease.

Diagnosis



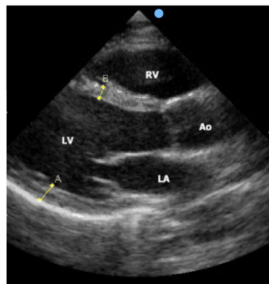
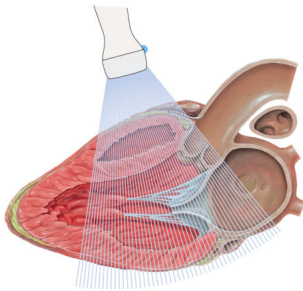
Echocardiography (Echo)



1,205 x 6

Diagnosis

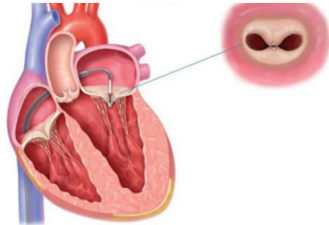
2D (two-dimensional) ultrasound



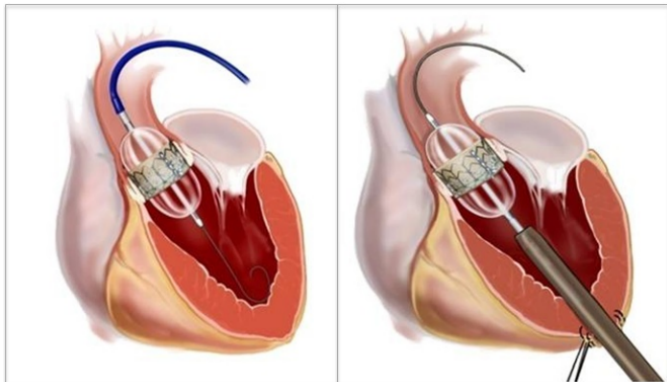
Management and Intervention

- Severe and symptomatic cases require prompt surgical intervention.
- Percutaneous mitral balloon commissurotomy for severe rheumatic mitral stenosis.
- TAVI (Transcatheter aortic valve implantation) for severe aortic stenosis.
- Prosthetic replacement if needed (both mechanical and bioprosthetic heart valves)

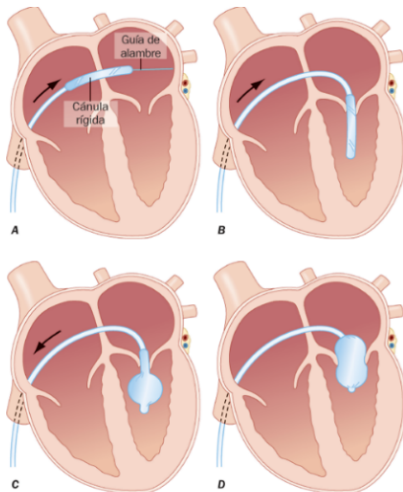
Management and Intervention: Mitraclip



Management and Intervention: TAVI



Management and Intervention: Mitral Valvoplasty



Fuente: J. Larry Jameson, Anthony S. Fauci, Dennis L. Kasper, Stephen L. Hauser, Dan L. Longo, Joseph Loscalzo: Harrison. Principios de Medicina Interna, 20e
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Management and Intervention: Biological valve



Questionnaire

What is **wrong** regarding valve heart disease?:

- 1 Finding a systolic murmur is the main diagnostic test.
- 2 Rheumatic disease is the leading cause of valve heart disease in developing countries.
- 3 Mitral and aortic valves are commonly involved.
- 4 Mitral regurgitation is associated with atrial fibrillation.
- 5 Stenosis is associated with restriction to flow.

Questionnaire

A physician finds a systolic murmur in a physical examination. The echocardiography finds left ventricle overload, remodeling and increased myocardial work. What valve is the most likely involved?

- 1 Aortic
- 2 Mitral
- 3 Tricuspid
- 4 Pulmonary
- 5 Any of them, indistinctly.