Valve Heart Diseases

Biomedical Engineering - URJC

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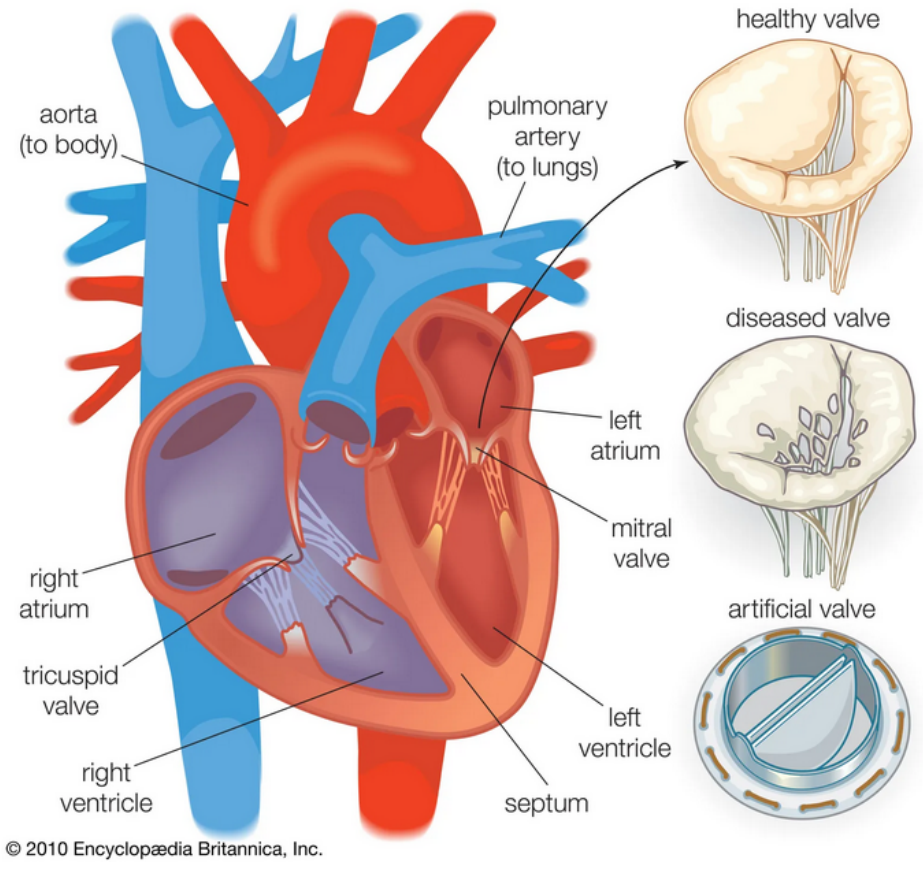
Overview

- 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



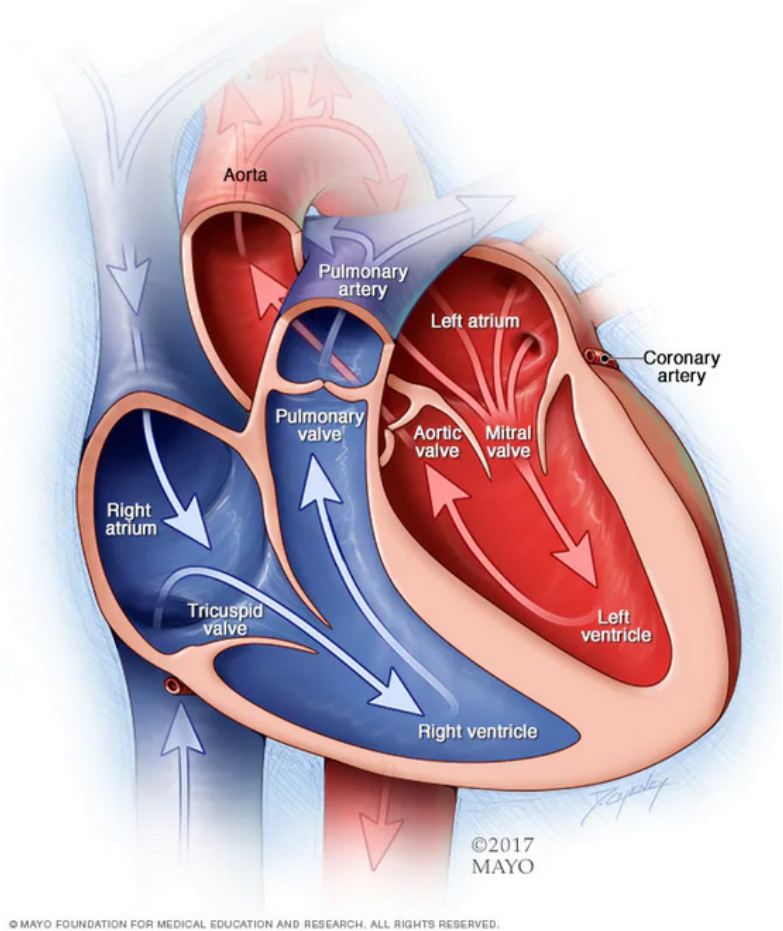
Key Points

- 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.

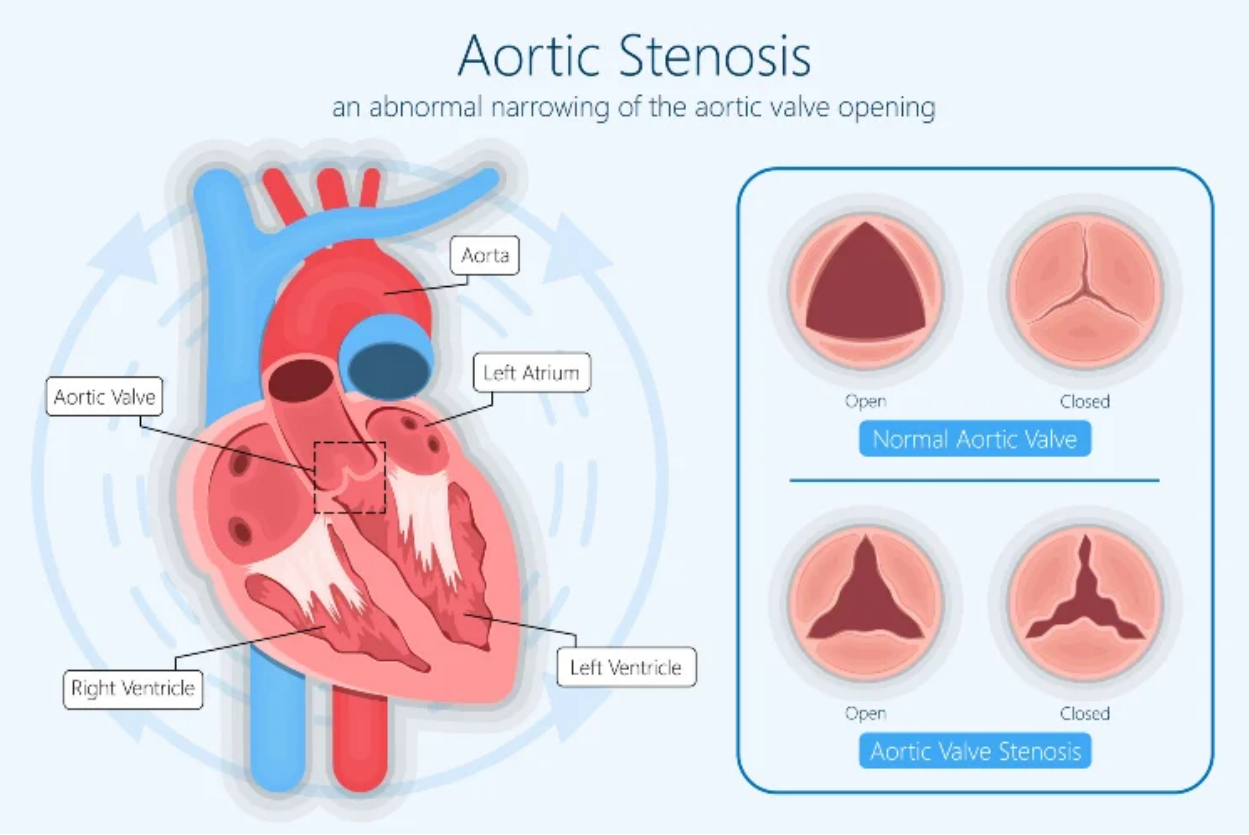
Typical Heart



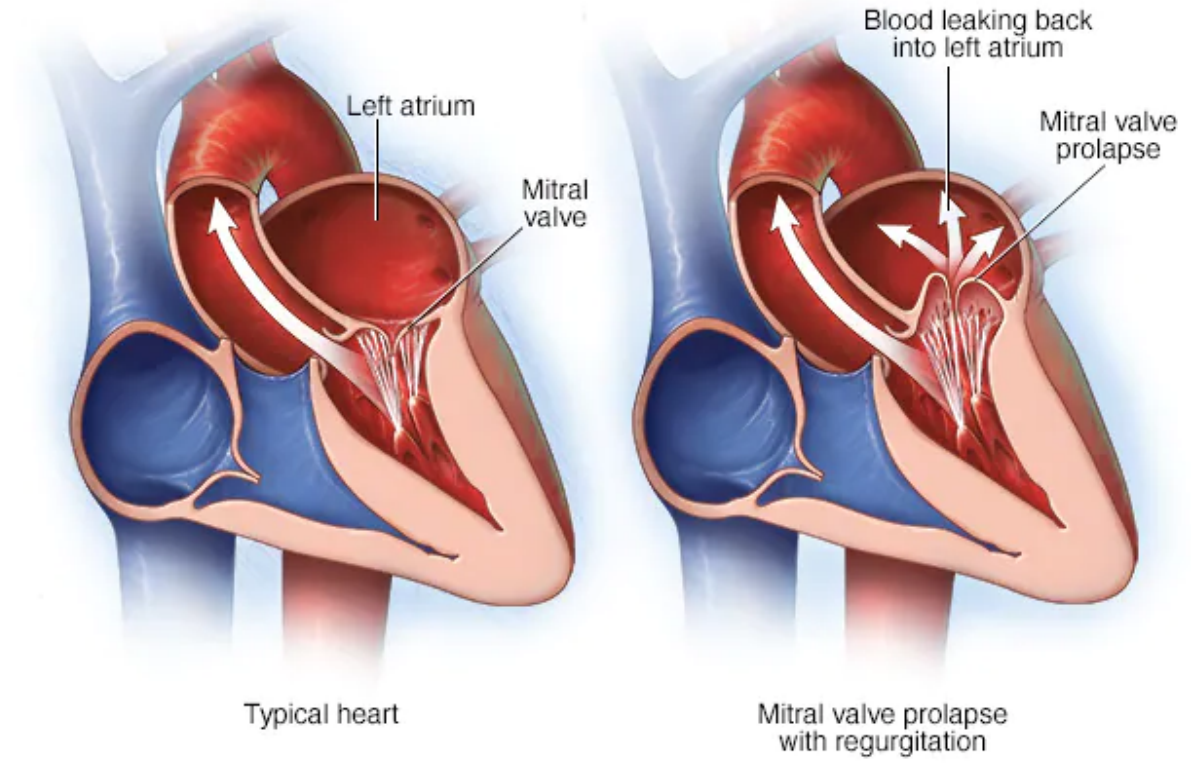
Pathophysiology

- **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


Aortic Stenosis
an abnormal narrowing of the aortic valve opening
Aorta
Left Atrium
Aortic Valve
Right Ventricle
Left Ventricle
Open
Closed
Normal Aortic Valve
Open
Closed
Aortic Valve Stenosis

Regurgitation



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.

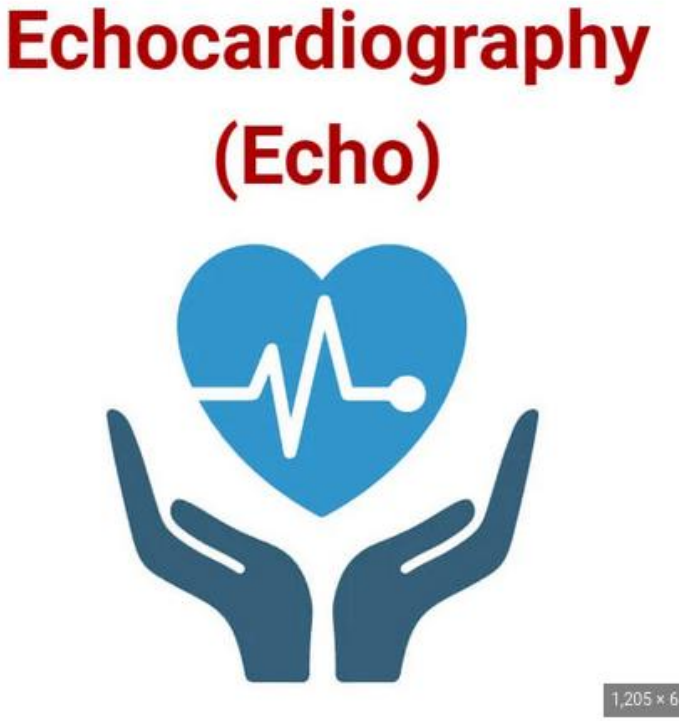
Stages of Valvular Heart Disease

- 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

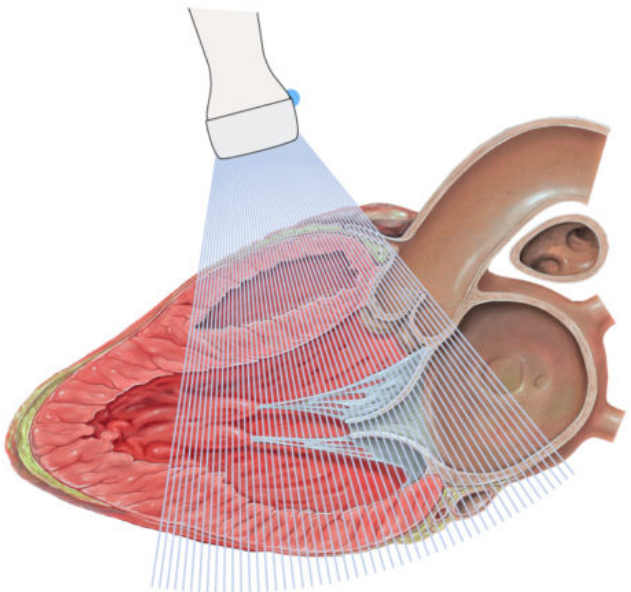
- **Transthoracic echocardiography**: Confirms diagnosis, assesses mechanism, ventricular function, estimates pulmonary artery pressure, and grades severity.
- Echocardiographic findings differ between rheumatic and calcific valvular heart disease.

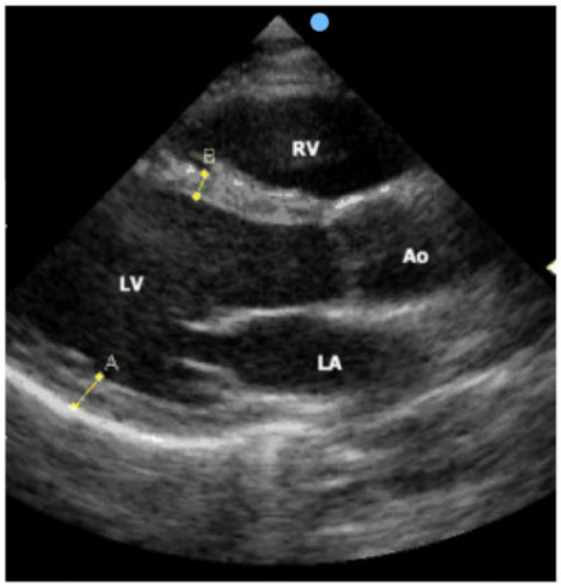
Diagnosis



Diagnosis

2D (two-dimensional) ultrasound

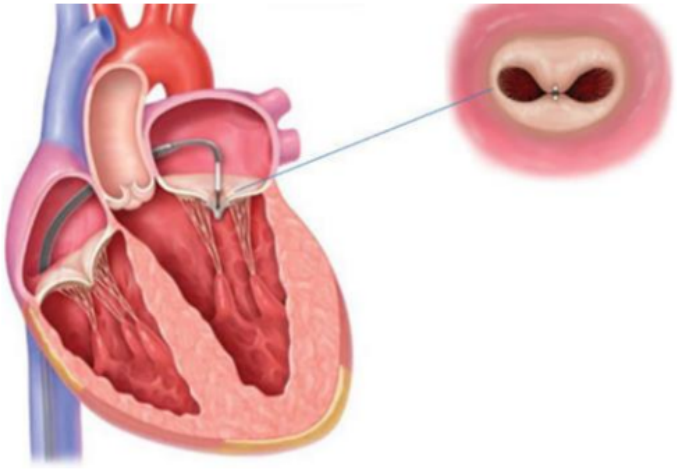




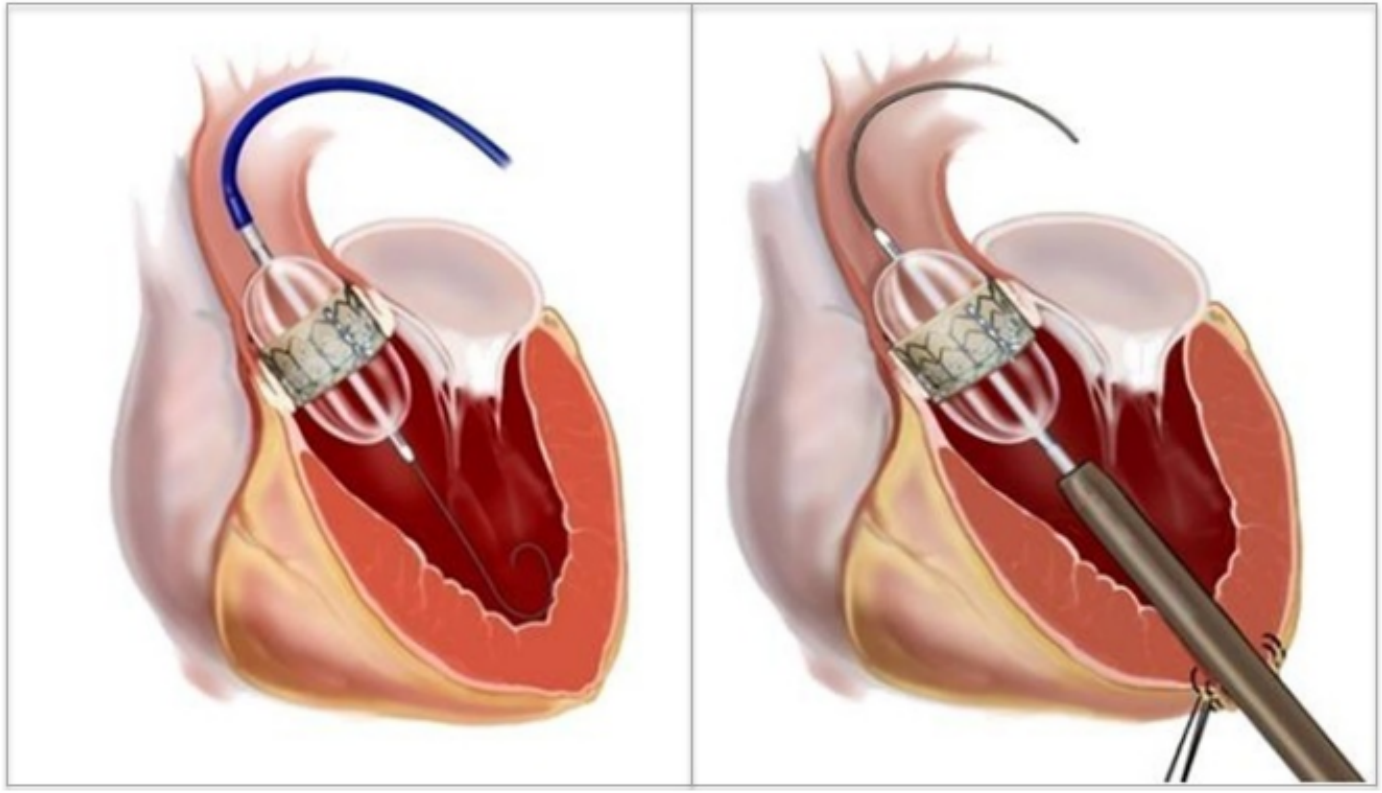
Management and Intervention

- 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)

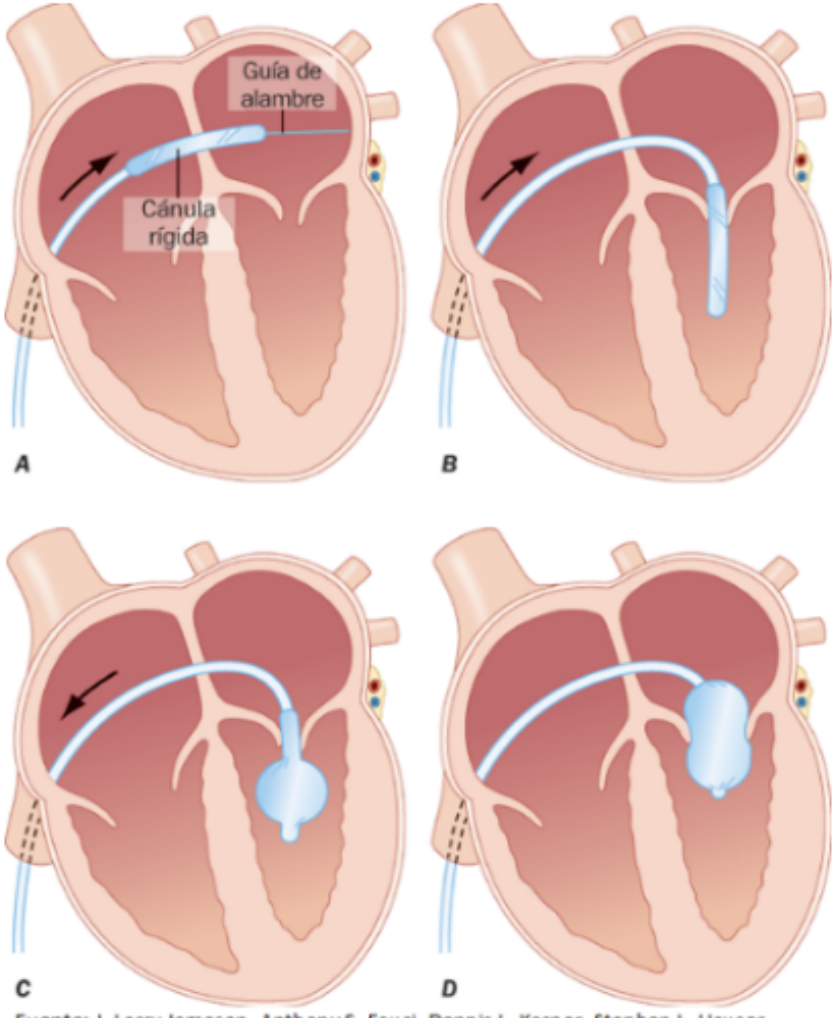
Management and Intervention: Mitraclip



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

Management and Intervention: Biological valve