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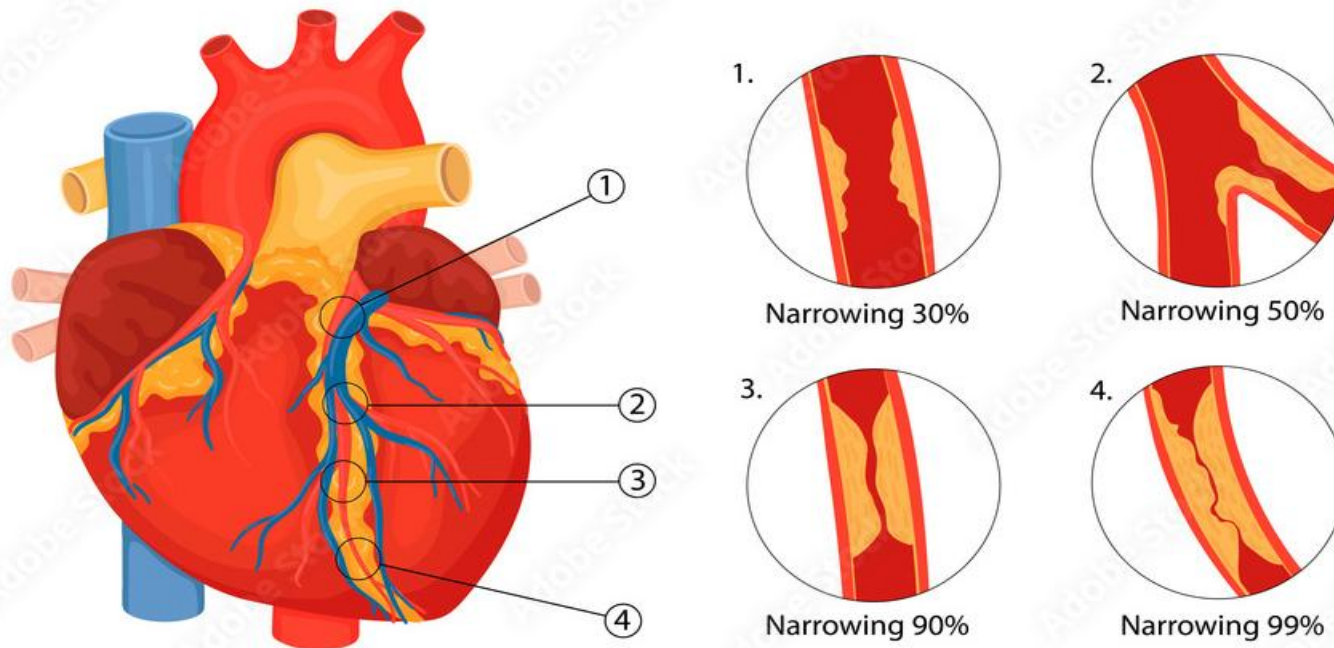
**Anesthetic Management of patient with  
Ischemic Heart disease & most common  
ECG abnormalities.**

## Definition

**Ischemic Heart Disease (IHD) occurs when myocardial oxygen demand exceeds oxygen supply, leading to myocardial ischemia.**

**This imbalance results mainly from coronary artery atherosclerosis, thrombosis, or vasospasm.**

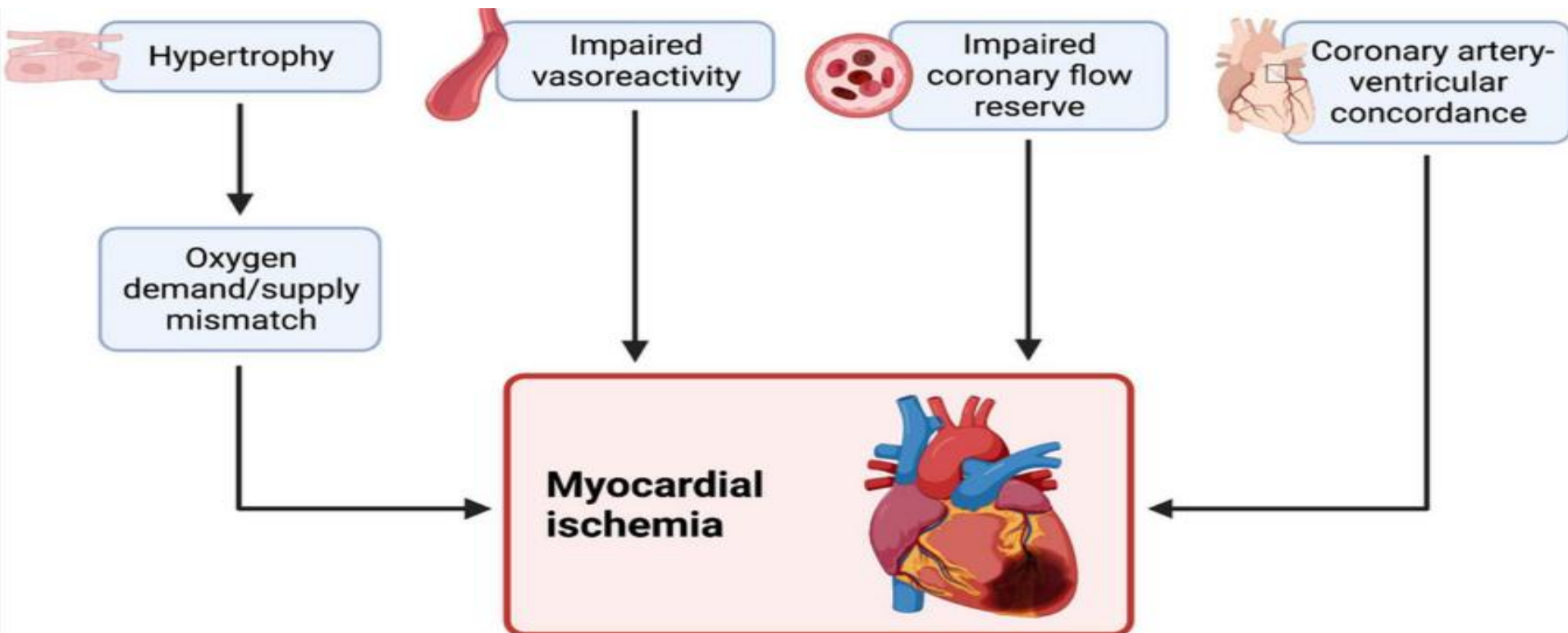
## Cardiac ischemia



## Pathophysiology

Myocardial ischemia develops due to:

- **Increased oxygen demand** (e.g., tachycardia, hypertension, ventricular hypertrophy)
- **Decreased oxygen supply** (e.g., hypotension, anemia, hypoxemia, coronary obstruction)



# Etiology and Risk Factors

**Most common cause: Atherosclerosis of coronary arteries**

**Major risk factors:**

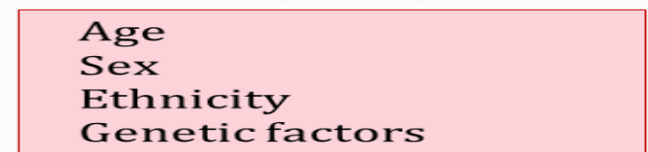
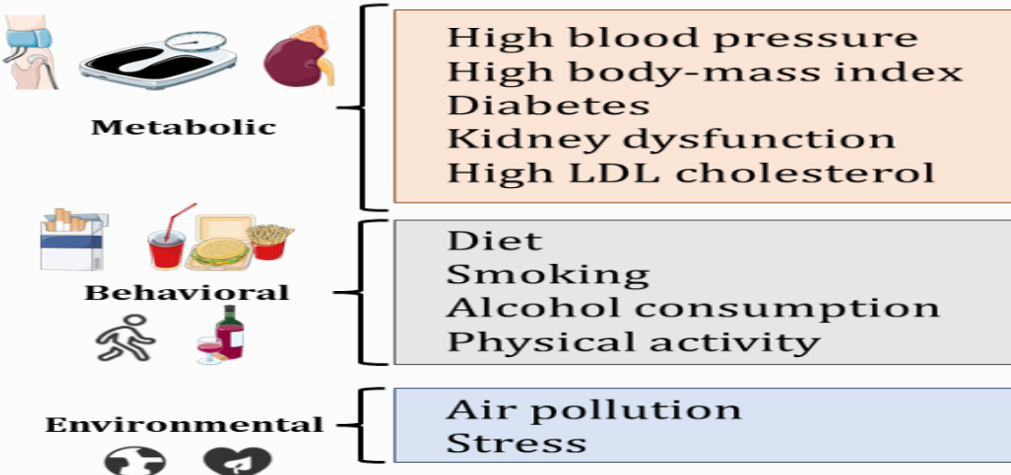
- **Hyperlipidemia**
- **Hypertension**
- **Diabetes mellitus**
- **Smoking**
- **Advanced age, male gender, family history**

**Other factors: Obesity, sedentary lifestyle, previous vascular disease**

## Risk factors of atherosclerosis

### Modifiable

### Non-modifiable



# Treatment

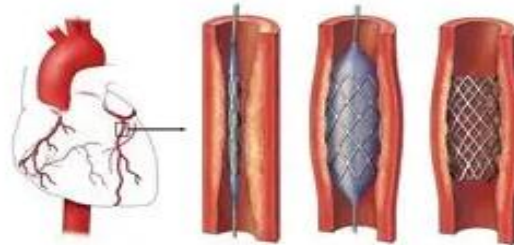
## A. Medical Therapy

- **$\beta$ -blockers:**  $\downarrow$  HR,  $\downarrow$  contractility,  $\downarrow$  O<sub>2</sub> demand;  $\uparrow$  survival post-MI
- **Calcium channel blockers:** Vasodilation,  $\downarrow$  afterload,  $\downarrow$  HR (verapamil, diltiazem)
- **Nitrates:** Venodilation,  $\downarrow$  preload & wall tension, improve subendocardial flow
- **Antiplatelets/Anticoagulants:** Aspirin, clopidogrel; prevent thrombotic events
- **ACE inhibitors/ARBs:** Improve survival in LV dysfunction or heart failure

## B. Interventional Therapy

- **Percutaneous coronary intervention (PCI).**

Percutaneous Coronary  
Intervention (PCI) Stents:  
A Comprehensive Guide



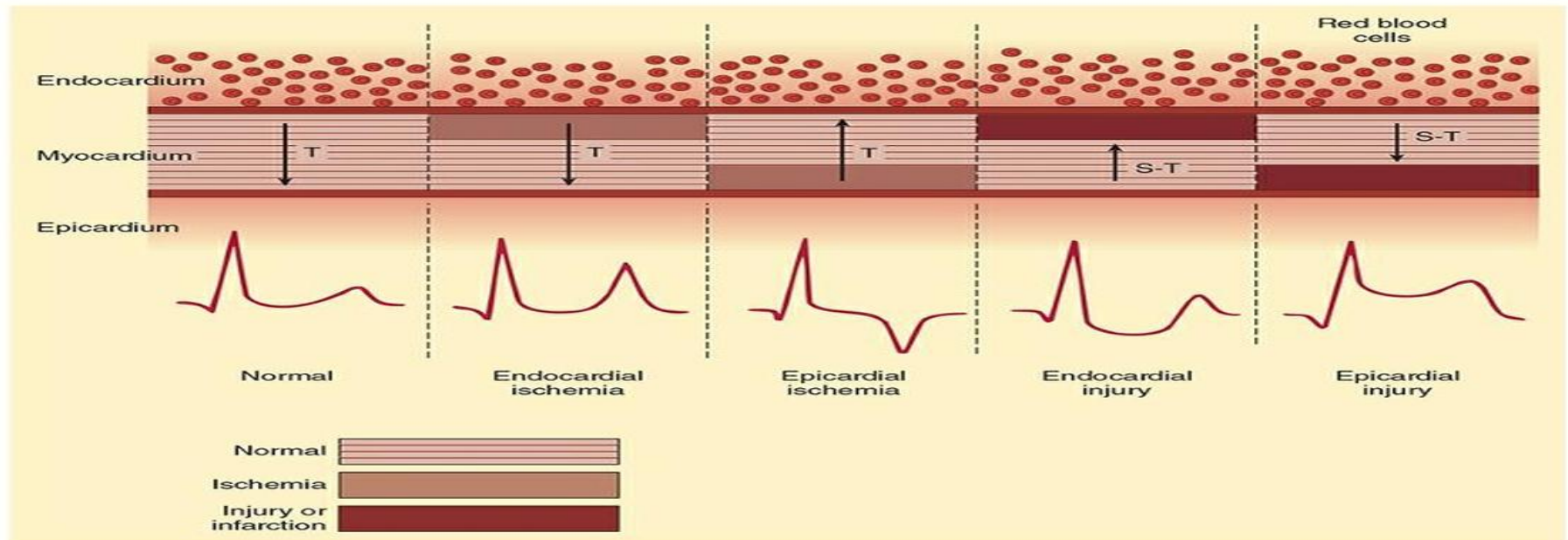
## **Anesthetic Considerations**

- **Continue  $\beta$ -blockers perioperatively (avoid withdrawal).**
- **Avoid tachycardia, hypotension, and hypoxia.**
- **Maintain stable hemodynamics and adequate oxygenation.**
- **Use volatile anesthetics cautiously (may cause myocardial depression).**
- **Optimize hemoglobin, oxygen delivery, and coronary perfusion.**



## Common ECG Abnormalities in IHD

1. ST-segment depression → Subendocardial ischemia
2. ST-segment elevation → Transmural ischemia / acute MI
3. T-wave inversion → Ischemia or reperfusion changes
4. Pathological Q waves → Previous infarction
5. Bundle branch blocks → LBBB / RBBB due to ischemia
6. Arrhythmias / ectopy → PVCs, VT, AF
7. QT prolongation → Drug effect or ischemic repolarization abnormality



**FIGURE 21-2** Electrocardiographic signs of ischemia. Patterns of ischemia and injury. (Data from Schamroth L. The 12 Lead Electrocardiogram. Oxford, UK: Blackwell; 1989.)

## References

1. Butterworth J.F., Mackey D.C., Wasnick J.D.  
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2. Gropper M.A. et al.  
Miller's Anesthesia, 9th Edition, Elsevier, 2020

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