Balloon angioplasty (percutaneous transluminal coronary angioplasty or PTCA)
Stable angina...

- **History:**
  - A man > 50 years.
  - A woman > 60 years.
  - Pain with physical & emotional exertion.
  - Last to 5-10 min.
Heart - Pathology

NORMAL

Atherosclerosis

FIXED CORONARY OBSTRUCTION
(Typical angina)

Platelet aggregate

PLAQUE DISRUPTION

Healing

SEVERE FIXED CORONARY OBSTRUCTION
(Chronic ischemic heart disease)

Thrombus

MURAL THROMBUS WITH
VARIABLE OBSTRUCTION / ? EMBOLI
(Unstable angina or acute subendocardial myocardial infarction or sudden death)

OCCLUSIVE THROMBUS
(Acute transmural myocardial infarction or sudden death)

ACUTE CORONARY SYNDROMES
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Insufficient blood flow to the heart muscle from narrowing of coronary artery may cause chest pain.
Ischemic Heart Disease

Clot stops flow of blood

Where the blockage occurs in the artery

Plaque buildup on vessel walls

Where the heart is affected
Plaque with fibrous cap

Cap ruptures

Blood clot forms around the rupture, blocking the artery
Location of chest pain during angina or heart attack

- Upper chest
- Subternal radiating to neck and jaw
- Subternal radiating down left arm
- Susternal radiating down left arm
- Epigastric radiating to neck, jaw, and arms
- Neck and Jaw
- Left shoulder and down both arms
- Intrascapular

Typical distribution of referred pain
Electrocardiogram (ECG)
Nuclear Thallium Scan
Thallium Scan
Blood test
Echocardiogram
Computerized tomography (CT) angiogram
cardiac catheterization

Narrowing of a coronary artery shown by catheterization
The arrow points the narrowing of an occluded anterior descendental coronary artery (on the heart) with a great ischemic territory.

The arrow shows the restored flow inside the same artery on the heart, delivering blood again and eliminating ischemia.
Occluded carotid artery with an atheroma plaque, the most common cause of stroke.

Same artery after angioplasty, filter and stenting, the function has been restored.
Brachial Artery

Alternative Site

Aorta

Guiding Catheter

Introducer Sheath in the Groin or Arm
Balloon angioplasty (percutaneous transluminal coronary angioplasty or PTCA)
Angioplasty (PTCA) Stent Implantation & Placement
Stent Implantation & Placement

- Stent insertion
- Stent expansion
- Stent remains in coronary artery
Stent Inside a Coronary Artery

- Coronary Artery
- Plaque
- Stent
Coronary Artery Bypass Grafting (CABG)

A. Simplified view of diseased heart before surgery

- Stenosis
- Occlusion
- Left anterior descending artery
- Right coronary artery
- Obtuse marginal artery

B. View of heart after bypass surgery

- Vein grafts
- Left subclavian artery
- Left internal mammary artery
Coronary Artery Bypass Graft

Left Internal Mammary Artery

Aorta

Vein taken from leg

Narrowings in coronary artery