MAJER HEALTH PROBLEM IN CARDIO VASULAR IN NURSING

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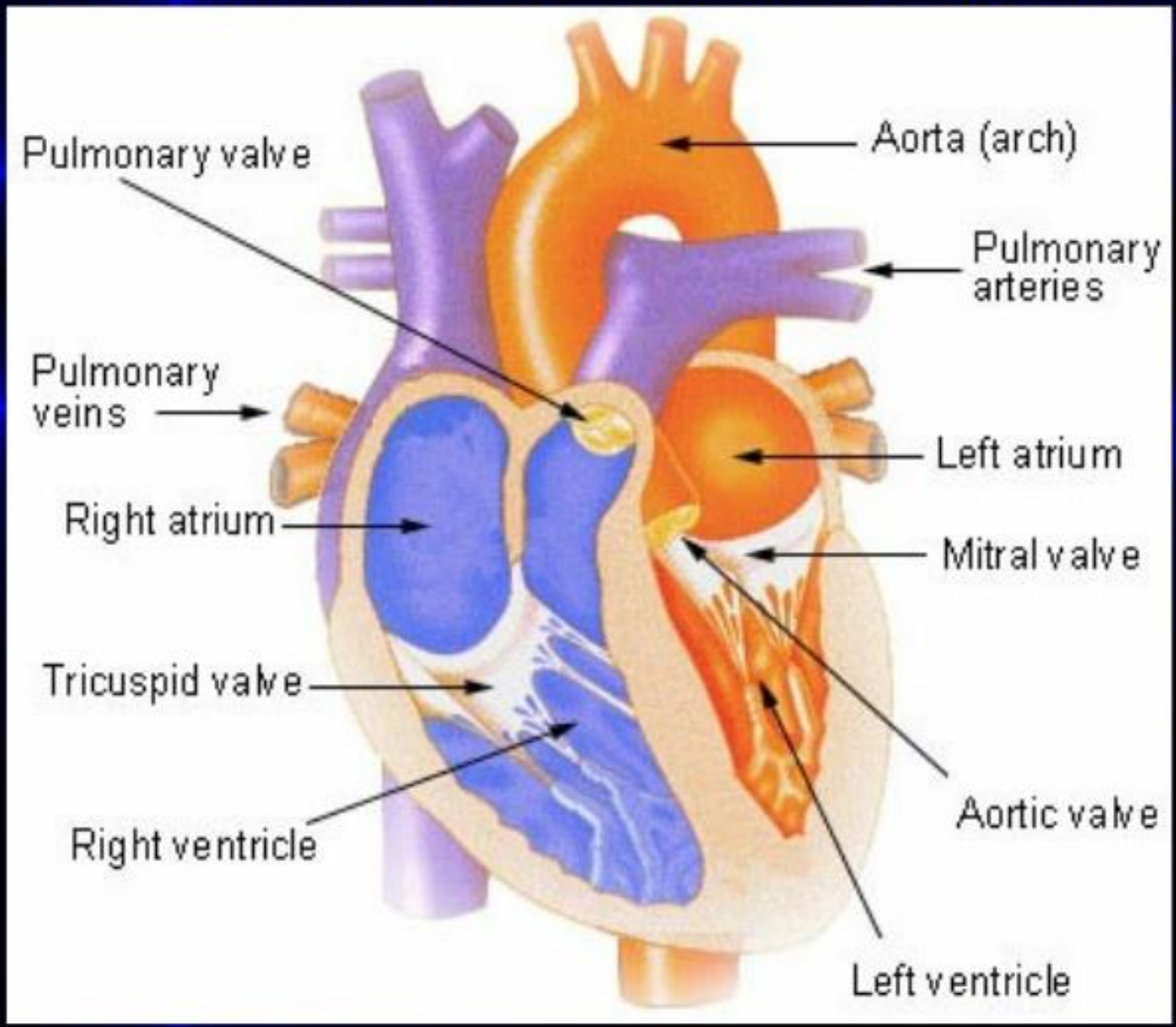
INTERNAL VIEW OF THE HEART



DISEASES OF THE HEART

- The diseases and conditions affecting the heart are collectively known as heart disease.
- The heart consists of a muscle that pumps blood, arteries that supply blood to the heart muscle, and valves that ensure that the blood within the heart is pumped in the correct direction.
- Problems can arise in any of these areas.
- Like cardiovascular disease, heart disease is a term that's somewhat loose and broad, and it's often used that way.

Heart disease is an umbrella term for a number of different diseases which affect the heart. The most common heart diseases are:

- Coronary artery disease.
- Coronary heart disease.
- Ischaemic heart disease.
- Cardiovascular disease
- Pulmonary heart disease.
- Hereditary heart disease.
- Hypertensive heart disease.
- Inflammatory heart disease.
- Valvular heart disease.
- Pericardial disease
- Congenital heart disease
- Heart failure

- Coronary artery disease (CAD), These are diseases of the arteries that supply the heart muscle with blood. CAD is one of the most common forms of heart disease and the leading cause of heart attacks. It generally means that blood flow through the coronary arteries has become obstructed. The most common cause of such obstructions is a condition called atherosclerosis, a largely preventable type of vascular disease. Coronary artery disease can lead to other heart problems, such as chest pain (angina) and heart attack (myocardial infarction).

- Coronary heart disease, a disease of the heart itself caused by the accumulation of atheromatous plaques within the walls of the arteries that supply the myocardium
- Ischaemic heart disease, another disease of the heart itself, characterized by reduced blood supply to the organ.
- Cardiovascular disease, a sub-umbrella term for a number of diseases that that affect the heart itself and/or the blood vessel system, especially the veins and arteries leading to and from the heart. Causes of cardivascular disease include diabetes mellitas, hypertension and hypercholesterolemia.

- Pulmonary heart disease, a failure of the right side of the heart.
- Hereditary heart disease, heart disease caused by inavoidable genetic factors
- Hypertensive heart disease, heart disease caused by high blood pressure, especially localised high blood pressure
- Inflammatory heart disease, heart disease that involves inflamation of the heart muscle and/or the tissue surrounding it.
- Valvular heart disease, heart disease that affects the valves of the heart.

- Pericardial disease, These are diseases of the sac that encases the heart (pericardium). Pericardial disorders include inflammation (pericarditis), fluid accumulation (pericardial effusion) and stiffness (constrictive pericarditis). These can occur alone or together. The causes of pericardial disease vary, as do the problems they may lead to. For instance, pericarditis can occur after a heart attack and, as a result, lead to pericardial effusion or chest pain.

- Congenital heart disease, These are forms of heart disease that develop before birth (congenital). Congenital heart disease is a broad term and includes a wide range of diseases and conditions. These diseases can affect the formation of the heart muscle or its chambers or valves. They include such conditions as narrowing of a section of the aorta (coarctation) or holes in the heart (atrial or ventricular septal defect). Some congenital heart defects may be apparent right at the time of birth, while others may not be detected until later in life.

- Heart failure, often called congestive heart failure, is a condition in which the heart can't pump enough blood to the body's organs and tissues. It doesn't mean the heart has failed and can't pump blood at all. With this less effective pumping, vital organs don't get enough blood, causing such signs and symptoms as shortness of breath, fluid retention and fatigue. Congestive heart failure is technically reserved for situations in which heart failure has led to fluid buildup in the body. Not all heart failure is congestive, but the terms are often used interchangeably. Heart failure may develop suddenly or over many years. It may occur as a result of other cardiovascular conditions that have damaged or weakened the heart, such as coronary artery disease or cardiomyopathy.

DISEASES OF THE BLOOD VESSELS

Blood vessels are essentially hollow tubes that carry blood to the organs and tissues throughout the body.

- **Arteries:** These blood vessels carry blood away from the heart and out to the body, delivering oxygen and nutrients. The aorta is the largest blood vessel of all.
- **Veins:** These blood vessels carry deoxygenated blood back to the heart. Lacking oxygen, they have a bluish cast on the skin.

- **Capillaries:** These tiny vessels connect arteries and veins.
- **Lymphatics:** Fluid leaks out of capillaries to bathe cells. Lymphatics are delicate vessels that carry this fluid back into the body's central circulation.

- Blood vessels have many layers and a complex mechanism of action to keep blood flowing to all of the vital organs.
- Despite that big responsibility – probably don't pay much attention to the blood vessels – until something goes wrong, that is.

Some types of blood vessel disorders:

- Arteriosclerosis and atherosclerosis.
- High blood pressure (hypertension).
- Stroke.
- Aneurysm.
- Peripheral arterial disease and claudication.
- Vasculitis.
- Venous incompetence.
- Venous thrombosis.
- Varicose veins.
- Lymphedema.

- Arteriosclerosis and atherosclerosis, are conditions in which the walls of the arteries become thick and stiff. This can sometimes restrict blood flow to the organs and tissues. The process of this thickening and stiffening is arteriosclerosis. Atherosclerosis is the most common form of arteriosclerosis. Although the two terms are often used interchangeably, atherosclerosis refers to hardening of the arteries caused by accumulation of fatty deposits (plaques) and other substances. The heart is one of the organs commonly affected by atherosclerosis. When the arteries of the heart (coronary arteries) narrow – may experience chest pain or a heart attack.

- High blood pressure (hypertension), is the excessive force of blood pumping through the blood vessels. It's perhaps the most common form of cardiovascular disease in the Western world, affecting about one in four Americans. Although potentially life-threatening, it’s one of the most preventable and treatable types of cardiovascular disease. High blood pressure also causes many other types of cardiovascular disease, such as stroke and heart failure.

- Stroke, is a sudden loss of brain function. It occurs when blood flow to the brain is interrupted (ischemic stroke) or when blood vessels in the brain rupture (hemorrhagic stroke). These, in turn, cause the death of brain cells in the affected areas. Stroke is often thought of as a neurological disorder because of the many complications it causes.
- Aneurysm, is a bulge or weakness in the wall of an artery or vein. Aneurysms usually enlarge over time. Because of that, they have the potential to rupture and cause life-threatening bleeding. Aneurysms can occur in arteries in any location in the body. The most common sites include the abdominal aorta and the arteries at the base of the brain.

- Peripheral arterial disease and claudication, may be more familiar with claudication — pain in the arms or legs during exercise — than the term "peripheral arterial disease." Strictly speaking, claudication is a symptom of peripheral arterial disease. However, claudication is often referred to as a disease itself. Peripheral arterial disease is a disorder in which the arteries supplying blood to the limbs — usually the legs — become clogged or partially blocked. When this happens, the arms and legs are left with less blood than they need to keep up with demand. Claudication symptoms may then develop. When the obstruction is mild, may have such symptoms as pain in the legs during strenuous exercise. As the disease progresses and arteries become more obstructed, may have pain or cramping in the legs even when not active.

- Vasculitis, This is an inflammation of the blood vessels. It usually involves the arteries but may also affect veins and capillaries. The inflammation may damage the wall of the artery or vein and impair blood flow to the region of the body supplied by that vessel. Sometimes vasculitis occurs along with a generalized disorder, such as lupus or rheumatoid arthritis, but it may also occur on its own.

- Venous incompetence, This is a condition in which blood flows the wrong way in the veins. Veins have tiny valves that are designed to promote blood flow in a forward direction, back to the heart. But if such conditions as infection, inflammation, abnormal blood clotting, or even high-back pressure in pregnancy, the valves may become damaged and incompetent. That allows blood to flow backward and pool in the legs when sitting or standing. May develop such complications as prominent and painful varicose veins, skin changes, ulcers and swelling in the legs. When venous incompetence occurs in the arms, may experience pain and swelling in the arms and prominent veins.

- Venous thrombosis, This is the formation of a blood clot (thrombus) in a vein. This condition may damage the vein and its valves. In addition, clots that break off and travel in the bloodstream can lodge in the lungs, a condition known as pulmonary embolism. In some cases, this type of clot can also cause a stroke. May be more familiar with deep vein thrombosis, in which a clot develops deep within a muscle, such as one in the calf.

- Varicose veins, This is a condition in which the veins become twisted and enlarged. The veins are usually located on the backs of the calves or on the inside of the legs, from the groin to the ankle. When valves in the veins don't function properly, blood can accumulate in the legs, causing the veins to bulge and twist. The veins appear blue because they contain less oxygen.
- Lymphedema, This is an obstruction of the lymphatic vessels. It results in an excessive buildup of fluid, which can cause swelling and pain. It can be caused by infections, trauma, tumors, surgery and radiation treatment. In rare cases, someone may be born with lymphedema.

Arrhythmia / Dysrhythmia

Heart block / Atrio ventricular block: Failure of conduction of impulses through the A.V.Node.

Damage to the S.A.Node causes week impulses failing to reach the ventricles. **Cardiac pacemaker** establishes normal rhythm. It is a small, battery-operated electronic device. It is inserted under the skin. It has leads that travel through a large vein to the heart, where the wires are anchored, which send the electrical impulses to the heart.

Flutter: Rapid, **regular contraction** of atria or ventricle reaching upto 250/300 beats per minute.

Fibrillation: Rapid, random, **irregular contraction** reaching upto 350-400 beats per minute.

Defibrillator is applied to the chest wall to help in **cardioversion**.

Defibrillation is a technique used to counter the onset of ventricular fibrillation, a common cause of cardiac arrest. Defibrillation is part of an advanced cardiac life support. It applies a controlled electric shock.

Cardiac Arrest: Sudden stoppage of heart.

Palpitation: Uncomfortable sensation in the chest associated with arrhythmia. This causes

1. Premature atrial contraction (PAC)
2. Premature ventricular contraction (PVC).

Angina Pectoris

Hardening of the arteries, and the presence of a thrombus, or clot, in a blood vessel are the most common causes of obstruction.

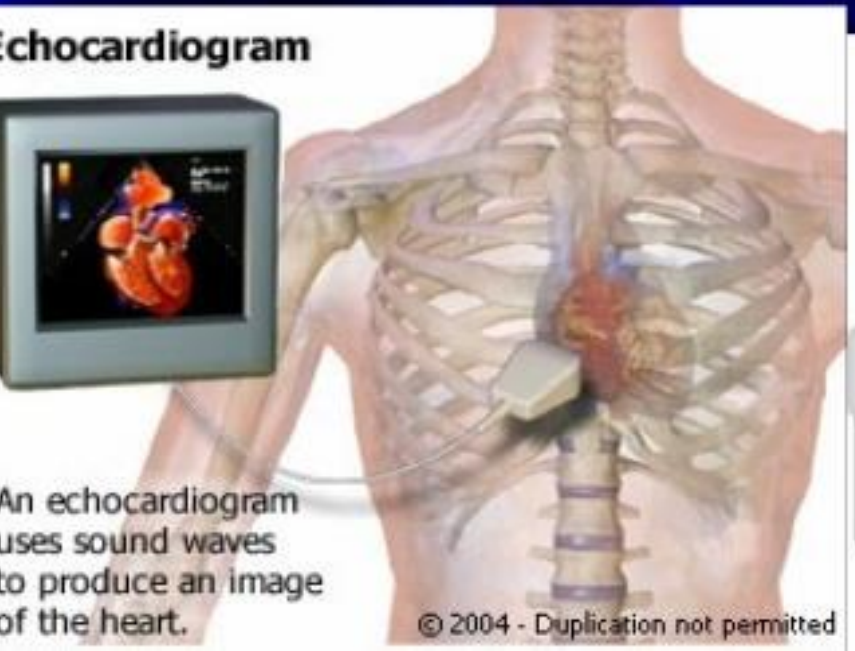
Arteriosclerosis is responsible for most of the deaths resulting from heart attacks. Spasms of the coronary arteries can also result in a heart attack.

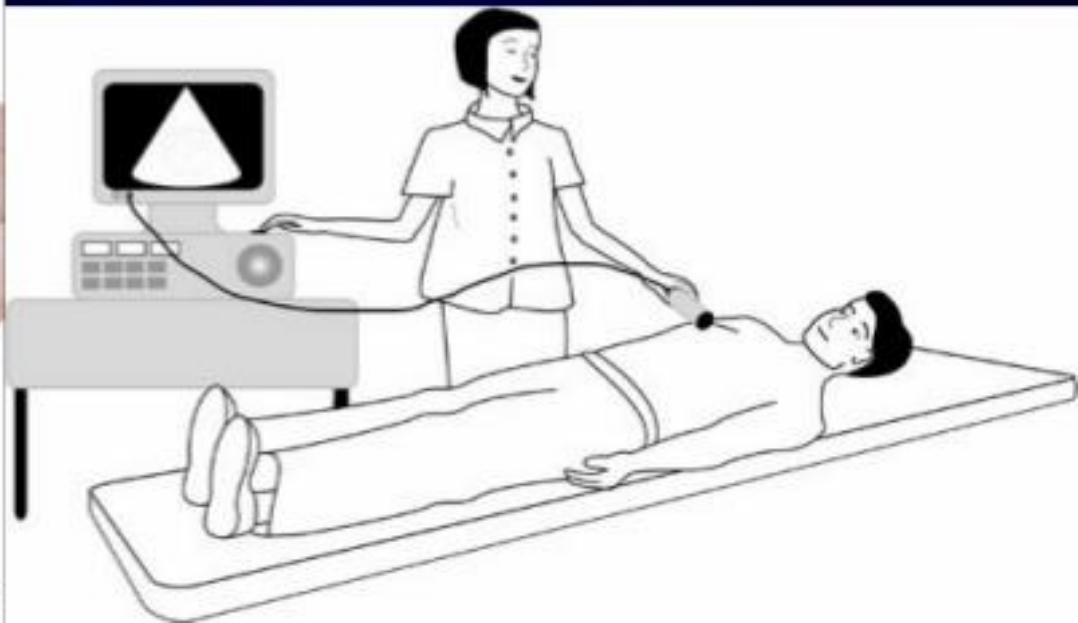
CHOICES IN HEART SCANS

- Electrocardiogram (ECG)
- Nuclear stress testing
- Echocardiogram (ECHO)
- Coronary angiogram
- CT scan
- PET/CT scan
- Magnetic resonance imaging (MRI)

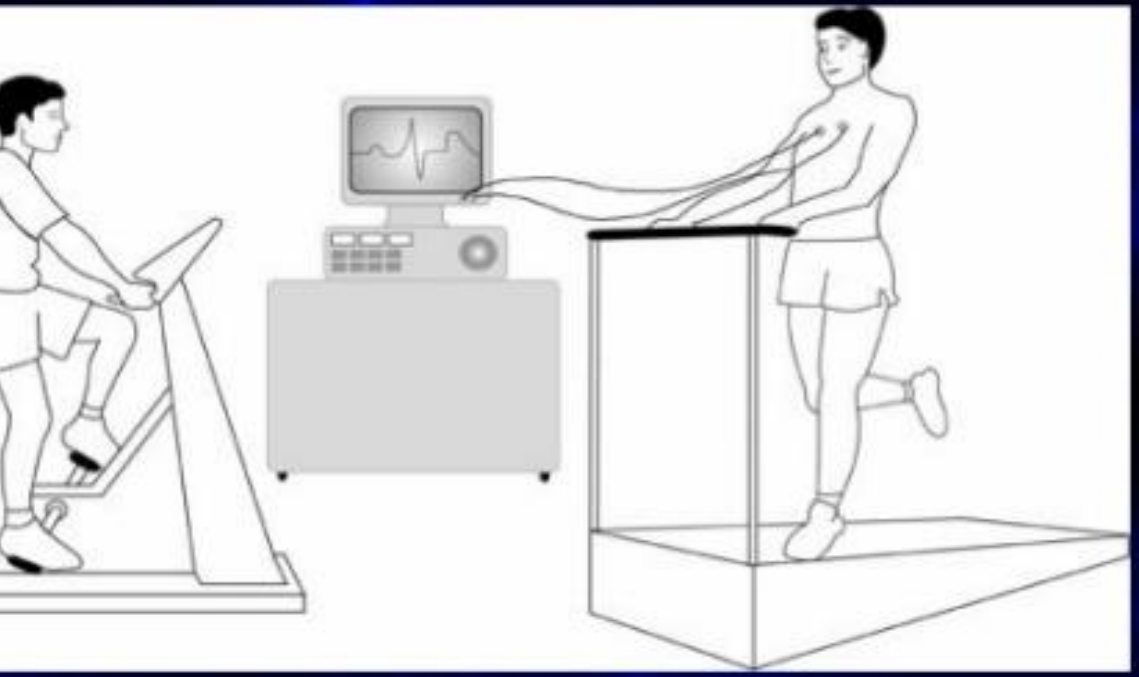
Echocardiography

The image shows the motion pattern and structure of the four heart **valves**, revealing any potential leakage (**regurgitation**) or narrowing (**stenosis**). During this test, a **Doppler ultrasound** may be done to evaluate cardiac blood flow.





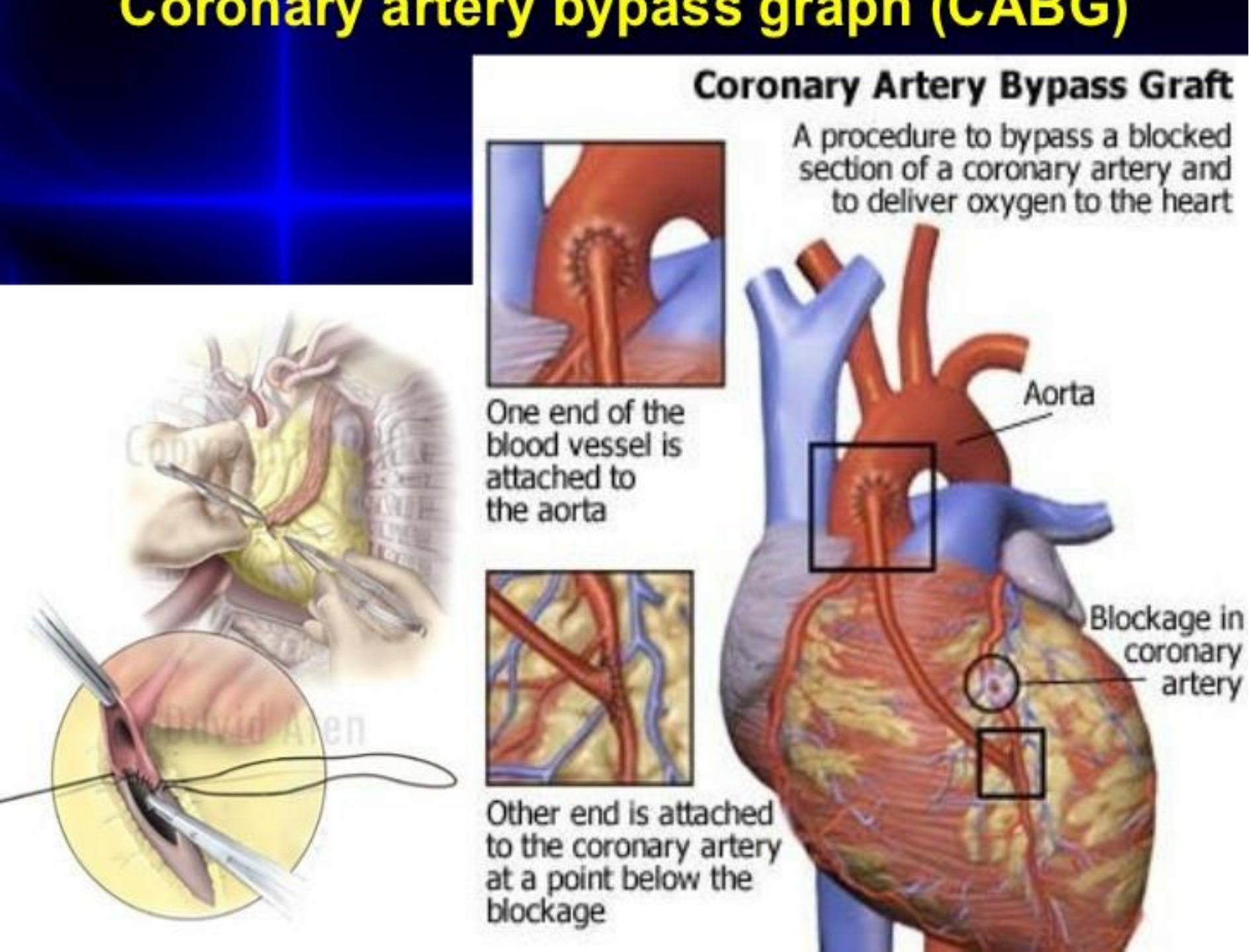
Stress Test/ Exercise tolerance test (ETT) / treadmill test



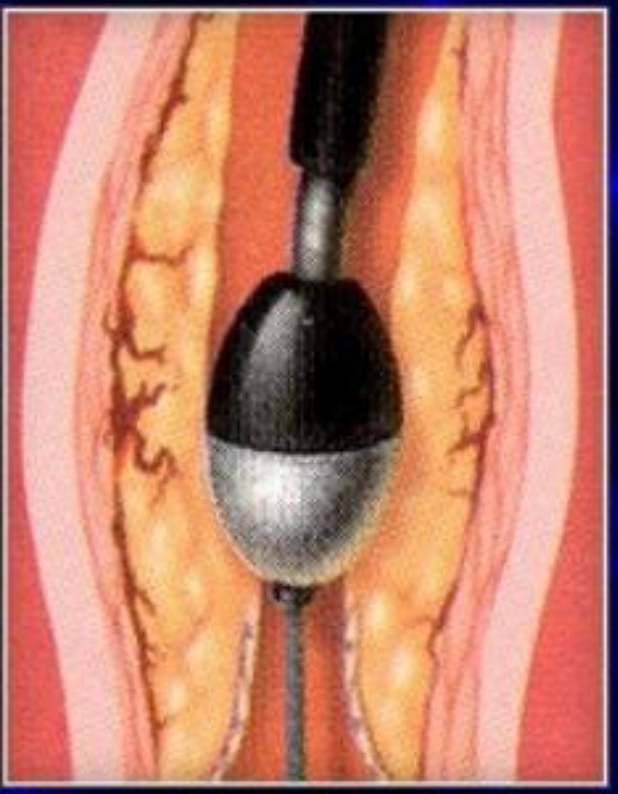
It can assess the heart's reaction under physical stress.

uring an exercise ST, an EKG is performed while the atient exercises in a controlled manner on a treadmill or ationary bicycle at varied speeds and elevations. uring a pharmacological ST, a medication (e.g., *obutamine*) is given to the patient, which causes the eart to react as if it were under the physical stress of xercise, though he is actually at rest.

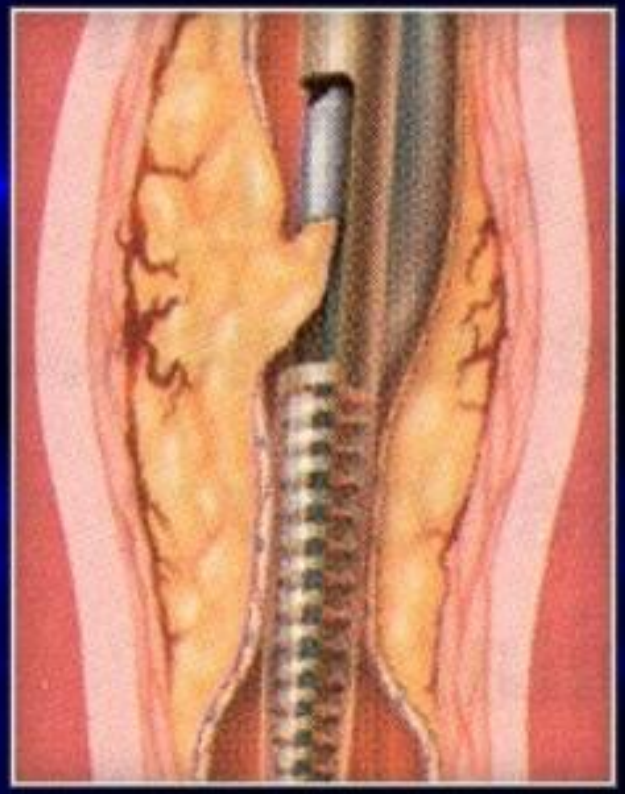
Coronary artery bypass graph (CABG)



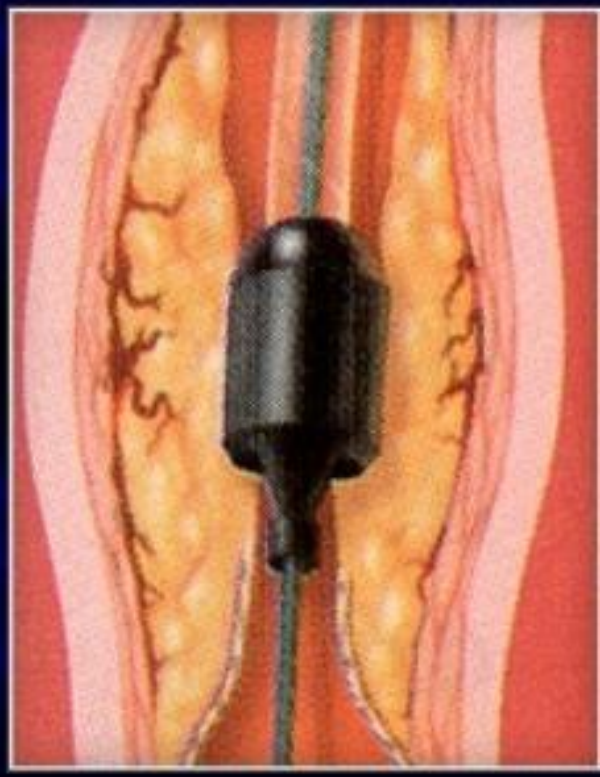
ATHERECTOMY



Rotational
Athrectomy



Directional
Coronary
Athrectomy



Extraction
Athrectomy

RISK FACTORS

which predispose to various forms of cardiovascular disease

- Age
- Absence of key nutritional elements, such as polyphenol antioxidants
- Diabetes mellitus
- Hypercholesterolemia (elevated cholesterol levels) and abnormal lipoprotein particle profile (cholesterol subtypes)
- Tobacco smoking
- Higher fibrinogen and PAI-1 blood concentrations

- Elevated homocysteine, or even upper half of normal
- Elevated blood levels of asymmetric dimethylarginine
- High blood pressure
- Exposure to high levels of environmental noise
- Obesity, especially central or male-type obesity; apart from being linked to diabetes, this form of obesity independently increases cardiovascular risk, presumedly by inducing an inflammatory and procoagulant state
- Genetic factors/Family history of cardiovascular disease
- Physical inactivity/ Sedentary lifestyle
- Depression

PREVENTION

- Attempts to prevent cardiovascular disease take the form of modifying risk factors.
- Some, such as sex (male or female), age, and family history, cannot be modified.
- Smoking cessation (or abstinence) is one of the most effective and easily modifiable changes.
- Regular cardiovascular exercise (aerobic exercise) complements the healthful eating habits.

- Sometimes, the combination of diet and exercise will improve lipoprotein (cholesterol) levels; if not, a physician may prescribe "cholesterol-lowering" drugs like the statins.
- These medications have additional protective benefits aside from their lipoprotein profile improvement.
- Aspirin may also be prescribed, as it has been shown to decrease the clot formation that may lead to myocardial infarctions and strokes; it is routinely prescribed for patients with one or more cardiovascular risk factors.

- One little known or discussed, but powerful way to almost eliminate risk of cardiovascular disease is keep the total cholesterol below 150.
- In the heart study, those with total cholesterol below 150 only very rarely got coronary heart disease.
- Eating oily fish at least twice a week may help reduce the risk of sudden death and arrhythmias.
- Olive oil is said to have the greatest benefits.
- Studies of individual heart cells showed that the fatty acids blocked excessive sodium and calcium currents in the heart, which could otherwise cause dangerous, unpredictable changes in its rhythm.

TREATMENT

- Treatment of cardiovascular disease depends on the specific form of the disease in each patient, but effective treatment always includes preventive lifestyle changes discussed above.
- Medications, such as blood pressure reducing medications, aspirin and the statin cholesterol-lowering drugs may be helpful.
- In some circumstances, surgery or angioplasty may be warranted to reopen, repair, or replace damaged blood vessels.

CARDIOVASCULAR DISEASES

Types of heart disease

- Arteriosclerosis/ Atherosclerosis
- Chest pain
- Coronary artery disease
- Heart attack

Types of circulatory disorders

- Aortic aneurysm
- Aortic dissection
- Claudication: When circulation problems cause leg pain
- Lymphedema
- Peripheral arterial disease
- Raynaud's disease
- Takayasu's arteritis
- Varicose veins

ALLOPATHIC TREATMENT

- ✓ Angiotensin II receptor blockers
- ✓ Angiotensin-converting enzyme (ACE) inhibitors
- ✓ Beta blockers
- ✓ Cholesterol medications: Consider the options
- ✓ Nitrates— Oral (Systemic)
- ✓ Nitrates— Sublingual, Chewable, or Buccal (Systemic)
- ✓ Nitrates— Topical (Systemic)
- ✓ Statins: Are these cholesterol-lowering drugs right?

SURGICAL PROCEDURES

- ✓ Coronary angioplasty and stenting: Opening clogged arteries
- ✓ Coronary artery bypass surgery

CARDIAC REHABILITATION

- ✓ Cardiac rehabilitation: Building a better life after heart disease

DEVICE TREATMENTS

- ✓ Implantable cardioverter-defibrillator: After the ICD is implanted
- ✓ Implantable cardioverter-defibrillators: Controlling a chaotic heart
- ✓ Pacemakers: Generating regular heartbeats

ALLOPATHIC TREATMENT

- ✓ Angiotensin II receptor blockers
- ✓ Angiotensin-converting enzyme (ACE) inhibitors
- ✓ Beta blockers
- ✓ Digitalis Medicines (Systemic)
- ✓ Diuretics

TRANSPLANTATION

- ✓ Heart transplant: A treatment for end-stage heart failure
- ✓ Organ transplant: Replacing diseased organs with healthy ones

DEVICES

- ✓ Biventricular pacemaker: Cardiac resynchronization therapy for heart failure
- ✓ Heart failure: Heart pumps help keep the beat

TOOL

- ✓ Biventricular pacing

Supplements for heart disease

Antioxidants

- Ascorbic Acid (Vitamin C) (Systemic)
- Beta-carotene— (Systemic)
- Coenzyme Q10
- Lycopene

B-vitamins

- Folic Acid (Vitamin B 9) (Systemic)
- Niacin (Vitamin B3, Nicotinic acid), Niacinamide
- Pyridoxine (Vitamin B 6) (Systemic)
- Vitamin B12 (Systemic)

Fish oil and garlic

- Garlic (Allium sativum L.)
- Omega-3 fatty acids, fish oil, alpha-linolenic acid

INTEGRATED YOGA MODULE FOR HEART DISEASES

Loosening Exercises

- Loosening of fingers
- Shoulder rotation
- Drill walking
- **Instant relaxation technique (IRT)**

Breathing practices

- Hands stretch breathing
- Ankle stretch breathing
- Rabbit breathing
- Straight leg raise breathing (alternating)
- Side bending, each
- **Quick relaxation technique (QRT)**

THANK U