GHADIALI

GHADIALI
General Surgery

PRESENTS

Dr. Mufa T. Ghadiali is skilled in all aspects of General Surgery.
His General Surgery Services include:

- General Surgery
- Advanced Laparoscopic Surgery
- Surgical Oncology
- Gastrointestinal Surgery
- Hernia Surgery
- Endoscopy

Heart Attack

Multimedia Health Education

Disclaimer

The information in this presentation has been intended to help consumers understand the structure and function of anatomical components and take charge of Cardiac health. Also, it explains the risks, complications and provides guidelines for living with surgeries, conditions and procedures.

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MULTIMEDIA HEALTH EDUCATION MANUAL

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INTRODUCTION

The coronary arteries supply blood to the heart muscle. When the coronary arteries become narrow or blocked, blood flow to the heart is reduced. This decrease in blood flow to the heart deprives the heart muscle of oxygen.

Heart attack (also called myocardial infarction) is when part of the heart muscle is damaged or dies because it isn't receiving oxygen. Most heart attacks are caused by a blockage in the coronary arteries. If you suspect symptoms of heart attack, you should call for an ambulance or seek immediate medical attention. To find out more about heart attack.

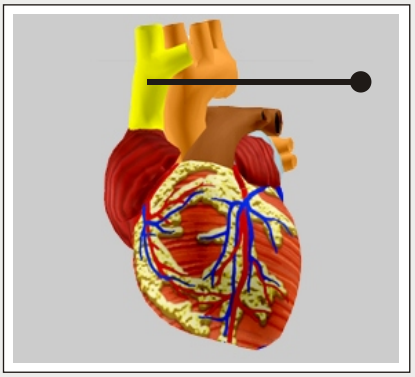
The main function of the heart is to deliver oxygen-rich blood to every cell in the body. The arteries are the passageways through which the blood is delivered and the veins are the passageways through which the blood is collected and returned to the heart. The coronary arteries supply blood to the heart muscle. When the coronary arteries become narrow or blocked, blood flow to the heart is reduced. This decrease in blood flow to the heart deprives the heart muscle of oxygen. Heart attack (also called myocardial infarction) is when part of the heart muscle is damaged or dies because it isn't receiving oxygen.

Heart Anatomy
Heart Chambers, Walls

Vena Cava

The vena cava is a large vein that brings the deoxygenated (impure) blood back to the heart and empties it into the right atrium.

(Refer fig.1)

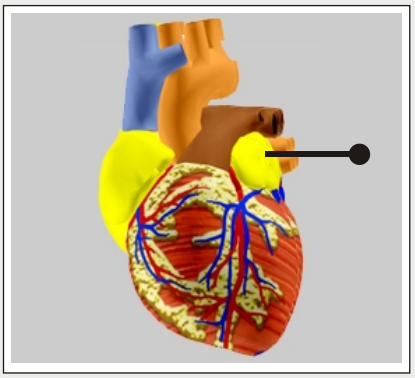


Vena Cava

(Fig.1)

Atria

There are two atria (Right & Left), which are two of the four muscular chambers of the heart. The right atrium collects the impure blood from the vena cava and delivers it to the right ventricle.
This delivery is regulated by the Tricuspid valve.



Atria

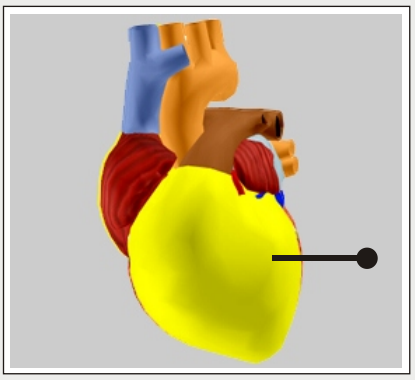
(Fig.2)

The left atrium collects the oxygenated blood from lungs from the pulmonary veins and delivers it to the left ventricle. This delivery is regulated by the Mitral valve.

(Refer fig.2)

Ventricles

There are two ventricles (Right & Left), which are two of the four muscular chambers of the heart. The right ventricle collects the impure blood from right atrium and delivers it to the lungs for purification. This delivery is regulated by the pulmonary valve.



Ventricles

(Fig.3)

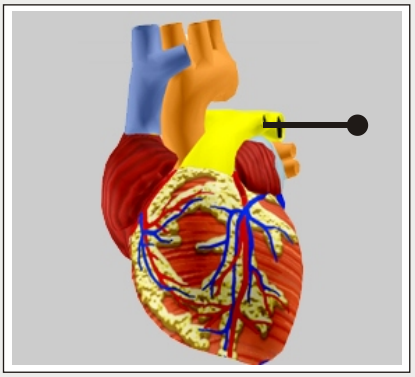
The left ventricle collects the pure blood from left atrium and delivers to the Aorta (main artery) from where it is pumped to the rest of the body. This delivery is regulated by the Aortic valve.

(Refer fig.3)

Pulmonary Arteries

As part of the pulmonary circulation, pulmonary arteries carry the de-oxygenated blood from the right ventricle to the lungs for oxygenation.

(Refer fig.4)



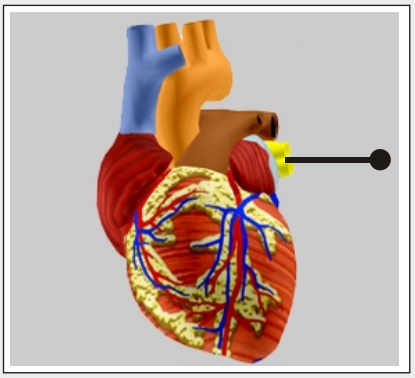
Pulmonary Arteries

(Fig.4)

Pulmonary Veins

Blood, after oxygenation in the lungs, is brought back to the heart by pulmonary veins and delivered to left atrium.

(Refer fig.5)



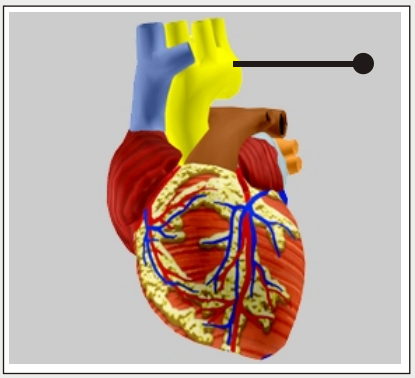
Pulmonary Veins

(Fig.5)

Aorta

The Aorta, the largest artery in the body, collects blood pumped from the left ventricle to branch and deliver the oxygen rich blood to various organs and tissues in the human body.

(Refer fig. 6)



Aorta

(Fig.6)

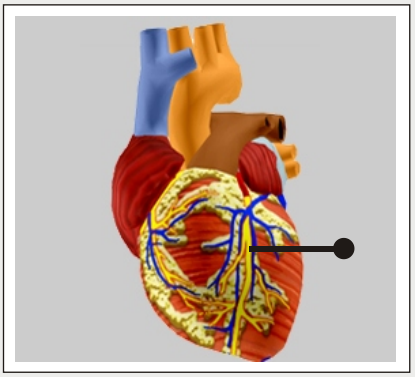
Coronary Circulation

The coronary circulation consists of the blood vessels that supply and remove blood to the heart tissue. Coronary arteries supply oxygen-rich blood to the heart; coronary veins remove the deoxygenated blood from the heart. Serious heart damage may occur when the coronary circulation is Blocked.

Coronary Arteries

Blood is supplied to the heart via the coronary arteries. Two main coronary arteries are branched from the aorta, and branch into several small arteries to supply oxygen rich blood to the heart.

(Refer fig. 5)



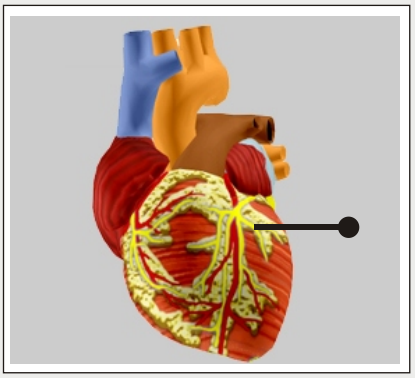
Coronary Arteries

(Fig. 5)

Coronary Veins

The deoxygenated blood from the heart muscle is collected by the coronary veins and drained into the right atria.

(Refer fig. 6)



Coronary Veins

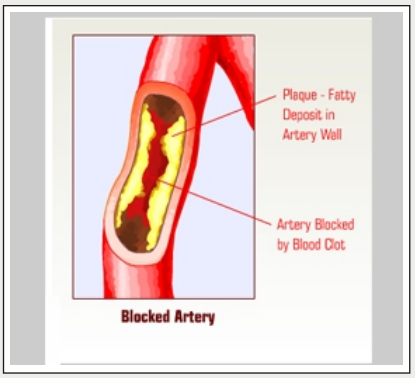
(Fig. 6)

Atherosclerosis

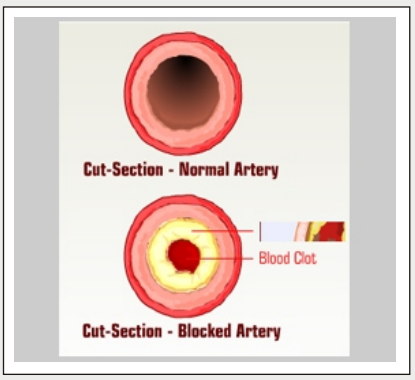
Atherosclerosis is a condition in which fatty material is deposited along the walls of arteries. This fatty material (often called plaque) thickens, hardens, and may eventually block the arteries.

Atherosclerosis of the coronary arteries is the most common cause of heart attack.

(Refer fig. 7 & 8)



(Fig. 7)



(Fig. 8)

Risk Factors

Risk factors for atherosclerosis and heart attack include:

- Family history
- Hypertension (High Blood Pressure)
- High Cholesterol or other fat levels in blood
- Inactive lifestyle, including obesity/ overweight / lack of exercise
- Diabetes (High blood sugar)
- Cigarette Smoking

(Refer fig. 9)

(Fig. 9)

How Will You Feel?

Chest pain is the most common complaint in heart attack. Unlike angina, pain does not subside on resting. However, the symptoms may be different.

For example:

- Fullness, uncomfortable pressure, squeeze in the middle of the chest
- Tightness, burning or a heavy weight over your chest
- Pain may radiate to your shoulders, neck, arms, upper abdomen, back or jaw.

20% of the patients with heart attack have no pain. This is seen in diabetics, high blood pressure and elderly patients. **Heart attack is a medical emergency and if you suspect symptoms of a heart attack, you should call for an ambulance or seek immediate medical help.**

Complications

Complications depend upon the location and extent of the heart damage (due to blocked blood supply). Early intervention and treatment could prevent these complications.

- Cardiac arrhythmias - cardiac arrhythmias are disruptions in the natural rhythm of the Heartbeat.
- Cardiac Failure - here the heart fails to pump blood to meet the metabolic demands of the Body.
- Pericarditis - pericarditis is the inflammation of the pericardium, the outer covering of the heart which acts as a shock absorber for the heart.
- Recurrent heart attacks - increased risk of heart attacks and angina in the future.
- Blood clots (Thromboembolism) - blood clots may be formed due to irregular rhythms and prolonged immobility. You may be prescribed blood thinning agents which needs to be monitored with regular blood tests.

Investigations

Heart attack is a medical emergency and if you suspect symptoms of heart attack, you should call for an ambulance or seek immediate medical help. The following tests may be conducted in the emergency department or at the hospital.

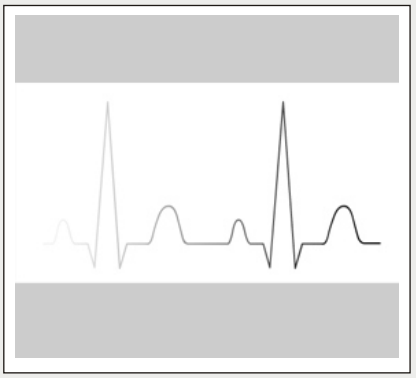
Blood Tests

Routine blood tests may be done for blood counts, electrolytes, cholesterol and cardiac enzymes. The cardiac enzymes in blood are markers of heart damage.

(EKG or ECG) Electrocardiogram

EKG is a test to measure the electrical activity of the heart and provides your doctor with information about your heart rate, rhythm, size of the heart chambers and previous damage to the heart. It is non-invasive and painless and is performed by attaching electrodes to various parts of the body.

(Refer fig. 10)

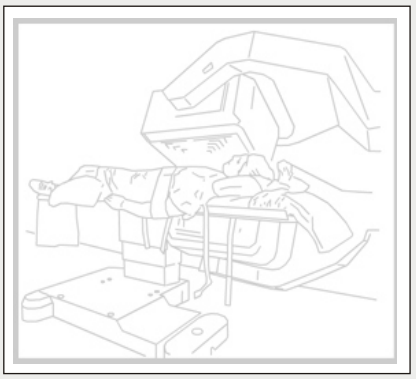


(Fig. 10)

Nuclear Heart Scans

This test shows blood flow to the heart and any damage to the heart muscle. A radioactive dye is injected into your bloodstream. A special camera can see the dye and find areas where blood flow is reduced.

(Refer fig. 11)

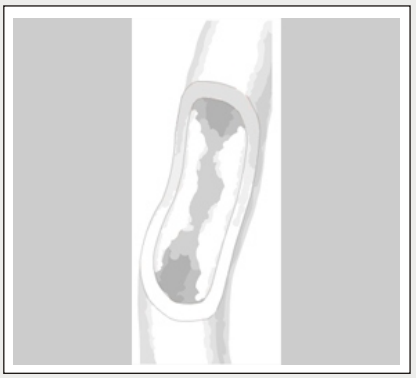


(Fig. 11)

Angiography (Cardiac Catheterization):

Angiography is a test that enables your doctor to take x-ray images of the inside of your blood vessels. This procedure is performed by a cardiologist and involves threading a tiny catheter through a small incision into a large artery, usually in your groin.

(Refer fig. 12)



(Fig. 12)

Angiography (Cardiac Catheterization):

Once the catheter reaches the site of the blood vessel to be viewed, a dye is injected and x-ray images are taken.Angiography enables your doctor to view how blood circulates in the vessels in specific areas of the body.

(Refer fig. 12)

Management

In angina, the blood supply to the heart is reduced and in heart attack the blood supply is blocked. Heart attack treatment should start as soon as possible to prevent complications and irreversible damage to the heart.

If a heart attack is confirmed then immediate treatment may include:

- Relieve anxiety and shock
- Pain relief
- Oxygen
- Thrombolytic treatment to break down the clot
- Medications to stabilize the heart rhythm
- Angioplasty or Surgery

General treatments include those listed below.

Lifestyle Modifications

The following life style modifications can help to prevent or lower your risk for heart disease and heart attack and improve your heart health

Healthy Diet Choices - eating a low fat, low salt, low cholesterol diet

Don't Smoke - if you do smoke, talk to your doctor about available options to help you quit. You will immediately lower your risk of heart disease as soon as you quit.

Exercise - increasing your physical activity is a great way to reduce stress, improve sleep, lose weight, and improve your overall sense of well being. Always discuss with your doctor before beginning any new exercise program.

Weight Loss - being overweight puts extra strain on your heart. Discuss weight loss options with your doctor and follow his advice.

Diabetes Control - take your diabetic medications, check with your doctor for exercises and physical activity as well as nutrition advice.

Medications

Along with life style modification, medications may be needed to control symptoms and improve the heart health. More than one medication may be prescribed. Some common coronary artery disease medications are listed below.

Anticoagulants or Thrombolytic agents: they are given during a heart attack to break up a blood clot in a coronary artery in order to restore blood flow.

Aspirin: reduces the tendency of small blood cells called platelets to stick together, which helps prevent the formation of a thrombosis.

Nitroglycerin (NTG): This quick acting sublingual tablets or spray relax the arteries of the heart and relieve angina attacks.

Digitalis: makes the heart contract harder and is used when the heart's pumping function has been weakened; it also slows some fast heart rhythms.

ACE (angiotensin converting enzyme) inhibitor: stops the production of a chemical that makes blood vessels narrow and is used to help control high blood pressure and in cases of heart failure.

Long-acting nitrates reduce the frequency of angina attacks. These can be in the form of tablets or patches and are very effective. Their main side effect is headache, but this often disappears once the nitrate has been taken for some weeks.

Beta blockers work by slowing down the heart rate and decreasing the force of the heart muscle. This reduces the heart's need for oxygen and improves the supply of blood to the heart muscle.

Calcium channel blockers reduce the frequency and severity of chest pain. They reduce the muscle tension in the coronary arteries, expanding them and creating more room. They also slightly relax the heart muscle, reducing the heart's need for oxygen and reducing blood pressure.

Surgery

When lifestyle changes and medications are not sufficient to control angina, your doctor may suggest surgery or invasive procedures. The following procedures improve blood flow to the heart to relieve the chest pain and may prevent a heart attack in the future.

Angioplasty – In this procedure, a thin tube is threaded into the coronary arteries via a blood vessel in the groin, in a similar procedure to cardiac catheterization. A small balloon attached to the end of the tube is inflated, which widens the blocked portion of the artery and allows increased blood flow to the affected part of the heart muscle. Angioplasty may be done with or without stenting.

Coronary Artery Bypass Graft (CABG surgery) - the coronary artery blockage is bypassed with a section of vein, taken from the leg or from the forearm.

Cardiac Rehabilitation

Cardiac rehabilitation is a clinically supervised program to help heart patients recover and regain their overall physical and mental functioning. This helps to prevent recurrent heart attacks.

Cardiac rehabilitation programs include education about cardiac health, lifestyle modifications, psychological support, nutritional advice and much more.

Prevention

The following life style modifications can help to prevent or lower your risk for heart disease and heart attack and improve your heart health:

- Healthy Diet Choices - eating a low fat, low salt, low cholesterol diet
- Don't Smoke - if you do smoke, talk to your doctor about available options to help you quit. You will immediately lower your risk of heart disease as soon as you quit.
- Exercise - increasing your physical activity is a great way to reduce stress, improve sleep, lose weight, and improve your overall sense of well being. Always discuss with your doctor before beginning any new exercise program.
- Weight Loss - being overweight puts extra strain on your heart. Discuss weight loss options with your doctor and follow his advice.
- Treat related conditions - such as high cholesterol, high blood pressure, diabetes, obesity, and being overweight.
- Regular health screenings and following your doctor's advice.

Disclaimer

Heart disease is preventable and the actions you take to reduce your risk of heart disease by making lifestyle changes will increase your chances for a long and healthy life.

☐ ☐ ☐ **YOUR SURGERY DATE**

☐ **READ YOUR BOOK AND MATERIAL**

☐ **VIEW YOUR VIDEO /CD / DVD / WEBSITE**

☐ **PRE - HABILITATION**

☐ **ARRANGE FOR BLOOD**

☐ **MEDICAL CHECK UP**

☐ **ADVANCE MEDICAL DIRECTIVE**

☐ **PRE - ADMISSION TESTING**

☐ **FAMILY SUPPORT REVIEW**

Physician's Name : _____

Physician's Signature: _____

Date : _____

Patient's Name : _____

Patient's Signature: _____

Date : _____