

CORONARY ARTERY BYPASS GRAFTING SURGERY (CABG)

TO THE PATIENT

Coronary artery bypass surgery has become a common procedure for restoring health and vigor to persons suffering from coronary artery disease. . This information is prepared for the patient who is considering such an operation and for his/her family. While it may not answer all your questions about the procedure, it should help you understand what this type of operation involves. Any doubts and questions should be discussed with your doctor who will be able to explain more details of the surgical procedure and recovery period.

WHAT IS CORONARY ARTERY DISEASE?

Coronary artery disease is a disease of the arteries (fig-1) that surround the heart and supply blood to the heart muscle. When those arteries harden and become partially obstructed by atherosclerosis (fig-2), coronary artery disease exists. The obstruction of the coronary arteries reduces the amount of blood reaching the heart muscle. When coronary artery blood flow is reduced, it may lead to pain called angina pectoris or a heart attack that scars part of the heart muscle.

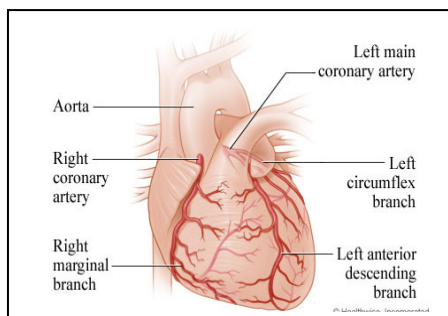


Fig-1 Coronary Arteries

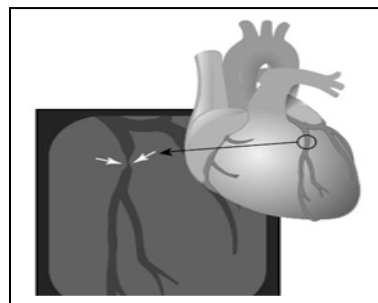


Fig-2 Narrowing of Coronary Artery as seen in Coronary angiogram

WHAT IS CORONARY ARTERY BYPASS GRAFT SURGERY?

Coronary artery bypass graft surgery is an operation in which arteries removed from inside the chest wall or hand or veins removed from the legs are used on the surface of the heart to bypass obstructions in the coronary arteries (fig-3). The blood supply to the heart muscle thus is restored to areas where it was reduced by atherosclerosis.

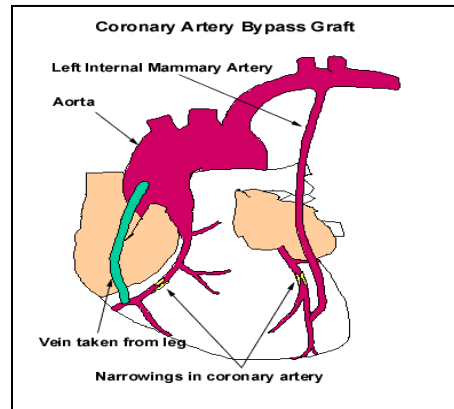


Fig-3

WHAT WILL CORONARY ARTERY BYPASS GRAFT SURGERY ACCOMPLISH?

The purpose of coronary artery bypass graft surgery is to improve the blood flow to the heart muscle. More blood flow should mean fewer anginas or no angina at all. It should reduce the need for medication and improve exercise capability. The operation also may prolong life.

WHAT ARE THE INDICATIONS FOR CABG SURGERY?

Decision to do surgery is taken by your cardiologist and cardiac surgeon after looking at your coronary angiogram. Surgery may be recommended for a variety of reasons: if medications no longer relieve your angina, if you have life-threatening coronary blocks or if you have complications following a heart attack.

WHAT IS BEATING HEART BYPASS SURGERY?

Coronary arteries are 1.5 to 2.5mm in diameter. When heart is beating, it is difficult to do surgery on such small blood vessels. Traditionally bypass surgery is done after stopping your heart. During this time your blood is circulated using artificial heart-lung machine. Now with the advent of newer devices, it is possible to do coronary artery bypass surgery without stopping heart (fig-4). What method suits you will be decided by your surgeon in the operating room.

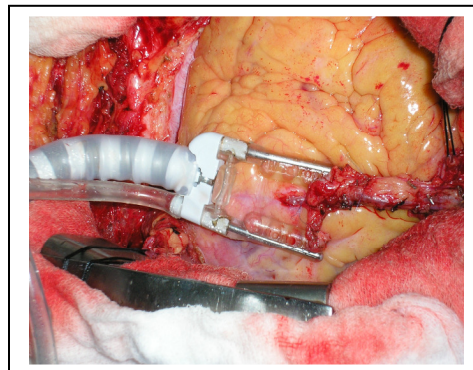


Fig-4

HOW DOES ONE PREPARE FOR CORONARY ARTERY BYPASS GRAFT SURGERY?

Both you and your family should have sufficient information and understand about the operation and hospital procedure to relieve your natural anxiety. You should feel free to discuss any concerns with the doctor. Because procedures vary from one hospital to another, be sure to find out about visiting hours, discussions with physicians and any other hospital related concerns you may have.

WHAT ABOUT HOSPITAL ADMISSION?

Admission to the hospital is usually scheduled for two or three days before the date of the operation to allow time for pre-operative testing, control of diabetes etc. Instructions for clearing the lungs of mucus secretions, coughing techniques and deep breathing exercises will be given. During this time, you will become acquainted with the team of surgeons, anesthetists, nurses and therapists who provide your care during and after the operation.

ARE PEOPLE FRIGHTENED OR NERVOUS BEFORE THE OPERATION?

It is normal to feel nervous before important events. Nervousness or anxiety before an operation is a normal reaction just as athletes often are nervous before important games.

Nervousness often is lessened by understanding the need for the operation, meeting members of the professional team and asking questions. Sometimes mild sedatives may be needed.

THE NIGHT BEFORE SURGERY:

Your anesthesiologist takes a brief medical history and explains your anesthesia to you. You will be given a normal dinner. If you are for surgery early next day, you should not eat or drink anything after midnight. If you are for surgery in the afternoon, you will be given early breakfast and after that you should not take anything. To help prevent infection after surgery, your chest, legs and groin will be shaved and you will be asked to shower before going to bed.

THE MORNING OF SURGERY:

Before going for surgery, you are weighed to help your doctor know if you are retaining fluid after surgery. You may be given a mild sedative to help you relax and you are taken to the operating room on a trolley for your safety. Your family or other support people are directed to a waiting area and will be kept informed of the progress of your surgery.

HOW LONG DO THESE OPERATIONS USUALLY LAST?

Generally, this operation takes from three to six hours. However, the length of the operation depends on its complexity. Because of this, each operation is different and the duration is difficult to predict accurately.

WHAT HAPPENS IMMEDIATELY AFTER THE OPERATION?

Once the operation is over, patients are cared for in an intensive care unit. It is here that patients regain consciousness after the anesthesia wears off. Tubes and wires are attached to parts of the body to provide for safe and efficient recovery. You may spend a few days in intensive care unit, although everyone recovers from surgery at a different pace. During this time one visitor will be allowed in the morning and again in the evening to see you. Make sure that at least one of your attendants will be available in the morning outside intensive care unit area. After doing rounds in the morning, doctor will discuss with them about your progress.

WHERE WILL THE INCISIONS BE MADE?

The incision used to reach the heart is made along the midline of the chest through the breastbone (fig-5). Sometimes a minimally invasive incision (fig-6) may be useful.

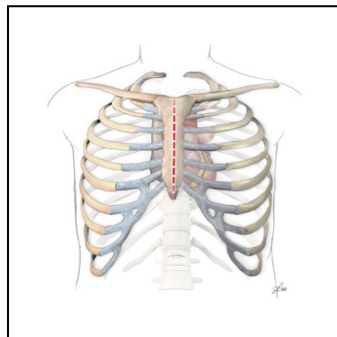


Fig-5 Traditional incision

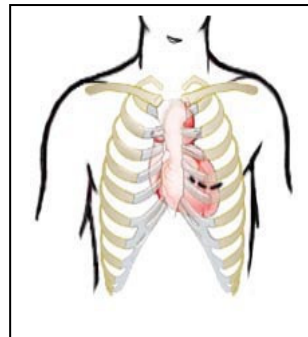


Fig-6 Minimally invasive incision

There usually will be one or more incisions in the leg where the vein is removed (fig 7 and 8) and sometimes in the forearm where the radial artery is removed for use for the bypass.



Fig 7 Regular incision for vein



Fig-8 Incisions for Endoscopic Vein harvesting

WHAT CAN BE DONE TO HELP IN RECOVERY?

Deep breathing exercises and coughing are important ways to help recover quickly. Coughing reduces the chances of pneumonia and fever and will not disturb the incision or bypass grafts. The nurse or therapist will clap her/his hands against the side of your chest, causing internal vibrations that loosen the secretions in the lungs. This makes it easier to cough them up. Most patients, fearing pain or discomfort, do not like to cough after an operation. But it is essential that it be done. Some patients find it easier to cough if the chest is supported by a pillow. You may be asked to inhale or exhale into a spirometer, a device to expand and exercise your lungs.

WHAT ACTIVITY LEVELS ARE PRESCRIBED?

The activity level is prescribed individually for each patient. At first, it may be sitting in a chair or walking around the room. Later, there will be short walks in the hall and eventually, stair climbing and brisk, longer walks in preparation to go home. Sponge baths are given right away and it is only a few days before a shower and shampoo is permissible.

WILL I FEEL PAIN AFTER THE OPERATION?

Most patients complain of being sore but do not have severe pain. This soreness originates from the surgical incisions and muscle spasms. It can be helped by good posture and frequent movement of the arms and shoulders. If the pain is severe, medication may be obtained from the nurse upon request.

WHAT ABOUT THE HEALING OF THE INCISIONS?

You can keep the incisions clean by washing them gently in your daily bath or shower. If you find excess swelling, redness, oozing or tenderness, call your doctor. About six weeks are required for complete healing of these wounds. External stitches are removed about 2 weeks from the day of surgery.

YOUR HOME ACTIVITY PLAN

After discharge from Hospital: It is important to follow a few basic guidelines.

- Initially limit your activities at your home
 - Get plenty of rest; Your body requires 6 to 8 hours of sleep every night
- 1. During Weeks 1 and 2:**
- Stay on level ground. Avoid climbing a full flight of stairs more than once or twice a day. Also avoid lifting weights.
 - Resume self-care activities. When bathing, avoid very hot or very cold water. This may cause dizziness or light-headedness.

- Avoid driving and bending activities. You may be weak from your hospitalization, so you may not react as quickly as you normally would. Riding in a car is acceptable after one month.
- Begin walking for short periods of time. (Two to four times a day starting with 5 mints each time). You may walk through several rooms in your home.
- Begin light home activities, including simple meal preparation and lap activities such as sewing and paper work.

II. During weeks 3 and 4:

- Increase walking by adding five minutes each week to the total daily walking time.
- Continue to avoid lifting heavy objects-those more than 10 kgs.

III. During weeks 5 and 6:

- Walking at least 25 minutes each time- twice a day
- You can gradually lift objects up to 15 kgs.

IV. Instructions for walking program:

- Walking is the best exercise
- Check your pulse. If your pulse raises above 120 bets per minute, stop and rest
- Lightheadedness, nausea, fatigue and chest discomfort are all signs you should stop and rest
- It is always important to warm up and cool down with any exercise. The warm-up and cool-down can consist of five minutes of walking at a slower pace.
- Walk at a pace that does not leave you breathless.
- Begin by walking five minutes at a time
- Avoid walking within 1-1 ½ hours after eating. Walking before eating reduces appetite thereby helping weight control
- It is important to walk regularly year-round. Continue walking while traveling and after returning to work.
- Aim to slowly increase walking to 1 hr/day at a single sitting at a normal rate of 4 km/hr

- After 4 to 5 months if you are comfortable and doctor permits go for brisk walk 5-6 km/hr for 1 hr.

V. Leg bandage should be applied upto 3 months (If vein is harvested from leg). To be used in day time only. At night remove the bandage and elevate the foot with pillows.

VI. Spirometry exercise and breathing exercise up to one month as explained.

DRIVING:

Since it takes 4-6 weeks for your breastbone to heal, avoid driving during this time. Your medications may also make you drowsy and slow your reflexes.

SEX:

Rest assured that sex won't interfere with your healing, although you may feel more comfortable sharing your affection in nonsexual ways like going out to dinner or just being close-for the first few weeks after surgery. When you feel ready for intercourse, any position is fine as long as it is comfortable, relaxing and allows for easy breathing.

RETURN TO WORK:

Your doctor can advise you when to return to work at your first follow-up visit. People with desk jobs often return in 6-8 weeks, it may be longer for more physical work.

ZEST:

Recovering your former zest may take some time. But take heart: it will happen. You will feel like yourself before long. Open heart surgery is a unique physical and personal challenge. When your sense of well-being and enjoyment in life return, you will know you have successfully recovered.

WHAT ARE THE LONG TERM PRECAUTIONS?

By doing bypass surgery, we are bypassing the existing blocks in coronary arteries. But there is no guarantee that these blocks will not appear in new areas in arteries or in the grafts. Even though we do not know the exact cause for this disease, now we know of many risk factors which if not controlled properly, increase the chances of having this disease manifold. So lots of precautions are needed to prevent it happening again.

1. Control of Diabetes Mellitus: Strict control of Diabetes is essential. Follow the instructions of your diabetologist and dietician.

2. Quit Smoking: The single best thing you can do is quit smoking. It is never too late to stop smoking. Setting a date to quit and getting support from your friends and family can help you kick this habit for good.

3. Control of high blood pressure: High blood pressure can put added strain on your heart and speed the process of atherosclerosis. If you are on medications for high blood pressure, be

sure to take them as directed. A low salt diet, exercise and relaxation techniques can also help control your blood pressure.

4. Diet: A low fat, low cholesterol diet may help prevent the buildup of cholesterol (a fatty, wax like substance) in your arteries, which can restrict blood flow to your heart. Try to avoid saturated fats such as butter, dairy products and fatty meats. Instead use polyunsaturated fats such as sunflower and liquid corn oils. Limiting fats to two tablespoons a day and eating fewer high-cholesterol foods (eggs, red meat, and whole milk) may also be advised.

5. Regular Exercise: Regular exercise can strengthen your heart muscle and boost its ability to use oxygen. Jogging, brisk walking, swimming and bicycling are all excellent ways to exercise. Your exercise program should start slowly and progress gradually. After heart surgery, an exercise programme should only be started with your doctor's supervision.

6. Taking your medications: Medications are usually needed after bypass surgery to help ensure your future cardiac health. Your doctor may prescribe certain medications which keep cholesterol down and prevent clotting blood. Take exact dose as directed.

FOLLOW-UP VISITS:

Follow-up visits with your doctor help assure that you are recovering safely after surgery. A follow-up schedule with the necessary investigations needed will be given to you at the time of discharge.

WHAT CAN I LOOK FORWARD TO AFTER THE OPERATION?

As your recovery progresses, you will be able to appreciate more fully the effectiveness of the surgery. The increased blood flow through your coronary arteries would mean less angina or none at all. You may find you need much less medication, if any, and that you are able to sustain physical activity and exercise with a greater capacity. In addition to feeling better, there is also a chance that your surgery may prolong your life.

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