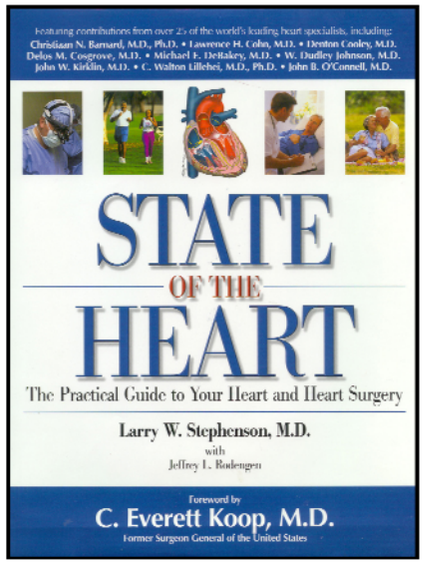






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Most patients are discharged from the hospital between the fourth and the eighth day after their operation.

CHAPTER FIFTEEN

# Recovery After Heart Surgery and a Second Bypass Operation... Will You Need It? When?

RECOVERY AFTER HEART SURGERY begins when the patient leaves the operating room and arrives in the intensive care unit. By that time, the anesthesia is wearing off, and the patient begins to awaken. Patients are still connected to drainage bottles and monitoring devices, and a temporary pacemaker may also be used.

People usually start to wake up within an hour after their heart surgery and are soon able to follow simple commands such as "Move your foot, move your arm." When patients are alert and breathing on their own, and if the blood oxygenation level is appropriate, the endotracheal tube in the patient's throat and windpipe (trachea) is removed. This usually occurs anywhere from a few hours after heart surgery to the next morning. In some cases, with some cigarette smokers for example, the endotracheal tube may need to stay in longer.

Chest drainage tubes can usually be removed by the next day. Sometimes they're left in until the second morning after heart surgery.

Eating is also introduced gradually. If the patient is awake and alert, and his or her intestines are functioning, the standard fare is ice chips and water. From this point, progress toward a liquid diet is usually rapid.

By the morning after surgery, most patients are able to sit in a chair next to their bed. Depending on the progress and also, to some extent, the preferences of the heart surgery team, most patients are transferred from the intensive care unit, or ICU, late on the morning after the heart surgery.

### Transfer from the ICU

After transfer from the ICU to the hospital ward, also known as the "step-down unit," the heart rhythm is still monitored at the nursing station. By the second postoperative day, most people are able to walk to the bathroom and down the hospital corridors with some assistance. By the third day after heart surgery, some people are ready for discharge. Others may have to stay for a few more days, and some will have to stay longer even, depending on the circumstances.

### Discharge Home

Today, most heart surgery patients are discharged between the fourth and the eighth postoperative day. Before discharge,

they are given instructions regarding the various medications that are usually prescribed after heart surgery. For example, patients with considerable heart pumping dysfunction will fare better with ACE-inhibitor drugs. Patients with bypass grafts will likely need aspirin. Patients with abnormal heart rhythms may require medication to regulate their heartbeat. A dietician also instructs patients on appropriate diets. Many of the instructions the patients get before discharge deal with various activities they can and cannot do at home, and in a way this is more or less an informal cardiac rehabilitation program.

The most common form of incision during heart surgery is an incision down the middle of the breastbone, which is closed after the surgery with stainless steel wires. Although the wires stay in indefinitely, there is a period of healing after heart surgery that demands special attention. Recent heart surgery patients are instructed not to lift anything heavier than twenty pounds for four to six weeks. In some ways, this healing process is similar to that for a broken arm or leg bone, which takes about three months to heal.

There is usually little pain associated with this incision, called a midline sternotomy incision. Nerves come from the spinal cord out of the back bone and run around the ribs to the front, so there is not a concentration of nerves in the area. However, it is worth noting that everybody's pain threshold is different. On some days, the incision pain can be more noticeable than on others. In most cases, it is gone after three to four weeks, although in some patients, it may be present for two months or longer.

Typically, we recommend that patients avoid using excessive salt in the first few weeks after the surgery. Don't eat potato chips, pickles, and other salty foods, and don't add salt to food. After major operations, and particularly heart operations, the body has a tendency to retain salt and water. Because salt causes people to drink more liquids, the result can be edema, or swelling of the legs. It can also lead to fluid overload, a condition in which veins become engorged and the extra fluid backs up into the lungs. The patient then becomes short of breath.

Salt restriction is usually no longer necessary after about a month. It is, however, still necessary in some patients who are on certain medications and those who have high blood pressure or some degree of chronic heart failure.

### Surgical Wounds

When the patient leaves the hospital, the wound's skin edges are joined together, and the wound is in the process of healing. Wounds should not be scrubbed with a washcloth but gently cleaned with soap and water. In many cases, stainless steel staples are used to close the skin. If a patient goes home between the third and even the fifth postoperative day, the staples are usually left in, and arrangements are made for them to be removed later.

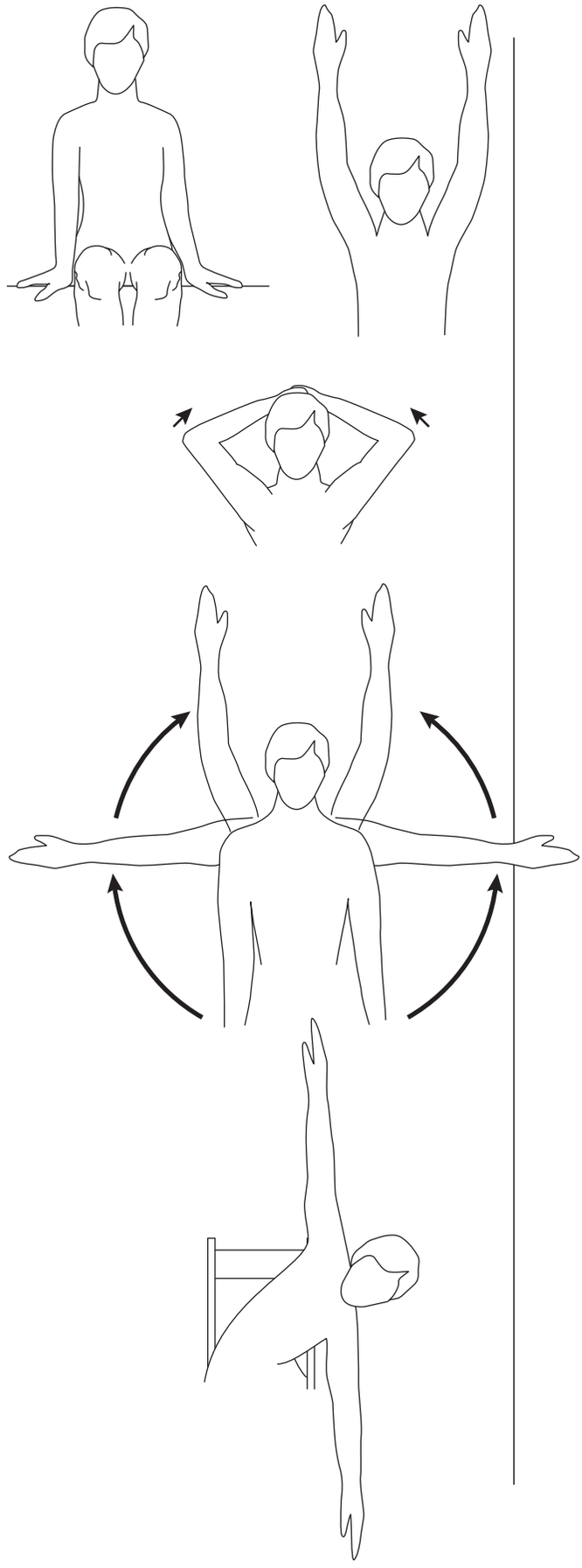
### Recovery at Home

After finally arriving home, most patients discover they are weaker than they thought they would be. This is typical. Hospitals are very sheltered environments, and, although confidence is gained walking up and down the hospital hallways, there are obstacles at home that weren't considered, like stairs and everyday movements.

Confidence usually returns fairly quickly as energy levels rise, but patients should strive to strike a balance between exercise and rest. Exercise itself is very good for a recovering heart patient if done very carefully at first and in moderation. It will help control blood pressure and blood sugar, burn excess calories, and lower body fat. Before any heavy exercise is possible, light stretch-

ing is a good idea. There are several effective stretches that will help the incision heal properly.

- ♥ Arm raises — forward: In a sitting position, straighten your arms, and raise them over your head.
- ♥ Pectoral stretches: In a sitting position, begin with your hands on top of your head, and push your elbows back until they are in line with your hands. Relax, bringing elbows slightly forward.
- ♥ Arm raises — side: In a sitting position with your arms at your sides, straighten your arms and raise them over your head. Keep your palms up.
- ♥ Sideways body bends: Place your feet about 1½ feet apart for balance while sitting in a chair. Bending slowly sideways at your waist, reach your right hand upward towards the ceiling and lower your left hand towards the floor on the left side of your chair. Hold for three seconds. Return slowly to sitting position.



After these light exercises have been performed, check your pulse.

Within a week or so, many patients have progressed to taking walks outside. Within a month, they can often walk a mile or two without difficulty. Driving, however, is not recommended for the first several weeks after heart surgery. I must admit, however, that one of my patients owned his own eighteen-wheeler tractor-trailer rig, and I found out when he came in for his routine postoperative visit five weeks after the heart surgery that he had gone back to driving his rig across the country a week after he returned home from his heart surgery. Clearly, we don't recommend this.

# Learn How to Take Your Pulse

AFTER HEART SURGERY, FATIGUE and stress during exercise should always signal that a rest is needed. Before that, however, patients should check their pulse during exercise to make sure the heartbeat is staying within a reasonable limit.

It is important to remember that pulse rates vary from individual to individual. There is no "magic number" but rather a range of about sixty to one hundred beats per minute when the heart is at rest. The pulse rate is increased by exercise as well as emotional states like anger, fear, excitement, and anxiety.

Your pulse can be taken anywhere on the body where an artery near the surface can be compressed against a firm surface. Most commonly, doctors use the inner forearm (wrist), where the radial artery can be compressed against a bone in the forearm. There are some practical approaches to taking a pulse.

- ♥ Sit in a comfortable position.
- ♥ Place the index, second, and third fingers of one hand on the wrist of the other hand.
- ♥ Exert firm pressure.
- ♥ If you cannot feel a pulse, lighten the pressure. If that doesn't work, move up along the wrist until a pulse is located.
- ♥ Count the beats for ten seconds, then multiply by six. This is the "resting pulse" per minute.
- ♥ To determine a good "speed limit" for exercise, add three to the resting pulse. For example, if the resting pulse is fifteen (or 90 beats a minute), a reasonable exercise target would be 18 beats in a ten-second period (or 108 beats per minute).

The pulse should be checked in the middle and at the end of exercise. If it rises above a reasonable limit, take a break or slow down. This can be done with abdominal breathing exercises. During an abdominal breathing exercise, the hands are placed over the abdomen and a deep breath is drawn in through the nose, allowing the abdomen to rise under the fingers. Breathe out through the mouth while pushing in on the abdomen. Repeat this eight to ten times. This will lower your respiratory rate.

Usually, after five or six weeks, patients can begin driving again, but even this should be avoided if the patient is suffering from dizzy spells, blackouts, or lightheadedness. When driving, it is a good idea to put a pillow between the seat belt and the incision to protect it.

Sexual activity can usually be resumed three or four weeks after heart surgery, depending on how the patient feels and how recovery is progressing.

Decreased appetite is common for the first several weeks after heart surgery, but appetite will gradually improve. Insomnia is experienced by some patients at times. Moodiness, irritability, and mild depression are not uncommon on some days of the recovery phase. Usually, over several weeks, these symptoms disappear, and patients will have the type of personality they had before heart surgery. A strong emotional support system is very helpful in getting through this period.

Even after several weeks of healing, excess stress should not be put on the breastbone. The arms are connected to the collarbones, which are anchored on the sternum. Any exercise that requires arm strength, including push-ups and lifting objects weighing more than twenty pounds, puts pressure on the breastbone and could cause it to become loose. For this reason, it is recommended that patients push with their body weight instead of pulling whenever possible.

Similarly, sports such as bowling, tennis, and golf should be avoided for the first three months. After that time, any of these activities can usually be resumed, although you should always check with your cardiologist before resuming these activities.

After their surgeries, patients are transferred to the intensive care unit, where they are constantly monitored.

**Exercise Stress Test:** A test during which a patient is connected to an electrocardiogram, or possibly other types of monitoring machines, and asked to walk on a treadmill or possibly pedal a stationary bicycle while being monitored.

### Recovery from Coronary Bypass Surgery

About three to eight weeks after heart surgery, some cardiologists recommend an **exercise stress test** for all of their patients. The stress test is performed as a baseline evaluation. The test may also be done to assess the patient's status in case of recurrent angina. This is not true for all doctors, however. Others perform the test only for those patients who may be doing activities that require more blood going to the heart. A good example is the patient who plans to run in a marathon or plans on playing tennis or perhaps patients who have the lives of many people in their hands, such as commercial pilots.

Repeated tests are also performed in patients with recurring or ongoing angina. If the exercise stress test result is normal, one can usually resume virtually any activity provided it is approved by a cardiologist. If it's abnormal, the cardiologist may recommend some limitation of activity or change in medication.

### Recovery from Heart Valve Surgery

Recovery from heart valve surgery is similar in many ways to recovery from coronary artery bypass surgery. The incision is similar, and the breastbone needs time to completely heal. Again, excess salt should also be avoided.

**Anticoagulant:** A drug that prevents or slows the blood clotting process. Also referred to as a blood thinner.

Some patients will be taking coumadin (warfarin), an **anticoagulant** or blood thinner. As long as coumadin is being taken, patients should avoid all vigorous contact sports such as rugby, soccer, and football. Dangerous sports like skydiving, in which one might receive blows to the head or begin bleeding, should also be avoided.

If the blood is not anticoagulated enough, blood clots can form on the heart valve or break off the valve and go to the brain, causing a stroke, or the valve itself could even clot off. If the anticoagulation level is too great, bleeding from the intestines or kidneys or even a stroke caused by bleeding into the brain could develop.

With heart valve surgery, the ventricle itself may be very thickened or enlarged as a result of the long-standing heart valve disease that was present before the valve surgery. In this case, the muscle tends to outgrow its blood supply, and although the valve has been fixed or replaced, the heart itself will likely take several months to recover. Patients should therefore avoid vigorous exercise such as running and playing tennis until these activities are approved by a cardiologist.

Stress tests are sometimes used after valve replacement that did not include coronary artery bypass grafting to assess postoperative exercise ability and heart rhythm during exercise. An echocardiogram is often recommended to see how the ventricles are recovering after the valve has been repaired or replaced.

Patients who have had heart valve surgery will need to undertake a regimen of antibiotics before and after dental surgery or additional surgical procedures.

### Cardiac Rehabilitation

Cardiac rehabilitation actually begins when one leaves the operating room. By the time patients arrive home, they are starting the second or third stage of cardiac rehabilitation, depending on whose definition of cardiac rehabilitation is used.

It is important to only gradually increase physical activities like walking. This promotes recovery. People who live in cold areas often do their walking in large shopping malls because extreme temperatures (less than 30˚F and more than 90˚F) should be avoided for the first month or so. During that period, patients

should avoid contact with people with colds and other types of illnesses that, if contracted, will cause coughing.

### Formal Cardiac Rehabilitation Programs after Heart Surgery or Heart Attacks

Some cardiologists feel strongly that all patients should be enrolled in a formal rehabilitation program. These programs typically last six to twelve weeks after heart surgery or heart attacks. Other cardiologists feel that the need to enter a formal cardiac rehabilitation program should be more individualized, and not all patients, particularly those that are already quite active, need to be enrolled.

These programs are typically located at a hospital, community center, or rehabilitation facility. They are designed to help build the patients' confidence. Patients are closely monitored for abnormal blood pressure and irregularities of the heartbeat by trained personnel in a group or class setting. They are taught to monitor their pulse rate and to look for signs of chest pain (angina type), particularly if they are coronary patients. Their activity level is slowly increased. During rehabilitation, they are educated about diet and other types of behavior modification that lead to a healthier lifestyle and a healthier heart.

### The Second Coronary Bypass Operation: Will I Need It? When?

I frequently hear comments from patients or their family members such as, "My neighbor told me these bypass opera-

Moderate exercise after heart surgery is a very valuable tool in rehabilitation. The level of exercise, however, should be determined at first by a cardiologist.

tions have to be redone every three to four years. Is that true?" Patients are naturally very apprehensive about surgery to begin with, and when it comes to the possibility of having to repeat a procedure, they want to know the bottom line. Will they need a second bypass operation? If so, how long before it is needed?

The answer that heart surgeons and cardiologists would always like to give is, "Never!" The realistic answer, however, is more complicated. One can say, "Hopefully never," but the fact is that every patient is unique, and every situation depends upon a number of variables.

When arteries are used as the bypass grafts, they tend to stay open longer than veins. Sometimes, however, the patient's vessels considered for use as bypass grafts may not be in the best shape. This can influence how long the bypass stays open.

The arteries normally considered as candidates for grafts may be too small or diseased, or the amount of blood flow through them may make them unacceptable. Likewise, the diameter of the veins may be too big or too small, or the vein itself may have other abnormalities. The surgeon will not use arteries unless he or she feels they are acceptable, and he will try to use the best quality segments of vein available.

How long bypass grafts stay open also depends on the condition of the coronary arteries themselves. Ideally, the coronary artery that was originally bypassed was a relatively large artery, appearing to be normal except for one localized area of blockage. Unfortunately, sometimes we find coronary arteries that have multiple blockages, or the entire artery has significant atherosclerosis build-up. In addition, some arteries are only a millimeter or less in diameter (there are twenty-five millimeters in an inch). Sometimes the arteries are so brittle with calcium that it is difficult to find a spot to place a bypass graft, and sometimes the needle used to stitch the bypass to the coronary won't go through the coronary's calcified wall. Also, bypass grafts tend not to stay open as long in insulin-dependent diabetic patients and those with cholesterol disorders.

### Bypass Grafts Closing

If you have three, four, or more bypasses and one or two of them close, that does not necessarily mean you need a second bypass operation. In fact, if they all close, you still may not need a second operation. You might need a balloon angioplasty (PTCA) and maybe a stent. After bypass surgery, your cardiologist may have more treatment options. For example, if you need a balloon angioplasty, your doctor may be able to dilate either the coronary artery or the bypass graft. It may turn out that if the bypass fails, translaser myocardial revascularization (TMLR) may be a better option than a second bypass operation. This procedure can be done either with an operation or with catheters passed from an artery in the groin or arm into the heart.

### The Second Operation

In addition to all of these factors, doctors' criteria for recommending a second bypass operation can be somewhat different than they were for the first operation because the risk of a second bypass operation is usually higher than that of the first. The patient is older. The atherosclerotic coronary disease is usually more advanced. Some of the arteries and veins used to do the first bypass are no longer available for the second operation.

Adhesions will be present that formed after the first operation. This means that the surfaces of all the tissues will be stuck to each other so that it is more difficult and time consuming

for the surgeon to expose the heart and coronaries or sometimes just to find the coronaries. Also, because of the adhesions, bypass grafts that are still functioning may be damaged while exposing the heart, which also adds to the complexity of the operation. The recovery after the second bypass operation, however, tends to be similar to the first.

So how risky is a second coronary bypass operation, and what are the chances of needing a second operation? The risk of not surviving a second operation varies depending on various factors, but in most cases is less than 10 percent.

What are the chances you will need a second coronary artery bypass operation? The field of cardiology, particularly interventional cardiology in which balloons and stents are used to treat coronary blockages, is advancing rapidly, as well as the specialty of cardiac surgery. My guess is that a person currently undergoing coronary bypass surgery has about a 10 percent chance of having a second coronary bypass operation. (A third bypass operation is uncommon, and having more than that is rare.)

Although unlikely, some patients need a second bypass operation within a year of the first. But for the majority of patients who will need a second bypass operation, it will most likely occur more than five years after their first and sometimes more than twenty years after it.

### You Can Help

Lifestyle after coronary surgery plays an important role in keeping bypass grafts open longer. Keeping your cholesterol in a safe range is important. If you are a smoker, quit. Watch your weight and exercise. Also, taking an aspirin a day makes platelets in your blood less sticky and probably helps to keep bypass grafts open longer.