

# The Benefits of Early Post Cardiac Surgery Recovery Program for Tahitian Patients

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## Description

Cardiac surgery, or cardiovascular surgery, is surgery on the heart or great vessels performed by cardiac surgeons. It is often used to treat complications of ischemic heart disease (for example, with coronary artery bypass grafting); to correct congenital heart disease; or to treat valvular heart disease from various causes, including endocarditis, rheumatic heart disease, and atherosclerosis. It also includes heart transplantation. The earliest operations on the pericardium (the sac that surrounds the heart) took place in the 19th century and were performed by Francisco Romero (1801) in the city of Almería (Spain), Dominique Jean Larrey (1810), Henry Dalton (1891), and Daniel Hale Williams (1893). The first surgery on the heart itself was performed by Axel Cappelen on 4 September 1895 at Rikshospitalet in Kristiania, now Oslo. Cappelen ligated a bleeding coronary artery in a 24-year-old man who had been stabbed in the left axilla and was in deep shock upon arrival. Access was through a left thoracotomy. The patient awoke and seemed fine for 24 hours, but became ill with a fever and died three days after the surgery from mediastinitis. Surgery on the great vessels (e.g., aortic coarctation repair, Blalock–Thomas–Taussig shunt creation, closure of patent ductus arteriosus) became common after the turn of the century. However, operations on the heart valves were unknown until, in 1925, Henry Souttar operated successfully on a young woman with mitral valve stenosis. He made an opening in the appendage of the left atrium and inserted a finger in order to palpate and explore the damaged mitral valve. The patient survived for several years, but Souttar's colleagues considered the procedure unjustified, and he could not continue.

## Cardiac Anatomy Training

Cardiac surgery changed significantly after World War II. In 1947, Thomas Sellors of Middlesex Hospital in London operated on a Tetralogy of Fallot patient with pulmonary stenosis and successfully divided the stenosed pulmonary valve. In 1948, Russell Brock, probably unaware of Sellors's work, used a specially designed dilator in three cases of pulmonary stenosis. Later that year, he designed a punch to resect a stenosed infundibulum, which is often associated with Tetralogy of Fallot. Many thousands of these "blind" operations were performed

until the introduction of cardiopulmonary bypass made direct surgery on valves possible. Also in 1948, four surgeons carried out successful operations for mitral valve stenosis resulting from rheumatic fever. Horace Smithy of Charlotte used a valvulotome to remove a portion of a patient's mitral valve, while three other doctors—Charles Bailey of Hahnemann University Hospital in Philadelphia; Dwight Harken in Boston; and Russell Brock of Guy's Hospital in London—adopted Souttar's method. All four men began their work independently of one another within a period of a few months.

## Open-Heart Surgery

Open-heart surgery is any kind of surgery in which a surgeon makes a large incision (cut) in the chest to open the rib cage and operate on the heart. "Open" refers to the chest, not the heart. Depending on the type of surgery, the surgeon also may open the heart. Dr. Wilfred G. Bigelow of the University of Toronto found that procedures involving opening the patient's heart could be performed better in a bloodless and motionless environment. Therefore, during such surgery, the heart is temporarily stopped, and the patient is placed on cardiopulmonary bypass, meaning a machine pumps their blood and oxygen. Because the machine cannot function the same way as the heart, surgeons try to minimize the time a patient spends on it. Cardiopulmonary bypass was developed after surgeons realized the limitations of hypothermia in cardiac surgery: Complex intracardiac repairs take time, and the patient needs blood flow to the body (particularly to the brain), as well as heart and lung function. In July 1952, Forest D. Dr. John Heysham Gibbon of Jefferson Medical School in Philadelphia reported the first successful use of extracorporeal circulation by means of an oxygenator, but he abandoned the method after subsequent failures.

## Modern Beating-Heart Surgery

In the early 1990s, surgeons began to perform off-pump coronary artery bypass, done without cardiopulmonary bypass. In these operations, the heart continues beating during surgery,

but is stabilized to provide an almost still work area in which to connect a conduit vessel that bypasses a blockage. The conduit vessel that is often used is the Saphenous vein. This vein is harvested using a technique known as endoscopic vessel harvesting (EVH).

### Heart transplant

In 1945, the Soviet pathologist Nikolai Sinitsyn successfully transplanted a heart from one frog to another frog and from one

dog to another dog. Norman Shumway is widely regarded as the father of human heart transplantation, although the world's first adult heart transplant was performed by a South African cardiac surgeon, Christiaan Barnard, using techniques developed by Shumway and Richard Lower. Barnard performed the first transplant on Louis Washkansky on 3 December 1967 at Groote Schuur Hospital in Cape Town. Shumway performed the first adult heart transplant in the United States on 6 January 1968 at Stanford University Hospital.