Coronary Artery Bypass Graft Surgery

By: JANE JOUKOVSKY

LEFT TO RIGHT: Cardiothoracic surgeons S. N. Mitruka, MD and Joseph Wilson, MD are assisted by Mike Padilla, RN as they perform a CABG surgery at Eisenhower Medical Center.

The term “bypass surgery” has become part of our common lexicon, but the process and the outcomes of Coronary Artery Bypass Graft Surgery, as it is formally called, may be unfamiliar.

Coronary artery disease occurs when the blood vessels that supply the heart with oxygen and nutrients become blocked or narrowed by fatty deposits called plaque.When the heart is starved of blood, the result is chest pain or “angina,” shortness of breath, and an increased risk for heart attack. Heart disease is the leading cause of death in the United States for both men and women. It is a major cause of disability and diminishes the quality of life for millions of sufferers. When symptoms persist after lifestyle changes, medications and other treatments have failed to provide relief, or when there are multiple blockages of the arteries, Coronary Artery Bypass Graft (CABG) surgery is generally recommended. CABG (pronounced “cabbage”) is one of the most commonly performed heart operations, accounting for approximately 520,000 procedures annually in the United States. CABG SURGERY

CABG surgery is performed to increase the supply of blood to the heart. Blood vessels taken from the leg, arm or chest are attached above and below the obstructed part of the coronary artery to “bypass” the blockage. The words “double,” “triple,” and “quadruple” bypass simply refer to the number of arteries bypassed in a procedure.

The surgeon will usually identify the blocked arteries with tests such as, nuclear scans and angiograms, performed prior to the surgery, but sometimes the final decision about the number of arteries to bypass is made in the operating room. The surgery generally lasts two to three hours, depending upon the number of arteries involved, or complexity of the procedure.

In the most common type of bypass operation, the chest is opened and the heart temporarily stopped during the procedure. The blood is rerouted through a heart-lung or “bypass”machine in what is called “onpump” surgery. “The heart-lung machine allows us to perform a complex surgery on a non-beating heart while the body’s other organs continue to receive blood and oxygen,” explains S. N.Mitruka, MD, Board Certified Cardiothoracic Surgeon at Eisenhower Medical Center. When the bypass grafts are in place, the blood is redirected from the heart-lung machine back to the heart for normal blood flow.

Newer surgical procedures that eliminate the need for large incisions or the use of a heart-lung machine are now being used more frequently, but are not suitable for all patients. In “off-pump” or “beating heart” surgery, special surgical equipment is used to isolate and stabilize only the portion of the heart the surgeon is working on, while the rest of the heart keeps pumping. In minimally invasive CABG procedures, surgery is performed through several small incisions in the chest. Using off-pump techniques, surgeons can provide the same results as on-pump procedures through a less invasive, but technically more complicated procedure. “CABG surgery results in complete relief or substantial improvement in symptoms in more than 90 percent of patients…” IMAGING TECHNOLOGY

Transesophageal echocardiography (TEE) is increasingly being used to assist surgeons prior to, during and after CABG and other cardiac procedures to evaluate the heart’s function and assess the outcome of treatment. Using sound waves, TEE provides views of the heart that cannot be obtained with conventional echocardiography or other imaging techniques.

“An endoscope, or flexible tube, containing a small ultrasound transducer is passed through the patient’s mouth and down the esophagus (the tube that carries food from the mouth to the stomach) until it is positioned immediately behind the heart,” explains Dr.Mitruka. The transducer emits high-frequency sound waves that bounce — or echo—off the heart and are turned into images that can be viewed on a video screen.

“We can move the transducer to obtain different views of the heart,” adds Joseph Wilson, MD, Board Certified Cardiothoracic Surgeon and Chief of Cardiac Surgery at Eisenhower Medical Center. “Since the probe is positioned directly behind the heart — where the lungs and bones of the chest wall don’t block the sound waves—TEE provides a very clear picture of the structures of the heart.” OUTCOMES

CABG surgery results in complete relief or substantial improvement in symptoms in more than 90 percent of patients who undergo the procedure. Most patients start to feel better in four to six weeks. “Patients are often surprised to find their energy level increase dramatically after bypass surgery,” notes Dr.Wilson, as they may not have been aware of how coronary artery disease had adversely affected their quality of life.

Most patients remain symptom-free for many years, but occasionally another bypass or angioplasty procedure is required. Making healthy lifestyle choices can have a significant and positive impact on long-term outcomes.

EISENHOWER SMILOW HEART CENTER Cardiac surgery is just one component of the comprehensive cardiac services offered at Eisenhower Smilow Heart Center. Eisenhower Medical Center’s Cardiovascular Center of Excellence incorporates all of the medical and surgical disciplines involved in the care of heart patients. Eisenhower Medical Center is only the third center in California to receive accreditation by the Society of Chest Pain Centers. Studies show that Chest Pain Centers increase the chances of survival for patients with acute coronary syndromes by 63 percent. In 2004, Eisenhower Medical Center performed the most CABG and total cardiac surgeries of all of the hospitals in the Coachella Valley. (Solucient®most recent data.) CABG represents approximately 65 percent of all open heart surgeries at Eisenhower Smilow Heart Center. Eisenhower’s risk adjusted, mortality rates for CABG are less than two percent, which is lower than the region and the nation. Eisenhower Board Certified Cardiothoracic Surgeons perform more than 300 procedures annually. In 2004, Eisenhower Cardiac Surgeons performed 35 percent more valve surgeries than any other hospital in the valley (see What’s New, "Eisenhower Smilow Heart Center Launches Valve Repair Program"). Eisenhower Smilow Heart Center is the only cardiac surgery program in the western region designated as a teaching site for the Maze procedure to cure atrial fibrillation and is a national leader, performing more than 200 Maze procedures (see Program Spotlight, "Matters of the Heart: Interventional Atrial Fibrillation Program"). The only fully-dedicated Electrophysiology Laboratory in the Coachella Valley. Eisenhower Smilow Heart Center participates in clinical trials that offer patients promising new therapies that would otherwise be unavailable to them. The Renker Wellness Center — which includes the Glickman Heart Failure Clinic, Tamkin Cardiac and Pulmonary Rehabilitation Program, an anticoagulation clinic, state-of-the-art cardiac monitoring and exercise equipment — rated among the best (the top 1 percent) of the more than 3,000 cardiac rehabilitation centers in the United States by the American Association of Cardiovascular and Pulmonary Rehabilitation. A dedicated team of anesthesiologists, pulmonologists, perfusionists (heart-lung machine operators), surgical assistants and nurses specializing in the care of cardiac patients from admission to discharge. For more information about the Eisenhower Smilow Heart Center and its programs, please call 760-837-8450.

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