Beth Israel
University Hospital and Manhattan Campus for the Albert Einstein College of Medicine
Continuum Health Partners, Inc.

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SurgeryNews
SPOTLIGHT ON CARDIAC SURGERY

Beth Israel Cardiac Surgeons Record OUTSTANDING BYPASS RESULTS USING RADIAL ARTERY GRAFTS

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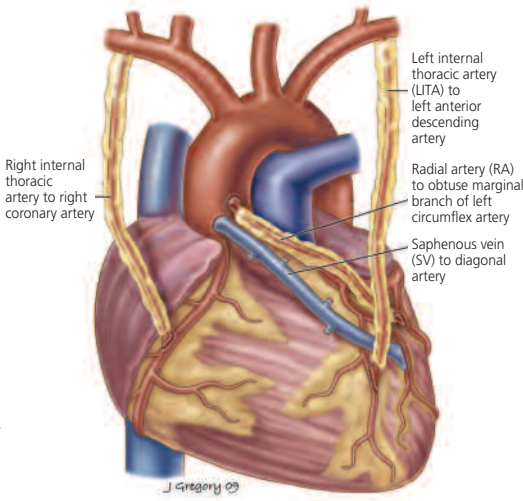

A quadruple bypass utilizing a radial artery graft

Nearly half a million patients annually undergo coronary artery bypass graft (CABG) surgery to restore blood flow to their hearts. Performed since 1967, the procedure traditionally relies on harvesting the superficial saphenous vein (SV) in the leg. However, occlusion rates after one year can be as high as 20 percent. Now cardiac surgeons at Beth Israel are reporting a groundbreaking success using the radial artery instead.

In a 14-year retrospective study, Robert F. Tranbaugh, MD, Chief of Cardiac Surgery at Beth Israel, and his colleagues, Drs. Darryl M. Hoffman and Charles M. Geller, have documented one of the lowest reported operative mortality rates after CABG in the medical literature. From January 1995 to January 2009, 1563 consecutive patients at Beth Israel underwent isolated CABG procedures, using at least one radial artery (RA), along with the left internal thoracic artery (LITA), harvested from under the sternum, and SV for the remaining grafts (average 3.7 total grafts per patient).

Patient selection criteria for RA grafting included an age less than 65 years, or poor quality saphenous veins. Patients had moderately impaired heart-pumping efficiency as well, described by an ejection fraction averaging 49 percent (range from 10 to 83 percent). Other risk factors, recorded prior to surgery, included triple vessel disease (92 percent), hypertension (64 percent), previous myocardial infarction (52 percent), diabetes (34 percent), COPD (19 percent), vascular disease (7 percent), and previous stroke (5 percent).

Dr. Tranbaugh and his colleagues found improved outcomes utilizing radial arteries as opposed to employing the more delicate, thin-walled saphenous vein, designed to exist in low-pressure venous circulation. Operative and hospital mortality with LITA and RA was tabulated at 0.1 percent, with low complication rates, and a 10-year-survival rate of 87 percent. In comparison, traditional CABG, utilizing LITA without RA and only SV achieves a reported operative mortality between 1 and 2 percent, while 10-year survival is between 70 and 80 percent.

A second study being completed by Dr. Tranbaugh and his team utilizes a sophisticated matching system, known as propensity matching, in which each patient who undergoes LITA with RA, is carefully and individually matched with another patient who underwent LITA with only SV grafts. From these two groups of patients, 903 matches were made. Postoperative complications (hospital mortality, deep sternal wound infection, stroke, myocardial infarction and renal failure) were the same in both groups. However, the long term 10-year survival for the RA patients was markedly improved compared to those patients receiving only SV grafts.

By all accounts, a strong case exists to utilize radial artery grafting more widely.

For more information or to refer a patient for consultation, please call Dr. Tranbaugh or one of his colleagues at (212) 420-2584.

ROSS PROCEDURE OFFERS ADVANTAGES
Over Traditional Valve Replacement

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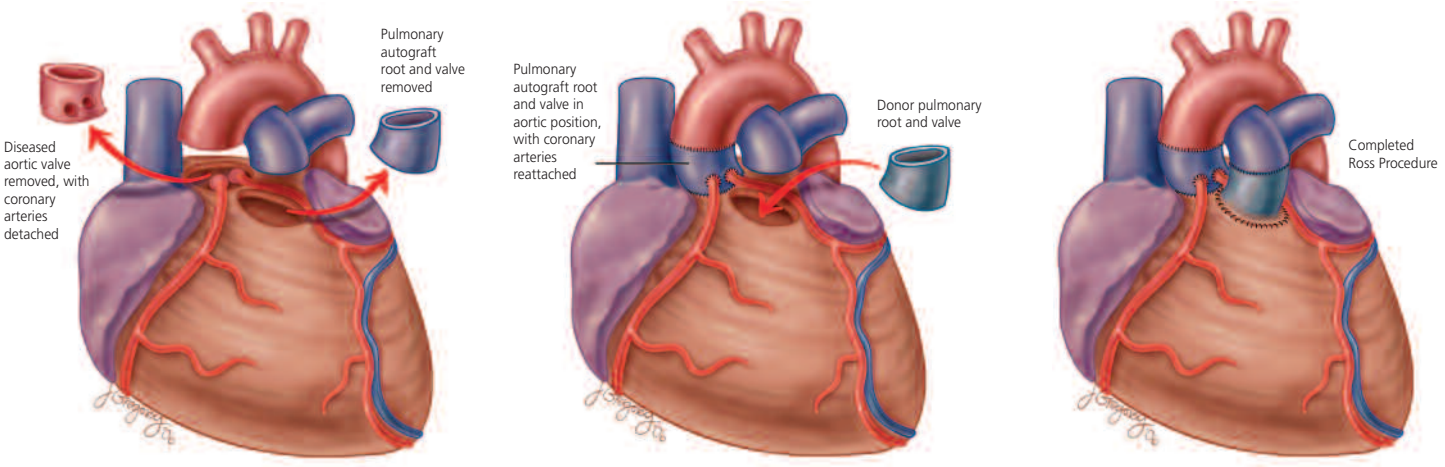
Over 100,000 valve replacement surgeries are performed annually in the U.S. according to American Heart Association statistics. Of these, only a small percentage are done using the Ross Procedure, a specialized technique that switches a patient's diseased aortic valve with his or her own healthy pulmonary valve, which is in turn replaced by a human homograft valve. Experienced Beth Israel cardiac surgeons, like Charles M. Geller, MD, perform this complex method with high success and offer it for wider use.

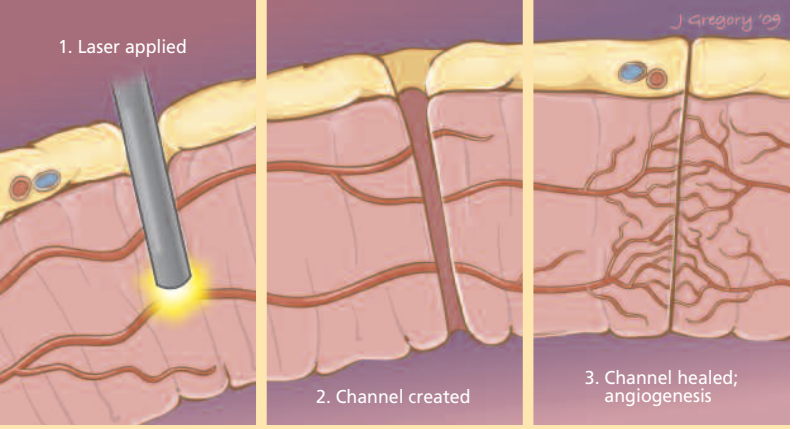


An aortic valve replacement utilizing the Ross Procedure uses the patient's own pulmonary root and valve, affording an ideal match in terms of shape, size and strength. This autograft procedure completely eliminates the need for post-surgery anticoagulation.

First performed in 1967 by British surgeon Donald Ross, the method is a technically demanding procedure in terms of physician time and expertise, but offers numerous advantages to the patient. Dr. Geller and his colleagues have been using the technique for more than a decade, performing several hundred procedures and accruing one of the largest hospital volumes in the metropolitan area. **The major advantage of the Ross Procedure over traditional mechanical valves is that anticoagulation is not required, allowing patients to lead active lives without the many risks associated with lifetime blood-thinner use.** This is particularly good news for women of childbearing age, since blood-thinning medications (Coumadin) are contraindicated during pregnancy because of known birth defects.

Since this technique utilizes the patient's own pulmonary valve, its shape, size and strength are ideally suited for aortic use. This close match, along with a human valve's durability, minimizes the need for future valve surgeries, providing a great advantage over traditional bioprosthetic (animal tissue) valves. The mortality risk associated with the Ross Procedure at Beth Israel Medical Center is equivalent to other aortic valve replacement procedures. Long-term results are excellent. More than 80 percent of patients are alive after 20 years and fewer than 15 percent need further valve procedures. **The ideal candidate is someone expected to live at least 25 years, in good general health with isolated aortic disease and good heart function.**

For further information on either the Ross Procedure or transmyocardial revascularization *(see sidebar at right)*, or to refer a patient to Dr. Geller or one of his colleagues, please call (212) 420-2584.



LASER REVASCULARIZATION TAKES AIM AT ANGINA After Other Treatments Fail

Insufficient blood flow to the heart, or myocardial ischemia, is a painful, potentially life-threatening condition. Characterized by angina (chest pain), it is typically caused by blockages in the coronary arteries. Usual treatments include medication, stenting and coronary artery bypass graft (CABG) surgery *(see cover story).* Now Beth Israel cardiac surgeons are adding another technique to their armamentarium—transmyocardial revascularization (TMR)—and joining a select group of metropolitan hospitals to offer this advanced treatment.

Charles Geller, MD, who brings previous experience in TMR to Beth Israel, uses this treatment option for angina patients who have exhausted all others. The stand-alone procedure may be performed through a midline or small left-sided chest incision, through which a flexible laser probe is placed on the external surface of the heart. Between heartbeats, the probe emits high-energy laser beams, creating between 12 and 40 one-millimeter-wide channels, each about the width of a pin-head, through the heart's wall and into the oxygen-deprived left ventricle. TMR can also be performed as an adjunctive therapy in conjunction with CABG procedures as well.

While the mechanism of success is not fully understood, current research points to angiogenesis, or the development of new blood vessels from the tiny channels, thus enhancing blood and oxygen flow to the heart. Interestingly, some patients feel immediate pain relief while others experience improved activity tolerance.

Ideal candidates are those with severe angina that limits daily activities and unrelieved pain with minimal exertion despite medication. Pre-op testing is required to confirm ischemia. Patients with previous bypass and/or stenting that brought limited relief are considered, along with those undergoing concurrent CABG. Patients with CHF, severely scarred heart tissue, or those whose angina is not ischemia-related are not presently eligible. In the future, this promising technique may be used to instill growth factors or stem cells directly into the heart muscle.

CARDIAC ABLATION Increasingly Provides Cure for Atrial Fibrillation

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Atrial fibrillation (AF) is one of the most common types of cardiac arrhythmia. For the approximate 2.2 million Americans who experience this rapid, irregular beat, in which the heart's two upper chambers, or atria, quiver rather than beat normally, palpitations and fatigue are common symptoms, and the risk of stroke is significant. Now, surgeons like Beth Israel's Darryl M. Hoffman, MD, are performing surgical ablation early and curing AF with increased frequency.

Traditionally the first line of defense has been medications, which work by controlling either heart rate or rhythm, potentially reducing palpitations. But for many these drugs can cause complications or fail. Lifetime anticoagulation therapy, when necessary, poses its own risks, and only reduces stroke risk by half. AF that is not well controlled typically worsens over time and intermittent occurrences can eventually become permanent, remodeling atrium cells, disrupting metabolism and predisposing a patient to more frequent and ultimately, constant fibrillation. This continuing fibrillation can have serious consequences, including fatal stroke. Early identification and surgical intervention are advised, before irreversible changes occur.

Performed as a stand-alone procedure, surgical ablation is a minimally invasive technique, without the need to spread the ribs. A small incision in the armpit allows insertion of a surgical instrument that delivers radiofrequency energy. Heart tissue is ablated, creating an insulation line at the junction where the left atrium joins the pulmonary veins, the site where the majority of abnormal AF impulses originate.

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CARDIAC ABLATION

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Blocking transmission of the electrical signal prevents the atria from fibrillating. The current cure rate using early, stand-alone ablation for isolated AF, without structural heart damage, ranges from 75 to 95 percent. As an adjunctive therapy, radiofrequency ablation or cryoablation is typically added to a surgical procedure by Dr. Hoffman and his Beth Israel colleagues.

Ideal candidates for the stand-alone procedure are patients with recently identified and isolated AF and no other major medical problems. Surgical ablation is also offered to patients who can't take blood thinners or anti-arrhythmic medication, or who have experienced stroke despite medication.

For further information about cardiac ablation or to refer a patient for consultation, please call Dr. Hoffman or one of his colleagues at (212) 420-2584.

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