Artery better than vein in heart bypass for women and diabetics

February 14, 2007

Researchers at Sunnybrook have shown that artery grafts from the forearm are a superior choice in place of vein grafts from the leg for use in heart bypass surgery especially in women, diabetics and patients with the most severe blockages.

The study, published in the February 13th edition of top-ranked heart journal Circulation, provides a detailed analysis from a multinational clinical trial confirming that the radial artery is an optimal choice to make heart bypasses instead of using veins from the leg, challenging over 30 years of surgical practice. The study provides guidelines for surgeons to improve outcomes for their patients by carefully matching the characteristics of the patient to the type of bypass graft used.

"Graft patency (where the bypass remains open to allow for efficient blood flow) is the key factor to a patient's outcome and whether there will be a need for other interventions in the future," says Dr. Nimesh Desai, lead author of the study and research fellow at Sunnybrook. "We have found that radial arteries are much less likely to fail after one year compared to veins from the leg in most patients. The improvement in graft patency by using a radial artery instead of a vein from the leg is most impressive in women, diabetics and in patients with the most severe heart disease who either have very small blood vessels on their heart or very severe cholesterol plaques in these vessels. In the right patient, a radial artery is more than 40 per cent less likely to fail than a vein graft. This is greater than the benefit of using drug-eluting stents in patients with less complex coronary heart disease versus bare metal stents."

In addition to benefiting women, diabetics and those with severe blockages, the use of the radial artery can also benefit younger patients as the artery is shown to be longer lasting and therefore decreases the need for any further intervention. Other potential benefits include a decreased risk of operative site infection, less chance of developing angina in the future, and, potentially, an increased survival rate.

"With the adoption of newer gentler removal techniques, radial arteries have been shown to be a preferential source of new blood flow to the heart when compared to veins," says Dr. Stephen Fremes, senior-investigator of the study, head of cardiovascular surgery at Sunnybrook and a professor at University of Toronto.

Saphenous vein graphs from the leg are still considered an adequate choice for patients with larger or less diseased blood vessels on the heart and those who have disease in other arteries in the body outside the heart, who are at risk for developing early cholesterol plaques in their radial arteries. Saphenous veins and radial arteries are different blood vessels used as grafts for coronary bypass surgery. During bypass surgery, a healthy blood vessel from a different part of the body is attached to the heart to bypass a blockage in a coronary artery on the heart. Blood, therefore, passes around an area of blockage and can feed the heart muscle.

The internal thoracic artery, taken from inside the chest is almost always used to bypass blockages in the major artery on the front of the heart, but the question is whether the use of the radial artery or saphenous vein is better to bypass blockages in other heart arteries.

The radial artery was first used in 1971 because of its ease of harvesting, low risk for wound infection, larger diameter, and its thick muscular wall. Due to concerns about graft spasm, their use was abandoned over the years, and usually saphenous vein grafts taken from the leg have been used.

In total, 13 centers participated in this large randomized study: 12 from across Canada and one in New Zealand. Sunnybrook's Schulich Heart Centre is the leader in the use of this technique in Canada and internationally performing it for the past 12 years. Approximately 35,000 patients receive coronary bypass surgery each year in Canada.

From interventional cardiology to cardiac surgery to clinical research, Schulich Heart Centre is the academic cardiovascular centre for Sunnybrook and a national leader in cardiac care. Services include emergency cardiac care, diagnostic and interventional procedures, cardiac surgery, electrophysiology, and cardiac rhythm management.

-30-

Media Contact:
Nadia Norcia Radovini
416.480.4040