

Your Heart

Total (All) Arterial Coronary Artery Bypass Grafting

A traditional Coronary Artery Bypass Grafting (CABG) or Bypass procedure utilises the left internal mammary artery (an artery that runs underneath the inner aspect of the left hand side of your chest bone or sternum) to bypass the most important artery in the heart, the left anterior descending coronary artery or LAD, along with a number of veins taking from the inner aspect of your lower legs to bypass the remaining blocked or diseased coronary arteries. While still a very sound and respected procedure, we as cardiac surgeons know, and have known for many years, that the long term outcome of this procedure is limited by what is termed vein graft failure. This means that the vein used to perform the bypass itself becomes diseased by fatty plaques and hardening with narrowing and eventual blockage of the vein itself. So from good evidence, we know that 5-10% of all vein grafts may be blocked within 1 month after the operation, and 50-60% will be blocked after 7-8 years. This may result in the recurrence of angina, repeat heart attacks and increased mortality. However, 92% of the left internal mammary arteries are still patent almost 20 years after the CABG procedure.

In light of the long term durability of the internal mammary arteries, it is beneficial to perform as many bypasses or grafts as possible utilising the internal mammary arteries alone - known as Total or All Arterial Coronary Artery Bypass Grafting. This is performed by utilising the right internal mammary artery (an artery that runs underneath the inner aspect of the right hand side of your chest bone or sternum) to bypass some of the remaining blocked arteries. By sowing the one end of the right internal mammary artery to the left internal mammary artery (utilising a T- or Y-anastomosis) and with the use of sequential anastomoses (bypassing more than one coronary artery branch with the same conduit,) it is possible to bypass three or four coronary arteries utilising the internal mammary arteries alone. A similar procedure may be performed by utilising an artery from your fore-arm, the radial artery, to perform some of the coronary artery bypasses. The use of bilateral (both) internal mammary arteries improves the long term outcome and durability of coronary artery bypass grafting with a small 1% incremental risk in the risk of poor chest bone healing or infection. This was already proven in the seminal article, "Two Internal Thoracic (Mammary) Arteries are Better than One." by the Cleveland Clinic in 1999. (Lytle BW, Blackstone EH, Loop FD, et al. J Thoracic Cardiovasc Surg 1999;117:855-72.) So it while it may take longer to perform and is a more complex procedure to perform, the length of the procedure and the slightly increased risk of chest bone infection, is well justified due to the long term benefits.

Thus in light of the long term benefits, Dr Davidson will endeavour to perform Total Arterial Coronary Artery Bypass Grafting whenever possible and feasible. The possibility of performing this procedure in your individual case, along with the risks and benefits, or the most suitable alternative, will be discussed with you in detail at your first consultation. Please feel free to discuss all concerns that you might have with Dr Davidson during this encounter.

Difference between a standard bypass and an all-arterial bypass.

All-Arterial CABG vs Traditional CABG with LIMA & Multiple Vein Grafts (From left to right.)

