

CASE REPORT

CHANGING TREND IN CORONARY ARTERY BYPASS GRAFTING SURGERY

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Background

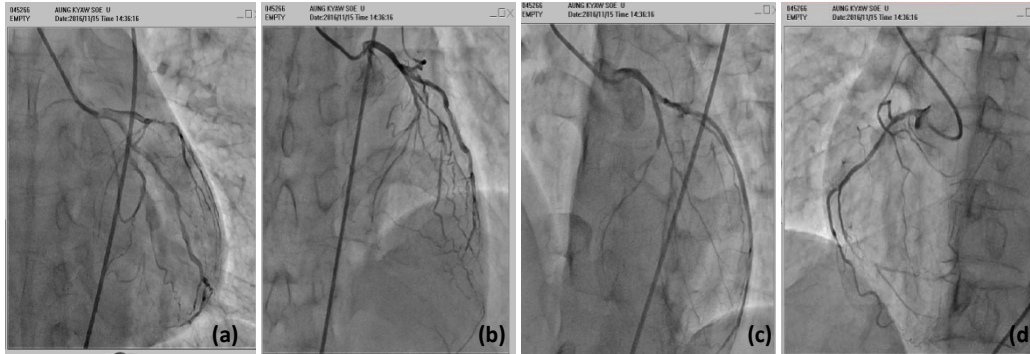
Coronary artery disease (CAD) is the most common pathology encountered by cardiologists and cardiac surgeons in the past century. Coronary artery bypass grafting (CABG) surgery is the standard procedure for treatment of advanced coronary artery disease. This surgical technique was initially introduced by Favaloro and colleagues in 1969 using saphenous vein grafts interposed between aorta and epicardial coronary artery branches distal to critical stenosis(1). Nowadays, conventional CABG surgery utilizes a combination of left internal mammary artery (LIMA), saphenous vein and radial artery as conduits. But saphenous vein grafts are limited by its poor long term patency and additional arterial grafts like right internal mammary artery (RIMA), radial artery, right gastroepiploic artery (RGEA) and inferior epigastric artery (IEA) are being increasingly used to avoid late complications of vein graft atherosclerosis and restenosis. Arterial grafts demonstrate remarkable resistance to development of atherosclerosis and greater resistance of its endothelium to harvest injury as compared with saphenous vein. With significantly higher basal production of the vasodilators nitric oxide and

prostacyclin, arterial grafts demonstrate a favorable response to pharmacologic agents commonly used in the postoperative period. Use of bilateral internal mammary artery(BIMA) showed better long term patency than conventional use of LIMA and saphenous vein (2). It also improves survival and significantly reduces the need for redo-surgery. But use of BIMA should be avoided in patients with diabetes, obesity and pre-existing skin disease as it has higher rate of superficial and deep sternal wound infection.

Case Presentation

A 45 years old man had attacks of chest pain off and on (CCS II) for 6 months and dyspnoea on exertion (NYHA II) for 2 months. He was a chronic smoker but he did not have other coronary risk factors like hypertension or diabetes and no history of coronary artery disease in his family. He was positive in exercise tolerance testing. His echocardiographic report results showed there is apicoseptal wall hypokinesia then preceded to coronary angiography revealing triple vessel coronary artery disease (Fig.1).

Figure 1. Coronary angiography of the patient showing narrowed arteries; (a) Left anterior descending artery (LAD), (b) Circumflex artery (Cx), (c) First Obtuse Marginal artery (OM1), (d) Right Coronary Artery (RCA)



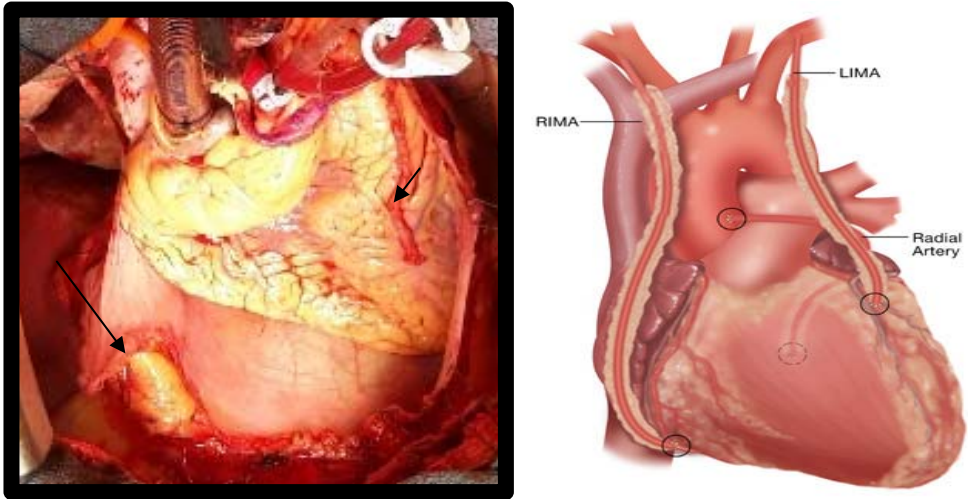
Then he was listed for CABG surgery for total arterial revascularization since he was young. For this particular case, we chose left internal mammary artery (LIMA), right internal mammary artery (RIMA) and radial artery graft as conduits.

Figure 2. Left internal mammary artery (LIMA) and right internal mammary artery (RIMA) before anastomosis to target vessels



Under cardiopulmonary bypass, *LIMA* was anastomosed to distal *Left anterior descending artery*, *RIMA* to distal *Right coronary artery*, and *Radial artery* from *aorta* to *Circumflex artery*.

Figure 3. After completion of anastomosis to target vessels as in operation and drawing; right internal mammary artery (long arrow), Left internal mammary artery (arrow head), Radial artery (short arrow)



The patient's post-operative period was uneventful and he was discharged on 10th post-op CABG.

References

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- Lytle, B. W, Blackstone, E. H, Loop, F. D, Houghtaling, P. L, Arnold, J. H, Akhrass, R, Mccarthy, P. M, & Cosgrove, D. M. Two internal thoracic artery grafts are better than one. *J Thorac Cardiovasc Surg.* (1999). May; , 117(5), 855-72.