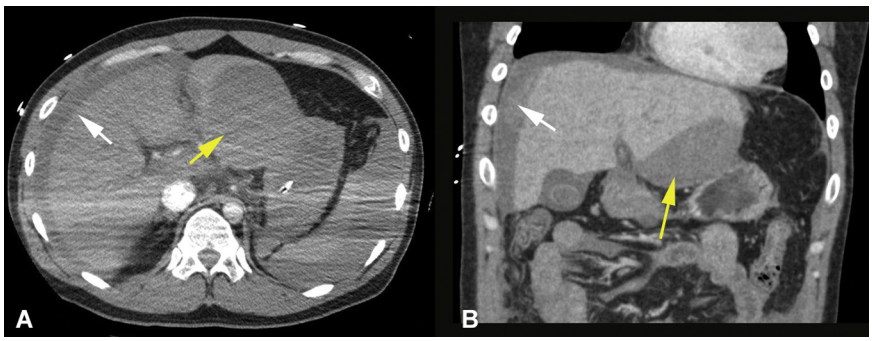

Fig 2. (A) Axial and (B) coronal images from computed tomography of the abdomen. White arrows indicate intraperitoneal bleeding; yellow arrows indicate subcapsular bleeding caused by liver injury.

anticoagulant-induced liver injury after cardiac massage by sternal compression [6, 7].

The mortality rate of acute PE has been reported to be 65% in cases requiring emergent embolectomy [8]. In this case, we were able to successfully resuscitate and treat the patient despite the complication of massive intraperitoneal bleeding. Performing a minimally invasive interventional embolization of a bleeding peripheral hepatic artery allowed us to perform the pulmonary embolectomy promptly. Emergent pulmonary embolectomy was performed to wean the patient from extracorporeal membrane oxygenation and to discontinue the anticoagulation as quickly as possible, in consideration of the intraperitoneal bleeding. We performed the interventional embolization before the pulmonary embolectomy, given that interventional embolization could be performed more quickly than direct repair, offering a less invasive and potentially more effective option than direct repair for multiple bleeding hepatic arteries. Suspecting that the bleeding was due to cardiopulmonary resuscitation, we performed hepatic hemostasis with only gauze packing, confirming hemostasis 2 days later. Despite life-threatening complications compounding critical illness, appropriate decision making regarding intervention and sequence enabled us to treat and discharge this patient without major neurologic sequelae.

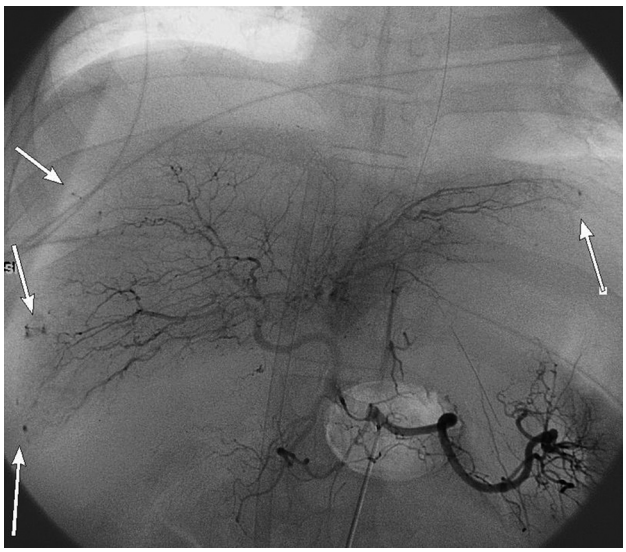

Fig 3. Angiograph showing multiple bleeding from peripheral hepatic arteries, as indicated by white arrows.

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FEATURE ARTICLES

Upgrading Redo Coronary Artery Bypass Graft by Recycling In Situ Arterial Graft

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We present a case of redo coronary artery bypass grafting (CABG) in which a single internal thoracic artery (ITA) graft was upgraded to a bilateral ITA graft by recycling a

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left ITA graft, anastomosed to the left anterior descending artery in primary CABG performed 17 years previously. During redo CABG, we dissected the left ITA, reused it in situ for the circumflex artery, and used the right ITA to the left anterior descending artery for a bilateral ITA graft. All grafts remained patent 2 years after redo CABG. Recycling ITA grafts may enable upgrading to bilateral ITA grafting during redo CABG.

(Ann Thorac Surg 2014;98:311–4)

Bilateral grafting of the internal thoracic artery (ITA) in coronary artery bypass grafting (CABG) is superior to single grafting of ITA in terms of patency, freedom from arteriosclerosis, and survival benefit [1]. However, it is difficult to perform bilateral ITA (BITA) grafting in redo coronary artery bypass grafting (CABG) because of a lack of available bypass conduits. Here, we describe a successful upgraded BITA grafting pattern by recycling a left internal thoracic artery (LITA) graft in redo CABG.

A 70-year-old man presented with breathlessness upon exertion1 year before reoperation. He had undergone emergent CABG 17 years ago with a LITA bypass to the left anterior descending artery (LAD) and sequential bypass using a saphenous vein graft to the circumflex and right coronary arteries. Coronary arteriography revealed 90% stenosis of the LAD, the first diagonal branch, and the distal right coronary artery, total occlusion of the circumflex branch, and 75% stenosis of the proximal right coronary artery. The saphenous vein graft was totally occluded, and the LITA graft was patent but exhibited 75% stenosis at the anastomotic site (Fig 1). The stenotic lesions of the right coronary artery and the diagonal branch indicated that atherosclerosis had progressed in the native coronary vessels. The patient was therefore admitted to our facility for redo CABG.

We performed a left anterior minithoracotomy and partially resected the second rib to dissect the patent LITA graft. This procedure prevented injury to the graft that could have occurred during median resternotomy because the grafted LITA lay in the midline at the second intercostal space, very close to the sternum (Fig 2). The graft was carefully dissected from the sternum in this position; then we performed a median resternotomy. Thereafter, the right ITA (RITA) was harvested, and the rest of the LITA in the pericardium was re-harvested up to the point of its anastomoses. The RITA graft was anastomosed 10-mm distal to the previous anastomosis site in the LAD. The LITA, still in situ, was then ligated at the proximal portion of its anastomosis and transected. This recycled LITA was anastomosed to the circumflex coronary artery. By using the skeletonizing method for re-harvesting the LITA, the graft could reach a distal portion of the coronary anatomy without tension. The saphenous veins were used as grafts for the distal right coronary artery and the diagonal branch from the ascending aorta. This procedure was performed by off-pump technique.

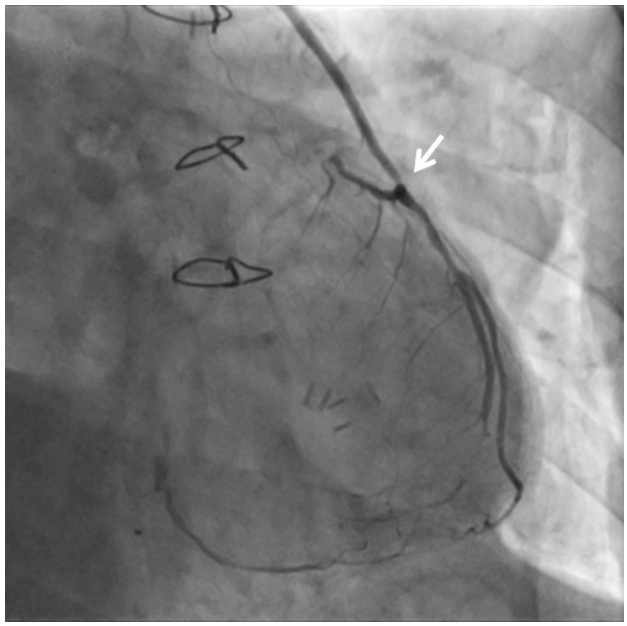

Fig 1. The left interior thoracic artery graft was patent, but exhibited 75% stenosis (white arrow) at the anastomotic site. The remaining graft was patent and well developed, without significant evidence of any disease.

The postoperative course was uneventful. On postoperative day (POD) 10, computed tomography was performed to evaluate graft patency (Fig 3). At 2 years after surgery the patient is well, and computed tomography

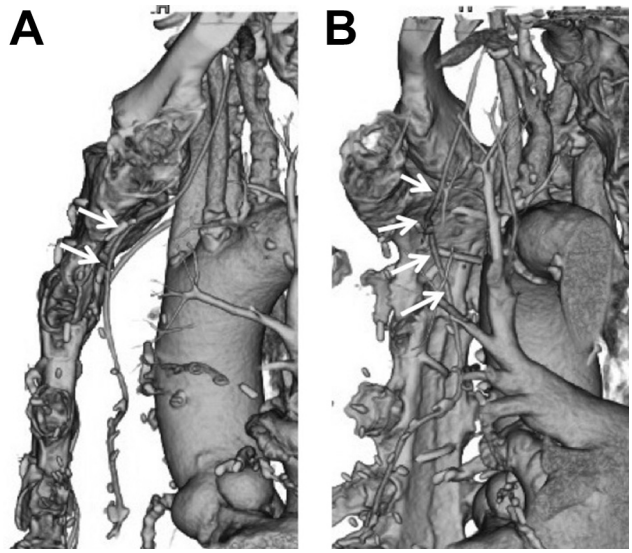

Fig 2. The left interior thoracic artery lay in the midline at the second intercostal space, very close to the sternum (arrows). Showing the (A) left lateral view and (B) back of the sternum.

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