

Repeated coronary artery bypass grafting of circumflex artery branches on a beating heart through the left lateral thoracotomy

Abstract

In addition to the widespread introduction of coronary artery bypass grafting (CABG) into clinical practice in patients, the issue of return of angina in the long term after the operation became an increasingly significant problem. Repeated coronary artery bypass grafting remains a complex operation and is associated with a higher risk of morbidity and mortality in comparison with the primary CABG. The characteristics of patients undergoing repeated surgical revascularization have changed over the past twenty years. Mostly these are elderly patients with numerous concomitant diseases, with partially functioning arterial grafts. In addition to demographic changes, there are also changes in the results of different strategies used in CABG operations. Thoracotomy is one of the alternative approaches in the surgical treatment of repeat patients. We represent the case of successful redo CABG of the circumflex in a patient with a functioning internal thoracic artery (ITA) graft to the LAD from the left side thoracotomy on the beating heart.

Keywords: Repeat coronary bypass surgery, thoracotomy, MICS

Volume 9 Issue 2 - 2017

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Received: November 02, 2017 | **Published:** November 24, 2017

Case

Together with improving long-term survival after cardiac surgical interventions, the number of redo cardiac surgical procedures has increased. These procedures are of greater technical complexity, and there is heightened concern of injury of cardiac structures and previously placed bypass grafts. The mortality rate of redo CABG is generally higher than that of primary CABG, especially in emergency cases. The main reason for the high mortality rate is myocardial damage as a result of dissection of the pericardial adhesions, damages of patent grafts and right ventricle.¹⁻⁴ A redo CABG using the left thoracotomy to avoid the risks associated with re sternotomy has been reported. This technique for redo CABG was first described in 1982 for grafting of circumflex artery branches in conditions of hypothermic artificial circulation and ventricular fibrillation.⁵ Subsequently, redo cases were performed through the left thoracotomy on beating heart. In our country the first redo CABG through left thoracotomy on beating heart was performed in Petersburg Regional Clinical Hospital, 1998.⁶

The purpose of our messages - to present a clinical case of the successful redo CABG of the branches of circumflex artery in patient with functioning LITA to LAD graft from the left-side lateral thoracotomy on beating heart and separated intubation. Patient S., 58 years old, diagnosis: CHD. Primary CABG in 2007 (LITA – LAD, Venous grafts – Intermediate and Diagonal artery. Dysfunction venous shunts. Recurrent angina. EuroSCORE risk assessment: 3.55. Preoperative assessment of MSCT with three-dimensional reconstruction made it possible to evaluate the following features: LITA's proximity to the sternum, right-ventricular fusion with the sternum, location of anomalous veins, aorta and intercostal space for thoracotomy (Figure 1).

Based on the results of the survey, the following redo CABG is recommended and performed: coronary artery bypass grafting (thoracic aorta) of circumflex artery branches, with the performance of composite anastomosis on a beating heart through thoracotomy. Endotracheal anesthesia with separate intubation of the lungs was

performed. A coronary angiogram revealed a total occlusion of the LCx coronary artery, total occlusion at the origin of the RCA artery, and a collateral flow from the LAD to the RCA. LITA to LAD graft was patent. Based on the above, it was determined that a revascularization of the LCx is required. A left thoracotomy at the 5th intercostal space was made under general anesthesia with the patient in the right lateral position. The length of the incision was 15cm (Figure 2). The descending aorta was selected and prepared for proximal anastomosis, its diameter was 25 mm. The pericardium was then resected, with care not to damage the phrenic nerve and to identify the target anastomosis site. A great saphenous vein harvested from the left leg. The distal anastomosis is imposed with the saphenous vein. After was determined the desired length of the matched composite anastomosis with another venous graft (Figure 3). Early postoperative period was uneventful. The patient was discharged in a satisfactory condition on the 8-th day after the operation.

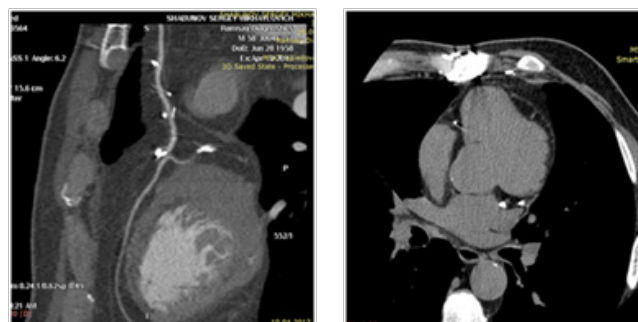


Figure 1 (A) Patent LIMA-LAD. (B) CT the thorax.

Conclusion

When performing repeated myocardial revascularization from thoracotomy, a clear representation of the topography of the coronary arteries and grafts is necessary to exclude the possibility of their erroneous identification based on coronary angiography, MSCT coronary angiography. We believe that, despite significant

technical difficulties, the use of MICS, in repeated operations, allows the successful implementation of a myocardial revascularization, minimizing the risk of complications associated with resternotomy and damage of functioning grafts.

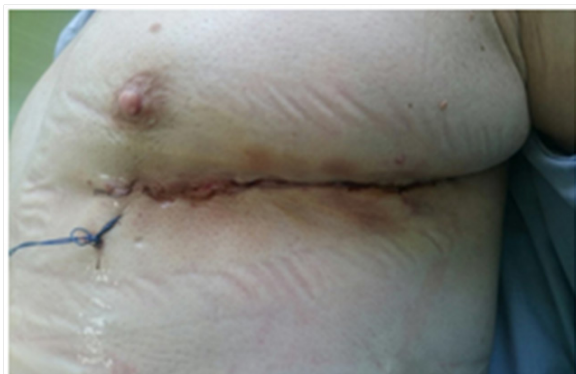


Figure 2 Type of wounds after repeated operation of coronary bypass surgery.

Acknowledgments

None.

Conflicts of interest

The authors declare no conflicts of interest.

Funding

None.

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