Combined left lower lobectomy and off pump coronary artery bypass grafting through left posterolateral thoracotomy

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Abstract

Carcinoma lung coexists with coronary artery disease in a significant number of patients. If a lung resection can be combined with off pump coronary Artery Bypass grafting in such patients, morbidity and mortality associated with staged procedures can be significantly reduced. Once such case is highlighted here. ***(Ind J Thorac Cardiovasc Surg, 2007; 23: 251-252)***

Key words: Lobectomy, Coronary artery bypass grafting, Thoracotomy

Introduction

Co-existence of carcinoma lung and coronary artery disease occurs in a small number of patients. Instead of treating them with two surgeries – a lung resection followed (or preceded) by Coronary Artery Bypass Grafting (CABG) – a combined procedure could improve the short and long-term outcome. If CABG can be performed off pump, the pulmonary complications of cardiopulmonary bypass (CPB) and its immunosuppressant effects in a lung resection setting can be avoided.

Case report

A 54-year-old male presented with recent onset cough and haemoptysis. Evaluation with Chest X-Ray and Computerised Tomographic (CT) Scan revealed a tumour of left lower lobe with no hilar lymph node enlargement or metastases. Pre-operative Electro Cardiogram (ECG) showed ischaemic changes in lateral leads and hence a coronary angiogram was done. This showed significant lesion in the Circumflex coronary artery with graftable Obtuse Marginal. Left Anterior Descending and Right Coronary Arteries were normal.

He was taken up for lung resection and Off Pump Coronary Artery Bypass Grafting (OPCAB). He was ventilated with a double lumen Endotracheal tube under general anaesthesia. A left posterolateral thoracotomy was done and pleura entered through 5th intercostal space. A tumour of size 4x5 cm was found in the left lower lobe. Hilar lymph nodes were not enlarged. A standard left lower lobectomy was done. Bronchial stump was closed with polypropylene interrupted sutures. One hilar lymph node was sampled. Then an antephrenic pericardiotomy was done and Left Circumflex system was exposed. Using a suction stabilizer, the second Obtuse Marginal branch (OM2) was stabilized. A reversed saphenous vein graft was anastomosed end to side to OM2 and proximal end of the vein graft was attached to descending thoracic aorta (Fig. 1).

Patient made an uneventful recovery and was extubated after 10 hours and shifted out of Intensive Care Unit (ICU) on 2nd postoperative day. An angiogram was done on 7th post-operative day, and demonstrated good flow into left circumflex system (Fig. 2). He was discharged home on 8th postoperative day.

Histopathology of the tumour diagnosed poorly differentiated squamous cell carcinoma and lymphnode showed reactive hyperplasia.

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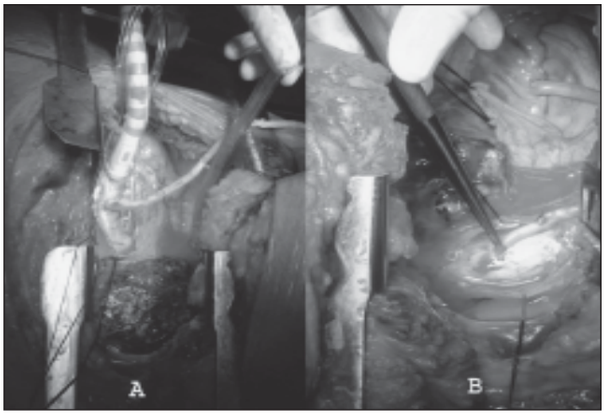

Fig. 1. Photograph of the Opeation. A : Saphenous Vein being anastomosed to OM2. B : Proximal end of Saphenous Vein being anastomosed thoracic Aorta.

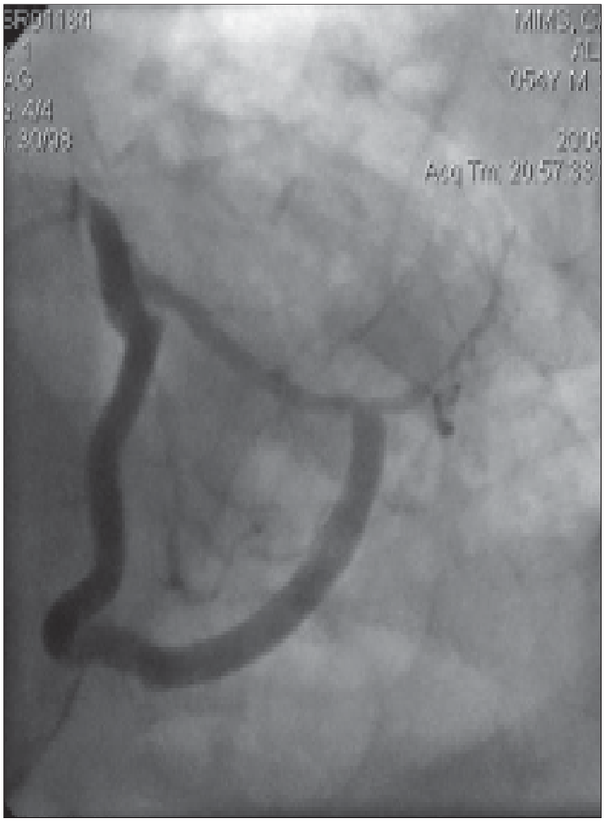

Fig. 2. Post Operative Angiogram showing good flow from Vein graft to OM2.

Patient is presently undergoing chemotherapy with Gemcetabine and Carboplatin. He is in functional class I at six month follow up.

Discussion

It is not uncommon to find carcinoma lung co-existing with coronary artery disease. Many of these patients undergo staged surgeries with either coronary artery bypass grafting or lung resection preceding the other. This involves subjecting the patient to two surgeries, both involving significant morbidity and mortality, and also delay in treatment of one pathology when the other is being tackled. It has been demonstrated that patients who underwent concomitant cardiac and pulmonary surgery under CPB had compromised long-term survival [1].

Lung resection in the presence of significant coronary artery disease carries the risk of peri-operative myocardial infarction and acute coronary events including sudden cardiac death. Conversely, if CABG is done as the first procedure, there is significant delay the initiation of treatment of carcinoma lung. Hence, those patients who can be treated with a combined procedure will benefit in the short term and long term from the approach. Combining lung resection with CABG depends on the anatomical location of Carcinoma lung and the territory of coronary artery affected. Approach may be through a median sternotomy or thoracotomy.

On pump CABG runs the risk of intra pulmonary haemorrhage and suppression of immune system due to the extra corporeal circuit. However OPCAB has been shown to abolish the CPB induced pulmonary complications associated with lung resection[2]. The avoidance of CPB may also be advantageous by decreasing blood loss and ventilation requirements[3]. Hence a lung resection and OPCAB in a single stage would be the best approach for such patients[4]. A combined approach, though, may be possible only in a few patients. The adequacy of lung resection and lymph node dissection along with complete revascularization of coronaries should never be compromised.

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