Letter to the Editor

Intact Pleura during Left Internal Mammary Artery Harvesting in a Patient with kyphoscoliosis and Chronic Obstructive Pulmonary Disease

We were interested in the study published by Dr. Alizadeh Ghavidel et al.,[1] whom we congratulate on their publication. There are some points, however, which we wish to make regarding the aim and results of their study.

The left internal mammary artery (LIMA) is mostly used as the conduit of choice for myocardial revascularization. The LIMA confers superior graft patency and better long-term survival and causes fewer cardiac events than does the saphenous vein.[1-2] Pleurotomy during LIMA harvesting may cause postoperative events. LIMA harvesting with pleurotomy may affect the respiratory function during the postoperative period, so some surgeons tend to proceed with their operations with the intact pleura.[2, 3]

With respect to our experience, a 70-year-old male patient with kyphoscoliosis and chronic obstructive pulmonary disease (COPD) presented with post-myocardial infarction angina. He underwent emergent coronary artery bypass grafting (CABG), during which the LIMA was harvested without pleurotomy. A pericardial drain was fixed postoperatively for 6 days, after which time it was removed. It is noteworthy, however, that we ourselves tend to remove the pericardial drain after 2 days. Our patient had a good postoperative period and was discharged on the 10th postoperative day without pulmonary complications. Pre-discharge chest X-ray and echocardiography showed no pleural effusion or pericardial effusion, and post-CABG delayed pericardial effusion was ruled one month later via echocardiography.

We believe that LIMA harvesting without pleurotomy during CABG is associated with lower pulmonary complications, especially in patients with pulmonary comorbidities such as COPD and chest wall deformity. Nevertheless, intact pleura may cause more pericardial effusion and tamponade. We would, therefore, recommend that in these patients, pericardial and retrosternal drains be fixed and kept until pericardial space drainage has dropped to lower than 50 cc per day. Nonetheless, when pleurotomy is done, the drain should be fixed and kept until pericardial space drainage has reduced to lower than 150 cc per day.

References

1. Alizadeh Ghavidel A, Noorizadeh E, Pouraliakbar H, Mirmesdagh Y, Hosseini S, Asgari B, Gholamour Dehaki M. Impact of intact pleura during left internal mammary artery harvesting on clinical outcome. J Teh Univ Heart Ctr 2013;8:48-53.
2. Rahim AMA, Kibria G, Ahmed NU. Effect of pleurotomy during internal mammary artery harvest on pulmonary function. Cardiovasc J 2011;3:163-168.
3. Oz BS, Iyem H, Akay HT, Yildirim V, Karabacak K, Bolcal C, Demirkiliç U, Tatar H. Preservation of pleural integrity during coronary artery bypass surgery affects respiratory functions and postoperative pain: a prospective study. Can Respir J 2006;13:145-149.

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Intact Pleura during Left Internal Mammary Artery Harvesting in a Patient with kyphoscoliosis and Chronic Obstructive Pulmonary Disease: Reply

We wish to thank you for your meticulous perusal of our article[1] and draw your attention to the following points.

Most of the patients candidated for coronary artery bypass grafting (CABG) have some degree of underlying disease because a significant number of these patients are current smokers and are elderly or obese. In addition, it is not uncommon for these patients to suffer from chronic obstructive pulmonary disease (COPD). Underlying pulmonary disease, intubation, prolonged and repeated mechanical ventilation, and infectious complications secondary to repeated or prolonged mechanical ventilation, atelectasis, and pleural effusion may increase treatment costs, length of hospitalization, morbidity, and even mortality. Keeping the pleura intact can be one way to help these patients. The main condition for the preservation of pleural integrity during CABG is precise hemostasis because otherwise the risk of pericardial effusion or tamponade can be problematic, although the incidence of this complication was not significant in our study.

The next point of significance is harvesting the left internal mammary artery (LIMA) as skeletonized technique. Relevant experiences have indicated that this technique is mostly useful for patients with a short sternum and requires distal coronary artery anastomosis.[2-4] Sometimes, small invisible pleural perforations occur during LIMA anastomosis, which may lead to left pneumothorax. In this condition, we recommend that pleural perforation be made (approximately 2 cm) without pleural drain tube insertion and that the sternum be closed after hyperventilation. In these cases, with the aid of mediastinal drainage with negative pressure, pneumothorax may be resolved sooner. Our second recommendation is that, in group of patients subjected to this type of CABG, an extra drain tube such as a chest tube or Tacuson Pratt should be inserted in order to prevent effusion. Also, in order to prevent injury or pressure on the right side of the heart, we can use diaphragmatic pericardium tunneling.

Finally, based on the results of our article and our personal experiences, we would advise that the pleura be kept intact during CABG. However, the priority is to have a sufficient length of LIMA anastomosis without tension and with proper curve, even though it leads to pleurotomy.

References

1. Alizadeh Ghavidel A, Noorizadeh E, Pouraliakbar H, Mirmesdagh Y, Hosseini S, Asgari B, Gholamour Dehaki M. Impact of Intact Pleura during Left Internal Mammary Artery Harvesting on Clinical Outcome. J Teh Univ Heart Ctr 2013;8:48-53.
2. Raja SG, Dreyfus GD. Internal thoracic artery: to skeletonize or not to skeletonize? Ann Thorac Surg 2005;79:1805-1811.
3. Athanasiou T, Crossman MC, Asimakopoulos G, Cherian A, Weerasinghe A, Glenville B, Casula R. Should the internal thoracic artery be skeletonized? Ann Thorac Surg 2004;77:2238-2246.
4. Wimmer-Greinecker G, Yosseef-Hakimi M, Rinne T, Buhl R, Matheis G, Martens S, Westphal K, Moritz A. Effect of internal thoracic artery preparation on blood loss, lung function, and pain. Ann Thorac Surg 1999;67:1078-1082.

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