Limited tissue is available to cover the bronchial stump after right extrapleural pneumonectomy for malignant pleural mesothelioma. After completing the resection, the pericardial reflection can be freed from the superior vena cava, the right pulmonary artery and veins, and the posterior wall of the pericardial sac between the transverse and oblique pericardial sinuses. The length and mobility from the posterior pericardium can then provide excellent coverage for the right bronchial stump. This technique has the advantage of being easy to perform and requiring limited time and dissection.

Technique

After right posterolateral thoracotomy, the parietal pleura and diaphragm are dissected en bloc with the lung exposing the pericardium in the anterior mediastinum and posterior mediastinum below the subcarinal space. The pericardium is then opened anteriorly in front of the superior vena cava (SVC) and posteriorly behind the right inferior pulmonary vein, and sharply dissected down to the diaphragm. The inferior vena cava (IVC) is identified below the diaphragm and is sharply dissected toward the right atrium. The right and left inferior phrenic veins are ligated along the IVC. The pericardial reflection extending between the IVC and the right inferior pulmonary vein is freed with cautery (Fig 1). The right inferior pulmonary vein, right superior pulmonary vein, and right pulmonary artery are stapled and sectioned intrapericardially. The right main bronchus is trimmed proximally to approximately 1 cm from the carina and stapled. After resection of the parietal pleura, diaphragm, pericardium, and right lung, the edge of the posterior pericardium is exposed up to the right inferior pulmonary vein. The pericardial reflection can then be freed with sharp dissection in the pulmonary venous recess and postcaval recess. After complete dissection of the posterior pericardium around the right pulmonary veins, the right pulmonary artery, and the SVC, the pericardial reflection is dissected toward the left pulmonary veins between the oblique sinus and the transverse sinus to gain enough mobility (Fig 2). Care should be taken during that stage to cauterize the collateral branches selectively from the bronchial arteries that communicate with the coronary circulation. Complete dissection of the pericardial reflection from the posterior wall of the pericardial sac provides enough mobility to the posterior pericardium to cover the right bronchial stump and be attached with interrupted stitches to peribronchial structures, such as the right vagus nerve, the muscular wall of the esophagus, and the azygos vein (Fig 3). Because no additional pericardium is removed and no pericardial flap is raised, the pericardial mesh can be fixed to the anterior and posterior pericardial edge in a standard fashion.

I have used this technique in 28 consecutive patients undergoing right EPP, including 21 patients after right-sided EPP. After freeing the pericardial reflection along the posterior wall of the pericardial sac, the posterior pericardium provided excellent coverage of the right bronchial stump. This technique has the advantage of being easy to perform and requiring limited time and dissection.
induction hemithoracic radiation as part of a prospective trial approved by our institutional research ethics board. In four patients, the posterior pericardium did not provide enough tissue and the bronchial stump was covered with a thymic flap (n = 2), a pericardial flap (n = 1), or an omental flap (n = 1). The bronchial stump from the remaining 24 patients undergoing right EPP was covered by the posterior pericardium alone. One patient (4%) who had received preoperative chemotherapy died from pneumonia within 30 days after surgery. No BPF was observed clinically and on bronchoscopy. None of the remaining patients developed BPF after a median follow-up of 14 months (range, 1 to 48 months).

Comment
The use of the posterior pericardium to cover the right bronchial stump is easily applicable and can be used in...
the majority of patients undergoing right EPP. The mobilization of the posterior pericardium does not require any additional dissection other than simply freeing the pericardial reflection along the posterior wall of the pericardial sac. In addition, no extra pericardium is removed than what is needed to resect the tumor. Therefore, the pericardial mesh can be attached to the anterior and posterior pericardial edges in a standard fashion, thus limiting the risk of problem related to the pericardial patch. This technique appears to be a safe option to cover the bronchial stump after right EPP, even in patients who undergo induction hemithoracic radiation therapy.

References


