Figure 1. a, Complete replacement of SVC with a long tube constructed of autologous pericardium. b, Autologous pericardial patch applied to cover a large vascular defect after partial SVC resection.

Superior vena cava replacement for lung cancer using a heterologous (bovine) prosthesis: Preliminary results

To the Editor:

We read with great interest the article by Spaggiari and associates,¹ and we congratulate the authors for their original contribution.

In agreement with the authors, we think that the use of a synthetic (polytetrafluoroethylene) prosthesis is burdened by several problems, but we disagree with their statement that the autologous pericardium is not sufficient to create a long enough tube to replace the superior vena cava (SVC) completely or in the majority of its length.

In our experience, we used fresh autologous pericardium to replace the SVC (Figure 1, *a*) in a small series of patients who had a good short- and long-term outcome. In fact, the autologous pericardium can be easily obtained from the patient and it can be shaped by a technique similar to that reported by Spaggiari's group. Lung tumor primarily invading the SVC is the best indication for surgery; we exclude from surgery patients with SVC involvement by N2 disease. The primary lung tumor usually infiltrates only the anterolateral and posterolateral walls of the SVC. Therefore, the indication for complete SVC replacement is very limited, because it is often possible to apply a pericardial patch.

Usually, a complete replacement of the SVC is considered mandatory for tumor invading more than 50% of the vascular wall. Nevertheless, in some cases in our experience we avoided total SVC replacement by using a large autologous fresh pericardial patch shaped to cover up to two thirds of the SVC circumference (Figure 1, *b*), without resorting to glutaraldehyde-preserved pericardial patches, as described by other authors.²

In conclusion, on the basis of our experience, we favor the use of autologous material to reduce the potential risks related to the application of heterologous prostheses, even if adequately pretreated.

In most cases, an angioplasty with a well-shaped autologous pericardial patch can be used to cover the vascular defect.¹⁻²

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Intraoperative indocyanine green angiography: Ready for prime time?

To the Editor:

We read with interest the report by Desai and associates¹ comparing intraoperative graft evaluation using indocyanine green (ICG) angiography and transit-time ultrasound flow (TTF) measurements. Our group also shared in the enthusiasm for ICG angiography when it was introduced,² and we congratulate the authors on their efforts to validate this novel technology as a quality improvement initia-

tive in coronary surgery.³ In our opinion, maximizing coronary artery bypass graft patency is a highly relevant issue.

In our experience, we found an important learning curve with ICG angiography, and we noted difficulty in the assessment of coronary anastomoses involving arterial pedicles, such as nonskeletonized internal thoracic artery (ITA) and radial artery grafts. We routinely skeletonized the distal portion of arterial grafts, and yet the images created by ICG angiography were still unclear at the anastomotic level. We would be interested to learn of the authors' experience with the evaluation of ITA grafts using ICG angiography and whether they now skeletonize their ITA grafts for this purpose. Another issue that was not addressed in this study relates to ICG costs, including the capital investment necessary to acquire the imaging device and the per-case costs. Can the authors comment on the cost effectiveness of the two techniques for the intraoperative assessment of graft patency?

More important, however, we are concerned with the analysis of sensitivity and specificity in Desai and colleagues' article. In the evaluation of sensitivity and specificity of a new diagnostic test, the validity of the analysis is intimately dependent on the definitions chosen for "positives" and "negatives." We disagree with the definition of "normal" used by the authors for TTF assessment, and we could not find any previous studies to support the authors' use of greater than 10 mL/min as a cutoff for "normal." Applying the definitions of Desai and associates, a vein graft to a large obtuse marginal coronary artery with high-grade proximal stenosis measured to have a pulsatility index of 4.9, diastolic flow fraction of 60%, and mean flow of 12 mL/min would be considered "normal." In our view, such a graft is abnormal because flow would be expected to be much higher than

12 mL/min, and we would consider graft revision. It is not surprising that such a graft would be seen as abnormal or even occluded by postoperative x-ray angiography. Applying the study's definition, this would constitute a false negative (normal by TTF, abnormal by x-ray angiography) and thus would contribute to an artificially low sensitivity of TTF measurement. Did the authors consider performing a post hoc exploratory analysis to evaluate their results with alternative definitions for "abnormal?" For example, had greater than 15 mL/min⁴ or greater than 20 mL/min⁵ been the cutoff for "normal" by TTF instead of greater than 10 mL/min, different conclusions may have been drawn regarding the sensitivity and specificity of TTF measurement.

In summary, we commend Desai and associates for their comparative assessment

of TTF and ICG angiography. However, we have identified limitations in their analysis and other logistical challenges that may constitute important barriers to the generalizability of their conclusions.

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