procedure. Perhaps it was not clear in our article, but the juxtaposition technique was proposed for anterior ventricular septal rupture, and for this reason we cited the anterior papillary muscle as a reference point to perform the left free wall juxtaposition with a lower risk of excessive left ventricular cavity reduction.

After this technique was applied in 4 patients with good results, posterior ventricular septal rupture was diagnosed in 1 patient with total occlusion of the right coronary artery. This patient had a clear posterior myocardial infarction and posterior ventricular septal rupture.

In this patient, we performed a ventriculotomy in the infarcted area in the posterior wall of the left ventricle. The juxtaposition of the free wall ventricles was done, juxtaposing the posterior free wall of the right ventricle with the posterior free wall of the left ventricle. Cava cannulation was performed, and the right atrium was opened to verify whether any stitch was accidentally in the posterior cusp of the tricuspid valve.

There is nothing controversial about applying the juxtaposition technique to treat posterior ventricular septal rupture. Of course, the anterior papillary muscle is not a reference point in the posterior region.

Although this technique can be used for posterior septal ventricular rupture, the juxtaposition of ventricular walls is more difficult and involves a minor area of juxtaposition.

As I said, we have observed only 1 case of posterior septal rupture, and since then, no patients with septal rupture have undergone operation. The real applicability of this technique for posterior rupture still remains to be defined.

Once again, we emphasize that the innovation of this technique is in the juxtaposition of both the right and left free walls over the septum, promoting the reinforcement of the ventricular septal rupture closure, exclusion of the infarcted area, and safety of ventricular cavity reduction.

I congratulate Dr Pocar and his team for the good surgical results obtained with their technique and thank you for the opportunity to clarify any doubts about our technical proposition.

Luis R. Gerola
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New technique for postinfarction ventricular septal rupture

To the Editor:

We congratulate Gerola and colleagues[1] for the outstanding results reported with biventricular free wall juxtaposition to secure postinfarction ventricular septal rupture (VSR) patch repair and would like to add a few comments.

Although not previously described with respect to the left ventricular free wall, right free wall plication over the septum for additional reinforcement of patch repair is conceptually similar and not an entirely new idea.[2,3] We used the latter approach in a 60-year-old man in whom a modified infarct exclusion operation was performed to repair an anterior VSR with associated oozing-type left ventricular anterior free wall rupture (Figure 1). The patient showed triple-vessel coronary disease and acute left ventricular failure (ejection fraction, 30%) with cardiogenic shock and was brought to the operating room on mechanical ventilation and intra-aortic balloon counterpulsation 19 hours after the onset of acute myocardial infarction (AMI). This interval also corresponds to the average time between AMI and rupture in patients developing cardiogenic shock.[4] Operation was completed with associated saphenous bypass grafting to the circumflex territory, and the postoperative course was free of major complications. At the 6-month follow-up, the ejection fraction increased to 48% and the patient was in New York Heart Association class I.

Previous reports do not specifically pertain to repair performed during the hyperacute phase after AMI,[1-3] but this approach allows the patch to be anchored to noninfarcted muscle with transmural sutures, whereas nondelayed surgery reduces the obvious impact of prolonged low cardiac output, rendering immediate repair less hazardous. In this respect, the SHOCK trial investigators reported an in-hospital mortality of 87% among patients with the triad AMI-VSR-cardiogenic shock, including patients managed conservatively or judged too sick for surgery, which further suggests a beneficial role of an aggressive strategy.

Conversely, the advantages of left ventricular free wall juxtaposition, as advocated by the authors, are less clear. AMI extends to the anterolateral free wall to a variable degree, whereas the risks of residual cavity restriction are difficult to predict. The level of the papillary muscles is suggested as the proximal limit for safe free wall juxtaposition. However, the technique has also been applied for posterior VSR in 1 patient. This sounds controversial given that posterior VSR usually relates to AMI in the right coronary territory and involves the posterobasal septum. It is possible that the authors repaired a VSR secondary to AMI in the distal territory of an extensively developed left anterior descending artery (ie, distal to the apex and thus along the inferior interventricular groove) with anteroseptal and distal inferior necrosis.

We fully concur that free wall juxtaposition is useful to ensure a secure patch repair, but the technique is most appealing for right ventricular noninfarcted muscle. This strategy may help to successfully perform VSR repair with a more aggressive timing.

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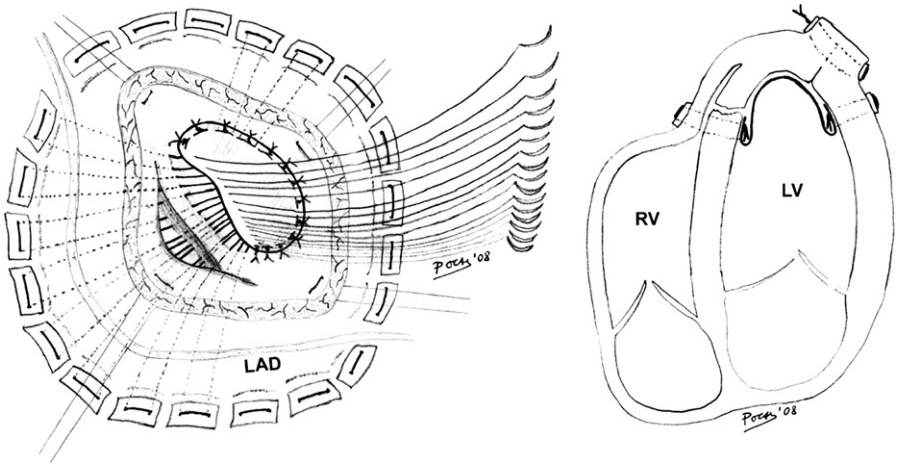

Figure 1. Pledgeted 2-0 polypropylene transmural mattress sutures are passed from outside through the right ventricular free wall and septum, beneath the course of the left anterior descending coronary artery and well posterior to the septal rupture; the remaining stitches are passed in a similar fashion through the left ventricular free wall (*left*). Sutures are then tied on the patch, and the ventriculotomy is closed. The 4-chamber cross-sectional diagram schematically shows juxtaposition of the distal right ventricular free wall over the septal defect (*right*). *LAD,* Left anterior descending; *RV,* right ventricular; *LV,* left ventricular.

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Adverse events in reoperative cardiac surgery: Delineating the typical intraoperative approach

To the Editor:

I read with great interest the recent article by Roselli and colleagues[1] detailing their review of adverse events during reoperative cardiac surgery. The authors have clearly demonstrated that these adverse events are significantly associated with lapses in preventive strategy and with failure to rescue. As a cardiothoracic anesthesiologist, I am interested in the details of the typical intraoperative setup during the study period (July 2002 to January 2006). I have the following questions:

1. Was blood routinely available in the operating room before incision? If so, how many units?
2. Were external defibrillation pads routinely applied to the chest wall to permit emergency defibrillation as required during sternal entry and/or mediastinal dissection?
3. Was large-bore intravenous access routinely achieved before skin incision?
4. Was a femoral arterial line frequently placed before sternal incision to expedite femoral arterial cannulation for rescue cardiopulmonary bypass?

I congratulate the authors again on their important contribution. I look forward to their comments about these aspects of preparation for reoperative cardiac surgery.

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Reply to the Editor:

We thank Dr Augoustides for his kind comments and inquiries regarding preparation for reoperative cardiac surgery. Cooperation and coordination of the entire team, especially the cardiothoracic anesthesiologist, is critical to success. Owing to space limitations, specific details regarding our typical approach to cardiac reoperations are included in Appendix E4 instead of within the main body of the manuscript. Some of Dr Augoustides' questions are addressed in Appendix E4, but many are not and we thank him for bringing attention to some of the important considerations from an anesthesiologist's viewpoint. Responses to each of his questions are included below:

1. Two units of blood are typically available for all reoperations. For patients undergoing left ventricular assist device explant or open thoracoabdominal aortic aneurysm repair, 4 units are made available.
2. Patients typically have external defibrillator pads placed before skin incision. Additionally, sterile pediatric-sized internal defibrillator paddles are available in the room inasmuch as they facilitate access to the partially exposed heart should the external pads not be adequate.
3. Large bore intravenous access is routinely obtained on all patients before incision.
4. We found no correlation between timing (during sternal re-entry or otherwise) or type of adverse event and outcome because so many of these patients were rescued. This experience differs from historical reports of catastrophic sternal re-entry with mortality approaching 50%. This success is in part due to the ability to predict who may have a difficult re-entry and the preparation to compensate for it with rapid institution of cardiopulmonary bypass (CPB). Should the need for emergency institution of CPB arise, methods of preparation vary depending on patient risk. Cross-sectional imaging with computed tomography (either with or without contrast) and