Authors have nothing to disclose with regard to commercial support.

colleagues¹ concluded that collagen patch sutureless repair of LVFWR is a safe surgical technique in selected patients.

Okamura and colleagues¹ are to be congratulated for their excellent results in this very challenging disease. Their impressive data, however, still deserve some comments.

Randomized control trials on LVFWR surgery are missing, and most existing data come from single small retrospective trials or case reports.²⁻⁶ It is therefore difficult to define the best surgical technique, although it is recognized that sutureless repair is the best treatment for oozing LVFWR. Okamura and colleagues¹ commented that autologous pericardium generally undergoes calcification in the long term. As we have recently reported,² we preferred to use the “patch and glue” technique through the application of 2 crossed collagen sponges and the subsequent application of autologous pericardium fixed with glue; the border of the pericardial patch is then fixed on the epicardium with some polypropylene 4-0 single stiches (Figure 1). With this technique, we have no reported cases of rerupture in either early or midterm follow-up; however, we recognize that we know nothing about the possible calcified degeneration in the long term.

Another interesting issue of this article is the application of ECMO support in 11.4% of patients. We have reported a higher use of ECMO support during the preoperative and postoperative periods (34.3% and 31.4%, respectively) with an acceptable early outcome; ECMO may offer valid and immediate support and stabilization mainly for patients who present with cardiac tamponade or cardiac arrest and even for those patients who had LVFWR in a referring center.⁷ Midterm survival is another interesting issue of this trial. Okamura and colleagues¹ have reported an encouraging midterm survival at 5 years. We have observed a 5-year survival of 74.7% among patients survived the operation. Okamura and colleagues¹ have not reported these data, and we believe that they should be described to demonstrate that the LVWFR should be promptly managed to obtain acceptable midterm and long-term outcomes.

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<https://doi.org/10.1016/j.jtcvs.2019.05.038>

REPLY: PATCH AND UNLOAD

Reply to the Editor:

We read with interest the letter of Formica and colleagues,¹ who discuss the article by Okamura and associates.^{1,2} Formica's group are to be similarly congratulated on their recently published series, which reports excellent results with the difficult problem of left ventricular free wall rupture.³ Formica and colleagues¹ share their similar technique of 2 perpendicularly crossed collagen sponges, on which is placed a layer of bovine pericardium fixed with glue. Their letter raises some interesting points.

It is unclear whether the use of a pericardial patch in addition to the collagen improves stability. Formica and colleagues reported no reruptures, whereas Okamura and colleagues,² who used the collagen patches alone, reported

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a rate of 17%. We believe that any concerns about calcification of a pericardial patch should be balanced against the high mortality associated with rerupture and the unlikelihood of such a patient requiring (or being a candidate for) a redo sternotomy. We also note a recent systematic review of left ventricular free wall rupture repair showing no difference in mortality between 96 patients repaired with a sutureless technique and 116 patients in whom sutures were used to close the ruptured myocardium or secure a patch on the epicardium.⁴

Both groups report the use of venoarterial extracorporeal membrane oxygenation both preoperatively and perioperatively in a proportion of patients. Cardiogenic shock as a result of acute myocardial infarction, even in the absence of a mechanical complication of acute myocardial infarction, has a poor prognosis.⁵ Venoarterial extracorporeal membrane oxygenation is an excellent short-term support for the patient in cardiogenic shock, allowing rapid restoration of end-organ perfusion. Its main limitations, however, are increased afterload and inability to unload the left ventricle.⁶ Increased afterload in the context of both left ventricular free wall rupture and acute myocardial infarction is unfavorable and should be avoided. Routine use of an intra-aortic balloon pump has been suggested for this purpose.⁷ We speculate whether a strategy of unloading the left ventricle after surgery with a left ventricular assist device, such as the Impella 5.0 (Abiomed, Danvers, Mass), inserted through the axillary artery may assist left ventricular recovery. Use of such a device as a bridge to surgery has been reported in the management of ischemic ventricular septal defect.⁸ We await the availability of some data to support such a strategy.

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<https://doi.org/10.1016/j.jtcvs.2019.06.008>

REPLY: OPTIMAL MANAGEMENT OF LEFT VENTRICULAR FREE WALL RUPTURE CONSIDERING THE PROBABILITY OF

RERUPTURE

Reply to the Editor:

I read with great interest the letter to the Editor by Formica and colleagues regarding their excellent experience with the “patch and glue” technique and their comments regarding our study. The optimal surgical strategy for left ventricular free wall rupture (LVFWR) remains controversial because of the lack of large-scale studies describing this subject and the severity of the patients’ condition. Formica and colleagues¹ have described the application of the pericardial patch and glue with cardiopulmonary bypass and cardioplegic arrest or on a beating heart. The pericardial patch is sutured to the myocardium with polypropylene sutures. Combined applications of collagen sponges and subsequent fixation with an autologous pericardial patch more effectively reinforces the fragile infarcted myocardium and can reduce the incidence of rerupture of the repaired site. Notably, Formica and colleagues¹ have reported that the surgical revision rate for bleeding was as high as 25.7%. Their study included both the “patch-and-glue” technique and the direct suture techniques. Furthermore, in my view, patients undergoing surgical revision for bleeding might include those who presented with rerupture of the repaired site and those with bleeding from noncardiac areas, such as the sternum. I expect Formica and colleagues to report the outcomes of the patch-and-glue technique after studies