Reviewer’s report

Title: Pericardial Closure with Extracellular Matrix Scaffold Following Cardiac Surgery Associated with a Reduction of Postoperative Complications and 30-day Hospital Readmissions

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Reviewer: Marc Albert

Reviewer’s report:

The authors report the experience after introducing an extracellular matrix patch for pericardial closure in a multi-center study. The study contains 42 centers and the study population was compared to a national database. The Authors have clearly expended a lot of time and effort to collect all the data, which the authors lead to quite remarkable conclusions. Although I do not agree with all of those conclusions, some of them need to be proven better, the authors show a significant reduction of readmissions and pericardial or pleural effusions.

1. Abstract: The abbreviation „POAF" (post-OP atrial fibrillation?) should be explained. In general, I would suggest reducing all figures to the absolute minimum in the abstract section.

2. Line 77 - 79: Be careful with your statement that pericardial closure is only performed in a small portion of cardiac surgeries. That may be the case in the States, but this is a worldwide read journal and in other parts of the world it is the standard of care to close the pericardium. I would suggest rephrasing that part.

3. I would suggest focusing on one or two groups of patients, not mixing the aortic valve replacement patients with the repair patients (see my remark no. 9). Repair and replacement patients are very much different patients and to mix the results is questionable.

4. Line 108 - 111: Please comment on the method how you gained the information about pleural or pericardial effusion and atrial fibrillation when you see the patients after 30 days for the first time since discharge.

5. Line 115 - 117: In my opinion, there should have been a study protocol defining exactly what a device-related event is. I am not sure if all surgeons in the 42 participating centers deem the same events as device-related.

6. Line 186 - 191: You have referred to the table. No need to repeat all the information.

7. Line 215: Why have been the 17 patients readmitted? Is there any possibility to get the equivalent data from the registry? I think when stating a lower readmission rate we must know why the patients have been readmitted.
8. Line 258 - 260: See above: as long as you do not know why the patients have been readmitted, there could be hundreds of reasons for the lowered incidence of readmissions. Furthermore, when speaking about a lower incidence of pericardial effusion, you should keep in mind, that different operation techniques and implants produce different amounts of fluids, e.g. when performing an aortic valve repair often the used aortic prosthesis produces pericardial effusion. For that reason, I might be tempted to suggest that you either distinguish between aortic valve repair and replacement or concentrate on one group.

9. Line 273 - 277: I would be very careful with those conclusions as they do not include the blood coming from the intrapericardial sutures. A barrier for the blood works in two ways, preventing blood to drain from the pericardium into pleura and thus prolonging the blood - atrium contact.

10. In general: When you write about pericardial or pleural effusion, are you talking about ml drainage, readmission for effusions, reoperation for effusions or TEE/TTE findings? Please clarify.

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