

Peer Review File

Article information: <https://dx.doi.org/10.21037/jovs-22-10>

Reviewer 1

This paper and video material is extremely useful, precise and of high quality. I strongly support its publication.

Although currently robotic on pump is the only widely available way to perform TECAB technically, it is in Europe still not allowed as it is in direct contact of the heart and thus becomes level III (new MDR legislation, Intuitive does not support this). The author should elaborate briefly on this and the importance of addressing the issue for both on pump and off pump techniques. It is key that Intuitive and the other players in the field address these issues rather than to lose the excellent tools and techniques that exist.

R: In the US, the European MDRs do not apply and according to FDA regulations the TECAB procedure is still possible. We have added a note on this fact in the paper under challenges.

A good patient selection is indeed key and patients with diffuse aortic and arterial disease might still benefit concerning stroke and intraoperative myocardial injury by off pump surgery.

R: We strongly agree with this argument, and we already pointed out the importance for vascular disease screening in the first version of the paper.

Endoballoon training and experience is important and Edwards has withdrawn its device for several months a few years ago because of balloon deflation issues and loss of pressure. What safe alternatives could be there? What potential problems could rise in the use of the endoballoon and how would this affect your procedure?

R: Already included in the first version of the manuscript. We have stressed the following:

- 1. Bilateral radial artery pressure monitoring lines**
- 2. Well-developed TEE skills**
- 3. Selection of the appropriate cannula size**
- 4. Utmost importance of distal leg perfusion**
- 5. Proper deairing of the balloon catheter**
- 6. Gentle wire and catheter handling**
- 7. General training in catheter and wire skills**
- 8. Excellent venous drainage - thereby avoidance of LV ejections to prevent balloon migration**
- 9. Attention to removing catheter slack to prevent migration**
- 10. Handling of balloon migrations during bypass and cardioplegia**

Even the smallest devices like the constructed Pott's knife will be subjected to the MDR in Europe. Therefore, both on - and off pump techniques should keep their own indication and importance, but sharing all this knowledge is importance and the authors should be congratulated on this.

Reviewer 2

Nice step-by-step summary of the TECAB procedure, well described.

Comments:

1.looking for a more exhaustive description/explanation of the meaning of the "parasternal" assistant port?

R: We've added clarification in the subcostal assistance port section.

2.not in favor of suggesting using self-made instruments (knife for arteriotomy). Removing that suggestive temptation would be more appropriate. There are official tools available in the industry as mentioned.

R: The use of this self-made construction is the only way to incise the target vessel on the Xi system as the snap fit instrument and lancet beaver knife, which were produced for the Si system, are not available at this point. We mentioned this already in the manuscript. Both the red rubber catheter and the beaver knife are approved devices.

Reviewer 3

The authors detail patient selection, clinical advantages, procedural challenges and overall technique for arrested-heart TECAB in an extremely well-carried and comprehensive way. The several images and the video are of added value. This is an overall beautiful and highly educational manuscript. Congratulations.