Peer Review File

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Reviewer A

The manuscript is nice but it stays in between a review and a personal experience. I would advise to prioritize one of the 2 aspects and rewrite.

Response: Thank you for your comment. The manuscript has been completely rewritten as a Surgical Technique.

Reviewer B

Well written paper describing in detail the application of premade loops for neochords in robotic mitral repair. Very nicely done.

Reviewer C

I am proud of reviewing the manuscript for the *Journal of Visualized Surgery* in which the authors described robotically assisted mitral valve repair, focusing on loop technique using CV-4 or CV-5. Although institutes in which robotically assisted mitral valve repair is routinely performed are limited, this robotic surgery has been already well-established with excellent long-term outcomes and is a standard approach in some institutes worldwide. The techniques described in this manuscript are what is already routinely done in institutes where robotic surgeries are routinely performed. **There is no mention of ingenuity or creativity**. In my view, this manuscript should be submitted elsewhere.

Response: Thank you for your comment. Although the reviewer may have experience of the loop technique being used in institutes already performing robotic surgery, these institutes have not published this in the surgical literature. The loop technique has been widely studied and published in mini mitral surgery, not robotic mitral valve surgery as section 1.3 now clarifies. Robotics introduces new challenges for the loop technique, such as accurate measurement of loop length in the totally endoscopic environment and hopefully, we have now clarified the various techniques available to facilitate this. We are also not aware of any other publications documenting use of a series of knots to lengthen Gore-Tex loops that eliminate abrasion of the loop-in-loop technique and therefore obviates the risk of neochordal breakage. Although this latter point may not be *ingenius*, we consider both this and the use of a pre-knotted goretex suture (trimmed at the annular plane and flush with the papillary muscle) to measure loop length as *creative*. We are sorry the reviewer does not agree with us.

Editorial Comments

1. Please include a section about the creativity of the technique in the main text.

Response: See response to reviewer 3 above. Also, we have added line 241 which states that tying a series of knots to lengthen the loops has not been previously described. The conclusion has been strengthened to highlight the creative ideas we have suggested, e.g., using a knotted CV4 to

measure loop length in robotic surgery, and lengthening loops with a series of knots rather than a loop-in-loop technique which may lead to abrasion and breakage of the loops.

2. The abstract starts with the mention of the Loop Technique being devised by Mohr almost 25 years ago and its widespread use in video-assisted mitral valve repair, especially in Europe. Yet, the focus then shifts to robotic mitral valve repair, which might seem like a slight leap to readers without clear linkage.

Response: Than you for the comment. We have changed the abstract accordingly..

3. The concluding sentence in the abstract, “Herein, we report our techniques for both of these”, is a bit vague. Considering the diverse topics covered in the abstract, it could be clearer to specify what the core contributions or findings of the report are.

Response: The abstract has been changed accordingly

4. The content related to the background in the Introduction seems extensive, especially in sections 1.1 and 1.2. Moreover, there’s an absence of a direct statement specifying the main objectives of the study. For clarity, we’d recommend adhering to our template: restructure the current content in “1.3 Knowledge Gaps” as “1.2 Rationale”. The section “1.3” should focus on the objective. Clearly articulating the study’s goals and significance with statements such as “In this study, we aim to...” or “The primary objectives of this research are...” will enhance reader comprehension.

Response: The introduction has been extensively changed.

5. Regarding the 2.5 Measuring Loop Length: “There are three techniques which we have illustrated in the operative video”, further clarification on when and why each method is preferred might be beneficial.

Response: This is now clarified on line 196 and section 5.

6. The description “The operative video demonstrates three different techniques of measuring chord length in the totally endoscopic robotic environment and how to adjust the effective loop length” seems more fitting as a legend for the operative video rather than as an introductory statement for the technical details.

Response: This statement has been added to the legend for the operative video and removed from the technical details.

7. Please provide a more detailed description of the equipment and instrumentation being used, such as robotic system (name/model, features, number of arms, operative console), trocar/ports (sizes, placement, special features), endoscope (type, camera specifications, angle), software add-ons or tools that aid in navigation, etc.

Response: See lines 134-138

8. Consider enhancing the discussion section further. For instance, delve into the potential clinical implications of your findings. Could the loop technique in robotic surgeries influence patient outcomes, recovery durations, or hospital expenditures?

Response: Thank you. Section 6.2 now covers this.

9. Please maintain consistent terminology. For instance, if referring to “cardiopulmonary bypass” as “CPB” initially, make sure to consistently use this abbreviation.

Response: Thank you, I have done this.