Author’s response to reviews

Title: Hybrid treatment of an unusual traumatic aortic arch rupture with pseudoaneurysm: a case report

Authors:
Shoujun Tang (tangshoujun@aliyun.com)
Shengjie Tang (852310859@qq.com)
Li Yu (760584332@qq.com)
Yongheng Zhang (735013350@qq.com)
haining zhou (zhouhaining@aliyun.com)

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Reviewer reports:

Reviewer #1: This is an interesting case report that highlights a hybrid treatment of a traumatic aortic arch rupture with pseudoaneurysm. I congratulate the authors in the resolution of this difficult case.

I have some comments.

Major comments:


The patient seems to be treated on an elective basis 3 months after a traffic accident. Considering the stable preoperative condition and young age (31 years old), hybrid therapy including stent graft placement is actually feasible?

The patient underwent total debranching of supra-aortic vessels. Although the detail of the procedure was not described in the manuscript, this procedure usually requires median sternotomy and partial clamp of ascending aorta. Do authors consider this procedure as less-invasive treatment?
I think that total arch replacement through the median sternotomy with the aid of cerebral protection under hypothermic cardiopulmonary bypass, which was more invasive than proposed hybrid therapy, could be possible and performed safely in this kind of situation?

AUTHORS’ REPLY: Thank you very much for your kind comments.

1. The chest pain and hoarseness appeared on the patient suddenly, suggesting that the aneurysmal mass increased rapidly and oppressed the laryngeal recurrent nerve. The patient's condition was considered to be unstable because of the pseudoaneurysm expansion and recent surgical history. Eventually, a hybrid repair of the ruptured area was favored over an open total arch reconstruction.

2. We described the operation in detail in the revised manuscript, following your thoughtful suggestion. We also reviewed the literature and summarized our single-center experience. Hybrid arch procedures provide a safe and viable alternative to traditional open surgical repair, and have a lower mortality and morbidity for high-risk older patients. At some institutions, hybrid thoracic aortic and arch repairs have become the preferred approach, with open procedures performed only if hybrid approaches are not possible for technical reasons. In this case, we still performed the surgery by median sternotomy and partial clamp of ascending aorta, but reduced the risk of cardiopulmonary bypass and deep hypothermia cardiac arrest. The less-invasive treatment means not only minimally invasive techniques, but also satisfactory short- and long-term outcomes.

3. We described the detail of the hybrid procedure in this article. Open total arch replacement is a robust operation. It provides a durable reconstruction and remains the standard against which all new techniques must be compared. However, it requires cardiopulmonary bypass and circulatory arrest and, therefore, may not be tolerated by all patients. As the reviewer suggests, the patient may have been able to undergo total arch replacement with brain protection through a median sternotomy incision. However, open surgery was considered to have a greater risk because of the expansion of the pseudoaneurysm and recent surgical history. In these situations, a hybrid operation is recommended to reduce the risk of cardiopulmonary bypass and deep hypothermia circulatory arrest. The review of the available literature shows that a hybrid debranching technique is simple and feasible, with the same therapeutic effect as open surgery, shorter hospitalization and similar postoperative complications.

Minor comment:

The 3rd paragraph of the Discussion section which explains the surgical procedure should be placed at the Case presentation section. Furthermore, the authors have to describe the detail of the hybrid treatment.

AUTHORS’ REPLY: Thank you very much for your advice. The 3rd paragraph of the Discussion section was placed at the Case presentation section and the detail of the hybrid treatment is redescribed.
Reviewer #2: The treatment of the patient was done with excellence. However, the treatment is not innovative. A case report to be published should reveal an exceptional technical innovation or a very curious case. I do not think this case report fits these criteria.

AUTHORS’ REPLY: Thank you very much for your kind comments.

Minimally invasive techniques have been developed to expand the suitability of aortic repair to medically and anatomically unfavorable patients. It could increase the utilization of endovascular techniques for treatment of patients unsuitable for open aortic arch repair. In this case, we reported a patient who underwent a hybrid surgery and was discharged uneventfully. We believe that this article may raise awareness of this combined procedure, and that it will be more often used in the future when indicated.

We have acknowledged this may not be an exceptional technical innovation or a very curious case. However, this is a rare case that many thoracic surgeons may not be familiar with, and reporting a new case successfully treated by hybrid debranching technique may be very informative to them. There are two differential features in our case: first, the hybrid operation did not require cardiopulmonary bypass or deep hypothermia circulatory arrest; and second, it can not be denied that open total arch replacement is a robust operation that can be performed with excellent results. For the patient, it was assessed that open surgery had greater risk and that hybrid debranching seemed to be safer. We think that these circumstances deserve to be emphasized in this case report. In clinic, low incidence of delayed traumatic aortic aneurysm is prone to misdiagnosis and delayed treatment. We hope to improve colleagues’ awareness and vigilance of this disease, as well as their choice of surgical methods through literature review and this case.

Reviewer #3: First of all, congratulations to your team for a very good surgery, the patient's treatment is also very good. Although the aortic dissection caused by trauma is usually located near the left subclavian artery, this patient is slightly different. Your surgical approach is also a good way.

I have a few suggestions for this article.

1. Please refer to the reader's instructions for this magazine for details.

2. Re-arrange paragraphs and texts with reference to previous cases published in this magazine.

3. It is recommended to retouch the article, including grammar and spelling, and important concepts.

AUTHORS’ REPLY: Thank you very much for your suggestions, with which we fully agree. My sincere thanks for your recommendation - it is always appreciated! We have read the reader’s instructions of this magazine carefully. And in the subsequent steps, we have re-arranged paragraphs and texts and retouched the article repeatedly. We also sought help from
professionals to propose amendments and improvements for the revised article. Thank you for pointing out this omission. We appreciated this opportunity to improve the original text.

The Authors would like to thank the Reviewers and the Editor for their thoughtful and constructive comments, and for the time devoted to the revision of our case report. No doubt, their revision has improved the original text. We hope that you will find our case report acceptable for publication in its revised form.