

Ascending aortic slide for interrupted aortic arch repair

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Provenance: This is a Guest Letter to the Editor commissioned by the Section Editor Xicheng Deng (Department of Cardiothoracic Surgery, Hunan Children's Hospital, Changsha, China).

Response to: Takeuchi K. Ascending aortic slide for interrupted aortic arch repair: a new approach to maintain native tissue continuity. *Transl Pediatr* 2017;6:81-2.

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In a recent editorial (1), Dr. Takeuchi summarized our report (2) on five neonates and infants undergoing repair of interrupted aortic arch (IAA) using the so-called "ascending aortic slide" technique. It was initially performed by Dr. William I. Norwood, without him ever publishing it, and was adopted by our team through description by memory after direct observation by one of our co-authors/colleagues who worked with Dr. Norwood in the 1980's. In difficult situations, where the gap between the proximal and distal portions of the interrupted arch is too far apart to achieve a tension-free anastomosis, the reconstruction involves splitting the ascending aorta in half up to the take-off of the innominate artery, posteriorly rotating the free flap of native tissue towards the ipsilateral shoulder respective to arch-sidedness, with anastomosis to the distal portion of the arch. The opening in the filleted arch is reconstructed with a patch as per any arch repair, and may be used for biventricular or univentricular physiology. Other techniques in a similar situation, namely the subclavian flap, the reverse subclavian flap, an interposition graft, or incorporating the aortic branches in the anastomosis (3), all have potential drawbacks. The ascending aortic slide technique has potential advantages, including the use of a native tissue-to-tissue anastomosis with the potential to grow, providing a good posterior scaffold to facilitate anterior patch reconstruction, no tethering or compression of the airway, and no sacrifice of a major vessel.

Dr. Takeuchi brings up a few questions and concerns regarding the technique which merit consideration and answers. In order of their appearance in his editorial, these are:

- (I) In small ascending aortas, supraaortic stenosis may be a limiting factor or potential post-operative complication: it is true that we encountered this problem early in our experience in one of our patients, requiring a reoperation with an additional patch of the ascending aorta. With experience, it is possible to avoid this pitfall with more generous/aggressive patching of the ascending aorta, as would be required when performing primary repair of supraaortic stenosis. Also, it may be used in neonates with even smaller ascending aortas (the smallest in our series measured 3.8 mm), with the caveat that in smaller ascending aortas, the surgeon is probably dealing with an aortic valve and/or subaortic area which is also very small, pointing to a univentricular pathway. In this situation, the ascending aortic slide may still be used, with a Damus-Kaye-Stansel anastomosis to the pulmonary root and patch aortic reconstruction, as required for a standard Norwood operation.
- (II) Long suture lines have not been at more risk of bleeding than otherwise, nor has the technique increased antegrade cerebral perfusion (ACP) or bypass times; the use of smaller needles on finer sutures, and judicious/expeditious use of ACP and bypass will mitigate any adverse effects of an approach that we have found to be surprisingly reproducible, and technically straightforward.
- (III) The short follow-up period and potential for future restenosis with longer follow-up: since submission

of the manuscript in February 2016 including five patients, our experience now includes eight neonates (including one with a right aortic arch with right descending thoracic aorta in whom the rotational flap was performed towards the right shoulder), and a mean follow-up which now extends beyond 39 months. No further instances of restenosis requiring re-intervention or reoperation have been encountered.

In summary, the experience with the ascending aortic slide technique is limited and the follow up time short. In difficult anatomic situations, we find it to be an attractive option with the potential for arch growth, and suggest it as an alternative to other techniques for the repair of IAA.

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Footnote

Conflicts of Interest: The author has no conflicts of interest to declare.

References

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