Peer Review File
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Reviewer A

Comment 1: The development of collateral circulation is a relevant complication in patients with congenital heart defects, especially in univentricular hearts after Fontan or Glenn circulation, which may lead to arterial oxygen desaturation and impaired cardiovascular hemodynamics. Accordingly, closure of these shunts is often controversial. Nevertheless, the literature on this complicated therapeutic option is sparse.
In the present review, the problem of collateral circulation between systemic veins, between systemic veins and pulmonary veins, and pulmonary arteriovenous malformations is discussed in detail.

The strength of the article is that the experienced authors describe in their narrative overview with an educational background in a straightforward manner in particular the development and location of the collateral vessel, the direction of blood flow in collaterals, the evaluation and sizing of collaterals, the hemodynamic effect of collaterals, and why and how collaterals are occluded.

Thereby, origin and practical approaches of each collateral type are explained without getting lost in the anatomic and hemodynamic complexities.

The tables and the illustrations are very clear.

Reply 1: we would like to thank the reviewer for these positive comments.

Comment 2: That the authors do not address aortopulmonary and systemic arterio-venous collaterals in their review may be seen as a weakness, but implementation in existing work could lead to overly cumbersome work on an overly heterogeneous patient population an important and successful overview.

All in all, the clinical and scientific relevance of this very well and clear written paper is high.

Reply 2: we agree with the reviewer that including aorto-pulmonary collaterals and systemic venous fistulae in the review would add unnecessary complexity; however, the second reviewer mentions to add some extra information.

Changes in the text: page 8, line 3 & page 18, references from 14 to 18

Reviewer B

Comment 1: Authors illustrated thorough review of so-called VV collateral vessels and pulmonary atrioventricular malformation in Glenn or Fontan patients. I appreciated the main points of the article.

Reply 1: we would like to thank the reviewer for the appreciation of the main points of the paper.

However, there are some points I want authors to clarify.

Comment 2: First, I think problems related to aorto-pulmonary collaterals (APC) are the most common and clinically problematic "collaterals in congenital heart disease" especially in

patients with single ventricular physiology. APCs cause volume overload to systemic ventricle and can cause HF. Also, APCs are related to high systemic venous (equals to high pulmonary artery) pressure in Glenn or Fontan circulation. Thus, coil embolization of APCs can be an effective treatment to such patients with HF and/or high systemic venous pressure.
I think authors should mention about APCs from such standpoint.

Reply 2: we agree with the reviewer's comment that the aortopulmonary collaterals in congenital heart defects might play an important hemodynamic role. To avoid tilting the weight of the paper entirely toward these collaterals, we decided to mention only briefly about them in the first version. On the other hand, we feel that not discussing this type of collaterals at all could be seen as a shortcoming. Therefore, we decided to include a brief section on aortopulmonary collaterals.

Changes in the text: page 8, line 3 & page 18, references from 14 to 18

Comment 3: line 116; scarce/immature pulmonary vascular bed is also a main cause of high SVC pressure in Glenn patients.

Reply 3: we agree, added in the text.

Changes in the text: page 5, line 21

Comment 4: line 189; I want authors to clarify that saline contrast echo is effective to detect especially the presence of systemic-pulmonary VV collaterals or pulmonary AVM.

Reply 4: clarified the text.

Changes in the text: page 9, line 13