Cardiology in the Young (2016), **26**, 1452–1453
doi:10.1017/S1047951116000354

Letter to the Editor

Recent experience with transcatheter closure of perimembranous ventricular septal defects using duct occluders

Received: 5 January 2016; Accepted: 14 February 2016; First published online: 13 April 2016

To the Editor,

We have read with great interest the paper entitled "Transcatheter closure of perimembranous ventricular septal defects with ductal occluders" published in *Cardiology in the Young*.[1] First, we would like to congratulate the authors for their study evaluating the feasibility and complications of ductal occluders for closure of perimembranous septal defects in a relatively sufficient number of patients. The conclusion of this study was that ductal occluders might be a promising therapeutic option for the closure of small- and moderate-sized ventricular septal defects. We would like to discuss our experience with ductal occluders in children with perimembranous ventricular septal defects. We performed transcatheter closure of perimembranous ventricular septal defects with Amplatzer duct occluders in 17 cases during the 18-month period: first-generation Amplatzer duct occluder was used in 13 cases and Amplatzer Duct Occluder-II device in four patients. The devices were successfully implanted in 16 of 17 patients. In one patient, the first-generation duct occluder suddenly embolised into the left pulmonary artery soon after its deployment. The device was retrieved and the patient underwent surgical closure of the ventricular septal defect. We usually decide the appropriate type and size of the device based on measurements obtained on left ventricular angiograms. A device that was 1–2 mm larger than the defect size was chosen for our first few cases; however, residual leakage was observed in two patients, of whom one had left bundle branch block. Development of embolisation of device in one patient and residual shunt in two patients changed our approach for decision on suitable device size. Therefore, we started to use devices that were 2–4 mm larger than the defect size in the following cases, if the anatomy was favourable. We did not observe any embolisation or residual shunt after the change in approach.

Left bundle branch block developed 1 day after the procedure in the patient who had the Amplatzer Duct Occluder-II implantation. Echocardiography showed the device moving to the right side during the systole and to the original position during diastole similar to accordion bands. After 1 month of follow-up, the device settled more properly and bundle branch block was improved; however, residual shunt persisted in this patient. Moreover, two retention discs may cause improper positioning of the device mimicking accordion motion, even if we take care to choose a larger Amplatzer Duct Occluder-II device as in this patient. Although it may have advantages regarding reducing the chance of valvular problems and advanced heart block, the fabric-free design and flexible waist might increase the possibility of residual shunt and embolisation; because of these concerns, our current approach is to close proper perimembranous defects using first-generation duct occluders that are 2–4 mm larger than the defect. The absence of right-sided retention disc and longer waist length may offer advantages in terms of stability of the device and appropriate alignment after deployment to avoid entrapment of the tricuspid leaflet and right ventricular structures.

Although there is a concern that ductal occluders are not designed for the closure of these defects, we share the authors' conclusion that duct occluders might provide an effective and safe therapeutic option in selected patients with perimembranous ventricular septal defects.

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Acknowledgements

None.

Financial Support

This research received no specific grant from any funding agency, commercial, or not-for-profit sectors.

Conflicts of Interest

None.

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https://doi.org/10.1017/S1047951116000354 Published online by Cambridge University Press