course of plastic bronchitis or on the durability of the Melody valve in the mitral position.

CONCLUSIONS

Transapical implantation of a Melody valve in a mitral bioprosthesis is feasible even in a young child with a failing Fontan circulation; however, the patient had borderline intracardiac dimensions for this approach.

References


EDITORIAL COMMENTARY

The Robin Hood principle in the treatment of congenital heart disease: Taking technologic developments intended for adults and using it in kids

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In this issue of the Journal of Thoracic and Cardiovascular Surgery, Moysich and colleagues1 from Giessen, Germany, describe the successful transapical implantation of a Melody valve (Medtronic, Minneapolis, Minn) within a mitral bioprosthesis in a pediatric patient. This operation was performed in a 3-year-old child who previously had undergone a Fontan procedure and later a left atrioventricular valve replacement with a size 27 Medtronic Mosaic valve (Mosaic Tissue Valve; Medtronic). The Mosaic valve had severe regurgitation after 6 months, necessitating another valve replacement.

The successful use of the Melody valve in this manner to treat mitral valve disease is another example of how pediatric patients can benefit from technologic advances made in adult patients. Mitral valve disease in pediatric patients is a challenging problem, with few options available when mitral valve replacement is necessary. This has led some groups to explore new options for valve replacement therapy when needed.2

The use of adult transcatheter expandable valves is a promising option for mitral valve replacement in children. These valves can be implanted within a smaller annulus, do not require warfarin anticoagulation, and retain the ability to be expanded as the annulus of the child grows. Obviously, further study is necessary to evaluate long-term durability and complications; however, short-term to midterm results are promising.

This case report of the first successful “valve-in-valve” implantation of a Melody prosthesis in a pediatric patient with a Fontan circulation highlights the many options that may be available to pediatric patients in the future. Patients with Fontan circulations who have significant atrioventricular valve dysfunction can be difficult to treat, and the condition often leads to transplant unless the valve can be adequately repaired or replaced.3

It is becoming increasingly beneficial to look to other areas in adult medicine for fresh solutions that could be applied in creative ways to patients with congenital heart
disease. Technologic advancements are often developed in the adult population first. The unfortunate reality is that the development of novel devices and technology for children is limited by the relatively small volume of pediatric cardiac patients. Creative applications of these advances in adult medicine may prove to be the best source for innovative treatment strategies for challenging pediatric cardiac problems in the future.

References

First surgical implantation of a sutureless valve in the pulmonary outflow tract

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Since 2008, sutureless valves have been used frequently in adult cardiac surgery for aortic valve replacement in severe aortic stenosis because of their efficiency of implantation and reduced crossclamp times.1,2 We report the first surgical implantation of a sutureless valve in the pulmonary position.

CLINICAL SUMMARY
An 82-year-old man was admitted with increased dyspnea caused by a mitral regurgitation associated with an aortic stenosis. Transthoracic and transesophageal echocardiography found a nondilated left ventricle with normal ejection fraction (65%), associated with a surgical aortic stenosis, and a grade III mitral regurgitation due to anterior leaflet prolapse (A2), associated with moderate pulmonary hypertension (systolic pulmonary artery pressure 40 mm Hg). A grade II pulmonary valve insufficiency due to a dilated pulmonary annulus (45 mm) was also detected without right ventricle enlargement.3

The local heart team decided on a double aortic and mitral valve treatment in view of the patient’s age and the complexity of the procedure. A Perceval L (Sorin, Milan, Italy) sutureless bioprosthesis was implanted in the aortic root with a concomitant mitral valvuloplasty by inserting 3 neochordae from the prolapsed anterior leaflet to the papillary muscles. Perioperative transesophageal echocardiography showed no paravalvular aortic leak or mitral regurgitation. The pulmonary insufficiency was moderate compared with the preoperative status.

In the intensive care unit, on the second postoperative day, a complete atrioventricular block appeared. Transthoracic echocardiography, supported by transesophageal echocardiography, identified an increased pulmonary regurgitation (grade IV), almost certainly due to a pulmonary hypertension crisis associated with a double stress event: patient awakening and