

A Reliable Option for Older Kids Needing a New Aortic Valve

A study shows that older children needing aortic valve replacement have a dependable option with the externally supported Ross procedure. Researchers from the Cincinnati Children's Heart Institute and Medical College of Wisconsin in Milwaukee recently published the results of a retrospective study of the externally supported Ross procedure.

The Ross procedure is a technique of aortic valve replacement in which the patient's own pulmonary valve is used to replace the aortic valve. While the Ross procedure is commonly used in infants and small children, some surgeons have been reluctant to perform the Ross in older children, teenagers and young adults because of the potential for the pulmonary root to dilate and the pulmonary valve to fail. This seems to be more common among patients with a bicuspid aortic valve with regurgitation—a common reason to need aortic valve replacement in older children, teenagers and young adults.

With the supported Ross, the surgeon removes the patient's pulmonary root, places it inside a supportive sleeve—in this case, a Dacron sinus of Valsalva graft—and uses it to replace the aortic valve. The supportive sleeve prevents dilatation of the pulmonary root and prevents valve failure.

Results Are Promising

The study's authors analyzed 40 consecutive patients who underwent this procedure. Findings showed that the supported Ross limits root dilatation, preserves autograft valve function, and can be used in children as young as 10 years old, adolescents and young adults.

"We found that supported Ross procedure was suitable even for patients as young as 10–11 years of age," explains James S. Tweddell, MD, director of Cardiothoracic Surgery, executive co-director of the Heart Institute and one of the study's authors. "We can oversize the Dacron tube within which we place the autograft and the valve will fill it in as the child grows. In the patients we

studied, ventricular function normalized and hypertrophy went away after surgery."

The results confirmed that the supported Ross is a good option for patients with bicuspid aortic valve combined with aortic regurgitation.

Meaningful for Children Ages 10 and Up

These findings are important for children who need treatment for congenital aortic valve disease in the pre-teen and teen years. Valve replacement options in this age group are limited. Mechanical valves require anticoagulation and carry risks of blood clotting and bleeding, and require lifelong blood-thinning medication. This can limit sports participation for all individuals and can complicate future pregnancies for young girls who may later want to have children. Biological valves derived from animals wear out within 10–15 years. The supported Ross provides the patient with their own valve that does not require anticoagulation and has excellent durability.

In this study of 40 procedures, just one autograft was replaced, at 10 years. All other autografts are functioning as they should. Says Tweddell, "These results substantiate the supported Ross as an option in a broader age range of patients that should improve long-term survival and quality of life, and hopefully will keep these kids out of the OR for a very long time. That's our goal: To make them forget they had or needed surgery."

Cincinnati Children's co-authors included Kyle Riggs, Durham Colohan, Tarek Alsaied, MD, and Shannon Powell.

