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Use of a porcine, full-root bioprosthesis for aortic valve replacement in the pediatric and young adult population: A promising alternative

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Purpose: Management of aortic valve disease in the pediatric and young adult population is challenging. When replacement is necessary, the traditional options possess inherent limitations, which may include: (1) the need for systemic anticoagulation, (2) patient/prosthesis mismatch, (3) early or late valvular insufficiency, and (4) the creation of two-valve disease. Recognition of these limitations has led us to explore the use of a porcine, full-root bioprosthesis for aortic valve replacement inchildren and young adults. We report the first such series in this population.

Methods: We reviewed our consecutive experience over 8 years (2005-2013) in 27patients with mean age 14.8 years (range 3 months- 30 years), collecting data for early- and mid-term outcomes. All patients were maintained on long-term, daily aspirin. Survival, valvular and ventricular echocardiographic findings, and all complications including need for reoperation were documented.

Results: There were no hospital deaths. One late death occurred 5 years post-implantfrom respiratory failure secondary to sepsis of unclear etiology. The mean follow-up for 27 patients was 34 months (range 1-84). There were no explants, and there was one reoperation. There were no thromboembolicor bleeding events. No patient developed more than mild-moderate stenosis or mild insufficiency. Echocardiographic data at follow-up demonstrated near- or complete normalization of left ventricular mass and dimension. No patient has required long-term warfarin.

Conclusions: A porcine, full-root bioprosthesis appears to be a viable option for aortic valve replacement in the pediatric and young adult population. Interestingly, when prosthetic degeneration does occur, it presents more with stenosis than insufficiency. Further and long-term studies are warranted.

Biography

Jorge Salazar, MD is Chief of the Division of Congenital Heart Surgery and Director of the Children's Heart Center at Batson Children's Hospital, University of Mississippi Medical Center. Prior to starting the program at the University of Mississippi Medical Center in 2010, he was the Associate Professor of Surgery and Pediatrics at Texas Children's Hospital (Baylor) from 2007-2010 and Chief of Congenital Heart Surgery at Christus Santa Rosa Children's Hospital with the University of Texas Health Science Center, San Antonio from 2004-2007. He graduated from the University of Washington Medical School in 1994. He completed his General Surgery, Research Fellowship, and Cardiothoracic Surgery Training at the Johns Hopkins Hospital in 2003. Dr. Salazar performed an additional year of focused Congenital Heart Surgery training at the University of California, San Francisco before beginning his career at the University of Texas. He has published numerous research manuscripts and is an Associate Editor of the Annals of Thoracic Surgery.

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