Hemodynamic Characteristics of the Matrix P Decellularized Xenograft for Pulmonary Valve Replacement during the Ross Operation


Background and aim of the study
Aortic valve disease can be treated successfully by means of the Ross operation. Alternatives to pulmonary valve replacement with homografts are needed. The study aim was to demonstrate the performance of a decellularized porcine xenograft valve (Matrix P) in adult patients after the Ross operation.

Methods
Between July 2002 and May 2004, a total of 50 Ross operations was performed with the Matrix P for pulmonary valve replacement. Operative results and postoperative hemodynamics were evaluated.

Results
The median patient age was 46 years (range: 17-70 years). Among patients, 36% underwent additional procedures, most often repair of aneurysms of the ascending aorta or coronary artery bypass grafts. One Patient died from septic multiorgan failure on postoperative day 36. One reoperation on the Matrix P and one reperation on the aortic valve were necessary; both reoperations were uneventful. Postoperative echocardiography demonstrated low transvalvular gradients that did not tend to increase over time.

Conclusion
In contrast to homografts and other xenografts the Matrix P decellularized xenograft showed, postoperatively, no rise in right ventricular-pulmonary artery pressure gradients. Indeed, the valve was seen to behave similarly to a physiologically normal valve in a healthy subject.

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