LETTERS TO THE EDITOR

Cryopreserved homograft monocusp valves for reconstruction of the right ventricular outflow tract

To the Editor:

Bigras and associates¹ presented their data with the use of monocusp valves in repair of tetralogy of Fallot in the July issue of the Journal. They concluded that transannular patch repair with three different monocusp valves, used to reconstruct the pulmonary valve orifice or the right ventricular outflow tract 2 standard deviations smaller than normal, neither prevents short-term postoperative pulmonary insufficiency nor improves immediate postoperative outcome. Monocusp valves tailored too wide were believed to be one cause of the observed early postoperative pulmonary insufficiency.

Since July 1990 we have used cryopreserved valved homografts to reconstruct the right ventricular outflow tract (RVOT) in 65 patients (mean age 4.3 years; range 3 months to 36 years) with tetralogy of Fallot (27/65; 42%), double-outlet right ventricle (15/63; 23%), pulmonary atresia (10/65; 15%), congenitally corrected transposition of the great arteries (3/65; 5%), truncus arteriosus (5/65; 6%), and complex pulmonary stenosis (5/65; 6%). Homograft conduits (29/65; 45%) were used if the RVOT was missing or not suitable for surgical in situ reconstruction owing to severe malformation. A transannular monocusp homograft patch (36/65; 55%) was used if age-related dimensions of the RVOT measured during the operation by Hegar dilators could not be achieved either by infundibular resection or commissurotomy. In growing patients the largest size homograft technically implantable was used at times. The operative mortality was 9.2% and was due to low cardiac output in six patients and to sepsis in one. The mean pressure gradient over the RVOT was successfully reduced from 70 ± 22 mm Hg to 10 mm Hg. As in Bigras' study, the pulmonary valve insufficiency (assessed by color flow Doppler echocardiography) was significant. In the early postoperative period, moderate pulmonary insufficiency was found in 48% of monocusps and moderate to severe insufficiency in 24%. After 34 ± 13 months (range 14 to 60), moderate to severe pulmonary regurgitation was found in 52% of monocusps but in only 8% of valved homograft conduits ($p = 0.005$). As suggested by Bigras and associates,¹ the degree of oversizing in monocusp valves was significantly associated with the development of late pulmonary regurgitation ($r = 0.86$; $p = 0.005$). One child had to be reoperated on after 18 months because of aneurysmal dilatation of a homograft conduit causing severe pulmonary regurgitation. In six of 52 (11.5%) children, two with a valved conduit and four with a monocusp valve, severe stenosis at the distal homograft-pulmonary artery anastomosis developed after 16 ± 4 months, necessitating balloon dilatation or reoperation in three patients each. Explanted homografts were acellular, nonvital, and calcified. Immuno-

histochemistry revealed the presence of T-cell as well as B-cell lymphocytes.

Pericardial monocusp valves used for RVOT reconstruction are reported to provide excellent early hemodynamic function.² Nevertheless, the study presented by Bigras and coworkers,¹ as well as our own results,³ fails to demonstrate an improved outcome with the use of monocusp valves. Late monocusp valve regurgitation is significant, which might be reduced by avoiding monocusp oversizing. In the case of a missing or severely diseased RVOT, reconstruction with a cryopreserved homograft conduit achieves good surgical results.⁴ However, the use of cryopreserved monocusp homografts fails to prevent pulmonary regurgitation either early and late after the operation. Furthermore, a disturbingly high incidence of late distal anastomotic stenosis was observed when monocusp valves were used to enlarge the pulmonary artery, which led us to abandon this particular technique for RVOT reconstruction.

Paul R. Vogt, MD

Michele Genoni, MD

Andreas Künzli, MD

Marko I. Turina, MD

Clinic for Cardiovascular Surgery
University Hospital Zurich
Zurich, Switzerland

REFERENCES

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Cost reduction by combined carotid endarterectomy and coronary bypass

To the Editor:

I read with great interest the article by Daily and associates¹ in the June 1996 issue of the Journal, in which they examined the cost effectiveness of doing first-time isolated carotid endarterectomy, coronary bypass, or com-